



EUROPEAN CLIMATE, INFRASTRUCTURE AND ENVIRONMENT EXECUTIVE AGENCY (CINEA)

CINEA.C – Green research and innovation
C.2 – Horizon Europe Energy

GRANT AGREEMENT

Project 101096571 — ASCEND

PREAMBLE

This **Agreement** ('the Agreement') is **between** the following parties:

on the one part,

the **European Climate, Infrastructure and Environment Executive Agency (CINEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and

on the other part,

1. 'the coordinator':

LYON CONFLUENCE (SPL), PIC 966090319, established in RUE DU LAC 20, LYON 69003, France,

and the following other beneficiaries, if they sign their 'accession form' (see Annex 3 and Article 40):

2. **METROPOLE DE LYON (GLY)**, PIC 924429401, established in 20 RUE DU LAC, LYON 69003, France,

3. **COMMUNE DE LYON (LYS)**, PIC 997468170, established in PLACE DE LA COMEDIE 1, LYON CEDEX 01 69205, France,

4. **HESPUL ASSOCIATION (HES)**, PIC 984234072, established in PLACE JULES FERRY 14, LYON 69006, France,

5. **URBAN PRACTICES (UP)**, PIC 888373919, established in 3 COURS CHARLEMAGNE, LYON 69002, France,

6. **ENERTECH (ETC)**, PIC 928689059, established in 65 LES BALCONS DE L'AMOURIER, PONT DE BARRET 26160, France,

7. **LANDESHAUPTSTADT MUNCHEN (LHM)**, PIC 997625601, established in BURGSTRASSE 4, MUNCHEN 80331, Germany,

8. **UNICORN GMBH (UNC)**, PIC 911019830, established in AM FORLENWALD 3, GAIBERG 69251, Germany,

9. **TECHNISCHE UNIVERSITAET MUENCHEN (TUM)**, PIC 999977463, established in Arcisstrasse 21, MUENCHEN 80333, Germany,
10. **ISARWATT EG (IW)**, PIC 886412676, established in ARNULFSTR 114, MUNCHEN 80636, Germany,
11. **AVANCIS GMBH (AVC)**, PIC 885022278, established in SOLARSTRASSE 3, TORGAU 04860, Germany,
12. **SPECTRUM MOBIL GMBH (SPC)**, PIC 928729314, established in AIDENBACHSTRASSTR. 36, MUNCHEN 81379, Germany,
13. **UNTERNEHMERTUM GMBH (UTUM)**, PIC 969082284, established in LICHTENBERGSTRASSE 6, GARCHING 85748, Germany,
14. **MUNICIPALITY OF ALBA IULIA (AIM)**, PIC 952991536, established in CALEA MOTILOR 5 A, ALBA IULIA 510134, Romania,
15. **VILLE DE CHARLEROI (CHA)**, PIC 903356054, established in PLACE CHARLES II, CHARLEROI 6000, Belgium,
16. **ADEPORTO - AGÊNCIA DE ENERGIA DO PORTO (PEN)**, PIC 909584812, established in RUA GONCALO CRISTOVAO 347 SALA 218, PORTO 4000 270, Portugal,
17. **CMPEAE - EMPRESA DE AGUAS E ENERGIADO MUNICIPIO DO PORTO EM (AEP)**, PIC 951510346, established in RUA BARAO NOVA SINTRA 285, PORTO 4300 367, Portugal,
18. **FUNDACAO DE SERRALVES (SRV)**, PIC 983080354, established in RUA JOAO DE CASTRO 210, PORTO 4150 417, Portugal,
19. **ASSOCIACAO PORTO DIGITAL (APD)**, PIC 985621948, established in LARGO DO DR. TITO FONTES, 15, PORTO 4000 538, Portugal,
20. **CESKE VYSOKE UCENI TECHNICKE V PRAZE (CVUT)**, PIC 999848744, established in JUGOSLAVSKYCH PARTYZANU 1580/3, PRAHA 160 00, Czechia,
21. **OPERATOR ICT AS (OICT)**, PIC 888144708, established in DELNICKA 213/12, PRAHA 170 00, Czechia,
22. **PRAZSKA DEVELOPERSKA SPOLECNOST PRISPEVKOVA ORGANIZACE (PDS)**, PIC 887655925, established in U RADNICE 10/2 STARE MESTO, PRAHA 1 110 00, Czechia,
23. **BUDAPEST FOVAROS ONKORMANYZATA (BUD)**, PIC 959102439, established in VAROSHAZ UTCA 9-11, BUDAPEST 1052, Hungary,
24. **BKK BUDAPESTI KOZLEKEDESI KOZPONT ZARTKORUEN MUKODO RESZVENYTARSASAG (BKK)**, PIC 965804460, established in RUMBACH SEBESTYEN UTCA 19-21, BUDAPEST 1075, Hungary,
25. **ENERGY CITIES/ENERGIE-CITES ASSOCIATION (ENC)**, PIC 966036484, established in CHEMIN DE PALENTE 2, BESANCON 25000, France,

26. **STOCKHOLMS STAD (STK)**, PIC 996559183, established in STADSHUSET/REDOVISNINGSENHETEN, STOCKHOLM 105 35, Sweden,
27. **AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH (AIT)**, PIC 999584128, established in GIEFINGGASSE 4, WIEN 1210, Austria,
28. **FUNDACION CARTIF (CAR)**, PIC 999929836, established in PQ TECNOLOGICO BOECILLO 205, BOECILLO 47151, Spain,
29. **UNIVERSITE DU LUXEMBOURG (UoL)**, PIC 999878620, established in 2 AVENUE DE L'UNIVERSITE, ESCH-SUR-ALZETTE 4365, Luxembourg,
30. **BLUE-SIGHT CONSEIL (BLS)**, PIC 894571928, established in 12 PLACE JULES FERRY, LYON 69006, France,
31. **DATEN KOMPETENZZENTRUM STADTE UND REGIONEN DKSR GMBH (DKSR)**, PIC 890595025, established in AM KARLSBAD 16, BERLIN 10785, Germany,
32. **CIVIESCO SRL (CIV)**, PIC 901780774, established in VIA VITTORIO VENETO 24, UDINE 33100, Italy,
33. **TWENTY COMMUNICATIONS SRO (TWE)**, PIC 904952674, established in DOLEZALOVA 2923/35, SKALICA 909 01, Slovakia,
34. **FOUCHAULT THOMAS ILKKA (ODY)**, PIC 887958953, established in 7 RUE DU DOYENNE, LYON 69005, France,

Unless otherwise specified, references to ‘beneficiary’ or ‘beneficiaries’ include the coordinator and affiliated entities (if any).

If only one beneficiary signs the grant agreement (‘mono-beneficiary grant’), all provisions referring to the ‘coordinator’ or the ‘beneficiaries’ will be considered — mutatis mutandis — as referring to the beneficiary.

The parties referred to above have agreed to enter into the Agreement.

By signing the Agreement and the accession forms, the beneficiaries accept the grant and agree to implement the action under their own responsibility and in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

The Agreement is composed of:

Preamble

Terms and Conditions (including Data Sheet)

- Annex 1 Description of the action¹
- Annex 2 Estimated budget for the action
- Annex 2a Additional information on unit costs and contributions (if applicable)
- Annex 3 Accession forms (if applicable)²
- Annex 3a Declaration on joint and several liability of affiliated entities (if applicable)³
- Annex 4 Model for the financial statements
- Annex 5 Specific rules (if applicable)

¹ Template published on [Portal Reference Documents](#).

² Template published on [Portal Reference Documents](#).

³ Template published on [Portal Reference Documents](#).

TERMS AND CONDITIONS

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DATA SHEET

1. General data

Project summary:

Project summary
<p>ASCEND (Accelerate positive Clean Energy Districts) seeks to accelerate the implementation of positive, clean energy districts (PCED) for cities' transition toward climate neutrality and social justice across Europe. ASCEND will: - Deliver two inclusive, affordable PCEDs in Lyon and Munich; - Successfully "bootstrap" implementation of PCEDs in the Multiplier Cities of Alba Iulia (RO), Budapest (HU), Charleroi (BE), Prague (CZ), Porto (PT), Stockholm (SE); - Scale-up solution packages for a large community of cities and investors across Europe; - Disseminate our results widely to the smart cities community. Our overarching goals are to i) Make cities healthier, inclusive and climate-neutral; ii) Speed up and scale up the deployment of cost-effective PCEDs solution packages. "Getting PCEDs done" across Europe entails the following actions for ASCEND: First, large-scale demonstrations in Lighthouse Cities (LHCs), using existing knowledge built by generation of Smart Cities Projects, offering well-proven and cost-effective solutions packages, scalable by design to cities across Europe. Second, developing our solutions packages across the entire life of the district: from design to implementation and maintenance, performances must be maintained and increased thanks to an urban orchestrator aiming to coordinate the ecosystem in the long run. Third, creating a PCEDs replication wave during ASCEND in our eight partnering cities by iterating between the development of solutions packages and deployment in LHCs and Multiplier cities (MCs) during the project and not after. MCs will achieve impact by bootstrapping their PCEDs during the project. Finally, triggering a PCED wave through outcome-driven collaboration with EC initiatives, such as Climate-Neutral and Smart City Mission, Covenant of Mayor, Smart Cities Marketplace, Scalable cities but also with the deployment of City Alliances in the eight cities, targeting small cities, not used to European projects.</p>

Keywords:

- Financing / Investment Schemes
- Low/nearly zero &-energy positive buildings
- Low/zero carbon communities
- Renovation
- Sustainable energy communities
- Urban studies (Planning and development)

Project number: 101096571

Project name: Accelerate poSitive Clean ENergy Districts

Project acronym: ASCEND

Call: HORIZON-MISS-2021-CIT-02

Topic: HORIZON-MISS-2021-CIT-02-04

Type of action: HORIZON Innovation Actions

Granting authority: European Climate, Infrastructure and Environment Executive Agency

Grant managed through EU Funding & Tenders Portal: Yes (eGrants)

Project starting date: first day of the month following the entry into force date

Project end date: starting date + months of duration

Project duration: 60 months

Consortium agreement: Yes

2. Participants

List of participants:

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
1	COO	SPL	LYON CONFLUENCE	FR	966090319	4 812 418.75	3 368 693.00

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
2	BEN	GLY	METROPOLE DE LYON	FR	924429401	1 129 625.00	1 129 625.00
3	BEN	LYS	COMMUNE DE LYON	FR	997468170	382 125.00	382 125.00
4	BEN	HES	HESPUL ASSOCIATION	FR	984234072	617 250.00	617 250.00
5	BEN	UP	URBAN PRACTICES	FR	888373919	452 500.00	316 750.00
6	BEN	ETC	ENERTECH	FR	928689059	190 625.00	133 437.50
7	BEN	LHM	LANDESHAUPTSTADT MUNCHEN	DE	997625601	1 870 125.00	1 870 125.00
7.1	AE	SWM	STADTWERKE MUENCHEN GMBH	DE	925064363	630 312.50	0.00
7.2	AE	MGS	MUENCHNER GESELLSCHAFT FUER STADTERNEUERUNG MBH (MGS)	DE	925097149	1 729 361.25	1 210 552.88
7.3	AE	GWG	GWG Gemeinnützige Wohnstätten- und Siedlungsgesellschaft mbH	DE	996843005	871 252.50	609 876.75
8	BEN	UNC	UNICCORN GMBH	DE	911019830	319 825.00	223 877.50
9	BEN	TUM	TECHNISCHE UNIVERSITAET MUENCHEN	DE	999977463	709 700.00	709 700.00
10	BEN	IW	ISARWATT EG	DE	886412676	322 812.50	225 968.75
11	BEN	AVC	AVANCIS GMBH	DE	885022278	222 515.00	155 760.50
12	BEN	SPC	SPECTRUM MOBIL GMBH	DE	928729314	394 487.50	276 141.00
13	BEN	UTUM	UNTERNEHMERTUM GMBH	DE	969082284	580 473.75	580 473.75
14	BEN	AIM	MUNICIPALITY OF ALBA IULIA	RO	952991536	721 500.00	721 500.00
15	BEN	CHA	VILLE DE CHARLEROI	BE	903356054	357 000.00	357 000.00
15.1	AE	IGC	INTERCOMMUNALE POUR LA GESTION ET LA REALISATION D'ETUDES TECHNIQUES ET ECONOMIQUES	BE	885106474	313 625.00	219 537.50
16	BEN	PEN	ADEPORTO - AGÊNCIA DE ENERGIA DO PORTO	PT	909584812	282 625.00	282 625.00
17	BEN	AEP	CMPEAE - EMPRESA DE AGUAS E ENERGIADO MUNICIPIO DO PORTO EM	PT	951510346	90 468.75	63 328.00
18	BEN	SRV	FUNDAÇÃO DE SERRALVES	PT	983080354	117 247.50	117 247.50
19	BEN	APD	ASSOCIACAO PORTO DIGITAL	PT	985621948	220 465.00	220 465.00
20	BEN	CVUT	CESKE VYSOKE UCENI TECHNICKE V PRAZE	CZ	999848744	429 125.00	429 125.00
21	BEN	OICT	OPERATOR ICT AS	CZ	888144708	132 000.00	92 400.00
22	BEN	PDS	PRAZSKA DEVELOPERSKA SPOLECNOST PRISPEVKOVA ORGANIZACE	CZ	887655925	100 125.00	100 125.00
23	BEN	BUD	BUDAPEST FOVAROS ONKORMANYZATA	HU	959102439	460 625.00	460 625.00
24	BEN	BKK	BKK BUDAPESTI KOZLEKEDESI KOZPONT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	965804460	58 125.00	40 687.50
25	BEN	ENC	ENERGY CITIES/ENERGIE-CITES ASSOCIATION	FR	966036484	767 937.50	767 937.50
26	BEN	STK	STOCKHOLMS STAD	SE	996559183	177 687.50	177 687.50
27	BEN	AIT	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	AT	999584128	716 957.50	716 957.50
28	BEN	CAR	FUNDACION CARTIF	ES	999929836	529 437.50	529 437.50
29	BEN	UoL	UNIVERSITE DU LUXEMBOURG	LU	999878620	377 597.50	377 597.50
30	BEN	BLS	BLUE-SIGHT CONSEIL	FR	894571928	486 468.75	340 528.00
31	BEN	DKSR	DATEN KOMPETENZZENTRUM STADTE UND REGIONEN DKSR GMBH	DE	890595025	1 118 700.00	783 090.00
32	BEN	CIV	CIVIESCO SRL	IT	901780774	714 375.00	500 062.50
33	BEN	TWE	TWENTY COMMUNICATIONS SRO	SK	904952674	1 009 062.50	706 343.75
34	BEN	ODY	FOUCHAULT THOMAS ILKKA	FR	887958953	246 180.63	172 326.44
35	AP	USG	UNIVERSITAET ST. GALLEN	CH	999861742	0.00	0.00
Total						24 662 744.38	19 986 990.32

Coordinator:

- LYON CONFLUENCE (SPL)

3. Grant**Maximum grant amount, total estimated eligible costs and contributions and funding rate:**

Total eligible costs (BEN and AE)	Funding rate (%)	Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
24 662 744.38	100, 70	19 986 990.32	19 986 990.32

Grant form: Budget-based**Grant mode:** Action grant**Budget categories/activity types:**

- A. Personnel costs
 - A.1 Employees, A.2 Natural persons under direct contract, A.3 Seconded persons
 - A.4 SME owners and natural person beneficiaries
- B. Subcontracting costs
- C. Purchase costs
 - C.1 Travel and subsistence
 - C.2 Equipment
 - C.3 Other goods, works and services
- D. Other cost categories
 - D.2 Internally invoiced goods and services
- E. Indirect costs

Cost eligibility options:

- In-kind contributions eligible costs
- Parental leave
- Project-based supplementary payments
- Average personnel costs (unit cost according to usual cost accounting practices)
- Limitation for subcontracting
- Travel and subsistence:
 - Travel: Actual costs
 - Accommodation: Actual costs
 - Subsistence: Actual costs
- Equipment: depreciation only
- Indirect cost flat-rate: 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any)
- VAT: Yes
- Other ineligible costs

Budget flexibility: Yes (no flexibility cap)

4. Reporting, payments and recoveries

4.1 Continuous reporting (art 21)

Deliverables: see Funding & Tenders Portal Continuous Reporting tool

4.2 Periodic reporting and payments

Reporting and payment schedule (art 21, 22):

Reporting					Payments	
Reporting periods			Type	Deadline	Type	Deadline (time to pay)
RP No	Month from	Month to				
					Initial prefinancing	30 days from entry into force/10 days before starting date – whichever is the latest
1	1	12	Periodic report	60 days after end of reporting period	Interim payment	90 days from receiving periodic report
2	13	30	Periodic report	60 days after end of reporting period	Interim payment	90 days from receiving periodic report
3	31	42	Periodic report	60 days after end of reporting period	Interim payment	90 days from receiving periodic report
4	43	60	Periodic report	60 days after end of reporting period	Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment	
Type	Amount
Prefinancing 1 (initial)	7 994 796.13

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): Yes

MIM contribution: 5% of the maximum grant amount (999 349.52), retained from the initial prefinancing

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call conditions (if any) have acceded to the Agreement and only to beneficiaries that have acceded.

Interim payment ceiling (if any): 90% of the maximum grant amount

Exception for revenues: Yes

No-profit rule: Yes

Late payment interest: ECB + 3.5%

Bank account for payments:

██

Conversion into euros: Double conversion

Reporting language: Language of the Agreement

4.3 Certificates (art 24):

Certificates on the financial statements (CFS):

Conditions:

Schedule: only at final payment, if threshold is reached

Standard threshold (beneficiary-level):

- financial statement: requested EU contribution to costs \geq EUR 430 000.00

Special threshold for beneficiaries with a systems and process audit(see Article 24): financial statement: requested EU contribution to costs \geq EUR 725 000.00

4.4 Recoveries (art 22)

First-line liability for recoveries:

Beneficiary termination: Beneficiary concerned

Final payment: Each beneficiary for their own debt

After final payment: Beneficiary concerned

Joint and several liability for enforced recoveries (in case of non-payment):

Individual financial responsibility: Each beneficiary is liable only for its own debts (and those of its affiliated entities, if any)

5. Consequences of non-compliance, applicable law & dispute settlement forum

Suspension and termination:

Additional suspension grounds (art 31)

Additional termination grounds (art 32)

Applicable law (art 43):

Standard applicable law regime: EU law + law of Belgium

Dispute settlement forum (art 43):

Standard dispute settlement forum:

EU beneficiaries: EU General Court + EU Court of Justice (on appeal)

Non-EU beneficiaries: Courts of Brussels, Belgium (unless an international agreement provides for the enforceability of EU court judgements)

6. Other

Specific rules (Annex 5): Yes

Standard time-limits after project end:

Confidentiality (for X years after final payment): 5

Record-keeping (for X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Reviews (up to X years after final payment): 2

Audits (up to X years after final payment): 2

Extension of findings from other grants to this grant (no later than X years after final payment): 2

Impact evaluation (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

CHAPTER 1 GENERAL

ARTICLE 1 — SUBJECT OF THE AGREEMENT

This Agreement sets out the rights and obligations and terms and conditions applicable to the grant awarded for the implementation of the action set out in Chapter 2.

ARTICLE 2 — DEFINITIONS

For the purpose of this Agreement, the following definitions apply:

Actions — The project which is being funded in the context of this Agreement.

Grant — The grant awarded in the context of this Agreement.

EU grants — Grants awarded by EU institutions, bodies, offices or agencies (including EU executive agencies, EU regulatory agencies, EDA, joint undertakings, etc.).

Participants — Entities participating in the action as beneficiaries, affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties.

Beneficiaries (BEN) — The signatories of this Agreement (either directly or through an accession form).

Affiliated entities (AE) — Entities affiliated to a beneficiary within the meaning of Article 187 of EU Financial Regulation 2018/1046⁴ which participate in the action with similar rights and obligations as the beneficiaries (obligation to implement action tasks and right to charge costs and claim contributions).

Associated partners (AP) — Entities which participate in the action, but without the right to charge costs or claim contributions.

Purchases — Contracts for goods, works or services needed to carry out the action (e.g. equipment, consumables and supplies) but which are not part of the action tasks (see Annex 1).

Subcontracting — Contracts for goods, works or services that are part of the action tasks (see Annex 1).

In-kind contributions — In-kind contributions within the meaning of Article 2(36) of EU Financial

⁴ For the definition, see Article 187 Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 ('EU Financial Regulation') (OJ L 193, 30.7.2018, p. 1): "**affiliated entities** [are]:

- (a) entities that form a sole beneficiary [(i.e. where an entity is formed of several entities that satisfy the criteria for being awarded a grant, including where the entity is specifically established for the purpose of implementing an action to be financed by a grant)];
- (b) entities that satisfy the eligibility criteria and that do not fall within one of the situations referred to in Article 136(1) and 141(1) and that have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation".

Regulation 2018/1046, i.e. non-financial resources made available free of charge by third parties.

Fraud — Fraud within the meaning of Article 3 of EU Directive 2017/1371⁵ and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995⁶, as well as any other wrongful or criminal deception intended to result in financial or personal gain.

Irregularities — Any type of breach (regulatory or contractual) which could impact the EU financial interests, including irregularities within the meaning of Article 1(2) of EU Regulation 2988/95⁷.

Grave professional misconduct — Any type of unacceptable or improper behaviour in exercising one's profession, especially by employees, including grave professional misconduct within the meaning of Article 136(1)(c) of EU Financial Regulation 2018/1046.

Applicable EU, international and national law — Any legal acts or other (binding or non-binding) rules and guidance in the area concerned.

Portal — EU Funding & Tenders Portal; electronic portal and exchange system managed by the European Commission and used by itself and other EU institutions, bodies, offices or agencies for the management of their funding programmes (grants, procurements, prizes, etc.).

CHAPTER 2 ACTION

ARTICLE 3 — ACTION

The grant is awarded for the action **101096571 — ASCEND** ('action'), as described in Annex 1.

ARTICLE 4 — DURATION AND STARTING DATE

The duration and the starting date of the action are set out in the Data Sheet (see Point 1).

CHAPTER 3 GRANT

ARTICLE 5 — GRANT

5.1 Form of grant

The grant is an action grant⁸ which takes the form of a budget-based mixed actual cost grant (i.e. a

⁵ Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law (OJ L 198, 28.7.2017, p. 29).

⁶ OJ C 316, 27.11.1995, p. 48.

⁷ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

⁸ For the definition, see Article 180(2)(a) EU Financial Regulation 2018/1046: '**action grant**' means an EU grant to finance "an action intended to help achieve a Union policy objective".

grant based on actual costs incurred, but which may also include other forms of funding, such as unit costs or contributions, flat-rate costs or contributions, lump sum costs or contributions or financing not linked to costs).

5.2 Maximum grant amount

The maximum grant amount is set out in the Data Sheet (see Point 3) and in the estimated budget (Annex 2).

5.3 Funding rate

The funding rate for costs is 100% of the eligible costs for beneficiaries that are non-profit legal entities⁹ and 70% of the eligible costs for beneficiaries that are profit legal entities.

Contributions are not subject to any funding rate.

5.4 Estimated budget, budget categories and forms of funding

The estimated budget for the action is set out in Annex 2.

It contains the estimated eligible costs and contributions for the action, broken down by participant and budget category.

Annex 2 also shows the types of costs and contributions (forms of funding)¹⁰ to be used for each budget category.

If unit costs or contributions are used, the details on the calculation will be explained in Annex 2a.

5.5 Budget flexibility

The budget breakdown may be adjusted — without an amendment (see Article 39) — by transfers (between participants and budget categories), as long as this does not imply any substantive or important change to the description of the action in Annex 1.

However:

- changes to the budget category for volunteers (if used) always require an amendment
- changes to budget categories with lump sums costs or contributions (if used; including financing not linked to costs) always require an amendment
- changes to budget categories with higher funding rates or budget ceilings (if used) always require an amendment
- addition of amounts for subcontracts not provided for in Annex 1 either require an amendment or simplified approval in accordance with Article 6.2

⁹ For the definition, see Article XX of the Horizon Europe Framework Programme and Rules for Participation Regulation (EU) XXX: ‘**non-profit legal entity**’ means a legal entity which by its legal form is non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members.

¹⁰ See Article 125 EU Financial Regulation 2018/1046.

- other changes require an amendment or simplified approval, if specifically provided for in Article 6.2
- flexibility caps: not applicable.

ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS AND CONTRIBUTIONS

In order to be eligible, costs and contributions must meet the **eligibility** conditions set out in this Article.

6.1 General eligibility conditions

The **general eligibility conditions** are the following:

- (a) for actual costs:
 - (i) they must be actually incurred by the beneficiary
 - (ii) they must be incurred in the period set out in Article 4 (with the exception of costs relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)
 - (iii) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
 - (iv) they must be incurred in connection with the action as described in Annex 1 and necessary for its implementation
 - (v) they must be identifiable and verifiable, in particular recorded in the beneficiary's accounts in accordance with the accounting standards applicable in the country where the beneficiary is established and with the beneficiary's usual cost accounting practices
 - (vi) they must comply with the applicable national law on taxes, labour and social security and
 - (vii) they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency
- (b) for unit costs or contributions (if any):
 - (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
 - (ii) the units must:
 - be actually used or produced by the beneficiary in the period set out in Article 4 (with the exception of units relating to the submission of the final periodic report, which may be used or produced afterwards; see Article 21)
 - be necessary for the implementation of the action and
 - (iii) the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 20)

(c) for flat-rate costs or contributions (if any):

- (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
- (ii) the costs or contributions to which the flat-rate is applied must:
 - be eligible
 - relate to the period set out in Article 4 (with the exception of costs or contributions relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)

(d) for lump sum costs or contributions (if any):

- (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
- (ii) the work must be properly implemented by the beneficiary in accordance with Annex 1
- (iii) the deliverables/outputs must be achieved in the period set out in Article 4 (with the exception of deliverables/outputs relating to the submission of the final periodic report, which may be achieved afterwards; see Article 21)

(e) for unit, flat-rate or lump sum costs or contributions according to usual cost accounting practices (if any):

- (i) they must fulfil the general eligibility conditions for the type of cost concerned
- (ii) the cost accounting practices must be applied in a consistent manner, based on objective criteria, regardless of the source of funding

(f) for financing not linked to costs (if any): the results must be achieved or the conditions must be fulfilled as described in Annex 1.

In addition, for direct cost categories (e.g. personnel, travel & subsistence, subcontracting and other direct costs) only costs that are directly linked to the action implementation and can therefore be attributed to it directly are eligible. They must not include any indirect costs (i.e. costs that are only indirectly linked to the action, e.g. via cost drivers).

In-kind contributions provided by third parties free of charge may be declared as eligible direct costs by the beneficiaries which use them (under the same conditions as if they were their own, provided that they concern only direct costs and that the third parties and their in-kind contributions are set out in Annex 1 (or approved ex post in the periodic report, if their use does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants; ‘simplified approval procedure’).

6.2 Specific eligibility conditions for each budget category

For each budget category, the **specific eligibility conditions** are as follows:

Direct costs

A. Personnel costs

A.1 Costs for employees (or equivalent) are eligible as personnel costs if they fulfil the general eligibility conditions and are related to personnel working for the beneficiary under an employment contract (or equivalent appointing act) and assigned to the action.

They must be limited to salaries (including net payments during parental leave), social security contributions, taxes and other costs linked to the remuneration, if they arise from national law or the employment contract (or equivalent appointing act) and be calculated on the basis of the costs actually incurred, in accordance with the following method:

{daily rate for the person
multiplied by
number of day-equivalents worked on the action (rounded up or down to the nearest half-day)}.

The daily rate must be calculated as:

{annual personnel costs for the person
divided by
215}.

The number of day-equivalents declared for a person must be identifiable and verifiable (see Article 20).

The actual time spent on parental leave by a person assigned to the action may be deducted from the 215 days indicated in the above formula.

The total number of day-equivalents declared in EU grants, for a person for a year, cannot be higher than 215, minus time spent on parental leave (if any).

For personnel which receives supplementary payments for work in projects (project-based remuneration), the personnel costs must be calculated at a rate which:

- corresponds to the actual remuneration costs paid by the beneficiary for the time worked by the person in the action over the reporting period
- does not exceed the remuneration costs paid by the beneficiary for work in similar projects funded by national schemes ('national projects reference')
- is defined based on objective criteria allowing to determine the amount to which the person is entitled

and

- reflects the usual practice of the beneficiary to pay consistently bonuses or supplementary payments for work in projects funded by national schemes.

The national projects reference is the remuneration defined in national law, collective labour agreement or written internal rules of the beneficiary applicable to work in projects funded by national schemes.

If there is no such national law, collective labour agreement or written internal rules or if the project-

based remuneration is not based on objective criteria, the national project reference will be the average remuneration of the person in the last full calendar year covered by the reporting period, excluding remuneration paid for work in EU actions.

If the beneficiary uses average personnel costs (unit cost according to usual cost accounting practices), the personnel costs must fulfil the general eligibility conditions for such unit costs and the daily rate must be calculated:

- using the actual personnel costs recorded in the beneficiary's accounts and excluding any costs which are ineligible or already included in other budget categories; the actual personnel costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the personnel costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

A.2 and A.3 Costs for natural persons working under a direct contract other than an employment contract and costs for **seconded persons by a third party against payment** are also eligible as personnel costs, if they are assigned to the action, fulfil the general eligibility conditions and:

- (a) work under conditions similar to those of an employee (in particular regarding the way the work is organised, the tasks that are performed and the premises where they are performed) and
- (b) the result of the work belongs to the beneficiary (unless agreed otherwise).

They must be calculated on the basis of a rate which corresponds to the costs actually incurred for the direct contract or secondment and must not be significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

A.4 The work of **SME owners** for the action (i.e. owners of beneficiaries that are small and medium-sized enterprises¹¹ not receiving a salary) or **natural person beneficiaries** (i.e. beneficiaries that are natural persons not receiving a salary) may be declared as personnel costs, if they fulfil the general eligibility conditions and are calculated as unit costs in accordance with the method set out in Annex 2a.

B. Subcontracting costs

Subcontracting costs for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible, if they are calculated on the basis

¹¹ For the definition, see Commission Recommendation 2003/361/EC: micro, small or medium-sized enterprise (SME) are enterprises

- engaged in an economic activity, irrespective of their legal form (including, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity) and
- employing fewer than 250 persons (expressed in 'annual working units' as defined in Article 5 of the Recommendation) and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

of the costs actually incurred, fulfil the general eligibility conditions and are awarded using the beneficiary's usual purchasing practices — provided these ensure subcontracts with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

Subcontracting may cover only a limited part of the action.

The tasks to be subcontracted and the estimated cost for each subcontract must be set out in Annex 1 and the total estimated costs of subcontracting per beneficiary must be set out in Annex 2 (or may be approved ex post in the periodic report, if the use of subcontracting does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants; 'simplified approval procedure').

C. Purchase costs

Purchase costs for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible if they fulfil the general eligibility conditions and are bought using the beneficiary's usual purchasing practices — provided these ensure purchases with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

C.1 Travel and subsistence

Purchases for **travel, accommodation and subsistence** must be calculated as follows:

- travel: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- accommodation: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- subsistence: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel .

C.2 Equipment

Purchases of **equipment, infrastructure or other assets** used for the action must be declared as depreciation costs, calculated on the basis of the costs actually incurred and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.

Only the portion of the costs that corresponds to the rate of actual use for the action during the action duration can be taken into account.

Costs for **renting or leasing** equipment, infrastructure or other assets are also eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets and do not include any financing fees.

C.3 Other goods, works and services

Purchases of **other goods, works and services** must be calculated on the basis of the costs actually incurred.

Such goods, works and services include, for instance, consumables and supplies, promotion, dissemination, protection of results, translations, publications, certificates and financial guarantees, if required under the Agreement.

D. Other cost categories

D.2 Internally invoiced goods and services

Costs for internally invoiced goods and services directly used for the action may be declared as unit cost according to usual cost accounting practices, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions for such unit costs and the amount per unit is calculated:

- using the actual costs for the good or service recorded in the beneficiary's accounts, attributed either by direct measurement or on the basis of cost drivers, and excluding any cost which are ineligible or already included in other budget categories; the actual costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

'Internally invoiced goods and services' means goods or services which are provided within the beneficiary's organisation directly for the action and which the beneficiary values on the basis of its usual cost accounting practices.

This cost will not be taken into account for the indirect cost flat-rate.

Indirect costs

E. Indirect costs

Indirect costs will be reimbursed at the flat-rate of 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any).

Contributions

Not applicable

6.3 Ineligible costs and contributions

The following costs or contributions are **ineligible**:

- (a) costs or contributions that do not comply with the conditions set out above (Article 6.1 and 6.2), in particular:

- (i) costs related to return on capital and dividends paid by a beneficiary
 - (ii) debt and debt service charges
 - (iii) provisions for future losses or debts
 - (iv) interest owed
 - (v) currency exchange losses
 - (vi) bank costs charged by the beneficiary's bank for transfers from the granting authority
 - (vii) excessive or reckless expenditure
 - (viii) deductible or refundable VAT (including VAT paid by public bodies acting as public authority)
 - (ix) costs incurred or contributions for activities implemented during grant agreement suspension (see Article 31)
 - (x) in-kind contributions by third parties: not applicable
- (b) costs or contributions declared under other EU grants (or grants awarded by an EU Member State, non-EU country or other body implementing the EU budget), except for the following cases:
- (i) Synergy actions: not applicable
 - (ii) if the action grant is combined with an operating grant¹² running during the same period and the beneficiary can demonstrate that the operating grant does not cover any (direct or indirect) costs of the action grant
- (c) costs or contributions for staff of a national (or regional/local) administration, for activities that are part of the administration's normal activities (i.e. not undertaken only because of the grant)
- (d) costs or contributions (especially travel and subsistence) for staff or representatives of EU institutions, bodies or agencies
- (e) other :
- (i) country restrictions for eligible costs: not applicable
 - (ii) costs or contributions declared specifically ineligible in the call conditions.

6.4 Consequences of non-compliance

If a beneficiary declares costs or contributions that are ineligible, they will be rejected (see Article 27).

This may also lead to other measures described in Chapter 5.

¹² For the definition, see Article 180(2)(b) of EU Financial Regulation 2018/1046: ‘**operating grant**’ means an EU grant to finance “the functioning of a body which has an objective forming part of and supporting an EU policy”.

CHAPTER 4 GRANT IMPLEMENTATION

SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS

ARTICLE 7 — BENEFICIARIES

The beneficiaries, as signatories of the Agreement, are fully responsible towards the granting authority for implementing it and for complying with all its obligations.

They must implement the Agreement to their best abilities, in good faith and in accordance with all the obligations and terms and conditions it sets out.

They must have the appropriate resources to implement the action and implement the action under their own responsibility and in accordance with Article 11. If they rely on affiliated entities or other participants (see Articles 8 and 9), they retain sole responsibility towards the granting authority and the other beneficiaries.

They are jointly responsible for the *technical* implementation of the action. If one of the beneficiaries fails to implement their part of the action, the other beneficiaries must ensure that this part is implemented by someone else (without being entitled to an increase of the maximum grant amount and subject to an amendment; see Article 39). The *financial* responsibility of each beneficiary in case of recoveries is governed by Article 22.

The beneficiaries (and their action) must remain eligible under the EU programme funding the grant for the entire duration of the action. Costs and contributions will be eligible only as long as the beneficiary and the action are eligible.

The **internal roles and responsibilities** of the beneficiaries are divided as follows:

- (a) Each beneficiary must:
 - (i) keep information stored in the Portal Participant Register up to date (see Article 19)
 - (ii) inform the granting authority (and the other beneficiaries) immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 19)
 - (iii) submit to the coordinator in good time:
 - the prefinancing guarantees (if required; see Article 23)
 - the financial statements and certificates on the financial statements (CFS) (if required; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
 - the contribution to the deliverables and technical reports (see Article 21)
 - any other documents or information required by the granting authority under the Agreement
 - (iv) submit via the Portal data and information related to the participation of their affiliated entities.

(b) The coordinator must:

- (i) monitor that the action is implemented properly (see Article 11)
- (ii) act as the intermediary for all communications between the consortium and the granting authority, unless the Agreement or granting authority specifies otherwise, and in particular:
 - submit the prefinancing guarantees to the granting authority (if any)
 - request and review any documents or information required and verify their quality and completeness before passing them on to the granting authority
 - submit the deliverables and reports to the granting authority
 - inform the granting authority about the payments made to the other beneficiaries (report on the distribution of payments; if required, see Articles 22 and 32)
- (iii) distribute the payments received from the granting authority to the other beneficiaries without unjustified delay (see Article 22).

The coordinator may not delegate or subcontract the above-mentioned tasks to any other beneficiary or third party (including affiliated entities).

However, coordinators which are public bodies may delegate the tasks set out in Point (b)(ii) last indent and (iii) above to entities with ‘authorisation to administer’ which they have created or which are controlled by or affiliated to them. In this case, the coordinator retains sole responsibility for the payments and for compliance with the obligations under the Agreement.

Moreover, coordinators which are ‘sole beneficiaries’¹³ (or similar, such as European research infrastructure consortia (ERICs)) may delegate the tasks set out in Point (b)(i) to (iii) above to one of their members. The coordinator retains sole responsibility for compliance with the obligations under the Agreement.

The beneficiaries must have **internal arrangements** regarding their operation and co-ordination, to ensure that the action is implemented properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **consortium agreement** between the beneficiaries, covering for instance:

- the internal organisation of the consortium
- the management of access to the Portal
- different distribution keys for the payments and financial responsibilities in case of recoveries (if any)
- additional rules on rights and obligations related to background and results (see Article 16)

¹³ For the definition, see Article 187(2) EU Financial Regulation 2018/1046: “Where several entities satisfy the criteria for being awarded a grant and together form one entity, that entity may be treated as the **sole beneficiary**, including where it is specifically established for the purpose of implementing the action financed by the grant.”

- settlement of internal disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries.

The internal arrangements must not contain any provision contrary to this Agreement.

ARTICLE 8 — AFFILIATED ENTITIES

The following entities which are linked to a beneficiary will participate in the action as ‘affiliated entities’:

- **STADTWERKE MUENCHEN GMBH (SWM)**, PIC 925064363, linked to LANDESHAUPTSTADT MUNCHEN (LHM)
- **MUENCHNER GESELLSCHAFT FUER STADTERNEUERUNG MBH (MGS) (MGS)**, PIC 925097149, linked to LANDESHAUPTSTADT MUNCHEN (LHM)
- **GWG Gemeinnützige Wohnstätten- und Siedlungsgesellschaft mbH (GWG)**, PIC 996843005, linked to LANDESHAUPTSTADT MUNCHEN (LHM)
- **INTERCOMMUNALE POUR LA GESTION ET LA REALISATION D'ETUDES TECHNIQUES ET ECONOMIQUES (IGC)**, PIC 885106474, linked to VILLE DE CHARLEROI (CHA)

Affiliated entities can charge costs and contributions to the action under the same conditions as the beneficiaries and must implement the action tasks attributed to them in Annex 1 in accordance with Article 11.

Their costs and contributions will be included in Annex 2 and will be taken into account for the calculation of the grant.

The beneficiaries must ensure that all their obligations under this Agreement also apply to their affiliated entities.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the affiliated entities.

Breaches by affiliated entities will be handled in the same manner as breaches by beneficiaries. Recovery of undue amounts will be handled through the beneficiaries.

If the granting authority requires joint and several liability of affiliated entities (see Data Sheet, Point 4.4), they must sign the declaration set out in Annex 3a and may be held liable in case of enforced recoveries against their beneficiaries (see Article 22.2 and 22.4).

ARTICLE 9 — OTHER PARTICIPANTS INVOLVED IN THE ACTION

9.1 Associated partners

The following entities which cooperate with a beneficiary will participate in the action as ‘associated partners’:

- **UNIVERSITAET ST. GALLEN (USG)**, PIC 999861742

Associated partners must implement the action tasks attributed to them in Annex 1 in accordance with Article 11. They may not charge costs or contributions to the action and the costs for their tasks are not eligible.

The tasks must be set out in Annex 1.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interests), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the associated partners.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the associated partners.

9.2 Third parties giving in-kind contributions to the action

Other third parties may give in-kind contributions to the action (i.e. personnel, equipment, other goods, works and services, etc. which are free-of-charge) if necessary for the implementation.

Third parties giving in-kind contributions do not implement any action tasks. They may not charge costs or contributions to the action, but the costs for the in-kind contributions are eligible and may be charged by the beneficiaries which use them, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The third parties and their in-kind contributions should be set out in Annex 1.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the third parties giving in-kind contributions.

9.3 Subcontractors

Subcontractors may participate in the action, if necessary for the implementation.

Subcontractors must implement their action tasks in accordance with Article 11. The costs for the subcontracted tasks (invoiced price from the subcontractor) are eligible and may be charged by the beneficiaries, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the subcontractors.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the subcontractors.

9.4 Recipients of financial support to third parties

If the action includes providing financial support to third parties (e.g. grants, prizes or similar forms of support), the beneficiaries must ensure that their contractual obligations under Articles 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying

out action), 19 (information) and 20 (record-keeping) also apply to the third parties receiving the support (recipients).

The beneficiaries must also ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the recipients.

ARTICLE 10 — PARTICIPANTS WITH SPECIAL STATUS

10.1 Non-EU participants

Participants which are established in a non-EU country (if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use qualified external auditors which are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC¹⁴
- for the controls under Article 25: to allow for checks, reviews, audits and investigations (including on-the-spot checks, visits and inspections) by the bodies mentioned in that Article (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.).

Special rules on dispute settlement apply (see Data Sheet, Point 5).

10.2 Participants which are international organisations

Participants which are international organisations (IOs; if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use either independent public officers or external auditors which comply with comparable standards as those set out in EU Directive 2006/43/EC
- for the controls under Article 25: to allow for the checks, reviews, audits and investigations by the bodies mentioned in that Article, taking into account the specific agreements concluded by them and the EU (if any).

For such participants, nothing in the Agreement will be interpreted as a waiver of their privileges or immunities, as accorded by their constituent documents or international law.

Special rules on applicable law and dispute settlement apply (see Article 43 and Data Sheet, Point 5).

¹⁴ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).

10.3 Pillar-assessed participants

Pillar-assessed participants (if any) may rely on their own systems, rules and procedures, in so far as they have been positively assessed and do not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries.

‘Pillar-assessment’ means a review by the European Commission on the systems, rules and procedures which participants use for managing EU grants (in particular internal control system, accounting system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 154 EU Financial Regulation 2018/1046).

Participants with a positive pillar assessment may rely on their own systems, rules and procedures, in particular for:

- record-keeping (Article 20): may be done in accordance with internal standards, rules and procedures
- currency conversion for financial statements (Article 21): may be done in accordance with usual accounting practices
- guarantees (Article 23): for public law bodies, prefinancing guarantees are not needed
- certificates (Article 24):
 - certificates on the financial statements (CFS): may be provided by their regular internal or external auditors and in accordance with their internal financial regulations and procedures
 - certificates on usual accounting practices (CoMUC): are not needed if those practices are covered by an ex-ante assessment

and use the following specific rules, for:

- recoveries (Article 22): in case of financial support to third parties, there will be no recovery if the participant has done everything possible to retrieve the undue amounts from the third party receiving the support (including legal proceedings) and non-recovery is not due to an error or negligence on its part
- checks, reviews, audits and investigations by the EU (Article 25): will be conducted taking into account the rules and procedures specifically agreed between them and the framework agreement (if any)
- impact evaluation (Article 26): will be conducted in accordance with the participant’s internal rules and procedures and the framework agreement (if any)
- grant agreement suspension (Article 31): certain costs incurred during grant suspension are eligible (notably, minimum costs necessary for a possible resumption of the action and costs relating to contracts which were entered into before the pre-information letter was received and which could not reasonably be suspended, reallocated or terminated on legal grounds)
- grant agreement termination (Article 32): the final grant amount and final payment will be calculated taking into account also costs relating to contracts due for execution only after

termination takes effect, if the contract was entered into before the pre-information letter was received and could not reasonably be terminated on legal grounds

- liability for damages (Article 33.2): the granting authority must be compensated for damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement only if the damage is due to an infringement of the participant's internal rules and procedures or due to a violation of third parties' rights by the participant or one of its employees or individual for whom the employees are responsible.

Participants whose pillar assessment covers procurement and granting procedures may also do purchases, subcontracting and financial support to third parties (Article 6.2) in accordance with their internal rules and procedures for purchases, subcontracting and financial support.

Participants whose pillar assessment covers data protection rules may rely on their internal standards, rules and procedures for data protection (Article 15).

The participants may however not rely on provisions which would breach the principle of equal treatment of applicants or beneficiaries or call into question the decision awarding the grant, such as in particular:

- eligibility (Article 6)
- consortium roles and set-up (Articles 7-9)
- security and ethics (Articles 13, 14)
- IPR (including background and results, access rights and rights of use), communication, dissemination and visibility (Articles 16 and 17)
- information obligation (Article 19)
- payment, reporting and amendments (Articles 21, 22 and 39)
- rejections, reductions, suspensions and terminations (Articles 27, 28, 29-32)

If the pillar assessment was subject to remedial measures, reliance on the internal systems, rules and procedures is subject to compliance with those remedial measures.

Participants whose assessment has not yet been updated to cover (the new rules on) data protection may rely on their internal systems, rules and procedures, provided that they ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subject
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date

- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the personal data.

Participants must inform the coordinator without delay of any changes to the systems, rules and procedures that were part of the pillar assessment. The coordinator must immediately inform the granting authority.

Pillar-assessed participants that have also concluded a framework agreement with the EU, may moreover — under the same conditions as those above (i.e. not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries) — rely on the provisions set out in that framework agreement.

SECTION 2 RULES FOR CARRYING OUT THE ACTION

ARTICLE 11 — PROPER IMPLEMENTATION OF THE ACTION

11.1 Obligation to properly implement the action

The beneficiaries must implement the action as described in Annex 1 and in compliance with the provisions of the Agreement, the call conditions and all legal obligations under applicable EU, international and national law.

11.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 12 — CONFLICT OF INTERESTS

12.1 Conflict of interests

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the Agreement could be compromised for reasons involving family, emotional life, political or national affinity, economic interest or any other direct or indirect interest (‘conflict of interests’).

They must formally notify the granting authority without delay of any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The granting authority may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

12.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the beneficiary may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 13 — CONFIDENTIALITY AND SECURITY

13.1 Sensitive information

The parties must keep confidential any data, documents or other material (in any form) that is identified as sensitive in writing ('sensitive information') — during the implementation of the action and for at least until the time-limit set out in the Data Sheet (see Point 6).

If a beneficiary requests, the granting authority may agree to keep such information confidential for a longer period.

Unless otherwise agreed between the parties, they may use sensitive information only to implement the Agreement.

The beneficiaries may disclose sensitive information to their personnel or other participants involved in the action only if they:

- (a) need to know it in order to implement the Agreement and
- (b) are bound by an obligation of confidentiality.

The granting authority may disclose sensitive information to its staff and to other EU institutions and bodies.

It may moreover disclose sensitive information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU financial interests and
- (b) the recipients of the information are bound by an obligation of confidentiality.

The confidentiality obligations no longer apply if:

- (a) the disclosing party agrees to release the other party
- (b) the information becomes publicly available, without breaching any confidentiality obligation
- (c) the disclosure of the sensitive information is required by EU, international or national law.

Specific confidentiality rules (if any) are set out in Annex 5.

13.2 Classified information

The parties must handle classified information in accordance with the applicable EU, international or national law on classified information (in particular, Decision 2015/444¹⁵ and its implementing rules).

Deliverables which contain classified information must be submitted according to special procedures agreed with the granting authority.

¹⁵ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

Action tasks involving classified information may be subcontracted only after explicit approval (in writing) from the granting authority.

Classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

Specific security rules (if any) are set out in Annex 5.

13.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 14 — ETHICS AND VALUES

14.1 Ethics

The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles.

Specific ethics rules (if any) are set out in Annex 5.

14.2 Values

The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).

Specific rules on values (if any) are set out in Annex 5.

14.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 15 — DATA PROTECTION

15.1 Data processing by the granting authority

Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.

For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725¹⁶.

¹⁶ Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies

15.2 Data processing by the beneficiaries

The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679¹⁷).

They must ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subjects
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the data.

The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.

The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.

15.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE

16.1 Background and access rights to background

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules in Annex 5.

‘Background’ means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that is:

and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

¹⁷ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (‘GDPR’) (OJ L 119, 4.5.2016, p. 1).

- (a) held by the beneficiaries before they acceded to the Agreement and
- (b) needed to implement the action or exploit the results.

If background is subject to rights of a third party, the beneficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

16.2 Ownership of results

The granting authority does not obtain ownership of the results produced under the action.

‘Results’ means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

16.3 Rights of use of the granting authority on materials, documents and information received for policy, information, communication, dissemination and publicity purposes

The granting authority has the right to use non-sensitive information relating to the action and materials and documents received from the beneficiaries (notably summaries for publication, deliverables, as well as any other material, such as pictures or audio-visual material, in paper or electronic form) for policy, information, communication, dissemination and publicity purposes — during the action or afterwards.

The right to use the beneficiaries’ materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

- (a) **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes)
- (c) **editing or redrafting** (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation)
- (d) **translation**
- (e) **storage** in paper, electronic or other form
- (f) **archiving**, in line with applicable document-management rules
- (g) the right to authorise **third parties** to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority

(h) **processing**, analysing, aggregating the materials, documents and information received and **producing derivative works**.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

If materials or documents are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure that they comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Where applicable, the granting authority will insert the following information:

“© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the [name of granting authority] under conditions.”

16.4 Specific rules on IPR, results and background

Specific rules regarding intellectual property rights, results and background (if any) are set out in Annex 5.

16.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY

17.1 Communication — Dissemination — Promoting the action

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

17.2 Visibility — European flag and funding statement

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the
European Union



Co-funded by the
European Union



Funded by the
European Union



Co-funded by the
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

17.3 Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

17.4 Specific communication, dissemination and visibility rules

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

17.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 18 — SPECIFIC RULES FOR CARRYING OUT THE ACTION

18.1 Specific rules for carrying out the action

Specific rules for implementing the action (if any) are set out in Annex 5.

18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

SECTION 3 GRANT ADMINISTRATION

ARTICLE 19 — GENERAL INFORMATION OBLIGATIONS

19.1 Information requests

The beneficiaries must provide — during the action or afterwards and in accordance with Article 7 — any information requested in order to verify eligibility of the costs or contributions declared, proper implementation of the action and compliance with the other obligations under the Agreement.

The information provided must be accurate, precise and complete and in the format requested, including electronic format.

19.2 Participant Register data updates

The beneficiaries must keep — at all times, during the action or afterwards — their information stored in the Portal Participant Register up to date, in particular, their name, address, legal representatives, legal form and organisation type.

19.3 Information about events and circumstances which impact the action

The beneficiaries must immediately inform the granting authority (and the other beneficiaries) of any of the following:

- (a) **events** which are likely to affect or delay the implementation of the action or affect the EU's financial interests, in particular:
 - (i) changes in their legal, financial, technical, organisational or ownership situation (including changes linked to one of the exclusion grounds listed in the declaration of honour signed before grant signature)
 - (ii) linked action information: not applicable

(b) **circumstances** affecting:

- (i) the decision to award the grant or
- (ii) compliance with requirements under the Agreement.

19.4 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 20 — RECORD-KEEPING

20.1 Keeping records and supporting documents

The beneficiaries must — at least until the time-limit set out in the Data Sheet (see Point 6) — keep records and other supporting documents to prove the proper implementation of the action in line with the accepted standards in the respective field (if any).

In addition, the beneficiaries must — for the same period — keep the following to justify the amounts declared:

- (a) for actual costs: adequate records and supporting documents to prove the costs declared (such as contracts, subcontracts, invoices and accounting records); in addition, the beneficiaries' usual accounting and internal control procedures must enable direct reconciliation between the amounts declared, the amounts recorded in their accounts and the amounts stated in the supporting documents
- (b) for flat-rate costs and contributions (if any): adequate records and supporting documents to prove the eligibility of the costs or contributions to which the flat-rate is applied
- (c) for the following simplified costs and contributions: the beneficiaries do not need to keep specific records on the actual costs incurred, but must keep:
 - (i) for unit costs and contributions (if any): adequate records and supporting documents to prove the number of units declared
 - (ii) for lump sum costs and contributions (if any): adequate records and supporting documents to prove proper implementation of the work as described in Annex 1
 - (iii) for financing not linked to costs (if any): adequate records and supporting documents to prove the achievement of the results or the fulfilment of the conditions as described in Annex 1
- (d) for unit, flat-rate and lump sum costs and contributions according to usual cost accounting practices (if any): the beneficiaries must keep any adequate records and supporting documents to prove that their cost accounting practices have been applied in a consistent manner, based on objective criteria, regardless of the source of funding, and that they comply with the eligibility conditions set out in Articles 6.1 and 6.2.

Moreover, the following is needed for specific budget categories:

- (e) for personnel costs: time worked for the beneficiary under the action must be supported by declarations signed monthly by the person and their supervisor, unless another reliable time-record system is in place; the granting authority may accept alternative evidence supporting the time worked for the action declared, if it considers that it offers an adequate level of assurance
- (f) additional record-keeping rules: not applicable

The records and supporting documents must be made available upon request (see Article 19) or in the context of checks, reviews, audits or investigations (see Article 25).

If there are on-going checks, reviews, audits, investigations, litigation or other pursuits of claims under the Agreement (including the extension of findings; see Article 25), the beneficiaries must keep these records and other supporting documentation until the end of these procedures.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law. The granting authority may accept non-original documents if they offer a comparable level of assurance.

20.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 21 — REPORTING

21.1 Continuous reporting

The beneficiaries must continuously report on the progress of the action (e.g. **deliverables, milestones, outputs/outcomes, critical risks, indicators**, etc; if any), in the Portal Continuous Reporting tool and in accordance with the timing and conditions it sets out (as agreed with the granting authority).

Standardised deliverables (e.g. progress reports not linked to payments, reports on cumulative expenditure, special reports, etc; if any) must be submitted using the templates published on the Portal.

21.2 Periodic reporting: Technical reports and financial statements

In addition, the beneficiaries must provide reports to request payments, in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2):

- for additional prefinancings (if any): an **additional prefinancing report**
- for interim payments (if any) and the final payment: a **periodic report**.

The prefinancing and periodic reports include a technical and financial part.

The technical part includes an overview of the action implementation. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment.

The financial part of the periodic report includes:

- the financial statements (individual and consolidated; for all beneficiaries/affiliated entities)
- the explanation on the use of resources (or detailed cost reporting table, if required)
- the certificates on the financial statements (CFS) (if required; see Article 24.2 and Data Sheet, Point 4.3).

The **financial statements** must detail the eligible costs and contributions for each budget category and, for the final payment, also the revenues for the action (see Articles 6 and 22).

All eligible costs and contributions incurred should be declared, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Amounts that are not declared in the individual financial statements will not be taken into account by the granting authority.

By signing the financial statements (directly in the Portal Periodic Reporting tool), the beneficiaries confirm that:

- the information provided is complete, reliable and true
- the costs and contributions declared are eligible (see Article 6)
- the costs and contributions can be substantiated by adequate records and supporting documents (see Article 20) that will be produced upon request (see Article 19) or in the context of checks, reviews, audits and investigations (see Article 25)
- for the final periodic report: all the revenues have been declared (if required; see Article 22).

Beneficiaries will have to submit also the financial statements of their affiliated entities (if any). In case of recoveries (see Article 22), beneficiaries will be held responsible also for the financial statements of their affiliated entities.

21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

Beneficiaries with general accounts established in a currency other than the euro must convert the costs recorded in their accounts into euro, at the average of the daily exchange rates published in the C series of the *Official Journal of the European Union* (ECB website), calculated over the corresponding reporting period.

If no daily euro exchange rate is published in the *Official Journal* for the currency in question, they must be converted at the average of the monthly accounting exchange rates published on the European Commission website (InforEuro), calculated over the corresponding reporting period.

Beneficiaries with general accounts in euro must convert costs incurred in another currency into euro according to their usual accounting practices.

21.4 Reporting language

The reporting must be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

21.5 Consequences of non-compliance

If a report submitted does not comply with this Article, the granting authority may suspend the payment deadline (see Article 29) and apply other measures described in Chapter 5.

If the coordinator breaches its reporting obligations, the granting authority may terminate the grant or the coordinator's participation (see Article 32) or apply other measures described in Chapter 5.

ARTICLE 22 — PAYMENTS AND RECOVERIES — CALCULATION OF AMOUNTS DUE

22.1 Payments and payment arrangements

Payments will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

They will be made in euro to the bank account indicated by the coordinator (see Data Sheet, Point 4.2) and must be distributed without unjustified delay (restrictions may apply to distribution of the initial prefinancing payment; see Data Sheet, Point 4.2).

Payments to this bank account will discharge the granting authority from its payment obligation.

The cost of payment transfers will be borne as follows:

- the granting authority bears the cost of transfers charged by its bank
- the beneficiary bears the cost of transfers charged by its bank
- the party causing a repetition of a transfer bears all costs of the repeated transfer.

Payments by the granting authority will be considered to have been carried out on the date when they are debited to its account.

22.2 Recoveries

Recoveries will be made, if — at beneficiary termination, final payment or afterwards — it turns out that the granting authority has paid too much and needs to recover the amounts undue.

Each beneficiary's financial responsibility in case of recovery is in principle limited to their own debt and undue amounts of their affiliated entities.

In case of enforced recoveries (see Article 22.4), affiliated entities will be held liable for repaying debts of their beneficiaries, if required by the granting authority (see Data Sheet, Point 4.4).

22.3 Amounts due

22.3.1 Prefinancing payments

The aim of the prefinancing is to provide the beneficiaries with a float.

It remains the property of the EU until the final payment.

For **initial prefinancings** (if any), the amount due, schedule and modalities are set out in the Data Sheet (see Point 4.2).

For **additional prefinancings** (if any), the amount due, schedule and modalities are also set out in the Data Sheet (see Point 4.2). However, if the statement on the use of the previous prefinancing payment shows that less than 70% was used, the amount set out in the Data Sheet will be reduced by the difference between the 70% threshold and the amount used.

The contribution to the Mutual Insurance Mechanism will be retained from the prefinancing payments (at the rate and in accordance with the modalities set out in the Data Sheet, see Point 4.2) and transferred to the Mechanism.

Prefinancing payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.2 Amount due at beneficiary termination — Recovery

In case of beneficiary termination, the granting authority will determine the provisional amount due for the beneficiary concerned. Payments (if any) will be made with the next interim or final payment.

The **amount due** will be calculated in the following step:

Step 1 — Calculation of the total accepted EU contribution

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the 'accepted EU contribution' for the beneficiary for all reporting periods, by calculating the 'maximum EU contribution to costs' (applying the funding rate to the accepted costs of the beneficiary), taking into account requests for a lower contribution to costs and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the 'total accepted EU contribution' for the beneficiary.

The **balance** is then calculated by deducting the payments received (if any; see report on the distribution of payments in Article 32), from the total accepted EU contribution:

{total accepted EU contribution for the beneficiary
 minus
 {prefinancing and interim payments received (if any)}}.

If the balance is **positive**, the amount will be included in the next interim or final payment to the consortium.

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount due, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered and ask this amount to be paid to the coordinator (**confirmation letter**).

If payment is not made to the coordinator by the date specified in the confirmation letter, the granting authority may call on the Mutual Insurance Mechanism to intervene, if continuation of the action is guaranteed and the conditions set out in the rules governing the Mechanism are met.

In this case, it will send a **beneficiary recovery letter**, together with a **debit note** with the terms and date for payment.

The debit note for the beneficiary will include the amount calculated for the affiliated entities which also had to end their participation (if any).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

The amounts will later on also be taken into account for the next interim or final payment.

22.3.3 Interim payments

Interim payments reimburse the eligible costs and contributions claimed for the implementation of the action during the reporting periods (if any).

Interim payments (if any) will be made in accordance with the schedule and modalities set out the Data Sheet (see Point 4.2).

Payment is subject to the approval of the periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **interim payment** will be calculated by the granting authority in the following steps:

- Step 1 — Calculation of the total accepted EU contribution
- Step 2 — Limit to the interim payment ceiling

Step 1 — Calculation of the total accepted EU contribution

The granting authority will calculate the ‘accepted EU contribution’ for the action for the reporting period, by first calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions from beneficiary termination (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the interim payment ceiling

The resulting amount is then capped to ensure that the total amount of prefinancing and interim payments (if any) does not exceed the interim payment ceiling set out in the Data Sheet (see Point 4.2).

Interim payments (or parts of them) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.4 Final payment — Final grant amount — Revenues and Profit — Recovery

The final payment (payment of the balance) reimburses the remaining part of the eligible costs and contributions claimed for the implementation of the action (if any).

The final payment will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

Payment is subject to the approval of the final periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **final grant amount for the action** will be calculated in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for all reporting periods, by calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the total accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the maximum grant amount

If the resulting amount is higher than the maximum grant amount set out in Article 5.2, it will be limited to the latter.

Step 3 — Reduction due to the no-profit rule

If the no-profit rule is provided for in the Data Sheet (see Point 4.2), the grant must not produce a profit (i.e. surplus of the amount obtained following Step 2 plus the action’s revenues, over the eligible costs and contributions approved by the granting authority).

‘Revenue’ is all income generated by the action, during its duration (see Article 4), for beneficiaries that are profit legal entities (— with the exception of income generated by the exploitation of results, which are not considered as revenues).

If there is a profit, it will be deducted in proportion to the final rate of reimbursement of the eligible costs approved by the granting authority (as compared to the amount calculated following Steps 1 and 2 minus the contributions).

The **balance** (final payment) is then calculated by deducting the total amount of prefinancing and interim payments already made (if any), from the final grant amount:

$$\begin{array}{l} \{\text{final grant amount} \\ \text{minus} \\ \{\text{prefinancing and interim payments made (if any)}\} \} \end{array}$$

If the balance is **positive**, it will be **paid** to the coordinator.

The amount retained for the Mutual Insurance Mechanism (see above) will be released and **paid** to the coordinator (in accordance with the rules governing the Mechanism).

The final payment (or part of it) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

If — despite the release of the Mutual Insurance Mechanism contribution — the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to recover, the final grant amount, the amount to be recovered and the reasons why

- requesting a report on the distribution of payments to the beneficiaries within 30 days of receiving notification and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received) and the coordinator has submitted the report on the distribution of payments, it will calculate the **share of the debt per beneficiary**, by:

- (a) identifying the beneficiaries for which the amount calculated as follows is negative:

$$\left\{ \left\{ \begin{array}{l} \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \end{array} \right\} \right\}$$

multiplied by

$$\left\{ \begin{array}{l} \text{final grant amount for the action} \end{array} \right\},$$

minus

$$\left\{ \begin{array}{l} \text{prefinancing and interim payments received by the beneficiary (if any)} \end{array} \right\}$$

and

- (b) dividing the debt:

$$\left\{ \begin{array}{l} \text{amount calculated according to point (a) for the beneficiary concerned} \\ \text{divided by} \\ \text{the sum of the amounts calculated according to point (a) for all the beneficiaries identified according to} \\ \text{point (a)} \end{array} \right\}$$

multiplied by

$$\left\{ \begin{array}{l} \text{the amount to be recovered} \end{array} \right\}.$$

and confirm the amount to be recovered from each beneficiary concerned (**confirmation letter**), together with **debit notes** with the terms and date for payment.

The debit notes for beneficiaries will include the amounts calculated for their affiliated entities (if any).

If the coordinator has not submitted the report on the distribution of payments, the granting authority will **recover** the full amount from the coordinator (**confirmation letter** and **debit note** with the terms and date for payment).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.3.5 Audit implementation after final payment — Revised final grant amount — Recovery

If — after the final payment (in particular, after checks, reviews, audits or investigations; see Article 25) — the granting authority rejects costs or contributions (see Article 27) or reduces the grant (see Article 28), it will calculate the **revised final grant amount** for the beneficiary concerned.

The **beneficiary revised final grant amount** will be calculated in the following step:

Step 1 — Calculation of the revised total accepted EU contribution

Step 1 — Calculation of the revised total accepted EU contribution

The granting authority will first calculate the ‘revised accepted EU contribution’ for the beneficiary, by calculating the ‘revised accepted costs’ and ‘revised accepted contributions’.

After that, it will take into account grant reductions (if any). The resulting ‘revised total accepted EU contribution’ is the beneficiary revised final grant amount.

If the revised final grant amount is lower than the beneficiary’s final grant amount (i.e. its share in the final grant amount for the action), it will be **recovered** in accordance with the following procedure:

The **beneficiary final grant amount** (i.e. share in the final grant amount for the action) is calculated as follows:

$$\left\{ \begin{array}{l} \text{\{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action\}} \\ \text{multiplied by} \\ \text{final grant amount for the action\}}. \end{array} \right.$$

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and the date for payment.

Recoveries against affiliated entities (if any) will be handled through their beneficiaries.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.4 Enforced recovery

If payment is not made by the date specified in the debit note, the amount due will be recovered:

- (a) by offsetting the amount — without the coordinator or beneficiary’s consent — against any amounts owed to the coordinator or beneficiary by the granting authority.

In exceptional circumstances, to safeguard the EU financial interests, the amount may be offset before the payment date specified in the debit note.

For grants where the granting authority is the European Commission or an EU executive

agency, debts may also be offset against amounts owed by other Commission services or executive agencies.

- (b) financial guarantee(s): not applicable
- (c) joint and several liability of beneficiaries: not applicable
- (d) by holding affiliated entities jointly and severally liable (if any, see Data Sheet, Point 4.4)
- (e) by taking legal action (see Article 43) or, provided that the granting authority is the European Commission or an EU executive agency, by adopting an enforceable decision under Article 299 of the Treaty on the Functioning of the EU (TFEU) and Article 100(2) of EU Financial Regulation 2018/1046.

If the Mutual Insurance Mechanism was called on by the granting authority to intervene, recovery will be continued in the name of the Mutual Insurance Mechanism. If two debit notes were sent, the second one (in the name of the Mutual Insurance Mechanism) will be considered to replace the first one (in the name of the granting authority). Where the MIM intervened, offsetting, enforceable decisions or any other of the above-mentioned forms of enforced recovery may be used mutatis mutandis.

The amount to be recovered will be increased by **late-payment interest** at the rate set out in Article 22.5, from the day following the payment date in the debit note, up to and including the date the full payment is received.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2015/2366¹⁸ applies.

For grants where the granting authority is an EU executive agency, enforced recovery by offsetting or enforceable decision will be done by the services of the European Commission (see also Article 43).

22.5 Consequences of non-compliance

22.5.1 If the granting authority does not pay within the payment deadlines (see above), the beneficiaries are entitled to **late-payment interest** at the rate applied by the European Central Bank (ECB) for its main refinancing operations in euros ('reference rate'), plus the rate specified in the Data Sheet (Point 4.2). The reference rate is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series of the *Official Journal of the European Union*.

If the late-payment interest is lower than or equal to EUR 200, it will be paid to the coordinator only on request submitted within two months of receiving the late payment.

Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement).

¹⁸ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, p. 35).

If payments or the payment deadline are suspended (see Articles 29 and 30), payment will not be considered as late.

Late-payment interest covers the period running from the day following the due date for payment (see above), up to and including the date of payment.

Late-payment interest is not considered for the purposes of calculating the final grant amount.

22.5.2 If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 29) and the grant or the coordinator may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 23 — GUARANTEES

Not applicable

ARTICLE 24 — CERTIFICATES

24.1 Operational verification report (OVR)

Not applicable

24.2 Certificate on the financial statements (CFS)

If required by the granting authority (see Data Sheet, Point 4.3), the beneficiaries must provide certificates on their financial statements (CFS), in accordance with the schedule, threshold and conditions set out in the Data Sheet.

The coordinator must submit them as part of the periodic report (see Article 21).

The certificates must be drawn up using the template published on the Portal, cover the costs declared on the basis of actual costs and costs according to usual cost accounting practices (if any), and fulfil the following conditions:

- (a) be provided by a qualified approved external auditor which is independent and complies with Directive 2006/43/EC¹⁹ (or for public bodies: by a competent independent public officer)
- (b) the verification must be carried out according to the highest professional standards to ensure that the financial statements comply with the provisions under the Agreement and that the costs declared are eligible.

The certificates will not affect the granting authority's right to carry out its own checks, reviews or audits, nor preclude the European Court of Auditors (ECA), the European Public Prosecutor's Office (EPPO) or the European Anti-Fraud Office (OLAF) from using their prerogatives for audits and investigations under the Agreement (see Article 25).

If the costs (or a part of them) were already audited by the granting authority, these costs do not need to be covered by the certificate and will not be counted for calculating the threshold (if any).

¹⁹ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).

24.3 Certificate on the compliance of usual cost accounting practices (CoMUC)

Not applicable

24.4 Systems and process audit (SPA)

Beneficiaries which:

- use unit, flat rate or lump sum costs or contributions according to documented (i.e. formally approved and in writing) usual costs accounting practices (if any) or
- have formalised documentation on the systems and processes for calculating their costs and contributions (i.e. formally approved and in writing), have participated in at least 150 actions under Horizon 2020 or the Euratom Research and Training Programme (2014-2018 or 2019-2020) and participate in at least 3 ongoing actions under Horizon Europe or the Euratom Research and Training Programme (2021-2025 or 2026-2027)

may apply to the granting authority for a systems and process audit (SPA).

This audit will be carried out as follows:

Step 1 – Application by the beneficiary.

Step 2 – If the application is accepted, the granting authority will carry out the systems and process audit, complemented by an audit of transactions (on a sample of the beneficiary's Horizon Europe or the Euratom Research and Training Programme financial statements).

Step 3 – The audit result will take the form of a risk assessment classification for the beneficiary: low, medium or high.

Low-risk beneficiaries will benefit from less (or less in-depth) ex-post audits (see Article 25) and a higher threshold for submitting certificates on the financial statements (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3).

24.5 Consequences of non-compliance

If a beneficiary does not submit a certificate on the financial statements (CFS) or the certificate is rejected, the accepted EU contribution to costs will be capped to reflect the CFS threshold.

If a beneficiary breaches any of its other obligations under this Article, the granting authority may apply the measures described in Chapter 5.

ARTICLE 25 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS

25.1 Granting authority checks, reviews and audits

25.1.1 Internal checks

The granting authority may — during the action or afterwards — check the proper implementation of the action and compliance with the obligations under the Agreement, including assessing costs and contributions, deliverables and reports.

25.1.2 Project reviews

The granting authority may carry out reviews on the proper implementation of the action and compliance with the obligations under the Agreement (general project reviews or specific issues reviews).

Such project reviews may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiary concerned and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent, outside experts. If it uses outside experts, the coordinator or beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The coordinator or beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information and data in addition to deliverables and reports already submitted (including information on the use of resources). The granting authority may request beneficiaries to provide such information to it directly. Sensitive information and documents will be treated in accordance with Article 13.

The coordinator or beneficiary concerned may be requested to participate in meetings, including with the outside experts.

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including to the outside experts) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the review findings, a **project review report** will be drawn up.

The granting authority will formally notify the project review report to the coordinator or beneficiary concerned, which has 30 days from receiving notification to make observations.

Project reviews (including project review reports) will be in the language of the Agreement.

25.1.3 Audits

The granting authority may carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Such audits may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the beneficiary concerned and will be considered to start on the date of the notification.

The granting authority may use its own audit service, delegate audits to a centralised service or use external audit firms. If it uses an external firm, the beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data)

to verify compliance with the Agreement. Sensitive information and documents will be treated in accordance with Article 13.

For **on-the-spot** visits, the beneficiary concerned must allow access to sites and premises (including for the external audit firm) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the audit findings, a **draft audit report** will be drawn up.

The auditors will formally notify the draft audit report to the beneficiary concerned, which has 30 days from receiving notification to make observations (contradictory audit procedure).

The **final audit report** will take into account observations by the beneficiary concerned and will be formally notified to them.

Audits (including audit reports) will be in the language of the Agreement.

25.2 European Commission checks, reviews and audits in grants of other granting authorities

Where the granting authority is not the European Commission, the latter has the same rights of checks, reviews and audits as the granting authority.

25.3 Access to records for assessing simplified forms of funding

The beneficiaries must give the European Commission access to their statutory records for the periodic assessment of simplified forms of funding which are used in EU programmes.

25.4 OLAF, EPPO and ECA audits and investigations

The following bodies may also carry out checks, reviews, audits and investigations — during the action or afterwards:

- the European Anti-Fraud Office (OLAF) under Regulations No 883/2013²⁰ and No 2185/96²¹
- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939
- the European Court of Auditors (ECA) under Article 287 of the Treaty on the Functioning of the EU (TFEU) and Article 257 of EU Financial Regulation 2018/1046.

If requested by these bodies, the beneficiary concerned must provide full, accurate and complete information in the format requested (including complete accounts, individual salary statements or

²⁰ Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18/09/2013, p. 1).

²¹ Council Regulation (Euratom, EC) No 2185/1996 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15/11/1996, p. 2).

other personal data, including in electronic format) and allow access to sites and premises for on-the-spot visits or inspections — as provided for under these Regulations.

To this end, the beneficiary concerned must keep all relevant information relating to the action, at least until the time-limit set out in the Data Sheet (Point 6) and, in any case, until any ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims have been concluded.

25.5 Consequences of checks, reviews, audits and investigations — Extension of results of reviews, audits or investigations

25.5.1 Consequences of checks, reviews, audits and investigations in this grant

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to rejections (see Article 27), grant reduction (see Article 28) or other measures described in Chapter 5.

Rejections or grant reductions after the final payment will lead to a revised final grant amount (see Article 22).

Findings in checks, reviews, audits or investigations during the action implementation may lead to a request for amendment (see Article 39), to change the description of the action set out in Annex 1.

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations in any EU grant may also lead to consequences in other EU grants awarded under similar conditions ('extension to other grants').

Moreover, findings arising from an OLAF or EPPO investigation may lead to criminal prosecution under national law.

25.5.2 Extension from other grants

Results of checks, reviews, audits or investigations in other grants may be extended to this grant, if:

- (a) the beneficiary concerned is found, in other EU grants awarded under similar conditions, to have committed systemic or recurrent errors, irregularities, fraud or breach of obligations that have a material impact on this grant and
- (b) those findings are formally notified to the beneficiary concerned — together with the list of grants affected by the findings — within the time-limit for audits set out in the Data Sheet (see Point 6).

The granting authority will formally notify the beneficiary concerned of the intention to extend the findings and the list of grants affected.

If the extension concerns **rejections of costs or contributions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings
- (b) the request to submit revised financial statements for all grants affected
- (c) the correction rate for extrapolation, established on the basis of the systemic or recurrent errors, to calculate the amounts to be rejected, if the beneficiary concerned:

- (i) considers that the submission of revised financial statements is not possible or practicable or
- (ii) does not submit revised financial statements.

If the extension concerns **grant reductions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the **correction rate for extrapolation**, established on the basis of the systemic or recurrent errors and the principle of proportionality.

The beneficiary concerned has **60 days** from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method/rate**.

On the basis of this, the granting authority will analyse the impact and decide on the implementation (i.e. start rejection or grant reduction procedures, either on the basis of the revised financial statements or the announced/alternative method/rate or a mix of those; see Articles 27 and 28).

25.6 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 26 — IMPACT EVALUATIONS

26.1 Impact evaluation

The granting authority may carry out impact evaluations of the action, measured against the objectives and indicators of the EU programme funding the grant.

Such evaluations may be started during implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiaries and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent outside experts.

The coordinator or beneficiaries must provide any information relevant to evaluate the impact of the action, including information in electronic format.

26.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the granting authority may apply the measures described in Chapter 5.

CHAPTER 5 CONSEQUENCES OF NON-COMPLIANCE

SECTION 1 REJECTIONS AND GRANT REDUCTION

ARTICLE 27 — REJECTION OF COSTS AND CONTRIBUTIONS

27.1 Conditions

The granting authority will — at beneficiary termination, interim payment, final payment or afterwards — reject any costs or contributions which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 25).

The rejection may also be based on the extension of findings from other grants to this grant (see Article 25).

Ineligible costs or contributions will be rejected.

27.2 Procedure

If the rejection does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the rejection, the amounts and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the rejection (payment review procedure).

If the rejection leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

27.3 Effects

If the granting authority rejects costs or contributions, it will deduct them from the costs or contributions declared and then calculate the amount due (and, if needed, make a recovery; see Article 22).

ARTICLE 28 — GRANT REDUCTION

28.1 Conditions

The granting authority may — at beneficiary termination, final payment or afterwards — reduce the grant for a beneficiary, if:

- (a) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants

awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (see Article 25).

The amount of the reduction will be calculated for each beneficiary concerned and proportionate to the seriousness and the duration of the errors, irregularities or fraud or breach of obligations, by applying an individual reduction rate to their accepted EU contribution.

28.2 Procedure

If the grant reduction does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the reduction, the amount to be reduced and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the reduction (payment review procedure).

If the grant reduction leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

28.3 Effects

If the granting authority reduces the grant, it will deduct the reduction and then calculate the amount due (and, if needed, make a recovery; see Article 22).

SECTION 2 SUSPENSION AND TERMINATION

ARTICLE 29 — PAYMENT DEADLINE SUSPENSION

29.1 Conditions

The granting authority may — at any moment — suspend the payment deadline if a payment cannot be processed because:

- (a) the required report (see Article 21) has not been submitted or is not complete or additional information is needed
- (b) there are doubts about the amount to be paid (e.g. ongoing audit extension procedure, queries about eligibility, need for a grant reduction, etc.) and additional checks, reviews, audits or investigations are necessary, or
- (c) there are other issues affecting the EU financial interests.

29.2 Procedure

The granting authority will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day the notification is sent.

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining time to pay (see Data Sheet, Point 4.2) will resume.

If the suspension exceeds two months, the coordinator may request the granting authority to confirm if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the report and the revised report is not submitted (or was submitted but is also rejected), the granting authority may also terminate the grant or the participation of the coordinator (see Article 32).

ARTICLE 30 — PAYMENT SUSPENSION

30.1 Conditions

The granting authority may — at any moment — suspend payments, in whole or in part for one or more beneficiaries, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant.

If payments are suspended for one or more beneficiaries, the granting authority will make partial payment(s) for the part(s) not suspended. If suspension concerns the final payment, the payment (or recovery) of the remaining amount after suspension is lifted will be considered to be the payment that closes the action.

30.2 Procedure

Before suspending payments, the granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to suspend payments and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

At the end of the suspension procedure, the granting authority will also inform the coordinator.

The suspension will **take effect** the day after the confirmation notification is sent.

If the conditions for resuming payments are met, the suspension will be **lifted**. The granting authority will formally notify the beneficiary concerned (and the coordinator) and set the suspension end date.

During the suspension, no prefinancing will be paid to the beneficiaries concerned. For interim payments, the periodic reports for all reporting periods except the last one (see Article 21) must not contain any financial statements from the beneficiary concerned (or its affiliated entities). The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

ARTICLE 31 — GRANT AGREEMENT SUSPENSION

31.1 Consortium-requested GA suspension

31.1.1 Conditions and procedure

The beneficiaries may request the suspension of the grant or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 35) — make implementation impossible or excessively difficult.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the suspension takes effect; this date may be before the date of the submission of the amendment request and
- the expected date of resumption.

The suspension will **take effect** on the day specified in the amendment.

Once circumstances allow for implementation to resume, the coordinator must immediately request another **amendment** of the Agreement to set the suspension end date, the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the amendment. This date may be before the date of the submission of the amendment request.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during grant suspension are not eligible (see Article 6.3).

31.2 EU-initiated GA suspension

31.2.1 Conditions

The granting authority may suspend the grant or any part of it, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions,

submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or

- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant
- (c) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

31.2.2 Procedure

Before suspending the grant, the granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to suspend the grant and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

The suspension will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification).

Once the conditions for resuming implementation of the action are met, the granting authority will formally notify the coordinator a **lifting of suspension letter**, in which it will set the suspension end date and invite the coordinator to request an amendment of the Agreement to set the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the lifting of suspension letter. This date may be before the date on which the letter is sent.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during suspension are not eligible (see Article 6.3).

The beneficiaries may not claim damages due to suspension by the granting authority (see Article 33).

Grant suspension does not affect the granting authority's right to terminate the grant or a beneficiary (see Article 32) or reduce the grant (see Article 28).

ARTICLE 32 — GRANT AGREEMENT OR BENEFICIARY TERMINATION

32.1 Consortium-requested GA termination

32.1.1 Conditions and procedure

The beneficiaries may request the termination of the grant.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the consortium ends work on the action ('end of work date') and
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

The termination will **take effect** on the termination date specified in the amendment.

If no reasons are given or if the granting authority considers the reasons do not justify termination, it may consider the grant terminated improperly.

32.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

If the granting authority does not receive the report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Improper termination may lead to a grant reduction (see Article 28).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.2 Consortium-requested beneficiary termination

32.2.1 Conditions and procedure

The coordinator may request the termination of the participation of one or more beneficiaries, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing)

- the date the beneficiary ends work on the action ('end of work date')
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

If the termination concerns the coordinator and is done without its agreement, the amendment request must be submitted by another beneficiary (acting on behalf of the consortium).

The termination will **take effect** on the termination date specified in the amendment.

If no information is given or if the granting authority considers that the reasons do not justify termination, it may consider the beneficiary to have been terminated improperly.

32.2.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a second **request for amendment** (see Article 39) with other amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the second request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the second request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

Improper termination may lead to a reduction of the grant (see Article 31) or grant termination (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.3 EU-initiated GA or beneficiary termination

32.3.1 Conditions

The granting authority may terminate the grant or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 40)
- (b) a change to the action or the legal, financial, technical, organisational or ownership situation of a beneficiary is likely to substantially affect the implementation of the action or calls into question the decision to award the grant (including changes linked to one of the exclusion grounds listed in the declaration of honour)
- (c) following termination of one or more beneficiaries, the necessary changes to the Agreement (and their impact on the action) would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (d) implementation of the action has become impossible or the changes necessary for its continuation would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (e) a beneficiary (or person with unlimited liability for its debts) is subject to bankruptcy proceedings or similar (including insolvency, winding-up, administration by a liquidator or court, arrangement with creditors, suspension of business activities, etc.)
- (f) a beneficiary (or person with unlimited liability for its debts) is in breach of social security or tax obligations
- (g) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has been found guilty of grave professional misconduct
- (h) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed fraud, corruption, or is involved in a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking
- (i) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) was created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (or created another entity with this purpose)
- (j) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:

- (i) substantial errors, irregularities or fraud or
- (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.)
- (k) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings from other grants to this grant; see Article 25)
- (l) despite a specific request by the granting authority, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its affiliated entities or associated partners that is in one of the situations under points (d), (f), (e), (g), (h), (i) or (j) and to reallocate its tasks, or
- (m) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

32.3.2 Procedure

Before terminating the grant or participation of one or more beneficiaries, the granting authority will send a **pre-information letter** to the coordinator or beneficiary concerned:

- formally notifying the intention to terminate and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the termination and the date it will take effect (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

For beneficiary terminations, the granting authority will — at the end of the procedure — also inform the coordinator.

The termination will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification; ‘termination date’).

32.3.3 Effects

- (a) for **GA termination**:

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the last open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

If the grant is terminated for breach of the obligation to submit reports, the coordinator may not submit any report after termination.

If the granting authority does not receive the report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Termination does not affect the granting authority's right to reduce the grant (see Article 28) or to impose administrative sanctions (see Article 34).

The beneficiaries may not claim damages due to termination by the granting authority (see Article 33).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

(b) for **beneficiary termination**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a **request for amendment** (see Article 39) with any amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

SECTION 3 OTHER CONSEQUENCES: DAMAGES AND ADMINISTRATIVE SANCTIONS

ARTICLE 33 — DAMAGES

33.1 Liability of the granting authority

The granting authority cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of the implementation of the Agreement, including for gross negligence.

The granting authority cannot be held liable for any damage caused by any of the beneficiaries or other participants involved in the action, as a consequence of the implementation of the Agreement.

33.2 Liability of the beneficiaries

The beneficiaries must compensate the granting authority for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement, provided that it was caused by gross negligence or wilful act.

The liability does not extend to indirect or consequential losses or similar damage (such as loss of profit, loss of revenue or loss of contracts), provided such damage was not caused by wilful act or by a breach of confidentiality.

ARTICLE 34 — ADMINISTRATIVE SANCTIONS AND OTHER MEASURES

Nothing in this Agreement may be construed as preventing the adoption of administrative sanctions (i.e. exclusion from EU award procedures and/or financial penalties) or other public law measures, in addition or as an alternative to the contractual measures provided under this Agreement (see,

for instance, Articles 135 to 145 EU Financial Regulation 2018/1046 and Articles 4 and 7 of Regulation 2988/95²²).

SECTION 4 FORCE MAJEURE

ARTICLE 35 — FORCE MAJEURE

A party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

‘Force majeure’ means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties’ control,
- was not due to error or negligence on their part (or on the part of other participants involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

CHAPTER 6 FINAL PROVISIONS

ARTICLE 36 — COMMUNICATION BETWEEN THE PARTIES

36.1 Forms and means of communication — Electronic management

EU grants are managed fully electronically through the EU Funding & Tenders Portal (‘Portal’).

All communications must be made electronically through the Portal, in accordance with the Portal Terms and Conditions and using the forms and templates provided there (except if explicitly instructed otherwise by the granting authority).

Communications must be made in writing and clearly identify the grant agreement (project number and acronym).

Communications must be made by persons authorised according to the Portal Terms and Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a ‘legal entity appointed representative (LEAR)’. The role and tasks of the LEAR are stipulated in their appointment letter (see Portal Terms and Conditions).

²² Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

If the electronic exchange system is temporarily unavailable, instructions will be given on the Portal.

36.2 Date of communication

The sending date for communications made through the Portal will be the date and time of sending, as indicated by the time logs.

The receiving date for communications made through the Portal will be the date and time the communication is accessed, as indicated by the time logs. Formal notifications that have not been accessed within 10 days after sending, will be considered to have been accessed (see Portal Terms and Conditions).

If a communication is exceptionally made on paper (by e-mail or postal service), general principles apply (i.e. date of sending/receipt). Formal notifications by registered post with proof of delivery will be considered to have been received either on the delivery date registered by the postal service or the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

36.3 Addresses for communication

The Portal can be accessed via the Europa website.

The address for paper communications to the granting authority (if exceptionally allowed) is the official mailing address indicated on its website.

For beneficiaries, it is the legal address specified in the Portal Participant Register.

ARTICLE 37 — INTERPRETATION OF THE AGREEMENT

The provisions in the Data Sheet take precedence over the rest of the Terms and Conditions of the Agreement.

Annex 5 takes precedence over the Terms and Conditions; the Terms and Conditions take precedence over the Annexes other than Annex 5.

Annex 2 takes precedence over Annex 1.

ARTICLE 38 — CALCULATION OF PERIODS AND DEADLINES

In accordance with Regulation No 1182/71²³, periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

‘Days’ means calendar days, not working days.

ARTICLE 39 — AMENDMENTS

²³ Regulation (EEC, Euratom) No 1182/71 of the Council of 3 June 1971 determining the rules applicable to periods, dates and time-limits (OJ L 124, 8/6/1971, p. 1).

39.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

39.2 Procedure

The party requesting an amendment must submit a request for amendment signed directly in the Portal Amendment tool.

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3). If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why
- the appropriate supporting documents and
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The granting authority may request additional information.

If the party receiving the request agrees, it must sign the amendment in the tool within 45 days of receiving notification (or any additional information the granting authority has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected.

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date of entry into force or other date specified in the amendment.

ARTICLE 40 — ACCESSION AND ADDITION OF NEW BENEFICIARIES

40.1 Accession of the beneficiaries mentioned in the Preamble

The beneficiaries which are not coordinator must accede to the grant by signing the accession form (see Annex 3) directly in the Portal Grant Preparation tool, within 30 days after the entry into force of the Agreement (see Article 44).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 44).

If a beneficiary does not accede to the grant within the above deadline, the coordinator must — within 30 days — request an amendment (see Article 39) to terminate the beneficiary and make any changes

necessary to ensure proper implementation of the action. This does not affect the granting authority's right to terminate the grant (see Article 32).

40.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 39. It must include an accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool.

New beneficiaries will assume the rights and obligations under the Agreement with effect from the date of their accession specified in the accession form (see Annex 3).

Additions are also possible in mono-beneficiary grants.

ARTICLE 41 — TRANSFER OF THE AGREEMENT

In justified cases, the beneficiary of a mono-beneficiary grant may request the transfer of the grant to a new beneficiary, provided that this would not call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiary must submit a request for **amendment** (see Article 39), with

- the reasons why
- the accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool and
- additional supporting documents (if required by the granting authority).

The new beneficiary will assume the rights and obligations under the Agreement with effect from the date of accession specified in the accession form (see Annex 3).

ARTICLE 42 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE GRANTING AUTHORITY

The beneficiaries may not assign any of their claims for payment against the granting authority to any third party, except if expressly approved in writing by the granting authority on the basis of a reasoned, written request by the coordinator (on behalf of the beneficiary concerned).

If the granting authority has not accepted the assignment or if the terms of it are not observed, the assignment will have no effect on it.

In no circumstances will an assignment release the beneficiaries from their obligations towards the granting authority.

ARTICLE 43 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES

43.1 Applicable law

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

Special rules may apply for beneficiaries which are international organisations (if any; see Data Sheet, Point 5).

43.2 Dispute settlement

If a dispute concerns the interpretation, application or validity of the Agreement, the parties must bring action before the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU).

For non-EU beneficiaries (if any), such disputes must be brought before the courts of Brussels, Belgium — unless an international agreement provides for the enforceability of EU court judgements.

For beneficiaries with arbitration as special dispute settlement forum (if any; see Data Sheet, Point 5), the dispute will — in the absence of an amicable settlement — be settled in accordance with the Rules for Arbitration published on the Portal.

If a dispute concerns administrative sanctions, offsetting or an enforceable decision under Article 299 TFEU (see Articles 22 and 34), the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice — under Article 263 TFEU.

For grants where the granting authority is an EU executive agency (see Preamble), actions against offsetting and enforceable decisions must be brought against the European Commission (not against the granting authority; see also Article 22).

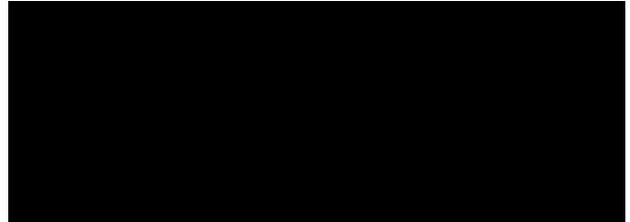
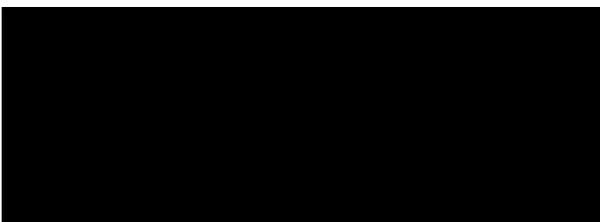
ARTICLE 44 — ENTRY INTO FORCE

The Agreement will enter into force on the day of signature by the granting authority or the coordinator, depending on which is later.

SIGNATURES

For the coordinator

For the granting authority





ANNEX 1



Horizon Europe (HORIZON)

Description of the action (DoA)

Part A

Part B

DESCRIPTION OF THE ACTION (PART A)

COVER PAGE

Part A of the Description of the Action (DoA) must be completed directly on the Portal Grant Preparation screens.

PROJECT	
<i>Grant Preparation (General Information screen) — Enter the info.</i>	
Project number:	101096571
Project name:	Accelerate poSitive Clean ENergy Districts
Project acronym:	ASCEND
Call:	HORIZON-MISS-2021-CIT-02
Topic:	HORIZON-MISS-2021-CIT-02-04
Type of action:	HORIZON-IA
Service:	CINEA/C/02
Project starting date:	first day of the month following the entry into force date
Project duration:	60 months

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Staff effort	22
List of deliverables	24
List of milestones (outputs/outcomes)	37
List of critical risks	40
Project reviews	43

PROJECT SUMMARY

Project summary

Grant Preparation (General Information screen) — Provide an overall description of your project (including context and overall objectives, planned activities and main achievements, and expected results and impacts (on target groups, change procedures, capacities, innovation etc)). This summary should give readers a clear idea of what your project is about.

Use the project summary from your proposal.

ASCEND (Accelerate positive Clean Energy Districts) seeks to accelerate the implementation of positive, clean energy districts (PCED) for cities' transition toward climate neutrality and social justice across Europe. ASCEND will:

- Deliver two inclusive, affordable PCEDs in Lyon and Munich;
- Successfully "bootstrap" implementation of PCEDs in the Multiplier Cities of Alba Iulia (RO), Budapest (HU), Charleroi (BE), Prague (CZ), Porto (PT), Stockholm (SE);
- Scale-up solution packages for a large community of cities and investors across Europe;
- Disseminate our results widely to the smart cities community.

Our overarching goals are to i) Make cities healthier, inclusive and climate-neutral; ii) Speed up and scale up the deployment of cost-effective PCEDs solution packages.

“Getting PCEDs done” across Europe entails the following actions for ASCEND:

First, large-scale demonstrations in Lighthouse Cities (LHCs), using existing knowledge built by generation of Smart Cities Projects, offering well-proven and cost-effective solutions packages, scalable by design to cities across Europe.

Second, developing our solutions packages across the entire life of the district: from design to implementation and maintenance, performances must be maintained and increased thanks to an urban orchestrator aiming to coordinate the ecosystem in the long run.

Third, creating a PCEDs replication wave during ASCEND in our eight partnering cities by iterating between the development of solutions packages and deployment in LHCs and Multiplier cities (MCs) during the project and not after. MCs will achieve impact by bootstrapping their PCEDs during the project.

Finally, triggering a PCED wave through outcome-driven collaboration with EC initiatives, such as Climate-Neutral and Smart City Mission, Covenant of Mayor, Smart Cities Marketplace, Scalable cities but also with the deployment of City Alliances in the eight cities, targeting small cities, not used to European projects.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	SPL	LYON CONFLUENCE	FR	966090319
2	BEN	GLY	METROPOLE DE LYON	FR	924429401
3	BEN	LYS	COMMUNE DE LYON	FR	997468170
4	BEN	HES	HESPUL ASSOCIATION	FR	984234072
5	BEN	UP	URBAN PRACTICES	FR	888373919
6	BEN	ETC	ENERTECH	FR	928689059
7	BEN	LHM	LANDESHAUPTSTADT MUNCHEN	DE	997625601
7.1	AE	SWM	STADTWERKE MUENCHEN GMBH	DE	925064363

PARTICIPANTS					
<i>Grant Preparation (Beneficiaries screen) — Enter the info.</i>					
Number	Role	Short name	Legal name	Country	PIC
7.2	AE	MGS	MUENCHNER GESELLSCHAFT FUER STADTERNEUERUNG MBH (MGS)	DE	925097149
7.3	AE	GWG	GWG Gemeinnützige Wohnstätten- und Siedlungsgesellschaft mbH	DE	996843005
8	BEN	UNC	UNICORN GMBH	DE	911019830
9	BEN	TUM	TECHNISCHE UNIVERSITAET MUENCHEN	DE	999977463
10	BEN	IW	ISARWATT EG	DE	886412676
11	BEN	AVC	AVANCIS GMBH	DE	885022278
12	BEN	SPC	SPECTRUM MOBIL GMBH	DE	928729314
13	BEN	UTUM	UNTERNEHMERTUM GMBH	DE	969082284
14	BEN	AIM	MUNICIPALITY OF ALBA IULIA	RO	952991536
15	BEN	CHA	VILLE DE CHARLEROI	BE	903356054
15.1	AE	IGC	INTERCOMMUNALE POUR LA GESTION ET LA REALISATION D'ETUDES TECHNIQUES ET ECONOMIQUES	BE	885106474
16	BEN	PEN	ADEPORTO - AGÊNCIA DE ENERGIA DO PORTO	PT	909584812
17	BEN	AEP	CMPEAE - EMPRESA DE AGUAS E ENERGIADO MUNICIPIO DO PORTO EM	PT	951510346
18	BEN	SRV	FUNDACAO DE SERRALVES	PT	983080354
19	BEN	APD	ASSOCIACAO PORTO DIGITAL	PT	985621948
20	BEN	CVUT	CESKE VYSOKE UCENI TECHNICKE V PRAZE	CZ	999848744
21	BEN	OICT	OPERATOR ICT AS	CZ	888144708
22	BEN	PDS	PRAZSKA DEVELOPERSKA SPOLECNOST PRISPEVKOVA ORGANIZACE	CZ	887655925
23	BEN	BUD	BUDAPEST FOVAROS ONKORMANYZATA	HU	959102439
24	BEN	BKK	BKK BUDAPESTI KOZLEKEDESI KOZPONT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	965804460
25	BEN	ENC	ENERGY CITIES/ENERGIE-CITES ASSOCIATION	FR	966036484
26	BEN	STK	STOCKHOLMS STAD	SE	996559183
27	BEN	AIT	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	AT	999584128
28	BEN	CAR	FUNDACION CARTIF	ES	999929836
29	BEN	UoL	UNIVERSITE DU LUXEMBOURG	LU	999878620
30	BEN	BLS	BLUE-SIGHT CONSEIL	FR	894571928
31	BEN	DKSR	DATEN KOMPETENZENTRUM STADTE UND REGIONEN DKSR GMBH	DE	890595025

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Number	Role	Short name	Legal name	Country	PIC
32	BEN	CIV	CIVIESCO SRL	IT	901780774
33	BEN	TWE	TWENTY COMMUNICATIONS SRO	SK	904952674
34	BEN	ODY	FOUCHAULT THOMAS ILKKA	FR	887958953
35	AP	USG	UNIVERSITAET ST. GALLEN	CH	999861742

LIST OF WORK PACKAGES

Work packages						
<i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP1	Project Management	1 - SPL	209.00	1	60	D1.1 – Project Management Plan D1.2 – Exploitation Plan D1.3 – Inception report
WP2	Lyon PCED Demonstrator	1 - SPL	250.00	1	60	D2.1 – Lyon PCED roadmap report D2.2 – Lyon PCED Implementation Report 1 D2.3 – Lyon PCED Implementation Report 2 D2.4 – Evaluation of Lyon PCED demonstrator
WP3	Munich PCED Demonstrator	7 - LHM	363.50	1	60	D3.1 – Munich PCED roadmap report D3.2 – Munich PCED Implementation Report 1 D3.3 – Munich PCED Implementation Report 2 D3.4 – Evaluation of Munich PCED demonstrator
WP4	Amplifying PCED Results for Lighthouse Cities & Multiplier Cities	25 - ENC	504.75	1	60	D4.1 – Local framework and needs assessment D4.2 – Five PCED books monitoring the advancement D4.3 – Blueprint and capacity building materials D4.4 – PCED Multiplication strategy for each Lighthouse City and Multiplier City

Work packages						
<i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP5	Scaling Up Solution Packages	32 - CIV	319.40	1	60	D5.1 – State-of-the-art assessment of the six Solution Packages D5.2 – Solution Packages capacity-building module D5.3 – Operational funding and financial mechanisms supporting Solution Packages D5.4 – Digital blueprint for local energy community building D5.5 – Solution Packages portfolio market uptake
WP6	Monitoring, Impact Assessment & Evaluation	27 - AIT	140.00	1	60	D6.1 – Data management plan D6.2 – Monitoring and Evaluation Report & KPIs definition D6.3 – Manual for the Standardised KPI Engine D6.4 – Data Quality Management and Maintenance Plan D6.5 – PCED Sustainable Impact Assessment and City Vision D6.6 – Data management plan - First update D6.7 – Data management plan - Second update D6.8 – Data management plan - Third update D6.9 – Data management plan - Final update
WP7	Collaboration with Projects, Cities, Networks	28 - CAR	130.10	1	60	D7.1 – Collaboration roadmap D7.2 – Results on collaboration with other projects and EU initiatives

Work packages						
<i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						D7.3 – City alliance network: agreements achieved and activities developed
WP8	Communication, Dissemination & Engagement	33 - TWE	161.50	1	60	D8.1 – Communication and Dissemination Plan D8.2 – Stakeholder Interaction Plan D8.3 – Event and Promotion plan

Work package WP1 – Project Management

Work Package Number	WP1	Lead Beneficiary	1. SPL
Work Package Name	Project Management		
Start Month	1	End Month	60

Objectives

- i) Organising the project kick-off, monitoring the work, progress and costs in all WP, and managing the project's results. Defining and implementing the consortium management rules and communication tools for partners. Identifying potential risks, the potential impact on the project and solutions to remedy them;
- ii) Managing the overall administrative, financial, and contractual duties of the project, including EC reporting and payments, ensuring high-quality deliverables production in time and within budget;
- iii) Setting up key project meeting, managing the Advisory Board (AB); iv) Producing the Exploitation plan.

Description

Task 1.1: Setting up and running the project management framework (M1-M60). SPL, HES, LHM, ENC, AIT, CAR, TWE, CIV, BLS, ODY.

The Coordination Team (CT) composed by SPL Project Coordinator (PC), HES Technical manager (TM), ODY Administrative/Quality Manager (AQM), BLS Innovation Manager (IM) will be responsible for the daily management of the consortium. In close collaboration with WP and Task leaders, they will establish a project management structure to finalise the roles and the responsibilities of partners and the overall decision-making processes. These will be detailed in the Consortium agreement (CA) and the Project Management Plan (PMP) within the first quarter of the project. The CA will govern the IPR rules and define appropriate conflict resolution mechanisms. The PMP will be updated twice during the project as an internal report. They shall perform a regular analysis of the management plan, monitor costs and detect any obstacles to the implementation of the project. The Technical Management Plan (TMP) will detail the workflows and ensure a common approach on technical issues across WPs and Cities. All project quality control procedures will be defined in the Project Quality Plan (PQP) to ensure high-quality outputs. All project deliverables will follow a quality review procedure. Both TMP and PQP will be prepared as internal reports.

The CT shall be responsible for establishing and following up the Project Action List (PAL), monitoring the progress, risks, and potential obstacles that would need corrective actions. The WP leaders will update the PAL and review at each progress meeting. The CT will handle basic day-to-day requests from partners and external bodies, ensure swift information exchange and communication flows within the consortium, select and purchase the adequate IT tools and licences to allow collaborative work and remote meetings.

Task 1.2: Reporting to the EC and management of payments (M1-M60). SPL, All.

- i) PC will ensure a permanent interface with the EC Project Officer (PO);
- ii) The CT will manage the collaborative production of Periodic reports and a Final report;
- iii) CT will prepare the appropriate documentation for EC reviews and support the implementation of recommendations from the PO and reviewers. CT will follow up the payments and distribute them to the consortium accordingly to Grant Agreement and CA rules

Task 1.3: Project management meetings and events (M1-M60). SPL, All.

This task will coordinate the preparation, execution, attendance and post-processing of the general management meetings. Key project meetings will be held physically in the LHCs and MCs,

- i) Kick-off meeting (M1);
- ii) General Assembly (M12,24, 36,48) to share progress and results with partners and stakeholders;
- iii) A final event will close the project and disseminate key results (M60).

Web conferencing services will be used for other meetings. Whenever possible, events will be collocated with other major networks and initiatives to optimize travel costs & efforts. The format and frequency of management meetings will be defined in the PMP. Technical meetings at WP level are part of the respective WPs.

Task 1.4: Preparing the exploitation of results (M5-M60). BLS, All.

The Advisory Board (AB) will gather financial partners and city representatives. It will meet to review, discuss, test and validate the SP and demonstration in LHCs and MCs. Recommendations for scaling up and attracting more investments will be proposed to enhance the results. BLS will manage the AB alongside SPL, LHM, CIV, ENC, HES and MCs.

This task will also deal with all exploitation and innovation management activities to ensure proper exploitation of the results is delivered.

Work package WP2 – Lyon PCED Demonstrator

Work Package Number	WP2	Lead Beneficiary	1. SPL
Work Package Name	Lyon PCED Demonstrator		
Start Month	1	End Month	60

Objectives

Six strategic objectives have been identified:

- i) To ensure that all proposed interventions are implemented in an integrated way and for the benefit of local residents of Lyon Confluence; to properly manage the PCED including financials, quality and risks; to secure integration with other WPs; to manage the Lyon PCED consortium, and implement coordinated local communication and dissemination.
- ii) To enhance the local multi-stakeholder ecosystem of citizens, real estate developers, investors, utility companies and city government, local businesses, social landlords and co-ownership trustees; to set up a relevant and agile local governance supporting co-designed and fast-paced implementation of a PCED; to ensure compliance and interaction with the climate-neutrality ambition of LYS by 2030.
- iii) To reinforce a digital ecosystem in Confluence, and beyond, based on existing systems (GLY's Urban Data Platform, SPL's local Digital Twin, IoT systems); to support services with & for citizens, and monitoring & evaluation (KPI engine), support local governance and stakeholder involvement.
- iv) To massively reduce the energy demand of buildings through super energy efficient building; to carry out the development of awareness-raising-dedicated solutions; to develop a large capacity of renewable energy sources (photovoltaic, cogeneration) to enable self-consumption for all citizens; to carry out district heating deployment with rising shares of biomass energy; to optimise and balance energy flows through smart energy grids.
- v) To reduce up to zero the number of combustion-powered vehicles for freight and passengers; to foster a shift to decarbonised mobility services; to co-design with citizens new green, healthy, inclusive and frugal public spaces facing the urban heat island effect.
- vi) To provide and implement a local monitoring strategy and plan with associated KPIs, supporting evaluation of measures in the district; to assess results with respect to objectives and in relation to the overall climate strategy of Lyon, also reaching out to wider sustainable development goals; to improve decisions during future wide-scale roll-out to the whole metropolis.

Description

Task 2.1: Local Project Management and Coordination (M1-M60). SPL, GLY, LYS, HES, UP, ETC.

The objective of this task is to set up and run the managerial structure for the integrated implementation and demonstration of a PCED in Lyon Confluence: organisation of the local consortium, financial support, daily management for partners involved in Lyon PCED, coordination of the different tasks and their progress. The local project management provides leadership and ensures the dynamic of the project implementation (LY6.1). It acts as a focal point ensuring an on-going integration of the implementation of the project tasks regarding demonstration to ensure sustainability, replicability, and dissemination. SPL will liaise with WP7 to mobilise the City Alliance (public developer association).

Task 2.2: PCED Governance and Services with and for Citizens (M1-M60). SPL, GLY, LYS, HES, UP.

The task will combine the actions of the local special-purpose company with public governance (LY6.1) with the local council (LY6.2) and the development of an energy prosumer approach. It will be based on the local citizen/user's perspective in the design on a wide range of projects and services contributing to PCED (buildings, housings, lowenergy solutions, mobility services, green public spaces) to ensure the relevance of urban development. A local council on PCED will be set up (LY6.2) with fair representativeness of all citizens and stakeholders (public investors, businesses, associations, professional organisations, real estate developers, policy makers...). The council will follow-up, measure the social, financial and environmental impacts, and co-design replication at all levels. This will be supported and

enriched by strong online and offline participation (LY5.3). This task also aims to develop a prosumer approach by raising awareness on energy-related issues (LY2.2) via online solutions and offline actions (LY5.3), and by implementing energy communities (LY2.1, LY2.2, LY1.4) to share local production of renewable energies (LY2.3) between different buildings, to support financial incentive in energy savings and social energy pricing (LY2.4).

Task 2.3: Digital Ecosystem and platform supporting PCED (M1-M60). SPL, GLY, HES, UP, ETC, UoL.

Lyon relies on a strong open-source-based digital ecosystem (LY1.1): a data platform managed by GLY and SPL's digital twin. Energy production (power & heat), energy consumption, air quality, water consumption feed into the district's digital twin that makes possible real-time monitoring of the whole district. An open API is available for every data provider to make the data integration into the digital twin easier (LY1.3). Thanks to digital monitoring, buildings and energy grids will be optimised, contributing to super-efficient buildings as proposed in T2.4. Data collected from the grids and from the on-site renewable energy production systems - photovoltaic and cogeneration - are used to adapt the sizing of the grids and of the heating substations, to bring flexibility to the grids, to maximise their efficiency and reduce the costs (LY1.3). The digital twin provides a view of the logistics flows in the PCED and offers the possibility to model different scenarios (LY1.2), to support the solutions of T2.5 (especially LY4.8). The ambition is to upgrade the current digital ecosystem to bring strong support to T2.2, T2.6 and WP6. The interface of the digital twin and the access to data - within the GDPR framework - will be made

easier to raise citizens' awareness on energy issues (T2.2, LY5.3) and provide data for evaluation and assessment (T2.6 and WP6). A new module keeping a record of energy flows between prosumers should be added to the digital twin (LY1.4), to support the deployment of energy communities (T2.2, LY2.2) and the on-site consumption of 100% of the renewable energy produced within the neighbourhood boundaries to get a positive energy balance.

Task 2.4: Energy Efficiency & Renewable Energy Sources (M1-M60). SPL, GLY, LYS, HES, UP, DKSR.

Sub-task T2.4.1 Flexible resilient energy buildings and systems: The PCED's buildings (offices, dwellings, social housings, public facilities) will be divided into three categories: old buildings to be refurbished (LY3.1), recent buildings that are very efficient (LY3.2), to-be-constructed buildings that will be super-efficient with no use of any active heating system, following the "22-26°" model19 (LY3.3). SPL imposes the energy efficiency level thanks to compulsory guidelines addressed to real estate developers. So that, relevant technical solutions to achieve energy efficiency targets - thermal insulation, solar protections and Building Operating Systems (BOS) (LY5.2) - will be implemented. The inhabitants and employees will be involved in the energy performance of their buildings as described in T2.2 (LY5.1, LY5.3). The energy networks (electricity and heat) will be optimised to be adapted to the demand (T2.3); and flexibility will be brought to the electricity network via the installation of V2X charging points, including 10 V2B (LY3.7).

Sub-task T2.4.2 Local Renewable Energy Sources (RES): The energy production will be ensured by a local and renewable production of electricity thanks to the implementation of 1MWp photovoltaic panels on the roof and a 400kW biogas cogeneration plant (LY3.6). The entire RES production (4.2MWp) will exceed the whole district's energy demand. Installation of PV panels will be made compulsory by SPL specifications. This electrical production will be consumed locally thanks to the creation of an energy community (LY2.1, LY2.2, LY2.3) directly benefiting all the citizens (LY2.4). The residual heating demand will be covered by a compulsory connection urban heat network, with rising shares of biomass energy (+17MW).

Task 2.5: Mobility and Logistics for Clean Urban Spaces (M1-M60). SPL, GLY, LYS, UP.

This task will enable the implementation of a "no-car" district thanks to the redesign of public spaces, alternative decarbonised mobility services for passengers and freight. Long-lasting & large-scale decarbonised mobility will be achieved by i) ensuring a wide range of electric charging infrastructures (LY4.5, LY4.4, LY4.9), with a close look at its actual

use and its impact on the electric grid (LY1.2, LY1.3) ii) developing a new offer of decarbonized last-mile logistics services (B2B & B2C) and finding a new use of buildings' undergrounds (LY4.6) with a capacity to adjust the area devoted to different mobility services in the same underground area all along the years (according to the actual offer and local needs). iii) powering LYS Green Spaces Department's and GLY Waste Management Department's electrical machines with local photovoltaic production (LY4.9). Citizen-centred public spaces will be created (LY4.1, LY4.3), supported by i) a data-based decision-making tool by crossing data on technical constraints, location of the underground networks, ownership of the land, surface available... ii) locally-fertilised planted soils (LY4.10) through natural and efficient methods, based on circular economy iii) upcycling

construction materials (recycled concrete, re-using the materials from local construction sites) iv) smart-lighting (LY4.2).

Task 2.6: Monitoring & Evaluation (M1-M60). SPL, HES, ETC.

This task will plan and carry out PCED monitoring and assessment. It works closely with tasks T2.2, T2.4 and T2.5 and will be integrated with T2.3 at the interface between sensing infrastructure (general digital ecosystem and the Digital Twin (LY1.1), KPI Engine (LY1.3)). The task collaborates with WP6. The evaluation of the results will enable i) to improve the guidelines written by SPL ii) to upgrade the requirements for the new constructions for LYS (Charte

Bâtiments Durables), and for GLY (Référentiel Grand Lyon) iii) To feed GLY's energy performance mapping at the metropolis scale.

Work package WP3 – Munich PCED Demonstrator

Work Package Number	WP3	Lead Beneficiary	7. LHM
Work Package Name	Munich PCED Demonstrator		
Start Month	1	End Month	60

Objectives

- i) To ensure that all proposed interventions are implemented in an integrated way and for the benefit of local residents of the district Harthof; to properly manage the PCED including financials, quality and risks; to secure integration with other WPs; to manage the Munich PCED City consortium and implement co-ordinated local communication and dissemination.
- ii) To enhance the local multi-stakeholder ecosystem of citizens, tenants, policy makers, developers, investors, utility companies and city government; to improve the framework conditions for that ecosystem; to activate all relevant roles of citizens (tenants, owners, prosumers); to motivate them to participate in the transformation including re-design of public space and greening; to ensure compliance and interaction with the long-term Munich climate and energy strategy STEP 2040, fostering replicability.
- iii) To provide a digital ecosystem for the interventions in Harthof, and beyond, based on existing systems (Urban Data Platform, Digital Twin, IoT systems LoRa and NB-IoT, citizen participation platforms Consul and Dipas); to support monitoring and automatic KPI computation; to support analytics, modelling and prediction for the optimisation of interventions; to support digital engagement with stakeholders such as citizens and businesses, promoting (social) innovation.
- iv) To carry out high efficiency building retrofitting towards NZEB, including new time and cost saving processes for serial retrofitting; to implement and optimise district heating with rising shares of geothermal energy; to deploy PV at large scale; to install electric storage for local self-consumption; to integrate the PCED heating system and buildings with the regional district heating for balancing, flexibilization and optimisation.
- v) To implement mobility actions in the district, for passengers and freight, private and public mobility; to foster a shift to clean, shared mobility and district logistics; to redesign public space, in collaboration with residents, towards a healthier living environment; to use public space for the purpose of optimising delivery and reducing individual traffic; to optimise logistics and reduce related traffic, CO2 and pollution.
- vi) To provide and implement a local monitoring strategy and plan with associated KPI's, supporting evaluation of measures in the district; to assess results with respect to objectives and in relationship to the overall climate strategy of Munich, also reaching out to wider sustainable development goals; to improve decisions during future wide-scale roll-out to the whole city.

Description

Task 3.1 Local project management and coordination (M1-M60). LHM, UNC, local partners.
The objective of this task is to set up and run the managerial structure for the integrated implementation and demonstration of a PCED in Munich: organisation of the local consortium, financial support, daily management for partners involved, coordination of the different tasks and their progress. LHM will liaise with WP7 to mobilise Munich City Alliance with the village Kirchheim, the city of Augsburg and the Munich Metropolitan Region. UNC will support LHM on all aspects of the task, with a strong role in scientific aspects and quality management.

Task 3.2 PCED governance and services with and for citizens (M1-M60). LHM, GWG, TUM, SPC, SWM, UNC, UTUM, IW.
This task will manage citizen participation in Harthof. It will support tasks T3.3, T3.4 and T3.5 by raising awareness and engaging citizens in all available participation formats. T3.2 will implement new PCED services and business models, focusing on energy communities, prosumer models, refurbishing communities and community-financed contracting

models for refurbishing. An important asset will be a newly created "Participatory District Energy Council" (MUC5.3) with a representative cross-section of stakeholders. Investigations will be carried out whether and how decisions can be shifted to citizens within legal boundaries. T3.2 will use existing digital participatory tools, see T3.3, and engage citizens in all decisions related to the district. Participation embraces the overall transformation concept, placement of PV on facades, modal shift in mobility, redesign of space and urban greening. Interventions MUC5.3 and MUC5.4 implement citizen co-creation of the district cityscape and behaviour change models. MUC2.2 and MUC5.2 will implement new business and participation models for clean energy and efficient buildings, including pooling of resources in new refurbishment communities. T3.2 will develop the roadmap for replication in residential districts making Munich CO₂ neutral by 2035.

T3.3 Digital ecosystem and platform to support PCED (M1-M60). LHM, MGS, SWM, GWG, TUM, IW, UNC, UoL, DKSR.

The city operates a comprehensive and integrated array of open-source-based platforms and infrastructures for data collection, processing and sharing (Digital Twin, Urban Data Platform, IoT systems including energy-efficient communication via LoRa and NB-IoT, citizen participation platform Consul and urban planning platform Dipas). In this task, the existing ecosystem will be configured and upgraded as needed (interventions MUC1.5, MUC1.3) by the PCED interventions of tasks T3.2, T3.4, T3.5 and T3.6 and by WP6. Comprehensive data about buildings, energy production, consumption, mobility, climate, statistics and so forth are used to implement new PCED management and replication planning decision support and optimisation systems, incorporated into the existing digital twin. Innovative software components for the PCED encompass real-time district energy management (MUC1.2), decision support for PCED replication using an enhanced digital twin (MUC1.1), AR/VR-based visualisation for citizen participation (MUC5.1) and a new KPI Engine (MUC1.4), an easy-to-use tool supporting automatic PCED assessment. All digital interventions will be open source. For cybersecurity, the Munich digital ecosystem uses an ISMS20 approach, critical systems are decoupled from the general network and GDPR is ensured intrinsically.

T3.4 Energy efficiency and RES (M1-M60). MGS, GWG, SWM, AVC, TUM, LHM, IW, UNC.

Sub-task T3.4.1 Flexible resilient energy buildings and systems: This task will carry out building-related energy efficiency measures. This includes conventional refurbishment (MUC3.1) and serial refurbishment with prefabricated elements (MUC3.2). Additionally, a new generation of elements will be covered in parts with high-efficiency PVs on the façade (MUC3.6). Some buildings will be demolished and reconstructed as NZEB standards (MUC3.3). A particular focus will be on improving serial refurbishment towards a highly efficient and industrialised process (MUC6.2) and to develop a blueprint to replicate such refurbishment (MUC6.1). A local school and kindergarten are also included in the plans.

Sub-task T3.4.2 Local RES: Roofs will be fitted with high efficiency PV (MUC3.7). Local PCED storage (MUC2.3) will be installed either in buildings or at district level, whatever is more efficient, for local self-consumption by tenants (energy community model MUC2.1) and for feeding e-Mobility charging points (MUC4.5). Buildings will be connected to the district heating grid (MUC3.4) by which the share of fossil fuels is reduced towards zero over time, as the whole district heating grid is converted to 100% clean geo-thermal heating, in line with the Munich clean energy strategy. In the PCED a smart heating grid (MUC3.5) will optimize energy flows by implementing supervisory control strategies for substations within buildings, using them as thermal short-time buffer storage (MUC3.8) in their thermal mass, by which the PCED offers energy flexibilization to the regional system. That system has an existing thermal energy store (MUC3.9) used to increase the share of geothermal energy in the regional thermal energy mix, which becomes 100% clean over time. T3.4 delivers planning, construction, and post-commissioning reports.

T3.5 Mobility and logistics for clean urban spaces (M1-M60). LHM, SWM, GWG, SPC, IW, UTUM, UNC.

This task will carry out mobility and urban space-related actions. Sharing of e-Cars will be implemented with a focus on residents by initially deploying 3 to 4 electric vehicles creation of 3 sharing parking spaces with up to 6 chargers (MUC4.3). The electric energy will come from the local building PV (MUC4.5). Public space will be redesigned in a co-creation process with citizens by engaging in seasonal street experiments (MUC4.1), developing concrete options jointly in the neighbourhood. Up to 3 mobility points will be deployed (MUC4.2). This is a flexible concept pioneered in Munich, by which a mobility station must not be a full-blown instance at each location; it is rather individually configured for that location in collaboration with all stakeholders. Munich plans to deploy 200 such points across the city and Harthof will pioneer them. Two innovative charging interventions will be implemented (MUC4.4). A mobile fast charger will be used to test whether foreseen locations are attractive to users, preventing investments in wrong places. Wallbox sharing will be used to reduce installation and operation cost while saving space. Two interventions will be deployed for freight (MUC4.6). Decarbonized last mile and freight optimisation will use LoRa sensing to optimise routes. It will be piloted for old clothes waste containers in Harthof with the ambition to roll out city-wide, adding the aspect of waste to the PCED interventions. New cargo-bikes, sharing boxes and package stations will be part of the transformation of urban space.

T3.6 Monitoring and evaluation (M1-M60). LHM, TUM, MGS, GWG, SWM, UTUM, SPC, IW, UNC.
 This task will plan and carry out monitoring and assessment in the Munich PCED. It works closely with tasks T3.2, T3.4 and T3.5 and will be well integrated with T3.3 at the interface to sensing infrastructure (MUC1.3), general digital ecosystem (MUC1.5), KPI Engine (MUC1.4) and the Digital Twin (MUC1.1). The task collaborates with WP6. The task will provide a climate and energy assessment tool. This tool will improve decision support in wide-scale replication throughout the city and will become part of the digital intervention packages.

Work package WP4 – Amplifying PCED Results for Lighthouse Cities & Multiplier Cities

Work Package Number	WP4	Lead Beneficiary	25. ENC
Work Package Name	Amplifying PCED Results for Lighthouse Cities & Multiplier Cities		
Start Month	1	End Month	60

Objectives

- i) Preparing and facilitate replication for PCED in the Multiplier Cities (MCs);
- ii) Fostering capacity building and upskilling through an ambitious learning and exchange programme;
- iii) Implementing PCED Solution Packages in 6 districts of the MCs;
- iv) Developing multiplication strategies for MCs and Lighthouse Cities (LHCs).

Description

T4.1 Replication framework for multiplier cities (M1-M6) ENC, MCs and their local partners.
 Within this task, MC will characterise the PCED with updated detailed identification of the framework conditions, in terms of, inter-alia, technical, governance and stakeholder analysis and overview of the challenges faced for the PCED development. Although a first identification of solutions to be implemented by MC has been done, a complete local assessment of the opportunities and solutions will be performed by the local teams, in cooperation with the LHCs. A local harvesting workshop will be done per MC for the local framework assessment and selection of solutions.

T4.2 Capacity building programme (M1-M60). ENC, All.

The task aims to plan, organise, and implement a detailed capacity building programme for LHCs and MCs, favouring exchange between the cities. This programme will include thematic communities of practice (CoPs), expert training and study visits. CoPs will bring together MCs and LHCs with SP owners to exchange knowledge and lessons-learnt in the SP implementation.

For four years, at least 18 sessions of the CoPs will be organised, in the form of 3 learning cycles, per year. Expert training sessions will be carried out by experts from the consortium (CIV, AIT, USG, UoL), SP owners (DKSR, HES, CAR, MGS, LHM, SPL), to transfer formal knowledge on SP and transversal topics: digital aspects of PCEDs (including standardized and harmonized protocols, data formats, ontologies, security, and resilience models data, cybersecurity, and standardisation) (1), business models and financing (2) monitoring (3). For four years, at least 12 expert training sessions will be organised.

Expert training materials will be available in the form of blueprints, ready for dissemination (e.g., Blueprint for protocol standardization, data formats and PED data ontologies). If possible, CoP and Expert training sessions will take place in person, back-to-back with study visits, consortium meetings or general assemblies.

8 study visits to the LHCs and MCs will be organised, to show and learn in loco the different PCED developments and to bring together the local teams and project partners.

The capacity building programme will support MCs for the T4.3 and organised in parallel to provide feedback during and after the implementation of the SP along the project duration.

T4.3 Preparing & implementing PCED in MCs (M3-M54). ENC, MCs & their local partners, DKSR, UoL, CIV, USG.
 Although MCs have different starting points, they are all developing comprehensive PED Concepts and will implement solutions to reach a PCED level in their chosen districts. During this task, MCs will mirror LHCs demonstrator actions, working on the implementation of their PCED i.e., governance aspects, citizens engagement and services for citizens,

digital ecosystems, flexible, clean and efficient energy systems and mobility. MCs implements their PCED roadmaps (D4.1), adjust the objectives based on feasibility studies and new learnings from Task 4.2 and their involvement in other WPs, they build key partnerships, define processes and business models, financing schemes, and new procurement schemes. Implemented actions include:

- Retrofitting of social and municipal buildings in Alba Iulia, Budapest, and Porto (energy efficiency, RES-based heating appliances, smart building management solutions),
- Development of energy communities based on solar PV production in all MCs,
- Development of data platforms and their valorisation (specific business models, access to citizens for awareness raising) by all MCs.
- Implementation of V2G solutions in Budapest and Alba Iulia.
- Beyond energy communities, citizen engagement methods are used to involve citizens in the development of the PCED by all MCs such as Climathon, participatory budget, and energy literacy, capacity building programme for citizens, to support citizens in changing behaviours, being engaged in energy communities, investing in EE and RES production and transitioning to e-mobility.
- Implementation of a district heating system, based on waste heat and local resources, in Charleroi.

T4.4 PCED multiplication in LHCs and MCs (M48 - M60). ENC, LHCs, MCs & their local partners. Based on learnings from PCED projects and the SP implemented, each LHCs and MCs develop a PCED multiplication strategy to apply the PED methodology to new areas, leading to a city-wide decarbonisation. The strategies include the identification of key solutions to be rolled-out across each city, via new PCED approach and sectoral measures, including participatory processes and regulatory changes. These strategies also include an evaluation of the financial needs for their implementations and the impacts of the sectoral measures in terms of GHG emissions.

Work package WP5 – Scaling Up Solution Packages

Work Package Number	WP5	Lead Beneficiary	32. CIV
Work Package Name	Scaling Up Solution Packages		
Start Month	1	End Month	60

Objectives
<p>To scale up the 6 Solution Packages (SPs) tested and developed in WP2,3 and 4 to foster early deployment and replication in the long-term scenario, providing guidance for implementation in LHCs and MCs, and guidelines to scale by design. The development of each SP will be coordinated by an owner:</p> <ul style="list-style-type: none"> - SP1 Digital infrastructures and ICT tools to support flexible energy systems and PCED (DKSR), - SP2 Deployment of energy communities and prosumers services (HES); - SP3 Deployment of energy-efficient buildings integrating RES and storage including frugal solutions (CAR); - SP4 Decarbonized mobility/freight including frugal solutions (LHM); - SP5 Citizen-centred solutions, co-creation along the governance chain (MGS); - SP6 Urban orchestrator (SPL).

Description
<p>Task 5.1 Innovation management for 6 SP (M1 - M60). BLS, SP Owners, LHCs, UP, DKSR, CIV, UoL, USG. The task orchestrates a cross-collaboration process between cities and SPs owners to ensure the successful delivery of SP. The link between the Owners, responsible for the holistic assessment and iterative improvement of each SP, and the cities, responsible for adoption, acceptance, and implementation, will be ensured by BLS, organising the knowledge-flow from the Owners to the cities and vice-versa. It will report the real-life needs from cities to Owners. The task applies a Maturity Model based on the Scaled Agile Framework (SAFe) to ensure SP smooth development. After the 1st year the process covers 80% of the SP’s overall accuracy. After the 2nd year the 95% and 100% after the 3rd. It has a recurring milestone (MS5.1) according to the application of the Maturity Model. CIV, DKSR, UoL, USG ensure that identified pain points and bottlenecks will be taken into consideration.</p> <p>Task 5.2 SP State of the art assessment and positioning (M1- M15). USG, SP Owners, UP, DKSR, CIV, UoL, MCs, BLS. Linked with task 5.1, this task performs a state-of-the-art assessment of the six SP, evaluated from 5 standpoints: 1) technological (DKSR, CAR and UoL); 2) business model (USG); 3) funding mechanisms (CIV); 4) procurement procedures, including PPPs and SPV (SPL and LHM); 5) Governance models and policies (BLS).</p>

The task settles for each SP a baseline assessment according to their cost-effectiveness. The results give flexibility to SP for the customization in different contexts and direct inputs to WP2, 3, 4 and to tasks 5.3, 5.5. The following aspects display a list for the assessment: 1) assessment of the existing tools for cities, and risk assessment in terms of technical and operational capability; 2) systematic literature analysis of existing business and public models including the targeted customers/users and the respective citizen engagement/involvement, the value propositions like social and grassroots innovations, the value chains and revenue streams; 3) the monetization strategies (cashable flows, both monetary and non-monetary) applied to the cities and the de-risk analysis through economic validation of the business plan assumptions; 4) assessment of the SP cost-effectiveness and scaling drivers & barriers while taking into consideration the local conditions and ecosystem.

Task 5.3 Co-design of the funding schemes & co-creation of business and public models (M12-M36). CIV, SP Owners, USG, DKSR, BLS, LHCs, MCs, AIT.

Built on T5.2 and T5.1, the task iteratively designs and tests innovative funding schemes and relevant business and public models for all SP. CIV provides support to cities on how to use innovative funding and settle local financing schemes applicable along the SP. For example, green bonds, debt, equity, and insurance models will fit well to build out hard infrastructures (basically funding CAPEX needs), but OPEX may be financed through other financing mechanisms such as blockchain-enabled peer-to-peer marketplaces. Additionally, ESG and Taxonomy are integrated into the calculations to highlight the "non-financial reporting" and decode the non-monetizable benefits into investment funds. A holistic CBA21 is deployed to assess each SP and the overall city plan. USG performs two workshop rounds for each SP with the public partners to tackle the outlined pain points and bottlenecks, to develop new and iterate on existing business and public models and evaluate their performance, with semi-structured interviews. The task will reinforce the KPI of WP6.

Task 5.4 Design of the digital modules for underlying SP digitalisation aspects (M12-M24). DKSR, UoL, CIV, SP Owners, BLS, USG, UP.

SP require sound management of data and the underlying technical infrastructure. This task will focus on the SP digital aspects to provide a practical and replicable approach for deployment. DKSR and UoL will work with the LHCs and the MCs to set-up a reference model for local energy community building based on open standards, data sovereignty and scalable, open-source ICT modules (e.g., the IDS Connector or the Ocean Protocol). DKSR and UoL will work with LHCs and MCs to identify the replicable digital building blocks for PCEDs and to extract replicable digital modules (e.g., connectors, ETL-processes, complex event processing, Machine-Learning modules, components for real-time analytics such as machine learning and optimization modules). The task will deliver the underlying legal and technical components of smart contracts to enable energy and data sharing in and between local PCED communities (DKSR) and focus on releasing prediction models and patterns related to each LHCs and MCs (e.g., learning inhabitant behaviours, PV generation) (UoL).

Task 5.5 Content creation and tool development for the capacity-building programme (M24-48). BLS, CIV, USG, DKSR, UoL, LHC, MCs, ENC.

This task delivers a holistic Module for the Capacity building Programme of Task 4.2 to replicate parts of the SP. UNISG develops a modular business and public model toolbox for PCEDs scale up and replication, allowing MCs to build their business public model along the 6 SP. CIV provides practical tools for the economic and technical appraisal (CBA) and how to face operational and financial objectives and administrative issues. A digital blueprint model performed by DKSR and UoL provides a decision support tool openly available (web-based tool) supporting cities in the multicriteria decision-making analysis (City MCDA) of what SP are beneficial to be used/implemented depending on their geopolitical situation and regulation policies, financial aspects and the maturity of their IT infrastructure. The module empowers MCs in their due diligence process, providing the tool to transfer capabilities to cities representatives and local developers on how to adopt the SP, how to assess a bankable business plan coupled with a viable business model, and how to quantify the funding gap and approach the optimal funding scheme. The Tool follows the agile approach and will be sustainable beyond the project. It will have its own exploitation plan.

Task 5.6 SP market uptake to a set of investors and cities (M12-48). CIV, USG, SP Owners, DKSR, LHCs, MCs, TWE. The task appraises in a virtual platform all the SP where stakeholders, seeking for clean and green investment opportunities with suitable returns and positive impacts on GHG emission reductions, can match their expectations with a Portfolio of SP. The platform will exploit the open portal Square22 operated by DKSR to maximize efficiency and build on existing solutions. The core is to rate each SP on their bankability and their contribution to GHG emission reduction. The rating system fulfils the lack of standardised disclosure on Energy Efficiency investments by incorporating the ESG criteria and the taxonomy principles. The rating score indicates the TCO23 of each SP, their technological features and showcases how SP are bankable. Each SP declares its compliance to ESG principles and in which percentage, to enable the investors to comply with regulations 24. The task performs 2 dedicated pipelines of SP to match with funds: 1) SP fit for local territorial equity campaigns via crowdfunding and crowdlending platforms (with guidelines for cities on

how to open experimentations and implement its campaign with European licensed platforms); 2) SP ready for National Development Banks, such as Banque Publique des Territoires, KfW. The task links with the AB (WP1) and with WP8 and 9 to disseminate the SP to a broader audience of cities, especially for the small-mid cities.

Work package WP6 – Monitoring, Impact Assessment & Evaluation

Work Package Number	WP6	Lead Beneficiary	27. AIT
Work Package Name	Monitoring, Impact Assessment & Evaluation		
Start Month	1	End Month	60

Objectives

- i) Monitoring and evaluating the impact of the implemented SP to achieve the intended PCEDs;
- ii) Assessing their sustainability and further deployment in the LHCs and MCs to drive and accelerate the clean energy transition towards sustainable and carbon-neutral cities.

Description

T6.1 Specification of monitoring methodology and definition of KPIs (M1-M12). AIT, LHCs, MCs, DKSR, ENC, CAR. An integrated monitoring and evaluation methodology (IMM) is established to describe the process of data gathering, KPIs definition and calculation evaluation and evaluation of the project impact. Harmonisation of the metrics will ensure comparable results for LHCs and MCs. It considers privacy and security concerns in compliance with the GDPR and local laws, regulations and standards. The methodology includes the definition and calculation of a common KPIs framework and cities specific KPIs covering technical, socio-economic, environmental and governance dimensions. Related KPIs will be frequently updated to reflect new findings on the implemented SP (WP5), particularly their cost-benefit and adequacy for business model deployment. This activity will use the rich experience of WP6 contributors in lighthouse project monitoring and evaluation (like Smarter Together, POCITYF and SPARCS) besides deep involvement in the SCC Monitoring & Evaluation Task Group, and IEA Annex 83 and PED-EU-NET. This task will inform the LHCs and MCs on the specific data to be monitored on-site to comply with the KPIs calculation. Based on these, the LHs and MCs will decide and be responsible for the deployment of their own hardware/software infrastructure (WP2, WP3) needed for the data collection. The way these data should be sent to the so-called “KPI Engine” (developed in T6.2) is the responsibility of WP6. There will be – at a later stage – an exchange of information with the SCM to facilitate the transfer of best practices, provide key information for policy support and promote SCCs in the EU. The enhanced IMM will support the Cities Mission in monitoring innovative solutions towards carbon-neutral cities.

T6.2 Set up of the KPI Engine for automated data collection (M2-M18). Lead DKSR, AIT, UoL, TUM, LHCs, MCs. This task aims at specifying and setting up the right ICT infrastructure for crawling, in a standardised, automated, and regular basis, the different urban data platforms (in LHCs and MCs) that act as focal points for collecting the monitoring data. This ICT infrastructure is referred to as “KPI Engine”. Necessary software specification and support will be provided to LHCs and MCs to enable them to connect their urban data platforms to the KPI Engine endpoint hosted by DKSR. Special attention will be given to the standardisation of the KPI Engine communication interfaces, whether at the technical, syntactic, or semantic levels.

A second objective is to empower the “KPI Engine” with data management capabilities, including:

- (i) continuous assessment to ensure high-quality assurance of the collected data while complying with the privacy and security rules;
- (ii) Systematic data preparation covering data exploring, cleansing, blending, profiling and finalisation for the KPIs calculation conducted in T6.3
- (iii) automating notifications to relevant persons about potential issues along with diagnostic results (e.g., a sensor is unreachable, data values are unrealistic which can be due to a defective sensor, etc.).

Errors, diagnostics and debugging actions -along the whole chain of data collection and transmission- will be documented to keep track and derive a plan for fault and failure mitigation (e.g., on GitHub & in T8.3). Overall, this task is conducted in close coordination with the LHCs (T2.6 and T3.6) and MCs (T4.3), and with T5.4 in charge to allow any city to easily and efficiently connect to the KPI Engine server endpoint. Preparation plan for setting up the monitoring infrastructure

of LHCs will be provided in an early stage (M3) to enable premature action. MCs will observe and learn from the LHCs to finalise their preparation plan (M18).

T6.3 Continuous analysis and KPIs calculation (M18-M60). Lead AIT, DKSR, LHCs, MCs, UoL, ENC.
 This task is responsible for processing the data collected by the KPI engine (incl., data ng) for use in the KPIs calculation. Additional data (e.g., socio-economic state future development of the demo PCEDs) will be consolidated. Detailed analysis of the infrastructure will be prepared to answer specific questions from the side of technology providers and infrastructure owners (as documented in T6.2). The automated process of data collection and KPIs calculation allow easy, secure and standardised access to the monitoring results during and after project completion, providing real decision support. The derived KPIs are cross-linked with T5.1 and T5.3 to provide feedback on the cost-effectiveness and viability of the monitored PS and thus their further scalability potential. LHCs will provide data required to calculate all KPIs while MCs might not provide all of them to compute all KPIs.

T6.4 Impact assessment & measures to maximise the project impacts (M18-M60). Lead AIT, LHCs, MCs, DKSR, ENC, CAR.

The task will assess the PCEDs sustainability and impact. The KPIs will help quantifying the impact of the realised solution. A sustainability analysis will then be achieved, covering social, economic, environmental, and governance dimensions. The methodology will combine the derived KPIs with stakeholders’ interviews and surveys within LHCs (T2.6 and T3.6) to assess user acceptance, adequateness, and success of the implemented solutions. To maximise the project impact, sustainable transformation strategies towards carbon neutrality by 2030/2050 will be prepared for LHCs using special simulation tools (like MAED-City) to model city decarbonisation pathways. The prepared models will rely on official statistical data related to cities’ current and expected future socio-economic and technological development with focus on energy demand-supply of buildings, mobility and industry sectors. This data will be enriched by cross-cities surveys among LHCs and MCs. Results will inform city decision-making on the appropriate decarbonisation pathways and related action plans. This approach will be added to the monitoring and evaluation concept to be shared with the Cities Mission for wider replication.

Work package WP7 – Collaboration with Projects, Cities, Networks

Work Package Number	WP7	Lead Beneficiary	28. CAR
Work Package Name	Collaboration with Projects, Cities, Networks		
Start Month	1	End Month	60

Objectives
 To ensure the collaboration with other projects, initiatives, networks and cities to promote knowledge exchange for maximising the project impact and replication capabilities. In cooperation with WP4 and its capacity building programme (Task 4.2) where LHCs and MCs will learn from each other, and the networking and D&C activities developed inside WP8 that put in contact with external actors, the collaboration outside the project boundaries will be articulated among all the lifetime of the project and beyond meanwhile the channels opened in the project will be usable for further cooperation between cities.

Description
 Task 7.1 Collaboration roadmap (M1-M48); Lead: CAR; SPL, LHM, TWE, BLS.
 Based on the scene of current related projects and networks, the roadmap for the collaborative activities will be developed considering the needs and main topics of interest of our cities to implement their PCEDs and contribute to achieve their climate neutrality. A Collaboration Secretariat, formed by SPL, CAR as Collaboration Leader, TWE (WPL8), BLS will be created to define the roadmap. Consortium will take advantage of the already existing relationships of its members with target projects, EU initiatives and City networks working in Positive Energy District, Smart Cities, and Circular Economy projects to maximise the impact of the collaboration in the project. New collaboration opportunities appearing in the scene and the evaluation of the cooperation results will be considered to update the roadmap.
 Task 7.2 Outcomes-driven collaboration with other projects (M1-M60). Lead CAR, All.
 The collaboration with other projects focuses on seeking synergies with ASCEND and being outcomes driven for more impact. The first collaboration contact will be done with other projects approved under the same topic as us. Horizon 2020 Smart Cities and Communities Lighthouse projects, as the main source of experience implementing smart solutions in

cities for NZED and PEDs will be contacted through its cluster managed by Scalable Cities. Collaboration with NetZeroCities project and its Mission Platform will help through city planning to achieve climate neutrality to our cities as the Cities Mission portfolio claims. Collaboration with projects under the New European Bauhaus initiative will help to design and implement our PCEDs to be inclusive, sustainable and in harmony with the environment. Active collaboration with projects under the topic CL5-2021-D3-02 (formerly C5-D3-ESGS-06-2021) will contribute to increasing the RES share in the electricity grid while ensuring system resilience while cybersecurity in data collection is supported.

Task 7.3 Collaboration with EU initiatives and networks (M1-M60). Lead CAR, All.

A solid cooperation channel will be established with other initiatives that are working on Climate neutrality and Smart Cities domain. Close collaboration with Smart Cities Marketplace will allow finding investors for the replication of solutions in our MCs meanwhile Scalable Cities is the main source of city experiences implementing technical and non-technical solutions to transform our cities. New city planning into neutrality will be supported through the collaboration with CoM meanwhile the European Urban initiative of Cohesion policy (2021-2027) will get our PCED as instrument of Cohesion Policy. Additionally, connections will be built with Built4People, LivinInEU and EIT InnoEnergy for the exchange of best practices across Europe. On the other hand, the collaboration with research networks as EERA Smart Cities Joint Programme, IEA- EBC Annex 83 on Positive Energy Districts, or COST Action Positive Energy Districts EU Network will align the developments inside our project further to the State of the Art.

To foster complementarity and avoid duplication, all the projects funded under topic HORIZON-MISS-2021-CIT-02-04 and part of cluster clean energy districts are expected to share information on their living-labs demonstration/pilot activities and relevant results to the Mission Platform, including where possible the provision of data to enable the monitoring of progress towards the achievement of the Climate-neutral and Smart Cities Mission objectives. The collaboration with the Mission Platform will be formalised through a Memorandum of Understanding to be concluded as soon as possible after the project starting date.

ASCEND will contribute, upon invitation by the CINEA, to common information and dissemination activities to increase the visibility and synergies between HE/H2020 supported actions.

Task 7.4 City alliance network (M13-M60). Lead ENC, CAR, SPL, LHM, TWE, MCs, UoL, BLS.

A network of city alliances will be created joining experienced cities, small and very small and cities. ENC will work with the 8 city alliances proposed by LHCs and MCs to organise national dissemination events. With the objective of enhancing opportunities for accessing knowledge, technology and funding this network will be linked to the existing City Coordinators Group from Scalable cities at the same time that will be allowed to participate in the joint events from other EU networks as well as be involved in collaboration activities organised by ASCEND. Mission Platform, LIFE Clean Energy Transition projects, European Partnership on Driving Urban Transition for a sustainable future (DUT) and our own LHCs and MCs will be the starting point to contact these cities not actually integrated in Smart Cities networks but able to provide a factual contribution toward meeting the climate neutrality targets through the deployment of PCED.

Work package WP8 – Communication, Dissemination & Engagement

Work Package Number	WP8	Lead Beneficiary	33. TWE
Work Package Name	Communication, Dissemination & Engagement		
Start Month	1	End Month	60

Objectives

- i) Setting out the dissemination and communication framework to reach all the relevant stakeholders and target audiences through suitable channels and networks;
- ii) Engaging with the right stakeholders and audiences to generate a lively community on ASCEND platform to create city alliances across all relevant and interested cities and initiatives;
- iii) Identifying and using right offline and online communication channels to effectively engage, communicate with and disseminate solutions piloted in LHCs and MCs (WP2,3), and enable replication and knowledge sharing, learning loop for cities (in close collaboration with WP5,6 and 7);
- iv) Disseminating results of the project via participatory workshops, targeted (scientific) publications, websites, knowledge-sharing events and through networks to ensure uptake and replication.

Description
<p>Task 8.1 Communication and Dissemination Strategy (M1-M60). TWE, All. The task will present the ASCEND articulated and holistic communication and dissemination strategy, its management and implementation plan. It will use user-centred design methodologies and storytelling to create innovative, visual and interactive tools. Targeting relevant target audiences and respective stakeholder groups, determine the overall strategic plan for the communication, engagement and dissemination activities, the way they interact with all other WPs using a cross-cutting approach and establishing how they support and feed into the overall demonstration of the project, scaling up and replication of the solutions. The communication strategy has three parallel phases:</p> <ul style="list-style-type: none"> i) targeted communication to relevant target audiences; ii) (local) community engagement within the ASCEND; iii) creation, guidance and management of stakeholder and multipliers relationships. <p>The communication will always be on two levels: general - EU level, and local: city level (specifically targeting national levels of ASCEND cities) and build on close collaborative partnerships with other initiatives (as defined in WP7) and networks. To unify all communication activities, a framework will be created encompassing workflows, joint tools, templates, guidelines and tracking sheets and a joint communications planning calendar. A Communication Coordination Group gathering all communication ambassadors (WP2,3,4,5,7 leads and city-level communication representatives) will meet up regularly (monthly calls) to exchange, share and coordinate all communication and dissemination activities across the project.</p> <p>Task 8.2 Stakeholder Engagement (M6-M60). TWE, CAR, All. Sub-task T8.2.1 Framework for stakeholder engagement. TWE, All. We will track, identify and describe the roles and needs of all relevant stakeholders: consortium partners, cities and regional/municipal governments & policy makers, EU organizations and institutions; business and industry, research and academia, (local) citizens and other platform users. Sub-task T8.2.2 Stakeholder interaction. CAR, All: will develop a stakeholder interaction and engagement plan characterizing appropriate actions, methods, and workflow on how to reach all target audiences effectively. The task will set up the platform, supported by online knowledge-exchange meetings, workshops (T8.4), and conduct interactive surveys to i) collect and implement stakeholder input into the running project; ii) collaborate and participate with the stakeholders to demonstrate replicability of the solutions; iii). All partners will be asked to contribute with their local networks and outreach channels (physical or online) to pool them together and build upon them a lively community on the platform (T8.3.2).</p> <p>Task 8.3 - External communication channels and outreach (M3-M60). TWE, CAR, All. This task focuses on disseminating news, knowledge, know-how, best practices, technologies, solutions, or any suitable information to selected target groups to support the goal of disseminating the implementation progress and outcomes. We would focus on 1) Outreach on city, regional, national levels (coordination with WPs 2-3-4-7) Outreach to EU, similar initiatives, and city initiatives (coordination w/WP7) Outreach on local city level.</p> <p>Sub-task T8.3.1 Promotional materials (Lead TWE) will produce promotional materials, interactive infographics and leaflets, external-facing websites, and community and engagement focused online platforms (T8.3.3) and social media content & channels. Sub-task T8.3.2 Scientific publications (lead CAR) would include both scientific & promotional publications and other target-stakeholders focused products enabling us to reach target audiences both online and offline. Sub-task T8.3.3 Platform (lead TWE) will focus on building the Platform to enable all local and EU-level audiences visualised access to information in support of empowered citizen engagement and replication (WP4,5) and City alliances (WP7). We will focus on knowledge sharing and explaining the complex data information stemming from WP5, 6 and provide an embedded virtual platform for WP5, data dashboard to WP6; visualisations of data collected in cities, as well as a direct connection to the European data spaces, especially the Green Deal data space and the Energy data space. The Platform will also enable stakeholder interaction and implementation of community management, especially within the involved cities. It will include energy communities as well as a part of direct citizen engagement for ASCEND to build a better and more involved local (+national) support for the implementation of solutions, with a view of replicating them further through workshops and seminars of T8.4.</p> <p>Task 8.4 Event organisation (M13-M60). TWE, All. To support the dissemination and knowledge sharing, we will develop an event strategy and roadmap to mobilise cities (WP2,3) and initiatives (WP7) to deliver content and inform agendas of large and small(er) events & collaborative workshops that will be organised with the aim of uptake of solutions, especially on regional/national level.</p> <p>Sub-task T8.4.1: With WP1, Project events; annual conferences (GA) each in a different city, follow a regional balance,</p>

incl. cities from city alliances, e.g. Stockholm (T7.4) to promote project progress, exchanges and local knowledge sharing and exchanges.

Sub-task T8.4.2: Knowledge sharing workshops and Participatory webinars: with more regular exchange within the project and its cities but also as cross-learning opportunities across initiatives and other networks (e.g., together with Scalable Cities Group or NetZero cities, T7.4). These will slowly be collected and built into MOOCs, enriched with information from WP7 to enable knowledge transfer and capacity building on the city level and replication-focused exchanges on the national level.

STAFF EFFORT

Staff effort per participant									
<i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>									
Participant	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person-Months
1 - SPL	60.00	108.00		4.00	10.00	2.00	6.00	4.00	194.00
2 - GLY	2.00	72.00		12.00			3.00		89.00
3 - LYS	2.00	12.00		3.50			1.50		19.00
4 - HES	12.00	24.00		4.00	10.00	3.00	4.00	4.00	61.00
5 - UP	2.00	20.00			10.00				32.00
6 - ETC	2.00	11.00				10.00			23.00
7 - LHM	6.00		92.00	8.90	7.00	1.00	4.00	4.50	123.40
7.1 - SWM	2.00		10.00					1.00	13.00
7.2 - MGS	2.00		60.00	4.00	8.00	3.00	1.00	2.50	80.50
7.3 - GWG	2.00		21.00	1.00				1.00	25.00
8 - UNC	2.00		15.00					3.00	20.00
9 - TUM	2.00		67.50	2.00	3.00	2.00	1.00	4.00	81.50
10 - IW	2.00		23.00	2.00	2.00			2.00	31.00
11 - AVC			8.50	0.50	0.50				9.50
12 - SPC	2.00		27.00					1.00	30.00
13 - UTUM	2.00		36.50		6.00		2.00	4.00	50.50
14 - AIM	3.00			70.00	8.00	6.00	9.00	4.00	100.00
15 - CHA	2.00			40.00	2.00	1.50	4.00	2.00	51.50
15.1 - IGC	2.00			40.00	2.00	1.50		2.00	47.50

Staff effort per participant									
<i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>									
Participant	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person-Months
16 - PEN	2.00			19.00	3.00		2.00	1.00	27.00
17 - AEP	2.00			8.00	1.00	2.00		2.00	15.00
18 - SRV	2.00			8.50				4.00	14.50
19 - APD	2.00			18.00		4.00			24.00
20 - CVUT	2.00			68.00		2.00	4.00	2.00	78.00
21 - OICT				13.00	4.00	1.50		1.50	20.00
22 - PDS				4.50	0.30				4.80
23 - BUD	5.00			65.25	21.50	12.00	10.00	4.00	117.75
24 - BKK	1.00			7.50		1.00		0.50	10.00
25 - ENC	5.00			54.60	4.00		4.00	2.00	69.60
26 - STK	1.50			4.50			5.00		11.00
27 - AIT	6.00	1.00	1.00	4.30	3.00	54.00			69.30
28 - CAR	10.00			8.00	25.00	6.00	28.00	14.00	91.00
29 - UoL	3.00	1.00	1.00	2.00	32.00	3.00	6.00	6.00	54.00
30 - BLS	22.00				20.00		10.00	2.00	54.00
31 - DKSR	3.00	1.00	1.00	17.00	51.00	14.50	3.00	8.00	98.50
32 - CIV	5.00			6.50	47.00	6.00	5.00	2.00	71.50
33 - TWE	5.00			1.00	1.00		13.00	67.00	87.00
34 - ODY	21.50						3.00	2.00	26.50
35 - USG	2.00			3.20	38.10	4.00	1.60	4.50	53.40
Total Person-Months	209.00	250.00	363.50	504.75	319.40	140.00	130.10	161.50	2078.25

LIST OF DELIVERABLES

Deliverables						
<i>Grant Preparation (Deliverables screen) — Enter the info.</i>						
<i>The labels used mean:</i>						
<i>Public — fully open (⚠ automatically posted online)</i>						
<i>Sensitive — limited under the conditions of the Grant Agreement</i>						
<i>EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444</i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Project Management Plan	WP1	34 - ODY	R — Document, report	SEN - Sensitive	3
D1.2	Exploitation Plan	WP1	30 - BLS	R — Document, report	SEN - Sensitive	48
D1.3	Inception report	WP1	4 - HES	R — Document, report	SEN - Sensitive	6
D2.1	Lyon PCED roadmap report	WP2	1 - SPL	R — Document, report	SEN - Sensitive	6
D2.2	Lyon PCED Implementation Report 1	WP2	1 - SPL	R — Document, report	SEN - Sensitive	18
D2.3	Lyon PCED Implementation Report 2	WP2	1 - SPL	R — Document, report	SEN - Sensitive	48
D2.4	Evaluation of Lyon PCED demonstrator	WP2	1 - SPL	R — Document, report	PU - Public	60
D3.1	Munich PCED roadmap report	WP3	7 - LHM	R — Document, report	SEN - Sensitive	6
D3.2	Munich PCED Implementation Report 1	WP3	7 - LHM	R — Document, report	SEN - Sensitive	18
D3.3	Munich PCED Implementation Report 2	WP3	7 - LHM	R — Document, report	SEN - Sensitive	48
D3.4	Evaluation of Munich PCED demonstrator	WP3	7 - LHM	R — Document, report	PU - Public	60
D4.1	Local framework and needs assessment	WP4	25 - ENC	R — Document, report	PU - Public	6
D4.2	Five PCED books monitoring the advancement	WP4	25 - ENC	R — Document, report	PU - Public	12
D4.3	Blueprint and capacity building materials	WP4	25 - ENC	R — Document, report	PU - Public	60

Deliverables						
<i>Grant Preparation (Deliverables screen) — Enter the info.</i>						
<i>The labels used mean:</i>						
<i>Public — fully open (⚠ automatically posted online)</i>						
<i>Sensitive — limited under the conditions of the Grant Agreement</i>						
<i>EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444</i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D4.4	PCED Multiplication strategy for each Lighthouse City and Multiplier City	WP4	25 - ENC	R — Document, report	PU - Public	60
D5.1	State-of-the-art assessment of the six Solution Packages	WP5	35 - USG	R — Document, report	PU - Public	15
D5.2	Solution Packages capacity-building module	WP5	30 - BLS	R — Document, report	PU - Public	15
D5.3	Operational funding and financial mechanisms supporting Solution Packages	WP5	32 - CIV	R — Document, report	PU - Public	24
D5.4	Digital blueprint for local energy community building	WP5	31 - DKSR	R — Document, report	PU - Public	24
D5.5	Solution Packages portfolio market uptake	WP5	32 - CIV	R — Document, report	PU - Public	48
D6.1	Data management plan	WP6	27 - AIT	DMP — Data Management Plan	SEN - Sensitive	6
D6.2	Monitoring and Evaluation Report & KPIs definition	WP6	27 - AIT	R — Document, report	PU - Public	12
D6.3	Manual for the Standardised KPI Engine	WP6	31 - DKSR	R — Document, report	PU - Public	18
D6.4	Data Quality Management and Maintenance Plan	WP6	27 - AIT	R — Document, report	PU - Public	24
D6.5	PCED Sustainable Impact Assessment and City Vision	WP6	27 - AIT	R — Document, report	PU - Public	48

Deliverables						
<i>Grant Preparation (Deliverables screen) — Enter the info.</i>						
<i>The labels used mean:</i>						
<i>Public — fully open (⚠ automatically posted online)</i>						
<i>Sensitive — limited under the conditions of the Grant Agreement</i>						
<i>EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444</i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D6.6	Data management plan - First update	WP6	27 - AIT	DMP — Data Management Plan	SEN - Sensitive	12
D6.7	Data management plan - Second update	WP6	27 - AIT	DMP — Data Management Plan	SEN - Sensitive	30
D6.8	Data management plan - Third update	WP6	27 - AIT	DMP — Data Management Plan	SEN - Sensitive	42
D6.9	Data management plan - Final update	WP6	27 - AIT	DMP — Data Management Plan	SEN - Sensitive	60
D7.1	Collaboration roadmap	WP7	28 - CAR	R — Document, report	PU - Public	48
D7.2	Results on collaboration with other projects and EU initiatives	WP7	28 - CAR	R — Document, report	PU - Public	60
D7.3	City alliance network: agreements achieved and activities developed	WP7	25 - ENC	R — Document, report	PU - Public	60
D8.1	Communication and Dissemination Plan	WP8	33 - TWE	R — Document, report	SEN - Sensitive	3
D8.2	Stakeholder Interaction Plan	WP8	33 - TWE	R — Document, report	SEN - Sensitive	6
D8.3	Event and Promotion plan	WP8	33 - TWE	R — Document, report	SEN - Sensitive	9

Deliverable D1.1 – Project Management Plan

Deliverable Number	D1.1	Lead Beneficiary	34. ODY
Deliverable Name	Project Management Plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	3	Work Package No	WP1

Description
Document summarizing the project management processes, management rules, operational share of responsibilities, scope of work, Master time schedule, action list and risk register. Revised on a yearly basis as an internal report (Task 1.1).

Deliverable D1.2 – Exploitation Plan

Deliverable Number	D1.2	Lead Beneficiary	30. BLS
Deliverable Name	Exploitation Plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	48	Work Package No	WP1

Description
Description of how the tools, projects and methodologies will be sustained and deployed in the project. Pathway and strategy to exploit Key results by Beneficiaries/consortium. Updated at M60 as an internal report.

Deliverable D1.3 – Inception report

Deliverable Number	D1.3	Lead Beneficiary	4. HES
Deliverable Name	Inception report		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP1

Description
The Inception plan will briefly summarize the measures/solutions/... to be demonstrated or adopted by each LHC and MC in the form of an evolutive Excel document, including a calendar and the results aimed to be achieved per measure and demo/pilot site (Task 1.1)

Deliverable D2.1 – Lyon PCED roadmap report

Deliverable Number	D2.1	Lead Beneficiary	1. SPL
Deliverable Name	Lyon PCED roadmap report		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP2

Description
Document presenting the detailed roadmap. The individual steps of all trades to achieve a PCED district in Lyon are

described in detail, individual milestones and timeline are defined. In addition, possible risks are to be defined and concrete solutions are to be specified in advance (Task 2.1)

Deliverable D2.2 – Lyon PCED Implementation Report 1

Deliverable Number	D2.2	Lead Beneficiary	1. SPL
Deliverable Name	Lyon PCED Implementation Report 1		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	18	Work Package No	WP2

Description

Document reporting total achievement in the first 18 months, potential scaling at M18 and progress report on intervention status (Task 2.1)

Deliverable D2.3 – Lyon PCED Implementation Report 2

Deliverable Number	D2.3	Lead Beneficiary	1. SPL
Deliverable Name	Lyon PCED Implementation Report 2		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	48	Work Package No	WP2

Description

Document reporting total achievement in the first 48 months, potential scaling at M48 and progress report on intervention status, including lessons learned and recommendations for PCED creation in Multiplier Cities (Task 2.1). This deliverable will provide inputs to Task T4.4.

Deliverable D2.4 – Evaluation of Lyon PCED demonstrator

Deliverable Number	D2.4	Lead Beneficiary	1. SPL
Deliverable Name	Evaluation of Lyon PCED demonstrator		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP2

Description

Final evaluation of building, energy, mobility, digital and governance interventions in the Lyon PCED, document summarizing the PCED delivery with energy calculation, assessment of Solution Packages delivered through interventions and knowledge transferred to the Multiplier Cities (Task 2.1).

Deliverable D3.1 – Munich PCED roadmap report

Deliverable Number	D3.1	Lead Beneficiary	7. LHM
Deliverable Name	Munich PCED roadmap report		
Type	R — Document, report	Dissemination Level	SEN - Sensitive

Due Date (month)	6	Work Package No	WP3
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Description
Document presenting the detailed roadmap. The individual steps of all trades to achieve a PCED district in Munich are described in detail, individual milestones and timeline are defined. In addition, possible risks are to be defined and concrete solutions are to be specified in advance (Task 3.1)

Deliverable D3.2 – Munich PCED Implementation Report 1

Deliverable Number	D3.2	Lead Beneficiary	7. LHM
Deliverable Name	Munich PCED Implementation Report 1		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	18	Work Package No	WP3

Description
Document reporting total achievement in the first 18 months, potential scaling at M18 and progress report on intervention status (Task 3.1)

Deliverable D3.3 – Munich PCED Implementation Report 2

Deliverable Number	D3.3	Lead Beneficiary	7. LHM
Deliverable Name	Munich PCED Implementation Report 2		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	48	Work Package No	WP3

Description
Document reporting total achievement in the first 48 months, potential scaling at M48 and progress report on intervention status, including lessons learned and recommendations for PCED creation in Multiplier Cities (Task 3.1). This deliverable will provide inputs to Task T4.4.

Deliverable D3.4 – Evaluation of Munich PCED demonstrator

Deliverable Number	D3.4	Lead Beneficiary	7. LHM
Deliverable Name	Evaluation of Munich PCED demonstrator		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP3

Description
Final evaluation of building, energy, mobility, digital and governance interventions in the Munich PCED, document summarizing the PCED delivery with energy calculation, assessment of Solution Packages delivered through interventions and knowledge transferred to the Multiplier Cities (Task 3.1)

Deliverable D4.1 – Local framework and needs assessment

Deliverable Number	D4.1	Lead Beneficiary	25. ENC
Deliverable Name	Local framework and needs assessment		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	6	Work Package No	WP4

Description
Outcome of Task 4.1, this report describes the technical aspects, the governance model, an analysis of the stakeholders, the opportunities and the solutions for each PCED of the MCs. It serves as a starting point for each MC and for the identification of capacity building needs.

Deliverable D4.2 – Five PCED books monitoring the advancement

Deliverable Number	D4.2	Lead Beneficiary	25. ENC
Deliverable Name	Five PCED books monitoring the advancement		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP4

Description
Five PCED books monitoring the advancement (1 per city). First delivery at M12 as a deliverable. The PCED books will be updated every 6 months as internal reports (Task 4.3).

Deliverable D4.3 – Blueprint and capacity building materials

Deliverable Number	D4.3	Lead Beneficiary	25. ENC
Deliverable Name	Blueprint and capacity building materials		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP4

Description
Blueprint and capacity building materials developed during Task 4.2 for the 18 sessions of the communities of practices, and the 12 expert training sessions are published along the project duration to be disseminated, and reused by other cities. They are gathered at the project end in one report.

Deliverable D4.4 – PCED Multiplication strategy for each Lighthouse City and Multiplier City

Deliverable Number	D4.4	Lead Beneficiary	25. ENC
Deliverable Name	PCED Multiplication strategy for each Lighthouse City and Multiplier City		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP4

Description			
Outcome of Task 4.4, this report summarizes the strategy for each city to develop other PCED projects in their cities, including identification of these new PCED areas, solutions to implement, the financial needs for each of them and their impacts on GHG emissions.			

Deliverable D5.1 – State-of-the-art assessment of the six Solution Packages

Deliverable Number	D5.1	Lead Beneficiary	35. USG
Deliverable Name	State-of-the-art assessment of the six Solution Packages		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	15	Work Package No	WP5

Description			
State-of-the-art assessment of the six Solution Packages in Task 5.2, evaluated from 5 standpoints: 1) technological; 2) business model; 3) funding mechanisms; 4) procurement procedures, including PPPs and SPV; 5) Governance models and policies			

Deliverable D5.2 – Solution Packages capacity-building module

Deliverable Number	D5.2	Lead Beneficiary	30. BLS
Deliverable Name	Solution Packages capacity-building module		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	15	Work Package No	WP5

Description			
As result of Task 5.5, this deliverable will outline the Capacity-building programme aiming to transfer the knowledge of all 6 SPs to the LHCs and MCs from governance, technical and economic standpoints. This programme will be updated at M24 and M36 as internal reports to include the new results and lessons learned from demonstration activities.			

Deliverable D5.3 – Operational funding and financial mechanisms supporting Solution Packages

Deliverable Number	D5.3	Lead Beneficiary	32. CIV
Deliverable Name	Operational funding and financial mechanisms supporting Solution Packages		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP5

Description			
As result of the Task 5.3, the deliverable will summarize customized and applicable funding schemes for the deployment and the replication of Solution Packages. It will also create a link between the funding schemes and the business-and-public models. Indicator of success: inclusion of supportive tools helping cities to use innovative funding and to settle local financing schemes applicable along the SPs. First delivery at M24, second updated version at M36.			

Deliverable D5.4 – Digital blueprint for local energy community building

Deliverable Number	D5.4	Lead Beneficiary	31. DKSR
Deliverable Name	Digital blueprint for local energy community building		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP5

Description
As result of the Task 5.4, the blueprint provides a reference model for setting up local energy communities based on open standards, data sovereignty, and scalable open source ICT modules. It represents a practical, replicable approach that can be used by cities when deploying PCEDs and setting energy communities within and beyond the ASCEND project. First delivery at M24; update at M36 as an internal report.

Deliverable D5.5 – Solution Packages portfolio market uptake

Deliverable Number	D5.5	Lead Beneficiary	32. CIV
Deliverable Name	Solution Packages portfolio market uptake		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP5

Description
As an outcome of Task 5.6, the SP's portfolio will be hosted in a virtual marketplace (https://square.dksr.city/en) with clear reference to performances in terms of eco-fins, operationals, and climate actions. The overall rating of each SP discloses the compliance with each of the different possible investors. The outputs will be disseminated through the Advisory Board, WP8 and WP9.

Deliverable D6.1 – Data management plan

Deliverable Number	D6.1	Lead Beneficiary	27. AIT
Deliverable Name	Data management plan		
Type	DMP — Data Management Plan	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP6

Description
Data management plan (Task 6.1). Initial version, to be updated as D6.6, D6.7, D6.8 and D6.9 at the end of each reporting period. It refers to T6.2/T6.3 and aims at specifying the source and class of the gathered data in ASCEND, applied data standards, way to treat, store and share the data in the project, measures to guarantee data security and privacy and regulate ownership and access while ensuring open information policy (complying with GDPR), and long-term data archiving after the project period.

Deliverable D6.2 – Monitoring and Evaluation Report & KPIs definition

Deliverable Number	D6.2	Lead Beneficiary	27. AIT
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Deliverable Name	Monitoring and Evaluation Report & KPIs definition		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	12	Work Package No	WP6

Description
Monitoring and Evaluation Report & KPIs definition - outcome of Task 6.1. it aims at establishing an integrated monitoring and evaluation methodology, defining a comprehensive set of KPIs and related evaluation metrics and formula to be applied to calculate the KPIs based on the cleaned gathered data.

Deliverable D6.3 – Manual for the Standardised KPI Engine

Deliverable Number	D6.3	Lead Beneficiary	31. DKSR
Deliverable Name	Manual for the Standardised KPI Engine		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	18	Work Package No	WP6

Description
Manual for the Standardised KPI Engine - outcome of Task 6.2 It aims at specifying and setting up the KPI engine covering the ICT infrastructure needed for a standardised and automated communication with the urban data platforms (in LHCs and MCs) acting as focal points for monitoring data. It describes also the processing of the collected data (including quality assurance), data cleansing, visualisation and preparation for the KPIs calculation. The visualisation scheme is provided to support KPI visualisation and impact assessment of project solutions and the cross comparison of KPIs among the LHCs/MCs.

Deliverable D6.4 – Data Quality Management and Maintenance Plan

Deliverable Number	D6.4	Lead Beneficiary	27. AIT
Deliverable Name	Data Quality Management and Maintenance Plan		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	24	Work Package No	WP6

Description
It refers to T6.3 and aims to elaborate on the quality and consistence of the monitoring data beside other meta data of the demo PCEDs needed for the KPIs calculation. It provides feedback to the technical performance and cost-effectiveness of the infrastructure and monitored solutions and their scalability potential from the side of technology providers and infrastructure owners. The responsibilities for each part of the data acquisition, storage and processing, from field device up to the data end-use level is documented in the Maintenance Plan allowing for efficient error tracking and failure mitigation. First delivery at M24 as a deliverable; final update at M60 as an internal report.

Deliverable D6.5 – PCED Sustainable Impact Assessment and City Vision

Deliverable Number	D6.5	Lead Beneficiary	27. AIT
Deliverable Name	PCED Sustainable Impact Assessment and City Vision		
Type	R — Document, report	Dissemination Level	PU - Public

Due Date (month)	48	Work Package No	WP6
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Description
This deliverable relates to T6.4 and aims to document the evaluated impact of the monitored solutions using the calculated and visualised KPIs. This also includes cross comparison of KPIs among the LHCs/MCs. It further documents the carbon-neutral strategy to be developed for LHCs/MCs based on aligning the project impacts with the future visions of LHCs and MCs. The extracted KPIs combined with supplementary city's data on socio-economic and technological development build the needed basis to outlining the clean energy transformation towards sustainable and climate-neutral cities by 2030/2050. A roadmap will be provided displaying the replication of the ASCEND solutions in LHCs and MCs. First delivery at M48 as a deliverable; final update at M60 as an internal report.

Deliverable D6.6 – Data management plan - First update

Deliverable Number	D6.6	Lead Beneficiary	27. AIT
Deliverable Name	Data management plan - First update		
Type	DMP — Data Management Plan	Dissemination Level	SEN - Sensitive
Due Date (month)	12	Work Package No	WP6

Description
Updated Data management plan. Status: end of the first reporting period (Task 6.2)

Deliverable D6.7 – Data management plan - Second update

Deliverable Number	D6.7	Lead Beneficiary	27. AIT
Deliverable Name	Data management plan - Second update		
Type	DMP — Data Management Plan	Dissemination Level	SEN - Sensitive
Due Date (month)	30	Work Package No	WP6

Description
Updated Data management plan. Status: end of the second reporting period (Task 6.3)

Deliverable D6.8 – Data management plan - Third update

Deliverable Number	D6.8	Lead Beneficiary	27. AIT
Deliverable Name	Data management plan - Third update		
Type	DMP — Data Management Plan	Dissemination Level	SEN - Sensitive
Due Date (month)	42	Work Package No	WP6

Description
Updated Data management plan. Status: end of the second reporting period (Task 6.3)

Deliverable D6.9 – Data management plan - Final update

Deliverable Number	D6.9	Lead Beneficiary	27. AIT
Deliverable Name	Data management plan - Final update		
Type	DMP — Data Management Plan	Dissemination Level	SEN - Sensitive
Due Date (month)	60	Work Package No	WP6

Description
Final Data management plan, updated at project end (Task 6.3)

Deliverable D7.1 – Collaboration roadmap

Deliverable Number	D7.1	Lead Beneficiary	28. CAR
Deliverable Name	Collaboration roadmap		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	48	Work Package No	WP7

Description
The collaboration roadmap will be a report where objectives and main collaboration activities (Task 7.1) will be identified, described and scheduled at different levels and for the different kind of partners. First version will be published at M12 as an internal report; final version published at M48 as deliverable.

Deliverable D7.2 – Results on collaboration with other projects and EU initiatives

Deliverable Number	D7.2	Lead Beneficiary	28. CAR
Deliverable Name	Results on collaboration with other projects and EU initiatives		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP7

Description
Report with the summary of the collaboration activities carried out by the consortium partners with other projects, EU initiatives and networks in Tasks 7.2 and 7.3. Intermediate versions will be released at M24, M36, and M48 as internal reports.

Deliverable D7.3 – City alliance network: agreements achieved and activities developed

Deliverable Number	D7.3	Lead Beneficiary	25. ENC
Deliverable Name	City alliance network: agreements achieved and activities developed		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	60	Work Package No	WP7

Description

This deliverable summarises the activities of Task 7.4. i.e. the organisations of national activities between national city alliances and in cooperation with other initiatives: Mission Platform, LIFE Clean Energy Transition projects, European Partnership on Driving Urban Transition for a sustainable future (DUT). The aim of these activities are to enhance opportunities for accessing knowledge, technology and funding for these cities. A first version will be released at M30 as an internal report.

Deliverable D8.1 – Communication and Dissemination Plan

Deliverable Number	D8.1	Lead Beneficiary	33. TWE
Deliverable Name	Communication and Dissemination Plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	3	Work Package No	WP8

Description

Communication and Dissemination Plan detailing our targeted approach to communication to generate global reach, local engagement, and geographical balance, as well as the visual ID. The online and offline KPIs defined in this report will be tracked as a part of reporting on a monthly basis, evaluated every 6 months (Task 8.1). This deliverable will also include a preliminary list of exploitable results with a forward-looking proposal for exploitation of results, to be completed and followed-up in deliverable D1.2 Exploitation plan.

Deliverable D8.2 – Stakeholder Interaction Plan

Deliverable Number	D8.2	Lead Beneficiary	33. TWE
Deliverable Name	Stakeholder Interaction Plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP8

Description

Elaborating on the communication strategy identified in D8.1, the Stakeholder Interaction Plan will specify the programme to ensure an efficient communication and dissemination to the stakeholder groups (Task 8.1). The list of stakeholders will be updated every 6 months as an internal report.

Deliverable D8.3 – Event and Promotion plan

Deliverable Number	D8.3	Lead Beneficiary	33. TWE
Deliverable Name	Event and Promotion plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	9	Work Package No	WP8

Description

Elaborating on the communication strategy identified in D8.1, the Event and Promotion plan will specify the guidelines for event organisation and ASCEND promotional activities and set up an event calendar (Task 8.1). The event calendar will be updated continuously.

LIST OF MILESTONES

Milestones					
<i>Grant Preparation (Milestones screen) — Enter the info.</i>					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
1	MS 1.1. Kick-off meeting	WP1	1-SPL	Meeting minutes.	1
2	MS 1.2. Project management and structure set up	WP1	1-SPL	D1.1 & D8.1 submitted.	3
3	MS 7.1. Collaboration Secretariat launched	WP7	28-CAR	Meeting minutes issued.	4
4	MS 1.3. Advisory Board set up	WP1	1-SPL	Meeting minutes.	6
5	MS 8.1. Website launched	WP3, WP8, WP2	33-TWE	Website online in alpha form.	6
6	MS 4.1. Five harvesting workshops held in each MC	WP4	25-ENC	Workshop minutes.	6
7	MS 7.2. Memorandum of understanding with the Mission Platform	WP8	33-TWE	Memorandum signed.	6
8	MS 4.2. PCED monitoring book template ready	WP4	25-ENC	Document available for MCs.	10
9	MS 4.3. Community of Practice established, Learning Cycles started	WP4	25-ENC	Agenda of learning cycles defined.	12
10	MS 6.1. Monitoring methodology and KPIs final list ready	WP6	27-AIT	D6.2 ready and distributed	12
11	MS 7.3. Collaboration roadmap defined	WP7	28-CAR	First version available.	12
12	MS 8.2. Event and promotion strategy launched	WP3, WP8, WP2, WP7, WP6	33-TWE	D8.3 submitted, event calendar in place and filled.	12
13	MS 6.2. KPI engine ready	WP6	27-AIT	ICT infrastructure functional and D6.3 ready and distributed.	18

Milestones					
<i>Grant Preparation (Milestones screen) — Enter the info.</i>					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
14	MS 8.3. Platform launched	WP3, WP8, WP2, WP7, WP6	33-TWE	Platform online on the website.	18
15	MS 5.1. Digital tool for capacity building available	WP5	32-CIV	Creation of the digital tool for MCDA.	22
16	MS 6.3. Overall monitoring system ready	WP6	27-AIT	All monitoring channels working with appropriate data quality, first-year validation.	24
17	MS 7.4. City Alliance Network launched	WP7	28-CAR	Launching event minutes.	24
18	MS 6.4. Monitoring analysis finished and impact assessed	WP6	27-AIT	D6.5 approved.	48
19	MS 6.5. Carbon-neutral city strategy prepared	WP6	27-AIT	Carbon-neutral city strategy prepared and discussed with the LHCs & MCs.	52
20	MS 1.4. Final event	WP1	1-SPL	Meeting minutes.	60
21	MS2.1. Start of C1N building block - including the 22-26 building demonstrator - construction works in Lyon PCED	WP2	1-SPL	SPL is continuously monitoring the construction works in Confluence. The timeline and steps are known by SPL, in direct relation with the construction companies.	7
22	MS2.2. Start of B1 buildings block (including super efficient buildings, PV systems on the roof for energy communities, "flexible undergrounds") construction works in Lyon PCED	WP2	1-SPL	SPL is continuously monitoring the construction works in Confluence. The timeline and steps are known by SPL, in direct relation with the construction companies.	12
23	MS4.4. Porto's PCED presentation to the municipal executive	WP4	16-PEN	Press release.	12
24	MS4.5. Reception of works for the 3 renewable heating systems in Alba Iulia	WP4	14-AIM	Photos, Reception of works documents	12

Milestones					
<i>Grant Preparation (Milestones screen) — Enter the info.</i>					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
25	MS4.6. Reception of the works for the 6km of bike lanes in Alba Iulia	WP4	14-AIM	Photos, Official Reception of works	12
26	MS3.1. Start of construction works (building) in Munich PCED	WP3	7-LHM	Start of works on site	13
27	MS2.3. Start of D3 buildings block (including super efficient buildings, PV systems on the roof for energy communities, "flexible undergrounds") construction works in Lyon PCED	WP2	1-SPL	SPL is continuously monitoring the construction works in Confluence. The timeline and steps are known by SPL, in direct relation with the construction companies.	14
28	MS4.7. Launch of digital blueprint for LEC in Porto	WP4	16-PEN	Launch of online platform	18
29	MS3.2. Start of hardware installation in Munich PCED	WP3	7-LHM	Start of works on site	25
30	MS4.8. Start of depollution of the lands for the "Quartier du Futur" in Charleroi	WP4	15-CHA	Start of works related to depollution of lands, contaminated lands temporarily moved, etc.	25
31	MS4.9. Heating network - Start of the construction in Charleroi	WP4	15-CHA	Heating network effectively constructed.	25
32	MS4.10. Approval of the retrofitting plan for the former school at Megyeri street in Budapest	WP4	23-BUD	Approved plan.	30
33	MS4.11. PV concept for public utilities, institutions in Budapest	WP4	23-BUD	Approved concept.	30
34	MS4.12. 5 potential PCEDs identified in each Lighthouse and Multiplier City for replication	WP4	25-ENC	Presentation compiling all 40 identified PCEDs.	37
35	MS4.13. Reception of the works for all of the 7 renewable energy systems in Alba Iulia	WP4	14-AIM	Photos, Official Reception of works	37

Milestones					
<i>Grant Preparation (Milestones screen) — Enter the info.</i>					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
36	MS4.14. Reception of all E-charging stations in Alba Iulia	WP4	14-AIM	Photos, Official Reception of works	37
37	MS4.15. Start of construction works for the "Quartier du Futur" in Charleroi	WP4	15-CHA	Start of works.	42
38	MS3.3. Start of monitoring in Munich PCED	WP3	7-LHM	First monitoring data collected	48
39	MS4.16. Starting of the refurbishment in the former school in Budapest	WP4	23-BUD	Signed contract of refurbishment works.	48
40	MS4.17. Launch of tendering procedures for PV systems in Porto	WP4	16-PEN	Proof of tendering procedures	54
41	MS3.4. End of construction works (building) in Munich PCED	WP3	7-LHM	Taking over/acceptance of the refurbished/new built buildings and mobility infrastructure etc.	55
42	MS4.18. Implementation of 3 PCEDs in selected districts in each Lighthouse and Multiplier City	WP4	25-ENC	Start of work and/or procurement for 25 PCEDs.	60

LIST OF CRITICAL RISKS

Critical risks & risk management strategy			
<i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
1	MCs target districts are not a priority anymore (Likelihood: Medium / Severity: Medium)	WP4	SPs holistic approach and flexibility will make sure that solutions will be implemented independently from political changes.

Critical risks & risk management strategy			
<i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
2	Insufficient time dedicated by partners for capacity-building and cooperation activities (Likelihood: Medium / Severity: Medium)	WP4	LHCs, SP owners and experts included in WP4 with PMs to transfer their knowledge. Involvement of different organisations from each MC and LHC to ensure more flexibility.
3	Delay in setting up the monitoring infrastructure at the LHCs and MCs (Likelihood: Low / Severity: Medium)	WP3, WP4, WP2, WP6	Both LHCs have proven experience in project monitoring from previous SCC01 projects. MCs will be supported by LHCs in this mission.
4	Delay in establishing the KPI Engine. (Likelihood: Medium/ Severity: High)	WP6, WP5	Solid experience of key project partners and engagement of the LHCs/MCs will enable timely implementation and proper functioning of the KPI engine
5	Lack of available data to perform monitoring and calculate KPIs. (Likelihood: Low / Severity: Medium)	WP3, WP4, WP2, WP6	Start of work on data sources availability, reliability and accessibility in the demo areas will start at an early stage, in parallel with the selection of KPIs.
6	Data collection and feasibility of new solutions hindered by data security and privacy issues. (Likelihood: Medium / Severity: High)	WP3, WP4, WP2, WP6	Issues related to data protection, data privacy and ethics are addressed by specific tasks to ensure compliance with the legal framework. Mutual learning workshop on “Regulatory, legal aspects and data security/protection”.
7	Insufficient updates and information provided by the cities for dissemination. (Likelihood: Medium / Severity: Medium)	WP3, WP8, WP2, WP6	Establish a communication steering board, liaising on a regular basis with the cities and helping them identify communication-worthy topics, updates, news.
8	Lack of interest from audiences in communication outputs (Likelihood: Medium / Severity: Medium)	WP3, WP8, WP2, WP6	Establish a storytelling and user-centric system for all communication activities, that will always come from the “user-first” perspective, and explanatory (not preaching) tone.
9	District municipality has no willingness to cooperate within the planning and implementation phase in Multiplier cities. (Likelihood: Low / Severity: High)	WP4	Engaging them at the start of the project and establishing a common working ground.
10	No financial resource available for the deployment of pilots in Multiplier cities. (Likelihood: Low / Severity: High)	WP4	Continuously searching for alternative resources, engaging external funding.
11	Lack of interest of the public utilities for deploying	WP4	Engaging them at the start of the project and establishing a common working ground aiming to reach the city targets defined in the SECAP.

Critical risks & risk management strategy			
<i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
	pilots in Multiplier cities. (Likelihood: Medium / Severity: High)		
12	Lack of availability of planning offices, architects, executing craftsmen to implement the refurbishment measures (Likelihood: High /Severity: Medium)	WP3	Early tendering and broad distribution of the tasks advertised.
13	Unpredictable, strong cost increases for building materials for the renovations and the sustainable measures (Likelihood: Medium /Severity: High)	WP3	Early tendering and broad distribution of the tasks advertised.
14	Unpredictable Europe Energy Crisis (Likelihood: Medium /Severity: Medium)	WP3, WP4, WP2	Reduction of consumption during the project and best possible implementation of the measures.
15	Lack of availability of engineers and/or executing craftsmen to develop and implement the "Smart Heat Grid" hardware and software (Likelihood: Medium /Severity: Medium)	WP3	Early planning.
16	Implementation of "Smart Heat Grid" delayed due to dependencies to time schedule of district heating substation installation (Likelihood: Medium / Severity: Medium)	WP3	Close coordination with owner of residentia buildings (GWG)
17	Delays in Multiplier cities caused by municipal decision-making processes (Likelihood: Medium / Severity: Medium)	WP4	Early planning will address the timely decision making for municipal decisions and a continuous communication with the municipal executive will be established.
18	Charleroi: Delays created by lags into the ECO studies and depollution of the lands in "Porte Ouest" ("Quartier du Futur" and District Cleantech) (Likelihood: Low /Severity: Low)	WP4	Establishing a time schedule which takes into account forecastable and very often encountered difficulties while depolluting lands.
19	Charleroi: Closure of the steelworks and decrease	WP4	The development of the Cleantech cluster must allow to not be only depending on the steel industry for waste heat production and to make the district's economic system more resilient.

Critical risks & risk management strategy			
<i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
	in available waste heat (Likelihood: Low /Severity: Medium)		
20	Construction works delayed due to technical issues, long administrative processes, financing issues (sellers but also buyers) (Likelihood: Medium / Severity: Medium)	WP2	<p>The operations are already carried out by companies already selected or well-known, collaborating and working closely with financial actors.</p> <p>The construction sector is solid, as there is a high demand from buyers to live in the centre of Lyon.</p> <p>The EC funding brings safety and capacity to SPL to reassure the different projects such as B1-C1N including the 22-26 model.</p> <p>A part of the housings' price is controlled by SPL (social housing, financial arrangement with "Office Foncier Solidaire").</p>
21	Difficulties to set up and deploy energy communities due to administrative, legal, financial or adherence issues (Likelihood: Medium /Severity: High)	WP2	<p>Hespul works at the national level to change the legal framework to make the deployment of energy communities easier and possible at a larger scale.</p> <p>The increase of energy prices will make the energy communities more attractive financially.</p> <p>The constant support by SPL for the deployment of energy communities, made stronger thanks to ASCEND, should reduce the risks too.</p>

PROJECT REVIEWS

Project Reviews			
<i>Grant Preparation (Reviews screen) — Enter the info.</i>			
Review No	Timing (month)	Location	Comments
RV1	13	on-line / Brussels	
RV2	31	on-line / Brussels / on-site	

Project Reviews*Grant Preparation (Reviews screen) — Enter the info.*

Review No	Timing (month)	Location	Comments
RV3	43	on-line / Brussels / on-site	
RV4	60	on-line / Brussels	

History log

Modifications Annex 1 - Part A

Date	Modification	Tab(s)
20-10-22	List of deliverables and description of deliverables updated.	Deliverables
20-10-22	List of milestones updated	Milestones
20-10-22	List of critical risks updated	Critical risks
20-10-22	Description of Task 7.3 updated	Work Packages
20-10-22	Civiesco budget and efforts corrected	Financial information & Work Packages
20-10-22	Part B added in the F&T portal	Documents
14-11-22	Abstract updated	General Information
18-11-22	Budgets amended for BEN 34 ODY and BEN 16 PEN.	Financial information

Modifications Annex 1 - Part B

Date	Modification	Chapter	Page
22-08-22	Creation of DoA Part B – Removal of requested tables and sections	-	-
22-08-22	Table of contents added	-	2
22-08-22	Section 4 Ethics self-assessment added	4	30
23-09-22	Disclaimer on depreciation costs added	3	28
23-09-22	Description of Affiliated entities and Associated partner added	3.2	43
23-09-22	Tables 3.1g and 3.1h reformatted and completed	3.1	32-45
18-10-22	State of the Art table updated	1.1	5-7
18-10-22	Presentation of Multiplier Cities updated	1.2	17-19
18-10-22	GANTT chart reformatted and updated	3.1	31
18-10-22	Tables 3.1g and 3.1h updated	3.1	32-45
18-10-22	Documents proving the link between Beneficiaries and Affiliated Entities added.	5	51
14-11-22	Precisions added in table 3.1g	2.1	32-45
18-11-22	Precisions added in table 3.1g	2.1	32-45

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1.1. OBJECTIVES AND AMBITION

“Vision without execution is delusion. Thomas Edison”

IPCC's latest report is its final call to avoid the "apocalypse" before we blow through the 1.5°C limits. Current affairs call for a radical European energy transition: cutting our dependency on external fuel sources, such as Russian gas, and decreasing energy poverty. Cities will play a significant role in dramatically lowering the emission curve, fighting energy inequalities, and reducing energy dependency. Their focus is to shift from testing & experimenting Smart Cities solutions to speeding up and scaling high-impact ones. The pathway to Net Zero emission relies mainly on technologies already cost-competitive, thanks to an exponential and unforeseen growth in their development. These technologies shape a new energy system, the electrification of all infrastructures, powered by renewable energy sources (RES), managed by smart energy systems and storage. Massive changes in usage, behaviour and profound transformation in city organisations are required to address the challenge. The powers to reach Net Zero Targets are now distributed to millions of citizens that can daily act, design solutions or trigger large scale mobilization¹. Time is running out. Execution is the strategic competence needed to SPEED and SCALE the solutions built by generations of EU-projects, forming the most important Smart Cities Research and Development (R&D) programme Horizon Europe is raising the playing field with its 100 climate-neutral and smart cities moonshot. The ambition of funding, financing and city transformational changes is exponential. Our project will build upon the accumulated knowledge and the lessons learned, as well as shortcomings or limitations, to SPEED and SCALE Positive Clean Energy Solutions faster, accelerating cities transition. We have set four strategic objectives (SO) to achieve high impacts:

SO1: Deliver two inclusive affordable Positive Clean Energy Districts (PCEDs) in Lighthouse Cities (LHCs) Lyon and Munich

LHCs will demonstrate PCED solutions in two different urban settings. We will use the PCED scientific definition and measurement standard and go beyond by including the following dimensions: use and re-use of solutions, inclusion of mobility and social components, and frugal, simple & easy-to-use solutions focusing on end-user needs. We will establish a trustworthy operator, the urban orchestrator, to ensure that performances can be maintained and improved in the long run. **Lead:** WP2 -3

KR1.1	Positive energy balance of PCED
KR1.2	Urban orchestrator in place to manage, coordinate and maintain District performance

SO2: Bootstrap successful implementation of PCED in Multiplier Cities (MCs) and LHCs

Our project creates a role of Multiplier Cities (MCs), committed to work on catalyst experimentations for PCEDs Alba Iulia (Romania), Budapest (Hungary), Charleroi (Belgium), Prague (Czech Republic), Porto (Portugal), Stockholm (Sweden). We will establish operational synergies between the long-term city vision and the implementation of new PCEDs, both in LHCs and MCs to trigger a wave of PCEDs in the eight cities during the project life. **Lead:** WP4. *Related WPs:* WP5-6

KR2.1	25 tailored experimentations in MCs using solutions developed by LHCs
KR2.2	6 new PCEDs bootstrapped in MCs, 25 launched in all partnering cities by 2028
KR2.3	Financial plan ready and deployed in LHCs and MCs for a PCEDs wave 2025-2035

SO3: Scale up PCED solution packages (SP) for a large community of cities and investors

We will deliver six SP to design, implement and roll out inclusive PCEDs. Their combination will provide a cost-effective PCED. They will aggregate technical, business model and financing components. A sustainability assessment will be performed. SP will both be standardised and adaptable to the local context. SP are described in section 1.2. **Lead:** WP5. *Related WPs:* WP2-3-4-6-7-8.

KR3.1	Successful demonstration of the cost-effectiveness and attractiveness of SP in 8 cities and a pool of investors, ASCEND Advisory Board (AB) members
KR3.2	Successful demonstration of creating value for stakeholders (Cities, inhabitants, investors)

SO4: Disseminate widely our results to the smart cities community

¹ See for a striking example <https://www.time-planet.com/en>

Our project will: **i)** liaise and establish a Memorandum of Understanding (MoU) with the Climate-Neutral and Smart Cities Mission (Cities Mission)² to scale at the level of the 100 cities; **ii)** use Scalable Cities³ to disseminate the results to the 120 participating cities; **iii)** focus on local/national dissemination **iv)** coordinate with the investor's pools of the Cities Mission, the Smart Cities Marketplace (SCM) and Scalable Cities to extend our outreach towards investors. We plan to partner with city alliances in the the seven countries and in Sweden through Stockholm to disseminate. **Lead:** WP7. *Related WPs:* WP4-7-8

KR5.1	At least 10 joint actions with the Cities Mission and the European Smart Cities initiatives
KR5.2	Eight city alliances reaching 100 additional cities, including small and very small ones
KR5.3	GitHub repository for open access to SP documentation in connection with Living-in.EU project and MIMP ⁴

Our project will cover the topic outcomes, as described in the table below:

Main impacts on Topic Outcomes	Covered by ASCEND
Contribute to the objectives of the Cities Mission by accelerating the transition towards climate neutrality in cities.	We will demonstrate in eight cities and provide tested and validated SP for European-wide PCED deployment to SPEED and SCALE climate neutrality in cities
Large-scale demonstration and implementation of PCEDs to prove their feasibility and cost-effectiveness in a real-world environment	Two large-scale PCEDs (445000 m ²) deployed with a strategy to bootstrap new ones during the project (years 3 to 5). MCs will use experimentations to bootstrap PCED deployment. We will support cities in structuring their investment plan.
Projects will be at district scale and will have long-term strategies addressing the needs and requirements of inhabitants, energy, mobility, ICT and environment to make cities more liveable, healthier, resource efficient and climate neutral. Projects will include different social and economic areas at the district level.	LHCs and MCs cover a large diversity of districts: city centre, outskirts, ageing residential areas, industrial brownfields. Projects are embedded in a long-term city strategy. Their objectives are to go beyond the energy scope to address crucial citizens' needs: inclusiveness, social cohesion, livability and economic development, technical integration between systems triggered by the new energy system.
Collaborative structures bringing together vital stakeholders to achieve PCEDs - policy makers, industry/SMEs, property developers/financial actors, R&I organisations, energy service providers, Citizen associations, energy agencies - will collaborate among each other, with the Horizon 2020 SCC-LG projects cluster, the supporting Scalable Cities service contract and the SCM.	Cities will use local ecosystems to deliver the PCEDs. A collaborative structure will be designed and implemented gathering the stakeholders, beyond the project's partners. Financial actors will be gathered. An Advisory Board will be created to test and validate the SP. We plan to join the Scalable Cities European initiative to foster cross-collaborations. Synergies will be established, particularly with investors and matchmaking exercise with the Cities Mission, SCM, the Covenant of Mayors (CoM), and the EU City Facility (ENC WP4 leader is coordinating the EU CF ⁵) among others.
Widening and consolidating the Positive Clean Energy cluster of practitioners and strengthened links with financial actors enabling the mid-term Europe-wide uptake of tested solutions for PCEDs.	We have foreseen participating in Scalable Cities and the City Practitioners groups created by the Cities Mission and the SCM. The MoU with the Cities Mission will propose a focused strategy to avoid any overlap and make synergies.
Paradigm shift from demonstration project to mainstreamed long-term city transformation.	Our goal is to make PCEDs a routine in cities, by demonstrating. Our strategy focuses on accelerating the PCEDs deployment in each city during the project and not at the end. We build on scalable and replicable, standardised and open-source solutions, supporting existing open standards to maximise mainstreaming across Europe.

²And the awarded consortium for call HORIZON-MISS-2021_CIT-02-03 operating on behalf of the Cities Mission the Mission platform.

³ Scalable cities is the new name of SCALE, the supporting service contract to the 18 SCC Projects (120 cities). The City Coordinator gathers 70 cities engaged in Smart Cities project across Europe

⁴ Minimal Interoperability Mechanisms (MIMs Plus) developed by Open and Agile Cities(OASC), now LivingIEU. Porto, OASC technology council member, will establish the link

⁵ <https://www.eucityfacility.eu/home.html>

Evidence of decreased investment risk for and acceleration of the rollout of PCEDs.	The six SP co-effectiveness will depend on their orchestration. The urban orchestrator, supported by a digital PCED platform, will be the trustworthy operator decreasing risk and unleashing the PCED roll out. We will propose an integrated investment package including the ESG framework ⁶ .
Well-proven and documented packaged solutions lowering the entry barrier, create trust and shape the market, ultimately leading to further large-scale investment.	We will use the Minimum Viable Product ⁷ (MVP) approach to design, build and validate the six SP via an iterative and agile approach. We expect to trigger 752M€ of public and private investments during the project development ⁸ .

Progress and ambitions beyond the State Of the Art (SOA) and maturity of Research and Innovation (R&I):

State of the art	Progress beyond state of the art	R&I maturity & TRL
Advanced digital twin (Lyon & Munich: SP1)		
Existing digital twins designed to plan urban energy systems but not for the development of PCEDs. In Lyon, the digital twin can monitor energy performance at the building level.	Open digital twins with advanced capabilities to design PCEDs according to building and energy systems features thanks to a module that monitors energy exchange between consumers and producers. The digital twin will be able to track also energy-flows to maximise collective self-consumption from local production and smart grids. It will also be able to anticipate impacts on the district in terms of costs, energy consumption and CO ₂ emissions.	This tool will be open and used as decision support to assess rollout potential in replication districts. <i>TRL7 to TRL9 at end project.</i>
Digital monitoring KPI engine (Munich & Lyon: SP1)		
KPIs are manually computed which is tedious, inefficient and error prone. Existing advanced KPIs tools are not freely accessible.	An open automatic tool for KPI processing from raw data to PCED assessment following a standardised data collection procedure will be integrated in the above ‘advanced digital twin’. It will connect to urban data platform structured as follows: 1) Data collection layer: standardised raw data collection and recording in a common format for different cities 2) Data preparation layer: identifies errors and anomalies and generate automatic notification to the data source owners. 3) KPI layer: calculates the KPIs specified in the monitoring methodology using the processed data 4) Visualisation layer: a “front-end dashboard” visualises the calculated KPIs to evaluate the impact of the monitored solutions, enable a city-to-city	KPI Engine in digital twin used as decision tool for PCED replication planning <i>TRL7 to TRL9 at end project.</i>

⁶ EU ESG Regulatory Regime : European Environmental, sustainable and Governance framework for investors
⁷ The MVP refers to the lean start up approach. See Harvard Business Review May 2013 Why the lean startup approach changes everything
⁸ Lyon plans 385 m€ and Munich 367 see section 1.2.3

	<p>comparisons.  Associated with document Ref. Ares(2022)8438279 - 06/12/2022</p> <p>The code of this open-source tool will be published in the project's GitHub repository to be accessible as a decision-support making beyond the ASCEND project. Innovation relates to the use of AI capabilities to predict, e.g., sensor failure, KPI developments and to ensuring semantic data interoperability between subsystems.</p>	
Smart heating grid, demand and energy flows optimisation (Munich: SP1)		
Local and regional heating system do not make use of each other.	Local and regional heating systems balance their energy for peak shaving and increase RES share in the overall system.	Flexible, dynamic and resilient energy grid proven in operational environmental. <i>TRL7 to TRL9 at end project.</i>
Collective self-consumption operations (Lyon: SP2)		
No existence of energy communities where buildings self-consume electricity produced in biogas cogeneration plants	New approach to the technical operation of collective self-consumption of energy produced by biogas cogeneration plant on the scale of several blocks of buildings	Collective self-consumption operation established and scalable. <i>TRL8 to TRL9 at end project</i>
Super-efficient buildings (Lyon: SP3)		
<p>The 22-26 building concept was developed by the Austrian architects Baumschlager and Eberle to achieve highly efficient buildings (52kWh/m²/yr). It maximises insulation and ventilation to reduce to null the need for active cooling and heating systems.</p> <p>The 22-26 concept builds on simple and proven technical solutions: building inertia, insulation with hollow bricks, perfect impermeability. Smart building management maintains acceptable comfort standards, no matter the season, by collecting inside / outside temperature, air quality, sunshine data, and by managing ventilation openings. This model has been tested in Austria.</p>	<p>The 22-26 concept will be tested for the first time in a dense city centre area. An extensive study will be carried out to monitor the transfer of this first 22-26 building in Confluence to any other future construction operations in the dense city centre of Lyon.</p> <p>This study aims to overcome obstacles for super-efficient buildings using bio-resources, natural ventilation, and no active heating system and to further reduce energy demand to (21kWh/m²/yr).</p>	<p>Full commercial technology for new building typologies. <i>TRL9 at end project</i></p>
Prefabricated elements with PV coating (Munich: SP3)		
Innovative high efficiency PV coated on the prefabricated elements have not been demonstrated in a PCED.	Demonstration of high efficiently PV coated and prefabricated elements in a PCED to reduce energy needs of refurbished buildings and produce RES to achieve Net Zero Energy Buildings.	Solution ready to be commercialised for serial retrofitting processes <i>TRL7 to TRL9 at end project.</i>

Vehicle-to-Building (V2B) (Lyon: SP4)		
V2B solution has not been tested as part of a PCED demonstration.	V2B solutions will provide flexibility to the Lyon PCED by acting as means of storage of the building's photovoltaic production. Munich will install V2B-compatible charging points, especially in the underground mobility hub of a social housing building offering energy social pricing services for low-income inhabitants.	Full commercial technology. <i>TRL8 to TRL9 at end project</i>
District energy council (Lyon & Munich: SP5) and business		
Citizen engagement strategies are based on open innovation and co-creation activities addressed to the public.	‘District local energy councils’ will be created as participatory tool for PCED co-design with fair representativeness of citizens and stakeholders. These council bring around the table: <ul style="list-style-type: none"> - local policy makers who will be able to give their agreement, and facilitate the administrative and legal steps, - private companies, able to carry out the projects and bring their expertise, - labs and research institutes, able to demonstrate the technical feasibility of the project, - citizens, providing feedback on the proposed project in relation to initial expectations before implementation so that the project answers the actual needs. 	<i>TRL9 at end project.</i>
Business model elaboration in SCC has been executed rather in silos leaving potential synergies in their combination untapped.	Holistic approach to demonstrating the ecologic and economic deployment & benefits of combined solutions packages by i) developing new business-and-public models, ii) evaluating non-conventional financing by investors iii) transferring successfully validated schemes and models to MCs via capacity building programmes; iv) developing / providing a dedicated financial decision-making tool	TRL of the 6 SP from pilot demonstration (<i>TRL 6</i>) to market uptake and commercialization (<i>TRL 9</i>). <i>TRL 9</i> for the financial decision-making tool

1.2. METHODOLOGY

1.2.1. Overall concept

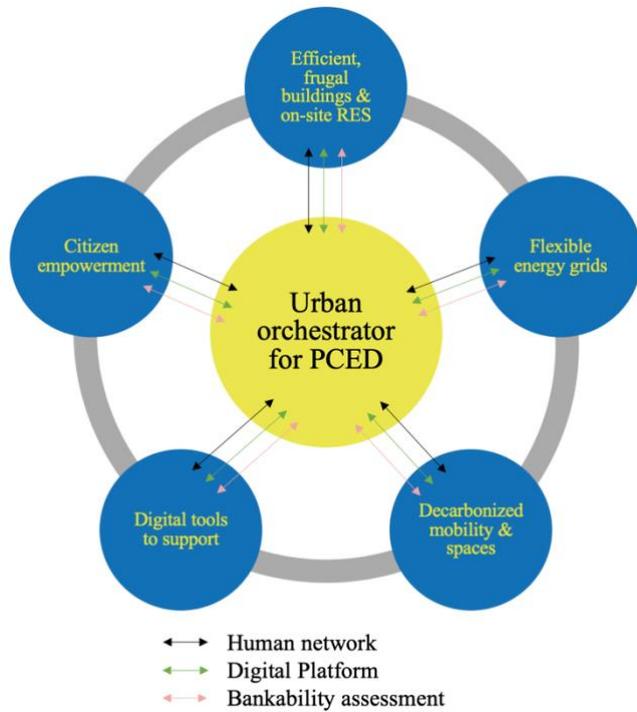


Figure 1: ASCEND PCED Pillars

By relying on the 18 SCC projects' wealth of solutions and experience, we have built a programme to go beyond their SOA. **First**, we believe MCs should use the project to bootstrap their PCED portfolio to be more impactful. **Second**, we target *Clean* Energy Districts. Inherent to a PCED is its healthiness and liveability. It means decarbonising but also providing friendly and easy-to-use solutions to citizens while engaging them in a 'decarbonised way of living'. **Third**, projects have frequently worked on implementation, rarely trying to master the whole value chain: from designing a PCED to achieving it and maintaining it in the long run. **Fourth**, business models have been sketched but rarely tested and implemented with the support of a financial community. **Fifth**, digital tools have seldom been systemically combined to design, simulate, connect and enable citizens to become prosumers and active players in addressing climate change. **Finally**, our focus is to multiply our impact by delivering hands-on SP, building trust for the market and replicating during the project, not at the end.

We will develop our PCEDs with two overarching principles: *i*) making cities healthier and resource-efficient; *ii*) SPEED and SCALE the deployment of a smart and sustainable energy district system. We have defined **five pillars** of a PCED.

- **Pillar 1** is human-centred: **the Citizen**. We will create an 'active citizenship' to ensure the adoption of solutions and long-lasting change. Our local consortia are built with this principle in mind.
- **Pillar 2** focuses on **zero-carbon frugal buildings** with high energy performances and self-consumption systems, powered by clean and locally produced renewable energy.
- **Pillar 3** is the deployment of **dynamic and flexible energy grids** to save and balance energy demand and supply. Smart grids for electricity & heating, will allow for real-time management, prediction and anticipation. Energy grids will enable the development of local energy communities making the citizens prosumer.
- **Pillar 4** decarbonises **public spaces and mobility** to make PCEDs breathable and liveable, with the deployment of alternative mobility means for passenger travels and freight via electro and micro-mobility.
- **Pillar 5** is the development of **digital tools to support the PCED**, helping to manage the district and optimise energy supply and demand. Our digital portfolio will be replicable and scalable by design by standardising our tools and being as interoperable and open as possible.

These 5 pillars revolve around an '**urban orchestrator**': a public entity which aggregates all components and services of a PCED to implement long-lasting change at district level. Each pillar of the PCED will be connected to the urban orchestrator through a **federating digital platform** and a '**human network**' gathering all local stakeholders.

1.2.2. Overall methodology

As shown in Figure 2, at the heart of ASCEND are our **six Solution Packages** (SP). We follow and upscale the approach taken by previous SCC projects (SPARCS, Sharing Cities) conceiving a smart solution as a system of integrated technical, social, infrastructure, business-related and governance modules. In combination, **they form a package enabling delivery, replication and scaling-up of solutions under different conditions in cities across Europe**. Each SP will be developed under the coordination of an owner:

SP1 Digital infrastructures and ICT tools to support flexible energy systems and PCED (DKSR),

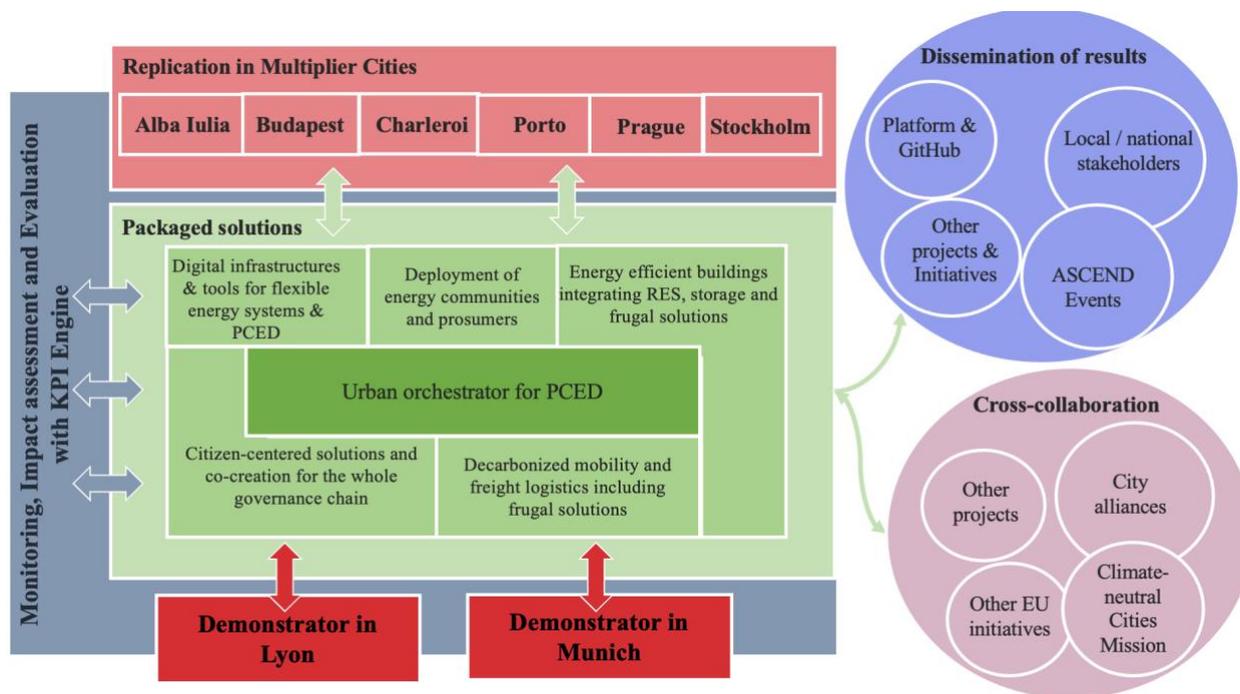


Figure 2: Overall methodology of ASCEND

Throughout the project, our goal will be to improve through scaling and replication, our SP. We will use **the Minimum Viable Product ('MVP') approach to create the most cost-effective combination of solutions for PCED**. It will help us demonstrate that technological solutions follow a maturity curve, in which, as it is re-designed and replicated, it becomes more cost-effective, easy to replicate and adaptable for most European local contexts. SP will be developed in the two demonstrators (WP2&3) and tested in the MCs to bootstrap their PCED development (WP4). **SP owners will work with LHCs and MCs to test & validate technical requirements, business models and financial approaches**. The solution will be re-evaluated and reshaped according to additional feedback from LHC, MCs and investors. WP5 will coordinate the process, providing guidance for implementation in LHCs and MCs, and guidelines to scale by design the SP.

An Integrated Monitoring and evaluation Methodology (IMM WP6) will be developed to monitor and assess the wider project impact in supporting the carbon neutral LHCs and MCs strategies. We will generate through a fully automated data collection **-KPI engine-**a **consistent and inclusive set** of KPIs to provide evidence for the feasibility and cost-effectiveness of the implemented PCEDs. Our approach will be proposed to the Cities Mission for further deployment of PCEDs. The KPIs will cover:

- i) Integrated and smart energy solutions for building, mobility and district infrastructure;
- ii) District energy demand-supply balance at different temporal scales;
- iii) Energy efficiency and energy-saving measures;
- iv) Onsite renewable energy contribution;
- v) Building energy performance and energy infrastructure;
- vi) Energy system flexibilization to manage the energy system performance;
- vii) Environmental impact;

- viii) Socio-economic impacts, user perception in occupant comfort, cost, energy savings measures and RES;
- ix) Replication of solutions;
- x) City Governance regulation, gender.

Replication outside of the consortium will be a continuous imperative. A collaboration secretariat (WP7) at the project level will be created to define the collaboration roadmap through the synergies established with relevant initiatives and projects working in the Smart City field. The governance and involvement of consortium members in the Cities Mission and Scalable Cities will guarantee the liaison. The eight cities will engage city alliances bringing the opportunity to learn on PCED to small and less developed cities. Joint activities will be defined with projects funded under the same call and those funded through topic CL5-2021-D3-02. A communication & dissemination (C&D) strategy (WP8) will be defined for a wide extension of project results.

1.2.3. LHCs Demonstrators

Lyon (WP2) and Munich (WP3) will follow a similar approach to design, build and operate their PCED. It will follow the PED reference framework⁹. The concept of both Lyon and Munich PCED is shown below:

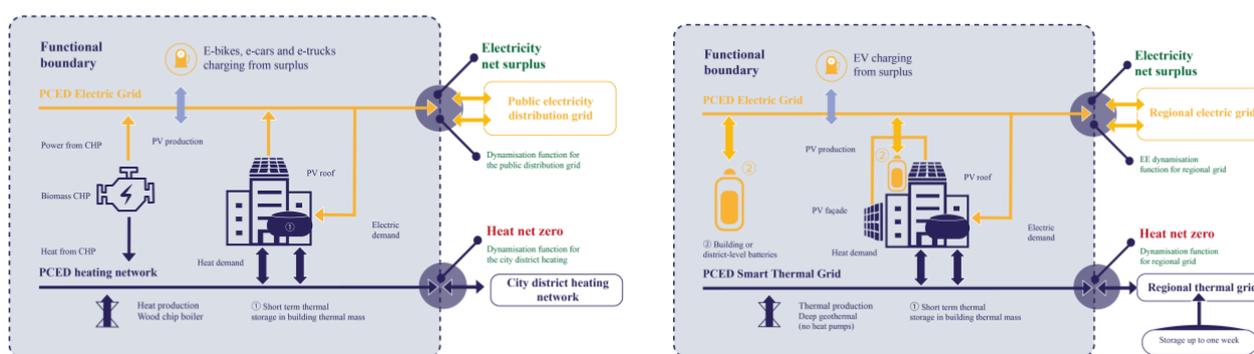


Figure 3: Lyon (left) and Munich (right) PCED Concepts

Lyon and Munich have calculated the PCED energy balance at the end of ASCEND, using a common methodology to get consistent results: heat and electricity demands of the whole district have been estimated, and compared with the amount of renewable energy powering the district. Both districts will have a positive energy balance. The calculations are detailed in the table below, including the reduction in CO2 emissions:

⁹ JPI Urban Europe, see [2](#).

Energy balance at the end of ASCEND	PCED Lyon					
	Final energy	Conversion factor	Primary energy	Final energy	Conversion factor	Primary energy
Energy consumption and production in kWh/year						
Heating	4 111 000			11 721 000		
Domestic hot water	3 268 000			3 484 000		
Total heat	7 379 000		2 394 000	18 607 000		7 257 000
Out of which supplied by local biomass CHP	540 000	0	0	0		
Out of which supplied by District heating renewable	4 445 000	0	0	18 607 000	0,39	7 257 000
Out of which supplied by district heating - Gas	2 394 000	1	2 394 000	0		
Domestic energy	4 060 000	2,58	-2 688 000	10 340 000	1,8	-10 417 000
Out of which supplied by PV	4 862 000			16 127 000		
Out of which supplied by CHP biomass	240 000			0		
PCED balance in kWh/year						
Primary energy			-294 000			-3 160 000
Conclusion			PCED achieved !			PCED achieved !
CO2 emissions in tCO2/year						
CO2 emissions of heat	745			819		
CO2 emissions of electricity	-45			-1 395		
CO2 emissions of local EV charging	-147			-1 580		
Total Emissions	554			-2 156		

Table 1: PCED in Lyon and Munich

LHC LYON: LA CONFLUENCE



LHC La Confluence in Lyon covers 33ha, located in the southern part of the city. It is the last phase of the overall project. By 2028, the demonstration area will host 19,034m² of renovated buildings and 170,413m² of new buildings with mixed uses: 1,347 dwellings (55% of social housing), offices, shops and public facilities, including a school system. It is currently an industrial wasteland with polluted and impermeable soils. Most of the buildings have not been constructed yet. A district heating network has been installed in the district.

CITY ALLIANCE: GLY area encompasses 59 municipalities, from 3,000 to 150,000 inhabitants. SPL is an active member of the national network of urban developers (CVA), cooperating with numerous French urban developers in charge of similar projects. It will be an accelerator for replication in France.

AMBITION –SPEED and SCALE: The Lyon Confluence project has had environmental ambitions from the outset. For its last phase, the objective is to

go further by making the demonstration site a PCED. The projected investment in buildings is 379 M€ and 6M€ in renewable production systems. GLY SECAP's ambition is to build up to 8.000 similar new dwellings per year by 2028 over 65 other PCEDs, representing a **total investment of approx. 8B€** by 2035. Lessons learned from ASCEND will help the metropole to optimise the investment plan.

LHC MUNICH: HARTHOF

LHC Harthof, Munich covers 56has and is the home of 11,500. It is a largely residential area with 327 residential buildings, 5,500 residential units and 256,000m² floor space, school, kindergarten and a few small businesses, without major industry. The structure of Harthof is typical of Munich’s many residential districts. Most flats are rental apartments owned by partner GWG. They were built in the 1940’s to 1970’s and have low energy efficiency standards. Heating is largely by oil and gas. Besides a tiny installation, there is no RES in the district and no shared clean mobility.



CITY ALLIANCE encompasses: a small village (Kirchheim, population 10,000), the mid-size city of Augsburg (population less than 30,000) and the Munich Metropolitan Region¹⁰, covering 33 counties and cities with 6,2M residents. Cooperation with the German Nation Smart cities program is targeted as well.

AMBITION –

SPEED and SCALE: The project aims to transform Harthof into a clean, CO₂-neutral positive energy district. The investment in buildings is projected as 323 M€ and for PV and electricity storage as 44 M€. The city's ambition is to scale this transformation to **100 structurally similar districts in Munich by 2035**, covering more than 43% of the city and providing a large share of the population with a CO₂-neutral, healthier environment. Including already committed city budgets of 900 M€ to support these measures in the coming 10 years, this extrapolates into **investments of around 37 B€**. The experiences in Harthof will help optimise these gigantic investments into the future of the city.

1.2.4. Solution Packages in Lyon and Munich

The table below is an overview of the different solutions and their integration into the SP. Each solution has received a code LYX.X or MUCX.X depending on the Lighthouse city. The reader can go to WP 2 and 3 and find the code of each solution in the description. We recommend printing the pages 10 and 11 below when reviewing WP2 and 3.

¹⁰ <https://www.metropolregion-muenchen.eu/english/>

Solution Packages		LYON			MUNICH		
ID	Solution	Effect	ID	Solution	Effect		
SP1: Digital infrastructures and ICT tools to support flexible energy systems and PCED / SP OWNER: DKSR							
Design of the PCED with digital tools	LY 1.1	Use and extend existing urban platforms (SPL's & GLY's platforms)	Supports all actions, TRL9 operational and upgraded as needed	MUC 1.1	Advanced digital twin for PCED replication planning	Implementation optimisation: real-time sensing, analytics, visualisation (AR/VR), modelling, prediction, indicators, automatic KPI analysis	
Use of District Energy Management Systems	LY 1.2	Modelling, simulating, and analysing various scenarios of logistics flows.	Energy savings, reduction of CO2 and decrease of air pollution	MUC 1.2	Demand and energy flows optimisation combining real-time, historic time series and planning / scheduling data		
Digital monitoring KPI engine	LY 1.3	Digital monitoring infrastructure: a) KPI Engine: easy to use tool / service for automatic PCED indicator calculations in support of PCED assessments and planning b) Smart heating and power grids	Demand and energy flows optimisation Optimised sizing of the energy grids	MUC 1.3	Digital monitoring and standardised IoT and sensing platform (NB-IoT, LORA)		
				MUC 1.4	KPI Engine: easy to use tool / service for automatic PCED indicator calculations in support of PCED assessments and planning	Improve assessment process quality, foster standardisation	
Digital infrastructure, for energy communities	LY 1.4	Developing digital infrastructure and interface for energy communities	Supporting the fast-paced deployment of energy communities	MUC 1.5	Digital ecosystem, use and extension of existing urban data platform based on open-source software	Supports all actions, operational at TRL9 and upgraded as needed	
SP2: Deployment of energy communities & prosumers / SP OWNER: HES							
Setting-up of energy communities	LY 2.1	Creating legal entities for deployment of energy communities	Ensuring and securing citizen commitment to PCED	MUC 2.1	Energy community (tenant energy model)	Decrease tenant energy cost Increase tenant buy-in	
	LY 2.2	New services and business models for prosumer approach	Social bond, empowering all citizens for long-term renewable energy solutions	MUC 2.2	Services / business models (prosumers and energy communities)	Greening change of business	
Multiplication of collective self-consumption operations	LY 2.3	Collective self-consumption operations	Local self consumption	MUC 2.3	Local EE storage, self-consumption	Capacity: 16500 MWh EE	
	LY 2.4	Developing a tool for social pricing of energy self-consumption	Facing energy poverty				

Solution Packages	LYON			MUNICH  Associated with document Ref. Ares(2022)8438279 - 06/12/2022		
	ID	Solution	Effect	ID	Solution	Effect
SP3: Deployment of energy-efficient buildings integrating RES, storage and frugal solutions / SP OWNER: CAR						
Reduction of building energy needs	LY 3.1	Building refurbishment (19,034 m ²)	Energy consumption: -55% (-85kWh/m ²). CO2 emissions: -89% (-715tCO ₂ /yr)	MUC 3.1	Conventional refurbishment to efficiency standard 55, 207 buildings, 3,150 flats, 140000 sqm floor space	Improve efficiency to standard 55 Total savings: 15400 MWh/yr TE
	LY 3.2	High energy performance buildings (92,315 m ²)	Energy consumption: -26% (-18.25kWh/m ²). CO2 emissions: -70% (-1114tCO ₂ /yr)	MUC 3.2	Serial refurbishment towards NZEB with prefabricated insulation elements; 80 buildings, 1350 flats, 60000 sqm floor space	Improve efficiency to standard 55 Total savings: 6600 MWh/yr TE
	LY 3.3	Super-efficient buildings (78,098 m ²)	Energy consumption: -70% (-49.3kWh/m ²). CO2 emissions: -88% (-1187tCO ₂ /yr)			
	LY 3.4	Passive cooling for new building	Zero Carbon emissions solution	MUC 3.3	Demolition / new construction as NZEB. 40 buildings, 1000 flats, 50000 sqm floor space	Building standard 40 Total savings: 4100 MWh/yr TE
Connection of buildings to the heating network	LY 3.5	Connecting new buildings to the district heating network	CO2 emissions: -59% (-1059tCO ₂ /yr)	MUC 3.4	Connect buildings to district heating 327 buildings, 5500 flats, 250000 sqm related floor space	Reduction of CO2 from 7200 t/yr to 819 t/yr
Production of heat from renewable energy sources	LY 3.6	Significant deployment of renewable energy production: i) +1MWc of photovoltaic production in 2028 ii) Cogeneration	CO2 emissions: -596tCO ₂ /yr	MUC 3.5	Smart heating grid; supervisory control of customer substation	Flexibilisation / optimisation TE
Production of electricity from renewables within the PCED				MUC 3.6	As MUC3.2, facade partly coated with innovative PV, 17 buildings	As MUC3.1, plus 200 MWh/yr EE
				MUC 3.7	High efficiency (off-the-shelf) PV on roofs, 327 buildings	Production: 16000 MWh/yr EE
Implementation of heat and electricity storage systems	LY 3.7	V2X	Flexibility of the electric grid	MUC 3.8	Short-time thermal storage in thermal mass of buildings	Flexibilisation / optimisation TE
				MUC 3.9	Short-time thermal storage of PCED energy in regional grid	Flexibilisation / optimisation TE
Collection and use of rainwater		<i>(see LY 4.1 below)</i>	<i>(see LY 4.1 below)</i>		<i>(see MUC 4.1 below)</i>	<i>(see MUC 4.1 below)</i>

Solution Packages	LYON			MUNICH		
	ID	Solution	Effect	ID	Solution	Effect
SP4: Decarbonized of mobility and freight logistics, including frugal solutions / SP OWNER: LHM						
Public spaces for micro-mobilities	LY 4.1	Significant increase of green spaces in public areas by: a) data-based decision-making tool to accelerate the implementation of frugal green solutions b) limiting the soil sealing to the building footprint c) massive greening of public spaces.	Development of 40,825 m ² of new green spaces (more carbon sinks, urban heat island effect limiting, rainwater natural management, increase of biodiversity)	MUC 4.1	Redesigning and greening urban space	Improve living conditions, speed up PCED transformation
	LY 4.2	Smart Lighting of public spaces	Reduction of energy consumption			
	LY 4.3	Pedestrianisation: redesigning public spaces for a "no-car" district	Reduction of car traffic, development of alternative mobility solutions, reducing CO2 emissions and air pollution	MUC 4.2	Mobility points, co-designed with stakeholders	Decrease individual traffic
	LY 4.4	No parking spots for combustion-powered cars	Reducing car traffic for a no-car district			
Promotion of car-sharing and electromobility for passenger travels	LY 4.5	Deployment of smart charging points in undergrounds	Decarbonising mobility	MUC 4.3	e-Car sharing with a focus on tenants	De-carbonize mobility
	LY 4.6	New uses of undergrounds (LY4.1) for alternative mobility services	Reducing car traffic & decarbonising mobility	MUC 4.4	Innovative charging	Reduce cost, improve planning
Decarbonisation of freight logistics	LY 4.7	Local photovoltaic production to power EV	Local self consumption	MUC 4.5	PV energy from buildings feed to charging infrastructure	Local self-consumption
	LY 4.8	Implementing "decarbonised-logistics hub"	Reducing car traffic & decarbonising freight	MUC 4.6	Decarbonized last mile waste optimisation	Decrease cost, noise, pollution
	LY 4.9	Charging points (LY4.7) for LYS Green Spaces & GLY Waste Management Departments' machines	Decarbonised waste management			
Shared public spaces with 'Nature'	LY 4.10	Soil waste and construction waste, fertilised locally for vegetal soil	Reducing energy consumption & GHG emissions by upcycling on-site materials to fertilise the district's soils; reducing negative impacts on the local forests		<i>(see MUC 4.1 above)</i>	<i>(see MUC 4.1 above)</i>
		<i>(see LY 4.1 above)</i>	<i>(see LY 4.1 above)</i>			

Solution Packages	LYON			MUNICH		
	ID	Solution	Effect	ID	Solution	Effect
SP5: Citizen-centric solutions and co-creation along the governance chain / SP OWNER: MGS						
Online citizen participation	LY 5.1	360-degree Citizen participation: online and offline	Involving citizens in the co-design of the PCED	MUC 5.1	Citizen participation based on existing platforms: Consul (citizen participation, Dipas (planning), including VR/AR visualisation	Improve user acceptance, leverage synergies, foster social innovation
Energy savings from increased awareness and frugal behaviour	LY 5.2	Building Operating System (BOS) to manage new buildings	Optimising & reducing energy consumption	MUC 5.2	Refurbishment communities	Financial engagement of tenants
'Active citizenship' and commitments	LY 5.3	Workshop and digital tools (EcoLyo) to raise buildings' users awareness on energy consumption, use of lighting in office buildings, and preventing active cooling	Reducing electricity and heating consumption	MUC 5.3	District energy council including a charter	Citizen co-creation
				MUC 5.4	Improved PCED townscape through civic involvement	Improvement of quality of life
SP6: Urban developer for PCED as an umbrella solution / SP OWNER: SPL						
Urban orchestrator	LY 6.1	Orchestrating the PCED: a special-purpose public governance body	Ensuring long-term agility, fast-paced implementation and general interest	MUC 6.1	Special-purpose city mission to orchestrate and build a replication concept	Ensuring PCED performance and orchestration (including blueprint for future replication)
	LY 6.2	Setting up a monthly local council on positive clean energy district	Long-term monitoring, reorientation and continual improvement of the project, replication and scaling-up of best practices	MUC 6.2	New time and cost saving processes for serial retrofitting	Industrialisation of refurbishment

Table 2: Solutions Packages in Lyon and Munich

We present below a list of solutions that MCs can implement. Priorities will be established at the beginning of the project to select the most impactful ones.

Alba Iulia. The district is the City Centre: 200ha with 22,200 inhabitants and 11,203 workers. The City will test several SP in their district: **SP1:** open data platform with front-end input capabilities for citizens; district energy management systems; digital monitoring infrastructure; KPI Engine, **SP2:** new services and business models approach for energy communities; **SP3:** serial refurbishment; building energy management systems; new construction as NZEB; standard PV on roofs, self-consumption and storage in local and regional grid; **SP4:** charging hubs and stations for cars, e-vehicles and freight logistics, new lanes for bikes and cargo-bikes; charging stations for electric buses; redesigning public spaces with small street interventions.

EXPECTED RESULTS: at the end of the project, the city centre of Alba Iulia will be on a **pathway towards climate neutrality and energy resilience**. The heat energy demand will be supplied by **3 renewable heating systems** and the energy demand will be reduced by 70%. **7 electric renewable energy systems** will be implemented by 2028. Expected modal shares in 2028 will be 10-15% micro mobility, and 25-45% public transport. In total, **6km of bike lanes** will be created and 10,000 m² of streets will be pedestrianised. A **monitoring tool** will be developed.

Budapest. The district is in the Megyeri street 45 and surrounding area, in the 4th district of Budapest. The area is 33ha of which 282,259m² is green space. Main actions will cover a former school system, a church and an elderly care institution. Budapest will test: **SP3:** complex refurbishment of former school (4,500m²) for collective and social housing; PV installations on the roofs of the elderly care homes, of the former schools and the church, at Cemetery, at North-Pest Wastewater Treatment Plant (WWTP); green waste treatment (Cemetery, North-Pest WWTP) and biogas production; **SP4:** e-charging points for municipal fleets and public uses; redesigning and greening of public spaces with permeable pavements, bike and micro mobility storage; adaptive bus stops and e-mobility stations; **SP5:** healthy street concept for redesigning urban spaces through citizen co-creation, participatory budget for PCED solutions; community building, engaging wide-range of local citizens (elderly care, schools, future tenants); **SP6:** development of the Sustainable Urban Concept by integrating PCED design to urban planning documents.

EXPECTED RESULTS: at the end of ASCEND, the **share of electric consumption** covered by RES systems will **reach at least 30%**. There will be five storage and flexibility systems. The city will actively include its inhabitants in developing a PCED with the use of **participatory budgets** and **co-design of solutions**. The **Sustainable Urban development concept** will become the ‘norm’ in urban development processes in Budapest.

Charleroi. The district is a 200ha area, located in the Porte Ouest (West Gate). It is a former industrial brownfield area that is currently under re-urbanisation. The "Porte Ouest" Masterplan drawn up by Paolo Vigano & SWECO foresees a limitation of the place of the car. Charleroi will experiment the following SP: **SP1:** Digitisation, data management and monitoring to optimise energy flows and demand; **SP2:** study to create an energy community grouping together the present and future activities in the PCED area, identification of temporary and permanent marginal areas for PV installations to power the community; **SP3:** maximisation of each building PV production to supply energy community; connection of each building to the district heating and cooling network powered by waste heat; explore the possibility of optimising electrical storage in combination with its strategy to deploy electric vehicle charging points in the area; study on the potential of geothermal mining for inter-seasonal storage; **SP4:** promotion of soft mobility with new accesses, biking and pedestrian axes, development of shared e-vehicles in proximity to the city centre; **SP5:** continuous participatory process set-up in the masterplan framework; **SP6:** The intermunicipal company IGRETEC is responsible for the urban development of the area and will explore the lessons learnt regarding an “umbrella model” of managing urban development.

EXPECTED RESULTS: the heating network represents significant progress toward curbing GHG emissions in Europe, as it enables to limit the pollution from mine gas and reduces the use of other power sources for heating. **It is estimated that 8% of the GHG emissions in Europe are caused by mine gas** (whether it is from active or closed mines). Mines are spread around Europe meaning **this innovation could significantly impact the level of emissions of European countries**. In 2028, the district will have 217 951 m² of newly built buildings.

Porto. The district is Lordelo do Ouro (71ha) managed by the **EDP Porto (Porto Energy Agency)**, including one of the city's most wealthy parishes (Foz do Douro) and several social housing developments (in Lordelo do Ouro and Massarelos). Porto will test the following solution packages: **SP1:** digital ecosystem - use and improvement of the existing urban data platform -, monitoring infrastructure connected with the urban data platform, KPI Engine; **SP2:** Energy Community based on solar technologies (PV) including public and private entities, new services and business models for private and public entities. **SP3:** energy efficiency actions in municipal buildings with mixed interventions, PV generation on buildings' rooftops for self-consumption; PV surplus used to power the public e-mobility charging stations; **SP4:** fostering of e-mobility solutions with a focus on tenants, co-creation actions to rethink small interventions in public space. **SP5:** development of the “Bairros Positivos” initiative, promoting training and awareness-raising necessary for the vulnerable population to make the most of the added value of PCED; **SP6:** PCED replication strategy for other districts of Porto and other municipal buildings.

EXPECTED RESULTS: at the end of the project, the district will have **15 electric renewable energy systems** (1,940kWp) and **reduce CO₂ emissions** by 936t/year.

Prague. The district is Dolni Pocernice in its second phase of development, led by Prazska Developerska, prispevkova spolecnost (PDS). In 2028, the total area will be 13ha, of which 4ha green space and 30,000m² dwellings owned by PDS. Prague will experiment the following SP: **SP1:** Smart Neighbourhood Concept & Data gathering and management, integrated concept with the Urban data platform, identification and evaluation of exploitable data-intensive use cases on district level from the municipal perspective. **SP2:** Framework for integration of the housing into the Prague Renewable Energy Community (PSOE) and addresses the technological readiness, organisational management and ownership structure of the assets in the developed area; **SP3:** energy master plan and PED feasibility study for Dolni Pocernice including building energy standard definition - preference is given to passive solution decreasing the dependence of the users on sophisticated solutions -, central heating and cooling solution, seasonal storage, PV microgrid concept, parametric study of different renewable energy sources deployment based on hourly simulation of whole district (PV, heat pumps, CHP, storage). **SP4:** analysis of energy-related aspects of transport behaviour through participatory design. **SP5:** framing the target groups of tenants, defining model owner-tenant relation with regards to the different groups in the social mix covering energy behaviour, water consumption, aspects of transport behaviour. **SP6:** Investment and operation plan for the macro-level, Replication guideline for new and existing Prague districts (built on Energy Master Plan process and Smart Neighbourhood Concept).

EXPECTED RESULTS: Prague will deliver **i) Smart neighbourhood concept, ii) Energy Master Plan** including PCED and environmental sustainability concept, **iii) Energy community readiness concept. iv) Replication guidelines** for new and existing Prague districts. Heat demand will be reduced by 30% and electricity demand by 25%. All heat and electricity energy needs will be covered by renewable energy sources. 15,000 m² of streets will be pedestrianized.

Stockholm. District is Loudden. The city will bring its know-how in European PED projects (Cities4PEDs in Loudden Trans-PED in Hammarby Sjöstad) and organise workshops to exchange on those experiences with LHCs and MCs. In addition, STK will use the consortium's expertise to decide which potential energy systems (**SP1,2&3**) can contribute to Loudden district becoming a PCED. STK will be active in creating a city alliance in Sweden.

EXPECTED RESULTS: Bootstrap Loudden PCEDs completion, expand the approach to other districts in the city.

In each “Multiplier City” (MC) a local team will gather the different departments to follow the project and ensure a better integration not only of the solutions but also their integration in the metropolitan or city grid and the infrastructure. The feedback from the metropole level will be essential to design sustainable strategies in the long term and avoiding duplication. In summary, within ASCEND the six MCs will implement the following elements of the four solution packages to support “system integration”:

	Alba Iulia	Budapest Member of the Cities Mission	Charleroi	Porto Member of the Cities Mission	Prague	Stockholm Member of the Cities Mission
SP1 - Digital infrastructure and ICT tools to support flexible energy	District Energy Management Systems	PCED energy data platform	Management and optimisation of the energy	Monitoring of energy infrastructure	City Data platform	Digital infrastructure

systems and PCED.			flows  Associated with document	Ref. Ares(2022)8438279 - 06/12/2022		
SP2 - Deployment of energy communities and prosumers services.	Energy Communities	/	Energy Communities	Energy communities	Prague Renewable Energy Community (PSOE)	Energy Communities
SP3 - Deployment of energy-efficient buildings integrating RES and storage including frugal solutions.	NZEB, PV systems, self-consumption and storage	Biogas production and PV systems with storage and flexible systems	PV systems, mine gas with inter-seasonal storage	PV systems, self-consumption with production surplus used to charge EVs	Complementary use of PV systems, heat pumps, CHP and energy storage	Renewable energy systems and storage
SP4 - Decarbonized mobility/freight including frugal solutions (LHM).	EV charging stations	EV charging stations	Shared EV	EV fostering measures	/	/

1.2.6. National and international research and innovation programmes

The consortium is built on the lessons learned from H2020 projects. Three former Lighthouse cities, four Fellow cities and over half of the consortium have already collaborated within five completed (or still running) SCC01 projects and other European initiatives and programmes that enables our consortium to select effective and impactful solutions and guarantees sound management and delivery.

Project	Partner
H2020 GROWSMARTER 2015-2020	STK, PEN
H2020 REMOURBAN 2015-2020	CAR
H2020 SMARTER TOGETHER 2016-2021	SPL, GLY, HES, UP, ETC, LHM, SWM, MGS, TUM, SPC, TWE, AIT, ENC, USG, BLS, ODY
H2020 +CITYxCHANGE 2019-2024	AIM
H2020 ATELIER 2020-2025	BUD, CAR, CIV, PEN
H2020 POCITYF 2020-2025	AIT
H2020 SPARCS 2020-2025	CVUT, TWE, CIV
Scalable Cities, in collaboration w/SCM	SPL, TWE, AIT, CIV, BLS, ODY, ENC
Covenant of Mayors	ENC
NetZeroCities	AIT/CAR/ENC

Table 3: Involvement of partners in H2020 SCC01 projects

1.2.7. Interdisciplinary approach

The interdisciplinary project approach is leveraged in the definition of the SP where the overall assessment and appraisal of each SP is performed from several standpoints according to the Quintuple Helix innovation model: the process engineering, the business modelling, the financial strategy, the technical and digital assessment, the governmental, the environmental and social dimension. ASCEND has a multidisciplinary consortium covering the disciplines required by the Quintuple Helix: Engineering, Technology, Environment, Economic and Financial, Data and Computer and Social Science, Engineering, Technology, and Economic disciplines.

1.2.8. Integration of social sciences and humanities

ASCEND will mobilise and integrate social sciences and humanities as our SP heavily rely on interdisciplinary approach combining economics, sociology, and political science. We will use economics to assess bankability and cost-effectiveness. Specific and analytical KPIs and indexes will evaluate the financial impact of each of the six SP. ASCEND will include KPIs to evaluate the social impact and conduct a sustainability assessment in WP6, mobilising social sciences to assess PCEDs social acceptance/gender dimension, looking at behavioural change, energy communities' sociological implications, shift from consumers to prosumers and the relevance of the 'urban orchestrator' to implement long-lasting change. This entails studying and exploring two new governance models for local governance constricted to a district.

We will develop a holistic perspective on all 'urban' functions: mobility, housing, and active citizenship for women and gender minorities to reclaim their place in urban decision-making. We will build our approach using the Urbact report on Gender Equal Cities (March 2019), recommendations on gender mainstreaming by the Council of Europe, the OECD Gender Initiative, and Goal 5 of United Nations Sustainable Development Goals (UN SDGs).

Pillar 1: City and PCED governance As a volunteer signatory of the European Charter for Equality between Women and Men, the City of Munich has set-up goals and mandates for 2019 to 2021, today under evaluation. Lyon is a pioneer in France in the generalisation of the gender mainstreaming approach in public policymaking and the elaboration and monitoring of its entire budget. Two departments are combined in gender mainstreaming: gender equality and finance and public contracting.

Pillar 2: Public spaces Both PCEDs are implementing various participation formats addressing the needs of women in the neighbourhood, e.g. the topic of safety in the co-design of public space. Their goal is to design gender-sensitive public spaces to favour fair sharing and use.

Pillar 3: Mobility Women have a different mobility behaviour (a lower car use, higher amount of walking and using public transport). Both PCEDs will offer different transport modes focusing on enabling short distances, facilitating care work, and implementing measures such as wider footpaths and bike lanes. Attention to safety will also be included (public lighting, adequate design, use of close-circuit television). In Harthof and Confluence, all transport modes and new mobility concepts will be evaluated in terms of gender-sensitive aspects, such as their demand, costs, acceptance, satisfaction, and safety. Evaluation for each measure of the results will be incorporated into the mobility strategy and gender mainstreaming analysis.

Pillar 4: Housing SPL has developed an offer for a broad range of housing (fitting different income and social conditions) and ensures a variety of business spaces to improve local entrepreneurship and economic empowerment. A particular attention to low-income single mothers is addressed in the construction of a new housing building with the development of innovative social pricing of energy and the development of new services (vehicle to grid).

Pillar 5: Active citizenship In Munich, the "Participatory District Energy Council" implemented in Harthof should meet the requirements of a good cross-section of the residents and equal representation. In Confluence, the Local Council will ensure fair representativeness of gender diversity.

1.2.10. Open sciences practices

The open access to all scientific publications will be ensured with their submission in fully open access journals, in the Open Research Europe Platform or self-archiving in accessible repositories using European Commission (EC) service OpenAire and Google searchers. The project website will include these materials, updating along with the project in a freely available and easily accessible way. All scientific publications will be free of charge through online access to be reused by the scientific and technological community. Public deliverables also will be stored with the scientific publications in the long term in open access repositories such as Zenodo.

To ensure that high-quality research is disseminated, scientific publications will follow a peer-review process. Full open access journals that apply a peer-review process such as MDPI as Gold Open Access (Energy and Sustainability), ELSEVIER (Energy Conversion & Management, Renewable and Sustainable Energy Transition, Applied Energy) as Green Open Access and Open Research Europe will be considered by the project partners. To facilitate this commitment, project beneficiaries have already allocated a budget to publish Gold Open Access in reputable journals that require payment.

Finally, all the relevant actors working in the design, implementation, and evaluation of PCED along the project duration will be engaged and involved in the project to generate scientific results.

1.2.11. Data and research outputs management

The project will follow the FAIR Guiding Principles for scientific data management and stewardship. Data management will be organised according to the EC Guidelines on Open Access to Scientific Publications and Research Data in H2020. Before any disclosure of results and generated data, the protection of the project progress

must be secured. As some data will be associated with results that may have a commercial value or may have restrictions according to the General Data Protection Regulation (GDPR), they cannot be made accessible for verification and re-use in general. Relevant data necessary for the verification of results published in scientific journals will be made accessible on a case-by-case basis. The consortium will decide on the publication of data. Research data of public interest, such as scientific publications, will be made accessible through dedicated repositories. Project partners will be responsible for curating and preserving the data and selecting publications available with an “as soon as possible” criterion. Open Access route will be used. The treatment of data used to generate those publications will be outlined in a Data Management Plan (DMP) to be delivered as part of the project dissemination and exploitation plan.

The DMP will include information on (a) what data will be collected, processed and/or generated in the project; (b) what data and metadata standards will be adopted; (c) how the data will be handled and shared during the project; (d) what measures will be adopted to ensure data security and data privacy; (e) which data will be archived after the project and how. To assure proper Data Management, specific points to regulate ownership and access to key knowledge (Intellectual Property Rights, data etc.) will be included in the Consortium Agreement. Participants will also comply with the Regulation (EU) 2016/679 (2016) on the protection of natural persons concerning the processing of personal data and the free movement of such data, repealing Directive 95/46/EC (GDPR). To allow frictionless application of robust knowledge into strategies and solutions, ASCEND pursues an open information policy. A project website will serve as an information and knowledge sharing platform among project teams and external stakeholders to enable knowledge transfer as a prerequisite for successful cooperation during the project and beyond. This will include databases, research results, demonstrator projects, reports, papers. To facilitate enhanced visualisation of generated results, a flexible dashboard module will be integrated into the project website.

2.1. PROJECT'S PATHWAYS TOWARD IMPACT

2.1.1. Impacts on topic, work programme and destination

Our SPEED and SCALE strategy will contribute to the wider impacts and main objectives of the work programme, the Cities Mission, and the destination. Our main **targets** are **i) cities** (and thus citizens); **ii) the investor community** as financing will be necessary to SPEED and SCALE; **iii) enablers** represented by the EC smart cities initiatives mentioned in the call and beyond, such as EUCF, and our city alliances. **Impacts** are what we will achieve at the end of the project and what will be executed three, five and ten years after, thanks to the momentum created by the project. Our ambition is high. We will contribute to all topic outcomes, with a particular focus on:

Capacity-building among European cities, the 100 cities under the Cities Mission, to design and roll out their Climate City Contracts and reach climate neutrality by 2030. Sector integration, cross-sectorial collaboration, and synergies, supported by digital solutions, new value chains for increased energy and resource efficiency, better-performing grids, resilience in cities and surroundings/ urban areas, communities and infrastructures, and enhanced competitiveness of the European industry (Impact 1,2,3)

We will provide to the Cities Mission six SP easily scalable with the 100 cities engaged in the climate city contracts. Cities will have to build investment plans of 1B€ magnitude for the largest ones. Our impact will be to propose SP (especially for 1 and 6), tailored to any city size, accelerating the PCEDs deployment thanks to a better design and deployment, enhancing investment plan and saving time and money. Our PCED approach will be inclusive by design. The urban orchestrator and PCED platform and ecosystem are easy to transfer. The project offers to work on the entire district lifecycle from designing, implementing, and maintaining a PCED in the long run. It will provide the political steer from the different local governments, the agility and the capability to set up Public-Private Partnerships (PPPs) and use different levers, and the animation of a cluster of interested stakeholders. The PCED federating platform provides a few tools that accelerate the take up of SP by designing and modelling their impact (digital twins), automating the monitoring and opening space for outcome-driven innovations such as innovation challenges with citizens. Performances in terms of grid and resilience are obtained by steering a community of interested stakeholders. The approach is highly scalable and could be tailored to many urban situations as all the tools will be open source, using existing standards. APIs are foreseen in the PCED platform. Our approach is tailored to many urban situations. Capacity Building (WP4 & 5) will be considerably strengthened for cities.

We will provide a new approach to bridge the gap between cities and the financial community and optimise the design, deployment, and completion of financial plans. Cities face two challenges: bridging a funding gap without losing their decision power, spending the money in an accelerated way. We will provide evidence of decreasing investment risk in the long term and acceleration due to the city's rollout commitment. We will create a snowball effect toward investors and enable cities to level their playing field. ASCEND will decode the hidden benefits into monetary benefits to reduce the non-acceptance of the Investors. The overall and holistic assessment of the SP will ensure how the risk could be predicted, managed, and turned into benefits. (ref. WP5). We have set up an Advisory Board with financial actors¹¹. Actions towards the demand side (cities) and the supply side (investors) are foreseen in the project to strengthen the relations. The dedicated task and deliverable to the market-shaping will benefit from a rating system that will incorporate market expectations regarding social and political acceptance, avoiding administrative obstacles, economic and operations revenues, and achievement of technical, energetic, and financial fundamental indexes. (T5.5). Specific Vehicle Purpose (SPV)¹² will provide a validated Proof of concept of an Urban Orchestrator playing a decisive role in orchestrating and accelerating PCEDs deployment

Establishment/development of interoperable, scalable, and replicable digital innovative solutions across the Mission's cities, using shared standards and data models, open Application Programming Interfaces (APIs), and open-source software where relevant. (Impact 4)

¹¹ Indicative composition : Lin O'Grady (European Bank for Reconstruction and Development (EBRD), Pierre Aubouin, Alexander Thees Management Board on KfW Capital, Lada Strelnikova European Energy Efficiency Fund (EEEF); Paola Rusconi Deutsche Asset Management, Rainer Lovato, Council of Europe Development Bank, Francesca Bria CDP venture fund, Oliver Gajda EURO CROWD, Louise White EIB and 8 high-level cities representatives

¹² Specific Vehicle Purpose such as SPL

SP1 will be highly scalable as all the tools will be open source, using existing standards. A GitHub repository will be created to facilitate the wider adoption of cities and a continuous upgrade of the solutions. ASCEND will propose the KPI engine, City MCDA¹³ decision-making tools and the financial decision-making tool foreseen in WP5&6 to the Cities Mission. We will draft a communication and dissemination plan setting rules for data sharing with European common Data Spaces.

Increased synergies and complementarities with all the relevant EU policies, programmes and initiatives linked to cities, in particular the DIGITAL programme and the Covenant of Mayors for Climate and Energy (Impact 4).

Our objective is to reach more than 100 cities to propose SP to be rolled out and support a wave of PCEDs across Europe. Paramount will be the cooperation with the EU initiatives mentioned in the call, among them the Cities Mission, Scalable Cities, CoM¹⁴, SCM. We will be outcome-driven in each cooperation, prioritizing the most impactful actions. The project will be linked with the wider European HUB composed of Scalable Cities, NetZeroCities¹⁵ and the SCM, collaborating toward creating a single Investors Network. We will propose specific actions to the Cities Mission to support the community and work with projects granted under the HORIZON-CL5-2021-D3-02 through Scalable Cities and create a Task Group with the 6 ongoing PED projects to share approaches and benefit from their experience. We will **expand our outreach by using city alliances and national networks**. This will help to SPEED and SCALE our SP to small and very small cities by using the considerable network of the 8 cities represented in the project.

2.1.2. Requirements and potential barriers

Potential barriers & obstacles	Influence on expected outcomes /impacts	Mitigation measures (within and beyond the project)
Production costs increase for building, energy	High	High focus on sobriety, easy to use tools to develop sobriety alongside the project and beyond. Early tendering and broad distribution of the tasks advertised Work with the entire building production chain in the PCED board (developers craftsman PV Installers...)
Exploiting the maximum potential of PV on building roofs and generally maximising the energy efficiency of buildings	Medium	Enforcement of RES through regulatory approaches and negotiation specifications/guidelines requiring the buildings to be connected to the urban heating network, integrate a BEMS/BOS, to minimise the buildings' consumption
High investments for mobility change (fossil to E)	Medium	Continuous and personal consulting and new ideas in implementation and motivation
The inhabitants do not join the energy communities or do not buy new mobility schemes	Medium	Support and awareness-raising from the start. Emphasis on the economic interest for the public which makes the establishment of an energy community very advantageous in this energy crisis
Data collection is difficult, and API are delayed compromising services deployment	High	Cities will oblige DSO and SH operators to open the necessary data and will deal with local developers to get access to data
MCs face difficulties in developing solutions	High replication will be diminished	SP owners and the technical manager will help the MCs. Workshop will be organised to carefully manage the risk in the Scope of WP4 and 5. In case the difficulty comes from the lack of funding sources, the MCs will be helped in applying to several Private and Public Institutional Investors, and their prospectus will be fine-tuned.
Business models and financial aspects are not taken into consideration	Medium	The LHCs and MCs have close connections with their cities' decision-makers. The WP5 develop an easy-to-manage tool supporting the decision-making process when referred to innovative funding and financing schemes and public business models
Cross collaboration is not	High	We will deliver a collaboration roadmap 12 months after the project

¹³ MCDA : multi criteria decision analysis see WP5

¹⁴ ENC is the coordinator of the CoM; SPL the coordinator of Scalable Cities

¹⁵ ENC, AIT, CAR are partners in NetZeroCities

happening	and contracts with, in particular Cities Mission, Scalable cities, SCM and CoM on a set of actionable actions
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Table 4: Potential barriers and obstacles

2.1.3. Scale and significance

Reaching market scale in PCEDs deployment in LHCs, MCs, cities alliances	
Scale	<ul style="list-style-type: none"> Massive deployment of planned PCEDs in LHCs and MCs and through city alliances in eight countries
Significance	<ul style="list-style-type: none"> Eight PCEDs deployed by 2028 by the eight cities (two delivered by LHC, six bootstrapped) on 600ha (90ha for LHCs and 510ha for MCs), 25 PCEDs already launched by 2028 445.000 m2 of refurbished and new NZEB and 20MW of PV in the LHCs Reduction of CO2 emissions of 17.000 t/year by 2028 200 PCEDs under completion in cities by 2035 80 PCEDs under completion by 2035 cities reached through city alliances Reduction of CO2 emissions of 45 M t/year by 2038 due to extension to 270 new PCEDs Charleroi: innovative heating solution reusing mine gas usable by cities facing the same challenge across Europe and beyond with high impact
Making PCEDs a standard and routine in the urban development planning process	
Scale	<ul style="list-style-type: none"> Wide dissemination of the two- city model frameworks for PCEDs in LHC and MCs
Significance	<ul style="list-style-type: none"> 300 cities staff trained Deployment of SP at city scale and particularly SP1&6 in LHCs and MCs across city alliances
Accelerating PCEDs deployment by a better design and deployment, enhancing cities investment plan impact	
Scale	<ul style="list-style-type: none"> Deployment of PCEDs in LHCs and MCs and beyond
Significance	<ul style="list-style-type: none"> Total investment (public and private) in the LHCs of 752 M€ by 2028. Foreseen total investment for reaching 200 PCEDs by 2035 are up to 50B€¹⁶ in the 8 cities. Lessons learned by the project will help cities to better design and deploy the PCEDs, enhancing the soundness and efficiency of financial plans and accelerating PCEDs delivery Deployment of 2 innovative funding disposal strategies for the LHCs for the scalability and replicability, by triggering at least 1/15 ratio (1 € public/15€ triggered) Deployment of 5 innovative funding disposal strategies for the MCs for replication by triggering at least 1/20 ratio (1 € public/20€ triggered)
Creating energy communities for stakeholders to be prosumers & enabling active citizenship	
Scale	<ul style="list-style-type: none"> Deployment of energy communities in LHCs and MCs and city alliances
Significance	<ul style="list-style-type: none"> 50 energy communities covering 2M inhabitants by 2030 with massive deployment of prosumers and energy community in the 7 cities Take up of energy marketplace in the 8 cities Reduction in energy poverty and social tariffs for PCED inhabitants
Achieving high impact for cross-collaboration with the Cities Mission	
Scale	<ul style="list-style-type: none"> Significant contributions to the Cities Mission Work programme by providing useful, usable, scalable SP to significantly increase PCEDs deployment in Europe
Significance	<ul style="list-style-type: none"> 100 cities reached with six SP disseminated 2028 through cooperation with Cities Mission, COM, Scalable Cities and SCM, which can be translated into 100 additional PCEDs by 2035 15 dissemination workshops in European regions GitHub repository used by 100 Climate-neutral cities, Scalable Cities in partnership with MIMs LivingInEU

Table 5: Scale and significance of solutions

2.2. MEASURES TO MAXIMISE IMPACT - DISSEMINATION, EXPLOITATION AND COMMUNICATION (D/E/C)

¹⁶ Estimation from Cities in the cost calculation. Most of the spending concerns energy expenses for reaching 200 PCEDs

Goals of ASCEND on D/E/C measures are: **Amplify (A)** impacts and the reach of the communication through the multiplier effect of networks; **Share (S)** knowledge from projects for capacity building into LHCs, MCs; **Collaborate (C)** with other initiatives to enrich solutions and foster replication; **Exploit (E)** results by building up on their input and insight to amplify them; **Navigate (N)** complex data sources through visualisations built on partner input; **Disseminate (D)** to them results of LHC, MCs and/or recommendations following the final results.

2.2.1. Communication strategy

ASCEND will engage in *dissemination, communication and exploitation activities* as defined in WP7 and WP8 to maximise impact on several levels with the key objective to empower cities across Europe to accelerate their transition; engage them in climate action through the built and replication of positive energy districts and use participatory mechanisms to include citizens and stakeholders into decision-making so that they speed up the progress of climate neutrality in their cities. All communication activities will be a part of a larger *collaboration, communication and dissemination workflow* helping ASCEND to *disseminate results, engage with stakeholders, participate in local outreach, and organise collaborative activities on EU, regional and local, city levels*.

Communication within ASCEND will always be on three levels interacting and sharing information together through the communication framework (T8.1) considering target audiences and their language:

- **Project level (dissemination and knowledge sharing):** internal and external communication within the project, LHC, MC and close project stakeholders, involving the enlarged networks for better dissemination and knowledge sharing.
- **Local (innovation and amplification) city levels:** local citizens, local SMEs and start-ups, local elected representatives, local policy makers and practitioners, local researchers, and academia.
- **EU level (collaboration and knowledge exchange):** EU representatives and policy makers, EU projects and initiatives, research, and academia. We count here also the dissemination reach to EU smart cities initiatives and projects; associations of cities as listed in T7.4.

ASCEND will employ a targeted approach to communication, as described in the table below, with relevant audiences through persona analysis and a dedicated stakeholder programme through its network and collaborative exchanges to generate **global reach, local engagement, and geographical balance**.

Audience	Communication, Engagement and Dissemination Strategy and Activities
Lighthouse cities Multipliers cities	Goals: i) Provide partial or final information on the implementation of the PCED; ii) Share with them the knowledge obtained from other projects and initiatives for informed decision making; iii) Provide them with tools for knowledge expansion, capacity building, and replication potentialities for further implementation and replication. Examples: political and technical experts in MCs, urban planners, solution providers etc.
	All cities (LHC & MC) will be targeted on local levels, with the potential for localisation and decentralisation of communication activities.
EU, national, policy makers	Goal: Create policy frameworks that will help implement results and recommendations from the project. Examples: policy experts, contributors, ministries shaping policies, EU policymakers
City-led initiatives, projects	Goal: i) Receive full access to knowledge in the Platform and additional information from solutions and guidance within ASCEND; ii) Provide active feedback and data into the Platform and WP2-3-7. Examples: City Alliances on regional levels and additional cities.
Local National Stakeholders	Goal: Provide for a quicker scaling up effect thanks to knowledge sharing. Local exchanges and collaboration in LHC and MC consortia will focus on local, national levels and their unifying elements. Examples: national or regional networks of cities/municipalities; national/regional associations of energy professionals & their events etc.
Industry and SMEs	Goals: i) Develop solutions, specifically locally in LHC; ii) Replicate through MCs and beyond; iii) Contribute to knowledge sharing and scaling up. Examples: companies, SMEs and start-ups in LHCs, matched up solution providers with MC for replication.
Research / Academia	Goals: i) Confirm and further amplify the results of the scientific work within ASCEND; ii) Contribute to the dissemination of scientific publications through their networks. Examples:

	research institutes, ERA-Nets, Academic institutions, etc.
Citizens	Goals: i) Support the implementation of solutions in their districts: ii) Influence policy makers when deciding about these solutions. Citizen engagement on city level is hence paramount for the implementation and scaling up. Examples: citizen initiatives active in the space, citizen organisations, interested citizens, inhabitants of LHC, MCs.
EU initiatives	Goals: Enlarge our target and stakeholder group as key to EU-level stakeholder outreach and dissemination, and city or regional levels (city alliances). ASCEND will foster specific, close collaborative partnerships through WP7. Examples: over 3000 partner cities and municipalities, regions, centres, organisational members, finance, and private sector stakeholders.
Media	Goals: Help us disseminate further, specifically on local levels, as they are a specific multiplier that is usually not a target audience, their own audience is. Examples: specialized media (climate, smart cities, technology and digital, mobility), local media of cities.

Table 6: Target audiences and communication activities

As outlined in WP8, we will use two types of channels: **own ASCEND communication channels** (T8.3) and **stakeholder channels** (T8.2) to drive the reach:

- **Platform.** It will be a key driver for all data and content collection and dissemination towards audiences. It will serve as: **i)** Main communication and dissemination channel as gateway to the information, services and ASCEND community; **ii)** Key engagement & collaboration channel for all stakeholders & partners of City Alliances; **iii)** Key repository, visualisation tool and a collection tool for all datasets; **iv)** Key marketplace, enabling the connections between cities, solution providers and financiers; **v)** “One-stop-shop visualisations” built on content from other platforms and projects (SCM, NetZeroCities, European Data Spaces etc.).
- **Social media.** ASCEND will use social media channels to reach and interact with target audiences on platforms such as LinkedIn and Twitter, potentially FB or IG, making full use of the multiplication effect of the partner's accounts. We will select each platform at the beginning of the project based on the target user analysis and needs, with the input of the LHCs & MCs and other partners, considering regional differences in usage as well as language differentiation.
- **Media.** ASCEND will seek interaction and presence in media, providing articles and news coverage on the project, to convey project activities and results through wider and more attractive narratives. Potential channels that will be targeted in this regard are the magazines (business, research and science, industry magazines), and mainstream media.
- **Events.** We will organise ASCEND General Assemblies, each time in a different city, focused on exchanges, collaborative activities, and knowledge sharing and capacity building of our cities. We foresee actively participating in events and workshops to collaborate with other initiatives or projects to gain more insight and knowledge, and to disseminate its own results and achievements.
- **Webinars.** To support the stakeholder engagement activities and city exchanges, ASCEND will organise workshops (online or offline) for local stakeholder outreach and involvement with the aim of replication. As needed, they will be organised on the local levels for languages.
- **Scientific publications.** Project results will be published in scientific journals, submitted to professional conferences and seminars to engage the scientific community in further research and help take-up of solutions.

Our Comms Strategy will be fuelled and updated by online & offline KPIs. Our online tools will have proprietary monitoring and evaluation tools to track the progress of KPIs, reach of targeted audiences (analysis of web traffic, social media insights, events and workshop statistics); we will equally use qualitative KPIs (surveys). We have the following indicators: **i) Platform.** 1000 unique visitors/month; > 200 views /downloads per service; **ii) Infographics:** 10 produced; **iii) Videos:** >80 views/video; **iv) Campaigns:** >10 campaigns with 10 000 impressions/ post; **v) Social networks:** > 500 followers on Twitter, LinkedIn; **vi) Interactive newsletters:** 12 / year, >500 subscribers; min. opening rate 20%; **vii) Workshops:** 10 workshops (>50 participants); 10 collaborative webinars (> 50 participants); **viii) General Assemblies:** 1 /year; > 150 participants.

2.2.2. Exploitation plan

The project will set up an innovation management team with key partners, led by BLS, responsible for all innovation and exploitation tasks: IP management, market forecast and analysis, risk management, potential Plan of Use for Dissemination of the Foreground (PUDF).

The focus will be on the practical conditions of exploiting innovation models for procurement, financing, market and revenue creation and citizen engagement and working on concrete exploitation plans with business and research partners.

The Innovation Team will meet regularly to monitor the exploitation strategy. Key results of the project are the SP and the PCED model. They will be exploited in the LHCs, MCs (WP4) and city alliances (WP7) to ensure a massive uptake: 280 PCEDs, 50 Energy Communities reaching 2M inhabitants and six SP mainstreamed by 2035. This will require a total of 50B€ investment by 2035 with an investment plan we will help to optimise through lessons learned and innovative funding schemes enabling cities to bridge the financial gap.

A second channel for exploitation will be through European Smart cities initiatives, allowing us to propose a wider replication reaching 100 cities and leveraging at least 100 PCEDs by 2030. Both targets (city alliances and Cities Mission) as the city alliances will allow us to reach small cities or cities that are not familiar with European projects.

Exploitation channels will include licensing, direct commercialization, patents, standardisation, policy implementation, and publications for scientific applications. CIV will exploit the City MCDA financial decision-making tool through the community portal Square, operated by DKSR. USG will develop a modular business and public model toolbox for PCEDs that can be commercially exploited¹⁷.

DKSR will use the results to build a GitHub repository for Climate Neutral and Smart cities and offer energy-community solutions on a technological and consultancy basis. AIT and CAR will exploit knowledge acquired through publications in conferences and journals, scientific and popular. TWE will build on the GitHub repository and European data spaces to build a visualisation platform for climate-neutral cities to improve decision-making or implementation. Besides exploiting the results for journal and conference publications and capacity building packages around PCEDs planning and deployment, AIT and DKSR will work on exploiting monitoring tools for the supervision of energy flows, Demand Side Management (DSM) solutions and new prosumer services within districts. The project results in modelling tools and use cases will be further used to advance future decarbonisation strategies of LHCs, MCs, and beyond.

The KPI Engine aims at providing a generalised solution for automatic urban indicator provisioning. Nowadays, widely available urban data are based on standardised semantic data models (INSPIRE, CityGML). Urban indicators, in contrast, are not. TUM contributes to the project with an existing General Indicator Model (GIM), allowing domain specialists to express indicators using a model-driven approach. This facilitates the linkage of concrete indicators to urban data defined by standardised data models for cities. The GIM is modelled in a graphical notation usable and understandable both by domain specialists and data specialists. Linking this approach to the urban monitoring and urban data platforms makes indicators an automatic and less error-prone process. The KPI Engine will first be applied and evaluated in Munich, then rolled out to all project cities. In parallel, standardisation of the GIM will be put forward to OGC, in which TUM has a leading role in the City GML Working Group. Other solutions, such as the digital twins and digital tools will be standardised to ease replication and uptake.

2.2.3. Strategy for the management of intellectual property

The Consortium Agreement (CA) will define the Intellectual Property rights (IPR) and management within the project and monitored through T1.4. IPR have been discussed between partners. No particular issue has been found blocking the project implementation. The background of each technological partner has been identified. Before beginning ASCEND, the results of this background will be studied to exploit the previous results if needed. Exploitation rights will be granted for free during the project and without infringement of the CA. The side ground concerns all the developments that the partners will do while the project is running but on solutions unrelated to the project. It will be strictly separated from the rest of the IPR. **The foreground is the project's main concern.** It includes all the IP that will be developed during the project by each partner and in cooperation. It will be identified as the project goes by the Innovation Manager. Basic guidelines on procedures will be discussed and fed in the Grant Agreement. In any case, reaching agreement will be of utmost importance when it comes to the possibility to exploit the solutions. IPR strategy and procedures will be developed accordingly to the basic principles in the Annotated Model Grant Agreement (art.16) and the CA General Principles. Based on the assessment of the

¹⁷ It will be a pattern card set to help cities design and develop appropriate business-and-public models transforming districts / cities

background of the consortium partners and monitoring of the partners' potential contribution to new IP generation, an IP protection strategy will be elaborated within WP1. While being instrumental for IP management, this strategy will be a relevant input for the exploitation action plan.

SPECIFIC NEEDS	D & E & C MEASURES	TARGETS
<p><i>What are the specific needs that triggered this project?</i></p> <p>Cities have pledged to be climate neutral by 2030. The challenge requires to SPEED and SCALE PCEDs in cities and across Europe. Reusing the accumulated knowledge, not reinventing the wheels, focusing on acceleration, and spreading useful, usable, and scalable solutions is essential.</p> <p>The 8 cities are well advanced in terms of PCEDs and wish to take them to another level in Europe. They will use the PCEDs as a trigger for their climate neutral policies and replicate them faster thanks to the momentum created in the city administration and ecosystem.</p>	<p><i>What dissemination, exploitation and communication measures will you apply to the results?</i></p> <p>The PCED consists in proposing 6 Solution Packages that are tailored and scalable for cities and amplifying the PCEDs deployment in the 8 cities during the project and not at the end as usual. MCs will experiment with catalysts measures to bootstrap their PCEDs. LHCs and MCs will develop a new wave of PCEDs development using the project momentum to launch new ones. City alliances in eight countries, will be used to disseminate our Solution Packages to a wider audience, particularly the small cities sharing the same regulatory environment. In France, the public developer association, gathering similar urban developers than SPL will be mobilised. Collaboration with Cities Mission, CoM, Scalable Cities, Smart Cities Marketplace and other relevant initiatives will be used to trigger a second wave of PCEDs across Europe.</p> <p>An exploitation strategy is foreseen and led by the innovation manager. It will ensure the proper coordination between partners to replicate and exploit the project's key results. It will closely link with WP4 (amplifying PCEDs), WP5 (scaling SP) and WP7 (cross-collaboration) and WP8/Communication Dissemination.</p>	<p><i>Who will use or further up-take the results of the project? Who will benefit from the results of the project?</i></p> <ul style="list-style-type: none"> ● City administrations; in house city corporations, local agencies ● European Climate Neutral and smart cities initiatives ● Local ecosystems involving the whole value chain from designing to building and maintaining PCEDs performance in the long run ● Citizens and local governance ● Investors

Table 7: Impact: Needs, Targets and Measures

EXPECTED RESULTS	OUTCOMES	
<p><i>What do you expect to generate by the end of the project?</i></p> <ul style="list-style-type: none"> ● 2 large scale PCEDs fully delivered, 25 planned and started by 2028 in LHCs and MCs, ● 6 SP validated by the market including innovation in governance -SP6 Urban orchestrator) and PCEDs data platform/Ecosystems implemented in the 8 cities and shared with more cities) through our PDEC ● Repository of solutions in GitHub ● Investment plans in the cities within innovative financial schemes generated by the SP implementation ● KPII engine, innovative monitoring methodology to support PCED implementation ● City MCDA Tool 	<p><i>What change do you expect to see after successful dissemination and exploitation of project results to the target group(s)?</i></p> <p>We expect to significantly impact the market by making PCED a routine in city administration and providing Solution packages fully scalable, whatever the city size and at low cost. Our pool of SP will allow a better design of PCEDs, accelerating their deployment and enhancing the investment plans.</p> <p>Outcomes should cover the PCEDs performance in the long run, from design to maintenance, which is not the case now. We expect to see the creation of two news waves of PCEDs in Europe, built on using at scale our SP. PCEDs wave in our cities and city alliances targets are 25 launched PCEDs by 2028 in all cities and 270 deployed by 2035 in LHCs, MCs and cities from our city alliances. Wave 2 occurs through cooperation with Cities Mission, COM, Scalable Cities and Smart City Marketplace, to reach 100 additional cities by 2030 and potentially 100 additional PCEDs. Investment needs will peak at an order of billions €. Our project should enable better and more efficient financial programming.</p> <p>We expect to see a growth in news local jobs generated by the various operations needed to design, build and maintain a PCED.</p>	<p><i>What are the expected wider scientific, economic and societal effects of the project contributing to the expected impacts outlined in the respective destination in the work programme?</i></p> <p>ASCEND will deliver capacity building directed to small, medium or large cities. It will level the playing field in terms of competencies, execution capabilities for cities administrations. Our tools will all be open access through a GitHub repository or other means. ASCEND PCED model is highly scalable, governance and citizen-centred and will be an asset to strengthen the European smart city value chain compared to technology-driven approach we can see in Asia Middle East and USA</p>

Table 8: Impact: Expected results and key outcome

3. QUALITY AND EFFICIENCY OF THE IMPLEMENTATION

3.1. WORKPLAN AND RESOURCES

3.1.1. Overview of general workplan and Gantt Chart

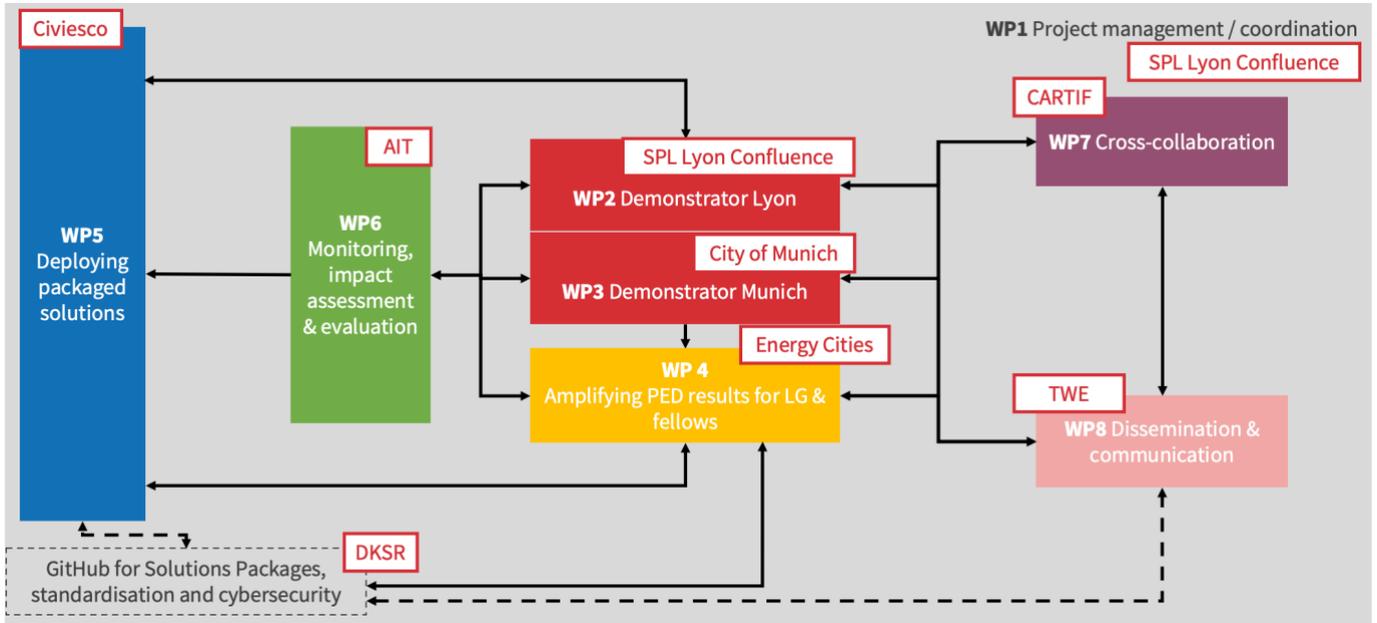


Figure 5: Global WPs overview

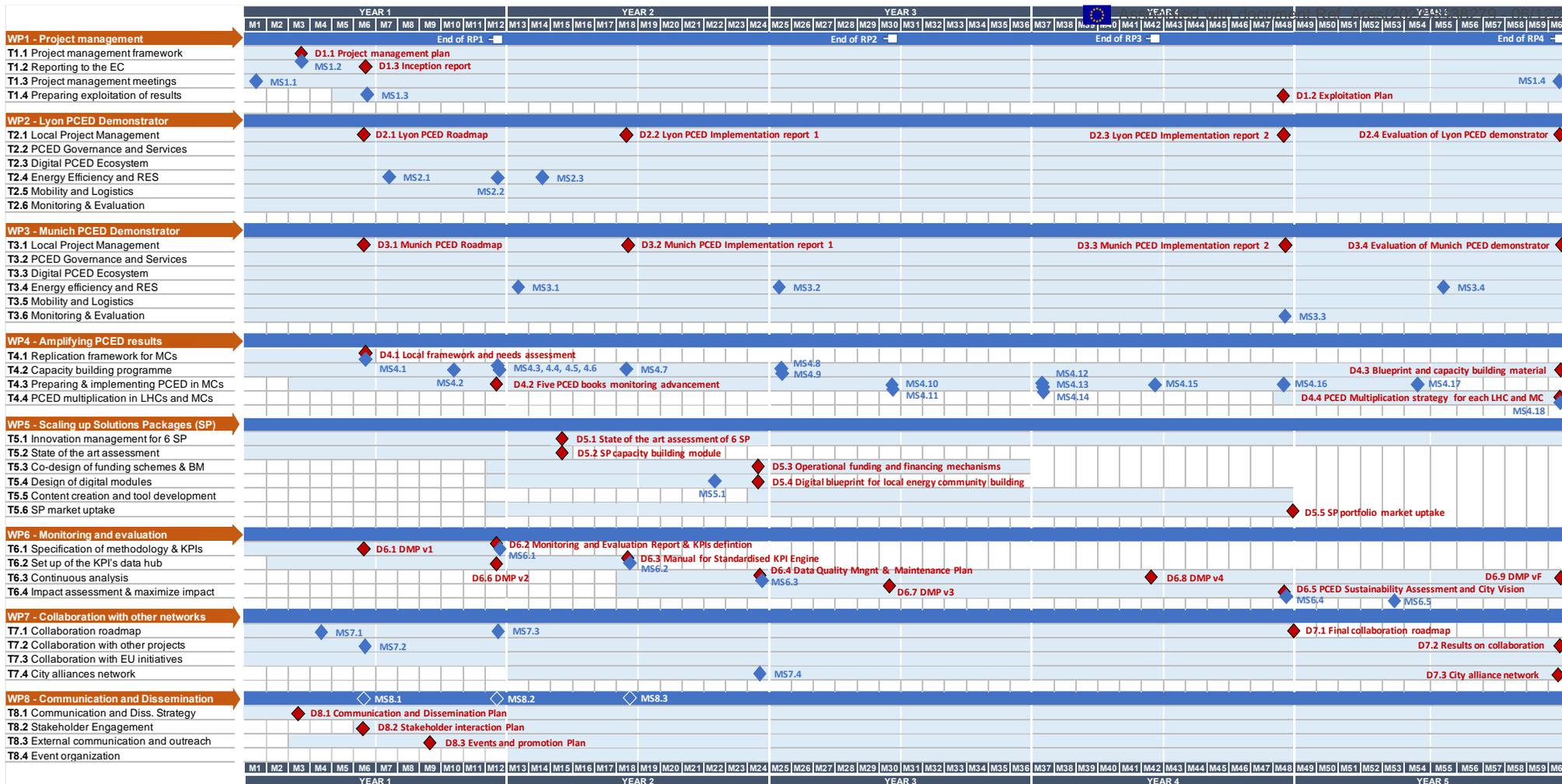
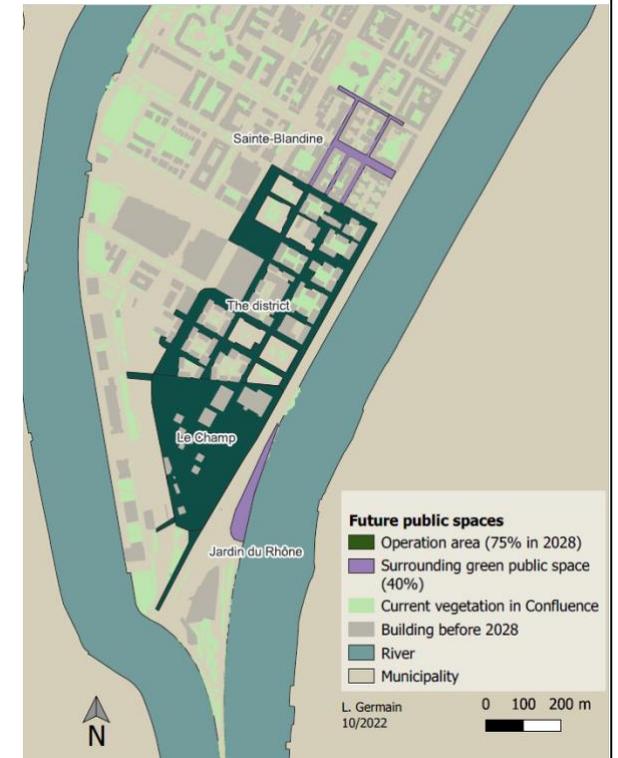


Figure 6: GANTT Chart of the project

The beneficiaries must base their contracts/subcontracts according to the principles for best value for money and absence of any conflict of interest (according to Articles 6.2 and 9.3 of GA). Beneficiaries that are ‘contracting authorities’ or ‘contracting entities’ (within the meaning of the EU public procurement Directives 2004/18/EC and 2004/17/EC or any EU legislation that replaces these Directives) must moreover comply with the applicable national law on public procurement.

Table 3.1g: ‘Subcontracting costs’ items

Partners	Cost (€)	Description of subcontracted tasks and justification
	100 000 €	<p>Studies for super energy-efficient buildings (22-26 model) <i>[related to LY3.3 Super-efficient buildings]</i></p> <p>WP 2: The 22-26 operation, called B1-C1N, is ongoing. This operation will develop a new energy strategy enabling us to pass beyond the state of the art. We aim to replicate and adapt the best solutions to raise the level of efficiency of the next projects to build super efficient buildings. To achieve this target, we will subcontract energy consultants with regards to the EU rules.</p> <p>The energy consultants will assess the B1-C1N project from the project studies, during the construction phase, and two years after the commissioning (70k€). In parallel and in relation with this assessment, we will also carry out studies and guidelines for the new building blocks that will integrate the best technical specifications for replication at the district level (30k€).</p>
01/SPL	500 000 €	<p>Design and works in Public Spaces for a "no-car" district <i>[related to LY4.2 Smart Lighting of public spaces, LY4.1 Significant increase of green spaces in public area, LY4.3 Pedestrianisation, LY4.10 Soil waste and construction waste fertilised locally for vegetal soil, LY4.4 No parking spots for combustion-powered cars]</i></p> <p>WP 2: Design and works in Public Spaces for a "no-car" district. Construction works company and landscapers are still to be selected.</p> <p>SPL Lyon Confluence oversees the public spaces’ development in the district. In order to reduce GHG emissions and energy consumption from mobility by implementing a car-free district, and to increase carbon sinks (by using fertile soils and high-density green spaces) for a clean energy district. An internal study conducted by the SPL highlighted strong links between the existing public spaces in Confluence and the ones to be created.</p> <p>Therefore, to achieve PCED, SPL Lyon Confluence will work on two different kinds of public green spaces:</p> <ul style="list-style-type: none"> - “Operation area”: it refers to new green public spaces to be created. Thanks to ASCEND, by 2028 some 105,000 m² of public spaces (equivalent to 75% of the total public space area) will be redesigned, adapted to create a car-free environment, intensively greened by increasing the density of vegetation in public spaces that can act as carbon sinks, by fertilising on-site construction and upcycled soil waste to produce local vegetal soil. The additional costs for redesign and construction works are +25€/m². - “Surrounding area”: it refers to existing public spaces. Thanks to ASCEND, by 2028 some 10,800 m² (equivalent to 40% of what is to be built within the overall Lyon Confluence project) will be totally rethought, constructed and adapted to become car-free areas: greener public spaces, pedestrianization, use of local vegetal soil produced from fertilised on-site construction and upcycled soil waste. The costs for the design and the construction of those surrounding areas are 220€/m². <p>Working on existing and new public spaces will enhance the city capacity to deploy massively low carbon public spaces at the metropolis level.</p>



The costs are summarised in the table below:

Public spaces	Surface area of additional green public spaces	% produced by 2028 (end of ASCEND)	Cost per m ²	Total cost (according to the % in 2028)	Total
Operation area	141,000 m ²	75% (105,000 m ²)	+25€/m ²	2,625,000€	5,001,000€
Surroundings	27,000m ²	40% (10,800m ²)	220€/m ²	2,376,000€	

The €500k in grants, corresponding to 10% of the €5,001,000 detailed above, will provide the impetus for the massive deployment of additional green spaces.

Total	150 000 €	<p>Digital infrastructure upgrading for monitoring energy performance of super efficient buildings <i>[related to LY5.2 Building Operating System (BOS) to manage new buildings, LY1.1 Use and extend existing urban platforms , LY1.3 Digital monitoring infrastructure, LY1.4 Developing digital infrastructure and interface for energy communities]</i></p> <p>WP 2: Additional smart meters (about 100 smart meters/building) and communication infrastructures (including dedicated server) are necessary to fully monitor the energy performance of around 15 super efficient buildings (2 building blocks) that will be built within ASCEND. The costs are difficult to estimate precisely so far, as one meter measuring the temperature is cheaper than one measuring power of water consumption. These will depend on the requirements. This infrastructure will be supplied and managed by Energy Monitoring & management companies still to be selected.</p>
	150 000 €	<p>Development of Application Programming Interfaces (APIs)/Digital tools to support the collection and the use of data, to implement services <i>[related to LY2.4 social pricing, LY3.7 V2X, LY4.5 Deployment of smart charging points in undergrounds, LY4.6 New uses of undergrounds for alternative mobility services, LY4.8 Implementing "decarbonised-logistics hub", LY1.4 Developing digital infrastructure and interface for energy communities]</i></p> <p>WP 2: In order to collect the data measured by smart meters, a specific API should be developed by a dedicated IT company to be selected.</p>
	900 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
02/GLY	200 000 €	EcoLyo: Development of a digital tool for citizens (energy consumption, CO2 emissions, challenges, nudges) [related to LY5.1 360-degree Citizen participation: online and offline, LY5.3 Workshop and digital tools (EcoLyo), LY1.3 Digital monitoring infrastructure] WP 2 & WP 5: This tool must be improved, completed, developed and deployed according to the feedback from users and the dissemination and animation strategy that will be defined during the project. The technical development of the tool will rely on an external service provider specialising in agile development. It brings together profiles such as developers, project managers, scrum masters, etc. This service provider is not known, as it will be chosen as part of a public contract with a competitive bidding process. Lyon Metropolis already has a framework agreement allowing it to put four pre-selected service providers out to tender. The deployment of the tool will require the support of a communication agency and distribution relays which have not yet been chosen. The profiles required are communication officers, marketers and designers.
	200 000 €	“Guichet des consommations” : development of a digital tool for monitoring energy consumption, intended for social landlords, local authorities, energy displayers... [related to LY1.1 Use and extend existing urban platforms, LY1.3 Digital monitoring infrastructure] WP 2 & WP 5: This tool requires developments for data access (electricity, gas, district heating), for the construction of a dashboard to manage consents and access rights to data, to visualise and retrieve data, but also for the production of analyses and reports providing added value to the service users. These developments will rely in part on the Lyon Metropolis' internal teams, but also on a service provider who has not yet been designated. It will also bring together project managers and developers.
Total	400 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
03/LYS	20 000 €	Consulting: set up employees driven actions targeting the reduction of office buildings' lighting power consumption [related to LY5.1 360-degree Citizen participation: online and offline, LY6.2 Setting up a monthly local council on positive clean energy district] WP 2 & WP 5: Organisation of challenges, nudges, public meeting for a 360-degree citizen participation (online & offline) + setting up a monthly local council on positive clean energy districts
	50 000 €	Technical studies on smart charging point for waste trucks, self consumption of PV production, V2G [related to LY4.7 Local photovoltaic production to power EV, LY2.3 Collective self-consumption operations] WP 2: Technical studies for deploying collective self consumption operations and powering City of Lyon's waste trucks by local renewable energy. A design/engineering office is to be selected.
	15 000 €	Studies on smart public lightings [related to LY4.1 Significant increase of green spaces in public area, Smart Lighting of public spaces] WP 2: In order to reduce the overall energy consumption of the district, a work should be done on lighting. A right balance needs to be found between having enough light to keep enough visibility during the night and ensure security, and reduce the energy consumption and light pollution. In order to find the right balance, Studies on smart public lightings will be carried out by a design/engineering office to be selected.
Total	85 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
05/UP	130 000 €	Digital ecosystem [related to LY2.3 Collective self-consumption operations, LY2.4 Developing a tool for social pricing of energy self-consumption, LY1.1 Use and extend existing urban platforms, LY1.4 Developing digital infrastructure and interface for energy communities] WP 2: Digital infrastructure and ICT tools to support flexible energy system and PCED will rely on the implementation, adaptation, and deployment of an urban data platform. Urban Practices subcontracting costs will consist of software Licensing fees and technical support from the selected platform vendor.

Partner	Cost (€)	Description of subcontracted tasks and justification
07/LHM	50 000 €	<p>Innovation IT solutions for digital twin and urban data platform <i>[related to MUC1.1 Advanced digital twin for PCED replication planning, MUC1.2 Demand and energy flows optimisation, MUC 1.3 Digital monitoring and standardised IoT and sensing platform, MUC 1.4 KPI Engine, MUC1.5 Digital ecosystem, MUC5.1 Citizen participation based on existing platforms]</i></p> <p>WP 3: Various existing digital platforms are used as part of the project and form a sound and functionally rich basis for various fields of application. Special expert knowledge is required to expand this ecosystem of digital platforms and to ensure it can deal with a number of complex technical measures proposed in the ASCEND project. The digital platforms are to be extended to cover the following functional blocks: special algorithms and supplementary information for data preparation; aggregation/anonymization of GDPR compliant information; integration of special sensor systems and their data in the context of IoT as well as the provision of monitoring information.</p> <p>In addition, the participation of the urban society is an important element of the project in order to provide target group-specific information for the required acceptance. Here, the support of experts and the necessary expansion of the platforms is planned to ensure the open, generalized expansion of the existing open-source software systems.</p>
	15 000 €	<p>Evaluation of Occupancy of Parking Spaces <i>[related to MUC4.1 Redesigning and greening urban space]</i></p> <p>WP 3, Task 3.5: Conduct 2 surveys (7.500 € per survey) on parking occupancy and parking duration in public space and on private property, including type of vehicle (electric vehicle, sharing, SUV, bicycle...) before and after interventions on mobility for the project area Harthof.</p>
	15 000 €	<p>Roadlytics to collect, analyse and display traffic and parking data <i>[related to MUC4.6 Decarbonized last mile waste optimisation]</i></p> <p>WP 3, Task 3.5: Data collection and analysis by equipping logistics providers with specific devices to record the time and place of loading activities and evaluating the data in a data dashboard as basis for optimization and for evaluating the results (project area Harthof).</p>
	65 000 €	<p>Monitoring and research surveys <i>[related to MUC 1.3 Digital monitoring and standardised IoT and sensing platform, MUC 1.4 KPI Engine]</i></p> <p>WP 3: Research surveys and results will be collected for Munich and the project area, as well as the measures used. In particular, the transferability to other Munich neighborhoods will be elaborated. Corresponding results can then be transferred to other cities and regions.</p> <p>The cost estimation is based on experience from conducting similar studies.</p>
Total	145 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
7.2/MGS	40 000 €	<p>Support in setting up the district energy council - moderation, engagement, co-creation (WP 3): <i>[related to MUC2.1 Energy community, MUC5.3 District energy council including a charter]</i></p>
	120 000 €	<p>Monitoring and data acquisition (WP 3): <i>[related to MUC1.2 Demand and energy flows optimisation, MUC 1.3 Digital monitoring and standardised IoT and sensing platform]</i></p> <p><u>Cost estimation:</u> gateways (2.500€) + 3 x heat meter per building at 500 € + 10 x temperature and humidity sensors per building at 150 € + installation in ca. 40 buildings + acquisition + storage of the monitored data (7.500€)</p>
Total	160 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
7.3/GWG	20 000 €	<p>Evaluation and survey (WP 3): <i>[related to MUC4.3 e-Car sharing with a focus on tenants, MUC4.4 Innovative charging]</i></p> <ul style="list-style-type: none"> - 2 surveys of citizens before refurbishment and after refurbishment about comfort, mobility, energy costs, etc. - evaluation of the answers to improve the project - 10.000 € per survey (set up, realisation and evaluation)

Partner	Cost (€)	Description of subcontracted tasks and justification
18/SRV	30 000 €	<p>Subcontracting services for citizen awareness and engagement by promoting communication actions (eg. Workshops, training sessions, etc.)</p> <p>This budget will be used to develop capacity building programs for citizens (WP4 - Task 4.3) - around 23 500€ - and outreach activities to selected target groups (WP8, Task 8.3) - around 6500€.</p>

Partner	Cost (€)	Description of subcontracted tasks and justification
22/PDS	60 000 €	<p>Architectural studies and construction documentation, extra costs to implement the PCED concept (2x 30 000 EUR)</p> <p>It is foreseen that in Task 4.3 Preparing & implementing PCED in MC, the local consortium (PDS, OICT, CVUT) generates new technical requirements to be implemented in the Dolni Pocernice II to achieve the positive energy standard, resulting into additional requirements towards project documentation. From partners' experience in other projects (e.g. SPARCS or ARV) these additions usually involve novel and tailored energy sources (e.g. Building Integrated Photovoltaics – BIPV).</p> <p>Two types of documentation are included in this subcontracting category:</p> <ol style="list-style-type: none"> 1) architectural and engineering solution for particular technologies, 2) necessary expert assessment/studies (e.g., fire safety, static assessment etc.). <p><u>Cost estimation:</u> Each of the two cost categories (see above) is budgeted to reach 30 000 EUR (i.e. 60 000 EUR in total) and probably will be procured independently due to different expertise required. However, the share between those two expenditures can differ in reality which will be reported to the EC. The cost budgeted represents 2,5 % fraction of the planned total cost of first stage project documentation (in total 2,4 M EUR for the Dolni Pocernice II project). Based on experience, the triggered cost can reach closer to 5 %. However, any additional cost beyond budgeted amount of subcontracting is planned to be covered by PDS resources.</p> <p>The costs triggered by ASCEND will be invoiced separately to make clear which part of the documentation is linked directly to the project activities.</p>

Partner	Cost (€)	Description of subcontracted tasks and justification
23/BUD	60 000 €	<p>Planning the renovation of unused school building (WP 4, Task 4.3)</p> <p><u>Description:</u> Preparing the detailed architectural plans for retrofitting the currently unused school building. Besides the architectural planning, this includes the mechanical and electrical engineering plans which should be ready to get the necessary permission from the relevant authorities.</p> <p><u>Cost estimation:</u> 150 days of expertise with a EUR 350/day engineering fee for architect, static engineer, electrical, mechanical engineers for the complete design documentation preparation + EUR 7500 in fees for obtaining official permits from different authorities.</p>
	20 000 €	<p>Planning of the PV installation at the cemetery, Wastewater Treatment Plant, Elderly Care Institute (WP 4, Task 4.3)</p> <p><u>Description:</u> Assessing the electrical needs of the aforementioned buildings and planning the optimal installation of PVs. Detailed plans are expected to be delivered including the necessary documentation of acquiring permits from the relevant authorities and also conducting the procurement process.</p> <p><u>Cost estimation:</u> 50 days of expertise with a EUR 350/day engineering fee for electrical engineers for the complete PV installation design documentation preparation + EUR 2500 in fees for obtaining official permits from different authorities.</p>
	30 000 €	<p>Designing solutions for the use of PV generated electricity (WP 4, Task 4.3)</p> <p><u>Description:</u> Complex engineering expertise is needed to find the best optimal way of using the locally generated electricity from the PVs installed in the PED area. Co-operation of an energy engineer, electrical engineer and mobility engineer will be necessary to the modelling of PV generated electricity usage within the</p>

		<p>PED. The designed technical solution will be an input to the local energy community's formulation process and will support the citizen engagement process by offering answers to technical question with regard to locally generated energy usage options and its consequences</p> <p><u>Cost estimation:</u> 100 expert days by EUR 300/day for consultation, preparation and presentation of a concept from the needed experts in the field of energy, electricity and mobility</p>
Total	110 000 €	

Partner	Cost (€)	Description of subcontracted tasks and justification
27/AIT	30 000 €	<p>Cross-cities surveys among LHCs and MCs conducted by local organisations (WP 6, Task 6.4)</p> <p><u>Description:</u> The scope of the subcontracting is to conduct surveys in the LHCs and MCs to complete the data basis (beside the monitoring data) for a comprehensive project impact assessment and to support the development of sustainable clean energy transition strategies in LHCs/MCs as elaborated in T6.4. With focus on building and mobility (as core elements of PCED development) the following surveys should be conducted in the LHCs/MCs:</p> <ul style="list-style-type: none"> ▪ Building survey (for citizen/consumer) ▪ Mobility survey (for citizen/consumer) ▪ Survey to the project partner (extent to which residents/users have been involved in the planning process & to quantify the number and type of new jobs created by the project actions) ▪ Survey to municipality staff (LHCs, MCs) <p><u>Cost estimation:</u> the costs per city (2 LHCs, 6 MCs) are estimated to around 4 k€ to perform the above services (e.g., based on previous experience with Smarter Together/Vienna domo site).</p>
Total Subcontracting costs		2 070 000 €

Table 14: Subcontracting cost items

All depreciation costs for equipment, infrastructure or other assets in the project are in compliance with Article 6 and will be recorded in the appropriate beneficiary's accounts, purchased in accordance with Article 6.2.C of the Grant Agreement and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.

Table 3.1h: ‘Purchase costs’ items (travel and subsistence, equipment and other goods, works and services)  Associated with document Ref. Ares(2022)8438279 - 06/12/2022

01/SPL	Cost (€)	Justification
OGWS	620 000 €	<p>Innovative infrastructure for agile and flexible undergrounds <i>[related to LY4.5 Deployment of smart charging points in undergrounds, LY4.6 New uses of undergrounds for alternative mobility services, LY4.8 Implementing "decarbonised-logistics hub", LY4.9 Charging points for LYS Green Spaces & GLY Waste Management Departments' machines]</i></p> <p>WP 2: The ambition and objective of the Lyon Confluence project is to make the district a "car-free" district. This involves a new parking strategy, new uses for the underground spaces usually reserved for car parking, and a new conception of public spaces (increased greening, pedestrianisation). It is imperative to adapt and modify the infrastructure so that the underground can offer new uses, decarbonising mobility including freight.</p> <ul style="list-style-type: none"> - Delivery issues in the hyper-centre must also be taken into account: the underground must be accessible for different types of vehicles (cargo bikes, vans, etc.) and storage of materials, foodstuffs and parcels may be necessary. - People will potentially work underground (deliverymen, sorting centres, craftsmen) and they will have to be offered working conditions that respect the labour code. <p>Studies are required to take these issues into account in the design and construction of future undergrounds (e.g. in form of less steep ramps, higher ceilings, adapted lifts, ventilation sized accordingly, lighting, water networks, etc.).</p> <p>The estimated cost breakdown is:</p> <ul style="list-style-type: none"> • Project management study, expertise (93.000 €) • Additional structural costs (310.000 €) • Additional costs for finishing interior works (124.000 €) • Equipment (93.000 €)
	430 000 €	<p>Installation of innovative & high-efficient PV modules and infrastructure (lightweight to reduce load on timber frame buildings-, re-used and biosolar PV (PV+green roofing)) <i>[related to LY3.6 Significant deployment of renewable energy production, LY4.7 Local photovoltaic production to power EV, LY2.3 Collective self-consumption operations, LY4.9 Charging points for LYS Green Spaces & GLY Waste Management Departments' machines]</i></p> <p>WP 2: This includes:</p> <ul style="list-style-type: none"> • Costs of the very first PV systems to be built in the LHCs to provide electricity to the energy community 250.000 €). This amount will help to improve the Business Model (BM) of the first of this kind of energy community, without which there is no BM due to the very low and subsidized price of electricity in France • Costs of the specific PV system (1MWc to be installed within between 2023 and 2028, being around 2.500 panels, being about 4.100 m²) for energy communities (high efficiency, biosolar, light weight PV), 130.000 €. • Costs of specific inverters set up to provide ancillary services such as the supply or consumption of reactive power (5.000 €). • Costs of production monitoring systems (5 systems, 5,000€ each = 25,000€). • Costs of specific supporting structure (architecturally designed suited for green roofs and proved by the building approval company), 20.000 €.
	210 000 €	<p>Awareness raising & participation of city's stakeholders: events, tools, workshops <i>[related to LY5.1 360-degree Citizen participation: online and offline, LY5.3 Workshop and digital tools (EcoLyoy), LY6.1 Orchestrating the PCED, LY6.2 Setting up a monthly local council on positive clean energy district]</i></p> <p>WP 2: These include the organisation costs (booking rooms, catering) and communication costs of:</p> <ul style="list-style-type: none"> • 360-degree Citizen participation - online and offline (7.500 € for booking rooms and catering), • Workshop and digital tools (EcoLyoy) to raise buildings' users awareness on energy consumption, use of lighting in office buildings, and preventing active cooling (2.500 €), • An urban innovation lab will be created by the PCED orchestrator, gathering several stakeholders from public and private sectors, to support the creation of Lyon's Solution Packages (SPs) . Monthly local councils will be set up over a period of 5 years. Smart city and building experts will be contracted to carry out studies for and with the innovation lab members on strategic topics to achieve a PCED, covering: mobility, public spaces, energy performance (consumption and production) of buildings. Events with the innovation lab members and the experts will be organized twice a year. Total costs for the creation and the operation of the innovation lab over 5 years: 200,000€.

	120 000 €	<p>Energy communities operating costs during project lifetime <i>[related to LY2.3 Collective self-consumption operations, LY2.2 New services and business models for prosumer approach]</i></p> <p>WP 2: These include the initial costs to set up the Special Purpose Vehicle managing the energy communities, such as:</p> <ul style="list-style-type: none"> the softwares to manage the members of the energy community, the energy data, the invoicing and other legal aspects such as general assemblies, accounting, resolving conflicts... (50.000 €), the energy community dashboards for inhabitants & building operators (30.000 €), the cost of the consultants that will be in charge of making inhabitants join the energy community and of training them to use the provided dashboard (40.000 €).
RPC	148 220 €	
Total	1 528 220 €	

03/LYS	Cost (€)	Justification
Travel	6 000 €	Travels for WP4: 6 study visits with 3 staff members (6 travels x 1000€).
OGWS	100 000 €	<p>Installation of innovative & high-efficient PV modules and infrastructure (lightweight to reduce load on timber frame buildings-, re-used and biosolar PV (PV+green roofing)) <i>[related to LY3.6 Significant deployment of renewable energy production, LY4.7 Local photovoltaic production to power EV, LY2.3 Collective self-consumption operations, LY4.9 Charging points for LYS Green Spaces & GLY Waste Management Departments' machines]</i> WP 2 & 5: High-efficiency PV modules on public buildings, around 72 kWc, 180 modules, 300m².</p>
RPC	12 000 €	
Total	118 000 €	

04/HES	Cost (€)	Justification
OGWS	50 000 €	<p>Energy community SPV setting-up costs (WP 2) <i>[related to LY 2.1 Creating legal entities for deployment of energy communities, LY 2.3 Collective self-consumption operations and LY 3.6 Significant deployment of renewable energy production]</i></p> <ul style="list-style-type: none"> Contribution to the legal and financial costs necessary to set up the specific purpose vehicle of the energy community.
	50 000 €	<p>PV monitoring systems (WP 2) <i>[related to LY 1.3 Digital monitoring infrastructure]</i> This cost item includes:</p> <ul style="list-style-type: none"> Costs necessary to set up the Epices Energie PV monitoring platform + yearly fee for the use of Epices Energie PV platform + purchase of satellite irradiation data + API for the data transfer (30.000 €) Monthly fee for the fiber connection (20.000 €).
	50 000 €	<p>PV training material of INES (French National Solar Centre) (WP4, Task 4.2 Capacity building programme) This cost item includes:</p> <ul style="list-style-type: none"> Design and printing of posters for the site visits of the PV system of the Porche building (5.000 €) PV module and inverter samples to be used during PV training sessions (15.000 €) Other specific materials for PV training sessions: solar irradiation meter, PV module performance meter, etc. (15.000 €)

		<ul style="list-style-type: none"> Electrical material to design a pedagogical MVoltage grid connection point for PV system  Associated with document Ref. Ares(2022)8438279 - 06/12/2022
RPC	34 300 €	
Total	184 300 €	

07/LHM	Cost (€)	Justification
OGWS	65 000 €	Co-creation with local stakeholders (workshops) (WP 3) <i>[related to MUC 4.1 Redesigning and greening urban space, MUC 4.2 Mobility points, co-designed with stakeholders, MUC 2.1 Energy community, MUC 2.2 Services / business models, MUC1.5 Digital ecosystem, MUC 5.2 Refurbishment communities, MUC 5.4 Improved PCED townscape through civic involvement]</i> <ul style="list-style-type: none"> The citizens in the project area are to be concretely involved in the planning and implementation of the measures from the very beginning. This applies to all areas in the project. Co-creation measures should develop the best possible content, but also bring about a common understanding of the tasks and goals. According to the current planning status, at least 10 different workshops are planned for the duration of the project.
	40 000 €	National & local communication and dissemination materials
RPC	164 500 €	
Total	269 500 €	

7.1/SWM	Cost (€)	Justification
OGWS	200 000 €	Integration of Smart Heat Grid including integration APIs (WP 3) <i>[related to MUC 3.5 Smart heating grid; supervisory control of customer substation]</i> <ul style="list-style-type: none"> The district heating substations of up to 10 pilot buildings are equipped with remote control, and a data communication from substation to the SWM control system is installed. SWM also plans to develop an IT-based control system for efficiency optimization of the future district heating system.
	200 000 €	Heat storage model of different buildings - cluster study (WP 3) <i>[related to MUC 3.5 Smart heating grid; supervisory control of customer substation]</i> <ul style="list-style-type: none"> A heat storage model of different buildings will be developed using measured and simulated data
	20 000 €	Innovative Smart-Heat-Grid sensing (WP 3) <i>[related to MUC 3.5 Smart heating grid; supervisory control of customer substation]</i> <ul style="list-style-type: none"> Special hardware for remote control of district heating substations.
RPC	3 000 €	
Total	423 000 €	

7.3/GWG	Description	Purchase cost	Depreciation period (Months)	Use period within the project (Months)	% of allocation to the project	Eligible cost in the project	Total eligible costs
EQUIPMENT	PV-facade elements for comb. PAV/green facade; 200 €/kW x 400 kW+ 25% eng. (WP 3) <i>[related to MUC3.6 Facade partly coated with innovative PV, 17 buildings]</i>	80 000 €	60	48	100%	64 000 €	230 940 €
	Wallbox ChargeX (WP 3)	38 675 €	60	48	100%	30 940 €	

	<i>[related to MUC4.4 Innovative charging]</i>				 Associated with document Ref. Ares(2022)8438279 - 06/12/2022			
	<ul style="list-style-type: none"> Wallbox installation in common garages in the GWG buildings. ca. 967€ per wallbox, ca. 40 wallboxes. project time ca. 4 years, depreciation period ca. 10 years. 							
	PV Power storage, car interface, 2-ways management (WP 3) <i>[related to MUC4.5 PV energy from buildings feed to charging infrastructure]</i> <ul style="list-style-type: none"> 10 k€/build. x 17 buildings 	170 000 €	60	48	100%	136 000 €		
OGWS	Mobile fast charger (incl. Integration of a billing backend) (leasing 3 years) (WP 3) <i>[related to MUC4.4 Innovative charging]</i> <ul style="list-style-type: none"> This is one mobile fast charging station. The positive effect and the special possibility lies in the fact that the fast charging station can be tried out at various locations in the project area and no expensive ground work has to be carried out for this. According to current planning, the fast charging station will be used at 2-3 locations in the project area. 						180 000 €	
	Communication and dissemination activities (WP 3) <i>[related to MUC 2.1 Energy community, MUC 2.2 Services / business models, MUC 5.2 Refurbishment communities, MUC 5.3 District energy council including a charter, MUC 5.4 Improved PCED townscape through civic involvement]</i> Currently, the following measures are planned: <ul style="list-style-type: none"> Documents for the information and participation of citizens (approx. 15,000 EUR) Ongoing products for the information of the overall project (approx.. 10,000 EUR) Interim reports and final report on all measures of the overall project (approx. 15,000 EUR) 						40 000 €	
	Certificate on Financial Statement							12 000 €
RPC								18 062 €
							Total	481 002 €

12/SPC	Description	Purchase cost	Depreciation period (Months)	Use period within the project (Months)	% of allocation to the project	Eligible cost in the project	Total eligible costs	
EQUIPMENT	WP 3, Task 3.5: Leasing and battery rental <i>[related to MUC4.3 e-Car sharing with a focus on tenants]</i> <ul style="list-style-type: none"> 4 e-car vehicles are considered for the project 	86 400 €	36	36	100%	86 400€	91 400 €	
	WP 3, Task 3.5: CarSharing Equipment costs <i>[related to MUC4.3 e-Car sharing with a focus on tenants]</i> <ul style="list-style-type: none"> Each of the four e-vehicles needs onboard-technology, so they can operate in the carsharing system. The equipment costs involve one on-board computer + installation per car. 	5 000 €	36	36	100%	5 000 €		
RPC								18 600 €
							Total	110 000 €

14/AIM	Cost (€)	Justification
OGWS	25 000 €	WP4, Tasks 4.3 and 4.4: Technical reports and feasibility studies needed for the replication activities and for PCED multiplication in Alba Iulia. This cost item includes: <ul style="list-style-type: none"> • 1 Technical report (approx. 10.000 €) • 1 Feasibility study (approx. 15.000 €)
RPC	52 200 €	
Total	77 200 €	

16/PEN	Description	Purchase cost	Depreciation period (Months)	Use period within the project (Months)	% of allocation to the project	Eligible cost in the project	Total eligible costs
EQUIPMENT	WP 4, Task 4.3: BEMS (incl. automatons/controllers, integration points, technical management boards, wiring, hardware and software) 7500€/each for 4 facilities	30 000 €	36	48	100%	30 000 €	60 000 €
	WP 4, Task 4.3: Monitoring devices for the social housing neighborhoods (200 dwellings × 150€/dwelling) <ul style="list-style-type: none"> • As the main energy vector consumed in these buildings is electricity, energy meters (Shelly 3EM, 134.07€ unit cost) capable of monitoring the consumption of home appliances are going to be implemented. • Smart plugs (Shelly Plug S, 20.79€ unit cost) will also be acquired and installed in specific home devices (preferably demand flexible devices) to understand usage patterns and assess the possibility of exploiting demand response actions. 	30 000 €	36	48	100%	30 000 €	
OGWS	WP 4, Tasks 4.1, 4.3, 4.4 and 4.5: Technical studies and local technical validation for the application of solutions/technologies This amount includes: <ul style="list-style-type: none"> • Task 4.3 - mandatory audits for energy certification in the several buildings of the PCED (around 20 000€), including: social housing districts (around 10 500€ in total); schools (700€/each); municipal buildings (1200 €/each) and water tanks (around 3000€). These amounts do not include the certification fees. Energy audits are relevant to identify energy efficiency opportunities and support the actions to be implemented. Also, graphic design services for dissemination material costs are included (including PCED multiplication strategy and participatory processes) • Task 4.4 and Task 5.5 (around 10 000€) for the graphic design of the tool interface • The remaining budget will be used in the organization and support materials for the local harvesting workshop (Task 4.1). 						40 000 €
RPC							12 700 €
Total							112 700 €

19/APD	Cost (€)	Justification
OGWS	50 000 €	<p>WP 4, Tasks 4.2-4.3: Integration APIs (code and programming development)</p> <p>This amount includes:</p> <ul style="list-style-type: none"> • Task 4.3: Hardware and software to complement the APD urban platform to collect and process energy-specific data. • Task 4.3: Contracting technical experts for energy-specific data management and visualization. • Task 4.2: Workshops for capacity building and knowledge sharing between partners and neighboring cities. • Task 4.3: Workshops/Events to discuss data standardization and energy data models.
RPC	8 100 €	
Total	58 100 €	

22/PDS	Cost (€)	Justification
Travel	5 100 €	WP4: 6 study visits for 1 person (6 x 850 €)
RPC	3 000 €	
Total	8 100 €	

23/BUD	Cost (€)	Justification
Travel	20 400 €	WP7 meetings with city networks (2-day events) 6 events, 4 pers/event x 850 €
RPC	26 600 €	
Total	47 000 €	

24/BKK	Cost (€)	Justification
Travel	8 500 €	WP7 meetings with city networks (2-day events) 10 events, 1 pers/event x 850 €
RPC	3 000 €	
Total	11 500 €	

26/STK	Cost (€)	Justification
OGWS	20 000 €	WP7: Organisation of two workshops in Stockholm (Venue, food, equipment, invitation)
Travel	12 750 €	WP4 (T4.2): Travel costs to participate to PCED workshops and study visits. 15 workshops and study visits x 850 €.
	12 750 €	WP7 (T7.4): Travel costs to participate to the City alliance network. 15 travels x 850 €.
RPC	4 250 €	
Total	49 750 €	

28/CAR	Cost (€)	Justification
Travel	12 000 €	Costs for 10 travels x 2 people x 600 € (T7.2 & T7.3)
RPC	47 550 €	
Total	59 550 €	

32/CIV	Cost (€)	Justification
Travel	16 800 €	WP5: Travel for PDA (2 per cities over 6 cities per 2 people x 700 €)
OGWS	46 700 €	WP4 (T.3), WP5 (T5.6), WP6 (T6.1): Bankability software license for 3 years and PCED customization of the analytical indexes Rate for 1 bankability software license (with 3 accounts) for 3 years producing PCED customization of the analytical indexes and delivering a Standard Economic and Financial Plan suitable for Preparing & implementing PCED in MCs (Task 4.3), customize and rate each SP in bankable terms fulfilling with ESG criteria and taxonomy principles (Task 5.6), contribute to specify settled KPIs for the monitoring and the impact assessment (Task 6.1).
RPC	33 000 €	
Total	96 500 €	

33/TWE	Cost (€)	Justification
OGWS	50 000 €	WP 8, Task 8.4: Venues, bookings of spaces in conferences This amount includes: <ul style="list-style-type: none"> • Booking fees for opening and closing conference (2 x 10.000€). Budget calculated for venues up to 150 people/1 day. • Booking fees for conference spaces throughout the project (5 x 6.000€). Budget calculated on average costs observed in smart cities events, allowing for ASCEND to be externally present once a year together with the whole SCC group, or standalone depending on the conference.
	30 000 €	WP 8, Task 8.3: Software purchase, hosting, all related to website and platform This amount includes: <ul style="list-style-type: none"> • Hosting and cloud rental for the duration of the project: approx. 250 €/ 60 months (15.000 €). • Hosting and cloud rental to keep the platform alive for one year after the project: approx. 250 €/ 12 months (3.000 €) • Drupal installation & modules needed + potential updates (approx. 5.000 €) • Video software fees including stock video footage: 200 €/ 25 months (5.000 €) • Purchase of stock images (2.000 €)
RPC	82 000 €	
Total	162 000 €	

34/ODY	Cost (€)	Justification
OGWS	30 000 €	WP 1, Task 1.1: Professional collaborative platform for project management (incl. licenses for all contact points in the consortium) and other collaborative tools for 5 years This cost item includes: <ul style="list-style-type: none"> • 100 licenses for a collaborative platform for communication/task management/document management: 10 € x 50 users x 60 months = 30.000 € • If a cheaper solution is found, the budget would be used to purchase ad-hoc IT tools for mindmapping, webconferencing, etc. depending on needs for collaborative work.
RPC	10 250 €	
Total	40 250 €	

35/USG	Cost (€)	Justification
OGWS	60 000 €	WP 5, Task 5.3: Organisation of 12 industry/stakeholder workshops (2 workshops for each packaged solution 1-6 @ EUR 5000 each)
RPC	71 230 €	
Total	131 230 €	

Table 15: Purchase costs' items (travel and subsistence, equipment, and other goods, works and service)

The ASCEND consortium involves 39 partners from 13 member states (FR, DE, HU, CZ, RO, BE, LU, SK, IT, ES, PT, SE, AT) and one associated country (CH). The consortium offers a wide geographical coverage in terms of economic and climate conditions and in terms of size of cities, diversity of the target areas and governance approaches for a maximum impact at EU-scale. Our project is composed of cities that have already been part of the SCC community as LHCs (Lyon, Munich, Stockholm) or Fellow cities (Alba Iulia, Budapest, Porto, Prague). Their experience will allow us to avoid implementation pitfalls and to accelerate the launch of activities, achieving greater impacts and replication.

The project will be managed by a **Coordination Team** composed of four Beneficiaries, which have a proven experience of collaboration in H2020 SCC01 Smarter Together and the Scalable Cities Secretariat (2020-2025):

SPL (Project Coordinator) will lead the strategic orientations of the project, manage payments and be the interface between the consortium and CINEA; **HES** (Technical Manager) will ensure the consistency of the scientific and technical approach on the project, supporting synergies in the activities as well as a coherent approach to the execution of tasks; **BLS** (Innovation Manager) will ensure that the innovations implemented in the target districts will be scaled up and replicated, manage the Advisory board and steer the development of the Exploitation plan; **ODY** (Administrative and Quality Manager) will be responsible for developing and implementing the project management rules, preparing meetings, providing the tools for collaboration and ensuring a high quality for all project outputs.

They will steer the common activities in close collaboration with the WP leaders and the City representatives:

In **Lyon**, SPL will coordinate 6 partners gathering the district, city and metropolitan area local authorities (SPL, LYS, GLY), the owners of networks (GLY) and public spaces (LYS), experts in energy (HES) and data management (UP). ETC will ensure a proper monitoring of activities and link with AIT at project-scale.

In **Munich**, LHM will coordinate 10 partners with the local authority (LHM) involving 6 departments in the implementation of the PCED with the support of its Affiliated entities SWM (municipal utilities company), MGS (city-owned renovation agency) and GWG (social housing operator and building owner). Four companies will provide specific inputs on e-mobility solutions (SPC UTUM), energy infrastructure (AVC) and energy management (IW). The academia (TUM) will provide inputs on citizen engagement, energy communities and monitoring. Last, UNC will support LHM departments with their expertise on project and data management.

In **Porto**, the local energy agency PEN will coordinate 4 partners. PCED experiments will be implemented in cooperation with the municipal utilities company (AEP) on public buildings and private property (owned by SRV), with support from APD on data management.

In **Budapest**, BUD will coordinate the activities as municipal authority responsible for public utilities, with inputs from the local transportation company (BKK).

In **Charleroi**, CHA will carry out the activities as local authority, with the engineering and local development expertise provided by its Affiliated entity IGC.

In **Prague**, the University Centre for Energy Efficient Buildings of CVUT will coordinate the local implementation activities with the support of the local development company (PDS) and ICT experts (OICT).

In **Alba Iulia**, AIM will carry out all implementation activities as local authority. Same situation in Stockholm.

At local level, Cities and partners will be supported by their stakeholder networks to multiply impact. At project-level, key transversal partners will ensure the link between the local PCED demonstration activities to ensure a common implementation:

As a major network of cities, **ENC** will coordinate the activities in MCs and engage with national City alliances. The wide geographical spread of consortium Cities will allow to implement regional outreach activities in Southwest Europe (CAR-PEN), Central Europe (LHM-CVUT) and Eastern Europe (BUD-AIM). Completing the scope, the involvement of **STK** in the project will allow to roll out replication activities in Scandinavia and

bootstrap a PCED in the city. The city will participate to the creation of city Alliances in Sweden and in the workshops in Lyon and Munich. A General Assembly could be organised in the city with a dedicated Nordic Event. The common approach on Solution Packages will be ensured by **CIV**, supported by **BLS**, who will also provide technical support on leveraging financing and funding from the investor communities. As Associated partner, **USG** will complement this action with their expertise in business models.

The common approach to digitalisation will be ensured by **DKSR** as expert in urban data platform, energy related services, interoperability, and open-source tools. **UoL** will complement with specific expertise on cybersecurity and energy management platforms. Relying on the monitoring infrastructure deployed in each target district, **AIT** will develop a common monitoring methodology and assess the impact. **AIT** will be in charge of the Data Management Plan.

These local outreach activities will be complemented with EU-scale cross-collaboration activities with other projects and initiatives led by **CAR**, thanks to their networks and experience in PED-projects.

All communication and dissemination and stakeholder engagement activities and Platform development will be coordinated by **TWE** based on the Communication and Dissemination strategy.

The governance structure and management rules will be detailed in the **Consortium agreement** (to be signed before project start) and the Project Management Plan (D1.1, foreseen M3).

Associated Partner – University St. Gallen

The University of St. Gallen (**USG**) is one of Europe's leading business schools and is EQUIS and AACSB accredited. The Institute of Technology Management (ITEM-HSG) is a research and education institute belonging to the UnSG and working in the area of Technology Management. The Institute of Technology Management conducts research in a variety of areas including business model innovation, stakeholder management, intellectual property management, open innovation, and global innovation. Additionally, the institute is experienced in conducting workshops for industry partners; it has successfully conducted several practical industry projects including research, workshops, and professional tasks. Finally, the institute is involved in executive, as well as student education, and therefore holds extensive experience and resources for ASCEND.

USG will provide expert training sessions (WP4) to transfer formal knowledge on SP from the business model and financing standpoint, help defining business models in MCs with the local partners. In WP5, USG will be part of the cross-collaboration process between SP owners and cities to ensure that identified pain points and bottlenecks will be taken into consideration (T5.1). In T5.2, USG will perform a state-of-the-art assessment of the six SP, evaluated from the business model standpoint. In T5.3, USG performs two workshop rounds for each SP with the public partners to tackle the outlined pain points and bottlenecks, to develop new and iterate on existing business and public models and evaluate their performance, with semi-structured interviews. From T5.4 to T5.6, USG will contribute to the design of SP digital modules, create content on business models and financing for the capacity-building programme and foster SP market uptake.

Affiliated entities

Stadtwerke München (SWM), Munich's municipal utilities company, is one of the largest energy and infrastructure companies in Germany. SWM supplies Munich 24/7 with energy (electricity, natural gas, district heating/cooling), fresh drinking water, mobility and advanced, cutting-edge telecommunication services. SWM is owned by the City of Munich and therefore an essential part of municipal public services. The company takes responsibility for individuals, resources and the environment.

SWM will contribute to the project within task 3.4 by installation of "Smart Heat Grid" in district heating. Several refurbished or new residential buildings within the project area are chosen in cooperation with the owner GWG. The district heating substations of these buildings are equipped with remote control, and a data communication from substation to the SWM control system is installed. SWM also plans to develop an IT-based control system for efficiency optimization of the future district heating system by smoothing out heat load peaks and increasing the renewable share within the heat network. Furthermore, a heat storage model of different buildings will be developed using measured and simulated data. Results of a previous study will be used too.

Münchner Gesellschaft für Stadterneuerung mbH (MGS) is a subsidiary of **GWG**, which is wholly owned by the City of Munich. MGS is the redevelopment agency/trustee of the City of Munich. MGS fulfills the mission of urban development as well as social and ecological urban renewal.

MGS will lead the task 3.4 Energy efficiency and RES and be an important part of Task 3.2 PCED governance and services with and for citizens.

Their service areas include:

- Fiduciary management
- Preparation and execution of preparatory studies (especially german Städtebauförderung)
- Project development and management
- Neighbourhood, district and shopping street management
- Vacancy and area management
- Public relations and participation projects
- Energetic area development
- Urban development measures
- Development and conception of municipal funding models
- Process control of highlighted projects

With more than 30,000 apartments and around 700 commercial units, **GWG (Gemeinnützige Wohnstätten- und Siedlungsgesellschaft mbH)** is one of the largest housing companies in the Munich area, looks after around 70,000 tenants and offers a wide range of expertise in social management and energy-efficient housing construction. In the extremely tight housing market in Munich, GWG München fulfills its housing policy mandate as a municipal housing company and ensures good, safe and affordable housing.

GWG will contribute to the project with buildings that will be a big part of the positive and clean energy district. The buildings represent typical residential buildings undergoing renovation and new built residential buildings including measures that serve for mobility, digital ecosystem, monitoring etc.

As a property owner with technical staff GWG will contribute by citizens engagement through involving its tenants as well as a professional stakeholder giving input.

For monitoring and replicability of the outcome from the project, several similar buildings out of GWGs building stock will be compared and GWG will use deliverables in other building projects, both buildings undergoing retrofitting as new-built projects.

IGRETEC (Intercommunale pour la Gestion et la Réalisation d'Etudes Techniques et Economiques, IGC) is a public enterprise 100% owned by public municipalities, subject to regional supervision and to the legislation about public markets. Through its mission of urban developer at the service of local public authorities, it has significant expertise in management of public (regional and European) funds for the development, implementation and follow-up of large-scale projects.

There is a strong relationship with Charleroi City as IGRETEC headquarter is located in Charleroi. Moreover, the two public entities often collaborate for the realization of development projects. IGRETEC has a wide variety of services to offer, ranging from water treatment (hydraulic study, sanitation, sewage, etc), engineering (design office, project management, urban planning & environment, etc), energy (energy services, motor control, purchasing center, etc), etc.

IGRETEC will contribute significantly to the development of PCED in Charleroi:

1) IGRETEC is a urban developer. Its knowledge of the region, areas in transformation, and especially its implication within the site of the "Porte Ouest" will be key elements to help the development of SPs. The city of Charleroi decided to grant the implementation of the masterplan built by Paola Vigano and the SWECO over the "Porte Ouest" to IGRETEC, which makes it a privileged actor (SPOC).

- 2) A public entity constituted at 51% by IGRETEC will become the owner of the land on the "Porte Ouest". Mastering the land will be central for any project on this territory and will enable IGRETEC to conduct studies and works on those sites.
- 3) There are two major projects on the "Porte Ouest". The "Quartier du Futur", a land of 34 ha, will be hosting the army forces and is structured around strong clean energy standards. IGRETEC will be the coordinator of this implementation. The "District Cleantech" consists of the development of an economic park dedicated to host cleantech actors. IGRETEC has been appointed as facilitator for the implementation of the site.
- 4) IGRETEC is currently involved in the deployment of renewable energy communities. This involvement provides it valuable expertise to be brought into the ASCEND project.
- 5) IGRETEC holds project management skills. It has an employee dedicated to low carbon topics and the energy transition. This person is a point of contact for municipalities.

3.3. GLOSSARY

BEMS/BOS: Building Energy Management System/Building Operating System

Cities Mission: Climate-Neutral and Smart Cities Mission

CoM: Covenant of Mayors

CoP: Community(ies) of Practice

EC: European Commission

ESG: Environmental, Social, and Governance

EUCF: European City Facility

EV: Electric Vehicle

GDPR: General Data Protection Regulation

GHG: Greenhouse Gases

GIM: General Indicator Model

ICT: Information and Communication Technology

IMM: Integrated Monitoring and evaluation Methodology

IPCC: Intergovernmental Panel on Climate Change

IPR: Intellectual Property Rights

LHC: Lighthouse City

MC: Multiplier City

MCDA: Multi Criteria Decision Analysis

MIM: Minimum Interoperability Mechanism

MoU: Memorandum of Understanding

MVP: Minimum Viable Product

PCED: Positive Clean Energy District

PED: Positive Energy District

PPP: Public-Private Partnership

PV: Photovoltaic

RES: Renewable Energy Sources

SCC/SCC-LG: Smart Cities & Communities/Smart Cities & Communities Lighthouse Group

SCM: Smart Cities Marketplace

SO: Strategic Objective(s)

SoA: State of the Art

SP: Solution Packages

SPV: Special Purpose Vehicle

V2B/G/X: Vehicle-to-Building/Grid/X

4. ETHICS SELF-ASSESSMENT

1. Human Embryonic Stem Cells and Human Embryo	1. Human Embryonic Stem Cells and Human Embryos
Does this activity involve Human Embryonic Stem Cells (hESCs)?	No
Does this activity involve the use of human embryos?	No
2. Humans Page	
Does this activity involve human participants?	No
Does this activity involve interventions (physical also including imaging technology, behavioural treatments, etc.) on the study participants?	No
Does this activity involve conducting a clinical study as defined by the Clinical Trial Regulation (EU 536/2014)? (using pharmaceuticals, biologicals, radiopharmaceuticals, or advanced therapy medicinal products)	No
3. Human Cells / Tissues	
Does this activity involve the use of human cells or tissues?	No
4. Personal Data	
Does this activity involve processing of personal data?	No
Does this activity involve further processing of previously collected personal data (including use of preexisting data sets or sources, merging existing data sets)?	No
Is it planned to export personal data from the EU to non-EU countries?	No
Is it planned to import personal data from non-EU countries into the EU or from a non-EU country to another non-EU country?	No
Does this activity involve the processing of personal data related to criminal convictions or offences?	No
5. Animals	
Does this activity involve animals?	No
6. Non-EU Countries	
Will some of the activities be carried out in non-EU countries?	No
In case non-EU countries are involved, do the activities undertaken in these countries raise potential ethics issues?	No
It is planned to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	No
Is it planned to import any material (other than data) from non-EU countries into the EU or from a non-EU country to another non-EU country?	No
Is it planned to export any material (other than data) from the EU to non-EU countries?	No
Does this activity involve low and/or lower middle income countries?	No
Could the situation in the country put the individuals taking part in the activity at risk?	No
7. Environment, Health and Safety	
Does this activity involve the use of substances or processes that may cause harm to the environment, to animals or plants (during the implementation of the activity or further to the use of the results, as a possible impact)?	No
Does this activity deal with endangered fauna and/or flora / protected areas?	No
Does this activity involve the use of substances or processes that may cause harm to humans, including those performing the activity (during the implementation of the activity or further to the use of the results, as a possible impact)?	No
Does this activity involve the development, deployment and/or use of Artificial Intelligence?	No
9. Other Ethics Issues	
Are there any other ethics issues that should be taken into consideration?	No

5. DOCUMENTS PROVING THE LINK BETWEEN BENEFICIARIES AND AFFILIATED ENTITIES

5.1. VILLE DE CHARLEROI & IGRETEC

Ville de Charleroi is highlighted as a shareholder of IGRETEC in the Shareholder register below (extracted from IGRETEC Financial report 2021):

NOM DES ASSOCIES	NOMBRE ET CATEGORIES DE PARTS SOUSCRITES 31/12/2021							
	SECTEUR 1				SECTEUR 2		SECTEUR 3	SECTEUR 4
	A 1	C 1	D	E	A 2	C 2	PF	A 4
I. VILLES ET COMMUNES								
Charleroi	458		3.102.772	3.811.942	48.828		3.083.755	407
TOTAUX	2.522	12.093	3.796.840	23.268.021	80.491	5.265	4.971.106	452
TOTAUX €	15.636,40	74.976,60	3.796.840,13	23.268.020,50	499.044,20	32.643,00	124.277.650,00	2.802,40
	27.155.473,63				531.687,20		124.277.650,00	2.802,40

- [Link to IGRETEC Financial report 2021](#)¹⁸

5.2. LANDESHAUPTSTADT MUNCHEN & GWG GEMEINNÜTZIGE WOHNSTÄTTEN- UND SIEDLUNGSGESELLSCHAFT (GWG)

The link between the City of Munich and its subsidiary GWG is highlighted in the GWG annual report below:

- [Link to GWG annual report 2020](#)¹⁹

5.3. LANDESHAUPTSTADT MUNCHEN & MUENCHNER GESELLSCHAFT FUER STADTERNEUERUNG (MGS)

The link between the City of Munich and its subsidiary MGS is highlighted in the MGS annual report below:

- [Link to MGS annual report 2020](#)²⁰

5.4. LANDESHAUPTSTADT MUNCHEN & STADTWERKE MUENCHEN (SWM)

The link between the City of Munich and its subsidiary SWM is highlighted in the SWM annual report below:

- [Link to SWM annual report 2021](#)²¹

¹⁸ <https://www.igretec.com/fr/gouvernance/igretec-toute-transparence/igretec-rapport-financier-2021-2/>

¹⁹ https://www.gwg-muenchen.de/_Resources/Persistent/6/f/d/b/6fdb18611627e94f77a2ade5528626df0204d216/GWG-Muenchen-Jahresbericht-2020-barrierefrei.pdf

²⁰ [https://www.mgs-](https://www.mgs-muenchen.de/_Resources/Persistent/8/8/9/e/889e7962245a006e5926718a47f010e79c00418b/MGS_GB_2020_barrierefrei.pdf)

[muenchen.de/_Resources/Persistent/8/8/9/e/889e7962245a006e5926718a47f010e79c00418b/MGS_GB_2020_barrierefrei.pdf](https://www.mgs-muenchen.de/_Resources/Persistent/8/8/9/e/889e7962245a006e5926718a47f010e79c00418b/MGS_GB_2020_barrierefrei.pdf)

²¹ <https://www.swm.de/dam/doc/swm/swm-geschaeftsbericht.pdf>

ANNEX 2

ESTIMATED BUDGET FOR THE ACTION

Estimated eligible ¹ costs (per budget category)										Estimated EU contribution ²				
Forms of funding	Direct costs							Indirect costs	Total costs	EU contribution to eligible costs			Maximum grant amount ⁶	
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories	E. Indirect costs ³		Funding rate % ⁴	Maximum EU contribution ⁵	Requested EU contribution		
	Actual costs	Unit costs (usual accounting practices)	Unit costs ⁷	Actual costs	Actual costs	Actual costs	Actual costs	Unit costs (usual accounting practices)	Flat-rate costs ⁸	U	g = f * U%	h	m	
	a1	a2	a3	b	c1	c2	c3	d2	e = 0,25 * (a1 + a2 + a3 + c1 + c2 + c3)	f = a + b + c + d + e				
1 - SPL	1 601 715.00	0.00	0.00	900 000.00	61 520.00	0.00	1 466 700.00	0.00	782 483.75	4 812 418.75	70	3 368 693.13	3 368 693.00	3 368 693.00
2 - GLY	560 700.00	0.00	0.00	400 000.00	18 000.00	0.00	5 000.00	0.00	145 925.00	1 129 625.00	100	1 129 625.00	1 129 625.00	1 129 625.00
3 - LYS	119 700.00	0.00	0.00	85 000.00	18 000.00	0.00	100 000.00	0.00	59 425.00	382 125.00	100	382 125.00	382 125.00	382 125.00
4 - HES	309 500.00	0.00	0.00	0.00	16 300.00	0.00	168 000.00	0.00	123 450.00	617 250.00	100	617 250.00	617 250.00	617 250.00
5 - UP	240 000.00	0.00	0.00	130 000.00	18 000.00	0.00	0.00	0.00	64 500.00	452 500.00	70	316 750.00	316 750.00	316 750.00
6 - ETC	149 500.00	0.00	0.00	0.00	3 000.00	0.00	0.00	0.00	38 125.00	190 625.00	70	133 437.50	133 437.50	133 437.50
7 - LHM	1 110 600.00	0.00	0.00	145 000.00	52 800.00	40 000.00	176 700.00	0.00	345 025.00	1 870 125.00	100	1 870 125.00	1 870 125.00	1 870 125.00
7.1 - SWM	81 250.00	0.00	0.00	0.00	3 000.00	0.00	420 000.00	0.00	126 062.50	630 312.50	70	441 218.75	0.00	0.00
7.2 - MGS	1 134 889.00	0.00	0.00	160 000.00	15 600.00	0.00	105 000.00	0.00	313 872.25	1 729 361.25	70	1 210 552.88	1 210 552.88	1 210 552.88
7.3 - GWG	200 000.00	0.00	0.00	20 000.00	12 350.00	230 940.00	237 712.00	0.00	170 250.50	871 252.50	70	609 876.75	609 876.75	609 876.75
8 - UNC	243 660.00	0.00	0.00	0.00	12 200.00	0.00	0.00	0.00	63 965.00	319 825.00	70	223 877.50	223 877.50	223 877.50
9 - TUM	533 010.00	0.00	0.00	0.00	24 750.00	0.00	10 000.00	0.00	141 940.00	709 700.00	100	709 700.00	709 700.00	709 700.00
10 - IW	248 000.00	0.00	0.00	0.00	10 250.00	0.00	0.00	0.00	64 562.50	322 812.50	70	225 968.75	225 968.75	225 968.75
11 - AVC	167 762.00	0.00	0.00	0.00	10 250.00	0.00	0.00	0.00	44 503.00	222 515.00	70	155 760.50	155 760.50	155 760.50
12 - SPC	205 590.00	0.00	0.00	0.00	8 100.00	91 400.00	10 500.00	0.00	78 897.50	394 487.50	70	276 141.25	276 141.00	276 141.00
13 - UTUM	446 279.00	0.00	0.00	0.00	8 100.00	0.00	10 000.00	0.00	116 094.75	580 473.75	100	580 473.75	580 473.75	580 473.75
14 - AIM	500 000.00	0.00	0.00	0.00	22 200.00	0.00	55 000.00	0.00	144 300.00	721 500.00	100	721 500.00	721 500.00	721 500.00
15 - CHA	261 000.00	0.00	0.00	0.00	17 100.00	0.00	7 500.00	0.00	71 400.00	357 000.00	100	357 000.00	357 000.00	357 000.00
15.1 - IGC	241 000.00	0.00	0.00	0.00	9 900.00	0.00	0.00	0.00	62 725.00	313 625.00	70	219 537.50	219 537.50	219 537.50
16 - PEN	113 400.00	0.00	0.00	0.00	9 300.00	60 000.00	43 400.00	0.00	56 525.00	282 625.00	100	282 625.00	282 625.00	282 625.00
17 - AEP	64 275.00	0.00	0.00	0.00	8 100.00	0.00	0.00	0.00	18 093.75	90 468.75	70	63 328.13	63 328.00	63 328.00
18 - SRV	61 698.00	0.00	0.00	30 000.00	8 100.00	0.00	0.00	0.00	17 449.50	117 247.50	100	117 247.50	117 247.50	117 247.50
19 - APD	118 272.00	0.00	0.00	0.00	8 100.00	0.00	50 000.00	0.00	44 093.00	220 465.00	100	220 465.00	220 465.00	220 465.00
20 - CVUT	312 000.00	0.00	0.00	0.00	16 200.00	0.00	15 100.00	0.00	85 825.00	429 125.00	100	429 125.00	429 125.00	429 125.00
21 - OICT	97 500.00	0.00	0.00	0.00	8 100.00	0.00	0.00	0.00	26 400.00	132 000.00	70	92 400.00	92 400.00	92 400.00
22 - PDS	24 000.00	0.00	0.00	60 000.00	8 100.00	0.00	0.00	0.00	8 025.00	100 125.00	100	100 125.00	100 125.00	100 125.00
23 - BUD	233 500.00	0.00	0.00	110 000.00	42 000.00	0.00	5 000.00	0.00	70 125.00	460 625.00	100	460 625.00	460 625.00	460 625.00
24 - BKK	35 000.00	0.00	0.00	0.00	11 500.00	0.00	0.00	0.00	11 625.00	58 125.00	70	40 687.50	40 687.50	40 687.50
25 - ENC	545 490.00	0.00	0.00	0.00	36 960.00	0.00	31 900.00	0.00	153 587.50	767 937.50	100	767 937.50	767 937.50	767 937.50
26 - STK	92 400.00	0.00	0.00	0.00	29 750.00	0.00	20 000.00	0.00	35 537.50	177 687.50	100	177 687.50	177 687.50	177 687.50
27 - AIT	0.00	494 716.00	0.00	30 000.00	40 850.00	0.00	14 000.00	0.00	137 391.50	716 957.50	100	716 957.50	716 957.50	716 957.50
28 - CAR	364 000.00	0.00	0.00	0.00	54 550.00	0.00	5 000.00	0.00	105 887.50	529 437.50	100	529 437.50	529 437.50	529 437.50

Forms of funding	Estimated eligible ¹ costs (per budget category)									Estimated EU contribution ²				
	Direct costs							Indirect costs	Total costs	EU contribution to eligible costs			Maximum grant amount ⁶	
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories	E. Indirect costs ³		Funding rate % ⁴	Maximum EU contribution ⁵	Requested EU contribution		
	A.1 Employees (or equivalent)	A.2 Natural persons under direct contract	A.3 Seconded persons	A.4 SME owners and natural person beneficiaries	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.2 Internally invoiced goods and services	E. Indirect costs				
Actual costs	Unit costs (usual accounting practices)	Unit costs ⁷	Actual costs	Actual costs	Actual costs	Actual costs	Actual costs	Unit costs (usual accounting practices)	Flat-rate costs ⁸					
a1	a2	a3	b	c1	c2	c3	d2	e = 0,25 * (a1 + a2 + a3 + c1 + c2 + c3)	f = a + b + c + d + e	U	g = f * U%	h	m	
29 - UoL	278 678.00	0.00	0.00	0.00	23 400.00	0.00	0.00	0.00	75 519.50	377 597.50	100	377 597.50	377 597.50	377 597.50
30 - BLS	365 175.00	0.00	0.00	0.00	24 000.00	0.00	0.00	0.00	97 293.75	486 468.75	70	340 528.13	340 528.00	340 528.00
31 - DKSR	818 600.00	0.00	0.00	0.00	41 800.00	0.00	34 560.00	0.00	223 740.00	1 118 700.00	70	783 090.00	783 090.00	783 090.00
32 - CIV	475 000.00	0.00	0.00	0.00	44 800.00	0.00	51 700.00	0.00	142 875.00	714 375.00	70	500 062.50	500 062.50	500 062.50
33 - TWE	645 250.00	0.00	0.00	0.00	52 000.00	0.00	110 000.00	0.00	201 812.50	1 009 062.50	70	706 343.75	706 343.75	706 343.75
34 - ODY	0.00	0.00	156 694.50	0.00	10 250.00	0.00	30 000.00	0.00	49 236.13	246 180.63	70	172 326.44	172 326.44	172 326.44
35 - USG														
Σ consortium	12 998 393.00	494 716.00	156 694.50	2 070 000.00	819 280.00	422 340.00	3 182 772.00	0.00	4 518 548.88	24 662 744.38		20 428 209.71	19 986 990.32	19 986 990.32

¹ See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

² The consortium remains free to decide on a different internal distribution of the EU funding (via the consortium agreement; see Article 7).

³ Indirect costs already covered by an operating grant (received under any EU funding programme) are ineligible (see Article 6.3). Therefore, a beneficiary/affiliated entity that receives an operating grant during the action duration cannot declare indirect costs for the year(s)/reporting period(s) covered by the operating grant, unless they can demonstrate that the operating grant does not cover any costs of the action. This requires specific accounting tools. Please immediately contact us via the EU Funding & Tenders Portal for details.

⁴ See Data Sheet for the funding rate(s).

⁵ This is the theoretical amount of the EU contribution to costs, if the reimbursement rate is applied to all the budgeted costs. This theoretical amount is then capped by the 'maximum grant amount'.

⁶ The 'maximum grant amount' is the maximum grant amount decided by the EU. It normally corresponds to the requested grant, but may be lower.

⁷ See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

⁸ See Data Sheet for the flat-rate.

ANNEX 2a

ADDITIONAL INFORMATION ON UNIT COSTS AND CONTRIBUTIONS

SME owners/natural person beneficiaries without salary (Decision C(2020) 7115¹)

Type: unit costs

Units: days spent working on the action (rounded up or down to the nearest half-day)

Amount per unit (daily rate): calculated according to the following formula:

$$\begin{aligned} &\{ \text{EUR } 5\,080 / 18 \text{ days} = \mathbf{282,22} \} \\ &\text{multiplied by} \\ &\{ \text{country-specific correction coefficient of the country where the beneficiary is established} \} \end{aligned}$$

The country-specific correction coefficients used are those set out in the Horizon Europe Work Programme (section Marie Skłodowska-Curie actions) in force at the time of the call (see [Portal Reference Documents](#)).

HE and Euratom Research Infrastructure actions²

Type: unit costs

Units³: see (for each access provider and installation) the unit cost table in Annex 2b

Amount per unit*: see (for each access provider and installation) the unit cost table in Annex 2b

* Amount calculated as follows:

For trans-national access:

$$\frac{\text{average annual total trans-national access costs to the installation (over past two years}^4)}{\text{average annual total quantity of trans-national access to the installation (over past two years}^5)}$$

For virtual access:

$$\frac{\text{total virtual access costs to the installation (over the last year}^6)}{\text{total quantity of virtual access to the installation (over the last year}^7)}$$

Euratom staff mobility costs⁸

Monthly living allowance

Type: unit costs

¹ Commission [Decision](#) of 20 October 2020 authorising the use of unit costs for the personnel costs of the owners of small and medium-sized enterprises and beneficiaries that are natural persons not receiving a salary for the work carried out by themselves under an action or work programme (C(2020)7715).

² [Decision](#) of 19 April 2021 authorising the use of unit costs for the costs of providing trans-national and virtual access in Research Infrastructure actions under the Horizon Europe Programme (2021-2027) and the Research and Training Programme of the European Atomic Energy Community (2021-2025).

³ Unit of access (e.g. beam hours, weeks of access, sample analysis) fixed by the access provider in proposal.

⁴ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁵ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁶ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁷ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁸ [Decision](#) of 15 March 2021 authorising the use of unit costs for mobility in co-fund actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025).

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit*: see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

* Amount calculated as follows from 1 January 2021:

{**EUR 4 300** multiplied by country-specific correction coefficient** of the country where the staff member is seconded}⁹

**Country-specific correction coefficients as from 1 January 2021¹⁰

EU-Member States¹¹

Country / Place	Coefficient (%)
Bulgaria	59,1
Czech Rep.	85,2
Denmark	131,3
Germany	101,9
Bonn	95,8
Karlsruhe	98
Munich	113,9
Estonia	82,3
Ireland	129
Greece	81,4
Spain	94,2
France	120,5
Croatia	75,8
Italy	95
Varese	90,7
Cyprus	78,2
Latvia	77,5
Lithuania	76,6
Hungary	71,9
Malta	94,7
Netherlands	113,9
Austria	107,9
Poland	70,9
Portugal	91,1
Romania	66,6
Slovenia	86,1

⁹ Unit costs for living allowances are calculated by using a method of calculation similar to that applied for the secondment to the European Commission of seconded national experts (SNEs).

¹⁰ ⚠ For the financial statements, the amount must be adjusted according to the actual place of secondment. The revised coefficients were adopted in the Decision authorising the use of unit costs for the Fusion Programme co-fund action under the Research and training Programme of the European Atomic Energy Community 2021-2025. They are based on the 2020 Annual update of the remuneration and pensions of the officials and other servants of the European Union and the correction coefficients applied thereto (OJ C 428, 11.12.2020) to ensure purchasing power parity. The revised coefficient are applied as from 1 January 2021 through an amendment to the grant agreement.

¹¹ No correction coefficient shall be applicable in Belgium and Luxembourg.

Slovakia	80,6
Finland	118,4
Sweden	124,3

Third countries

Country/place	Coefficient (%)
China	82,2
India	72,3
Japan	111,8
Russia	92,7
South Korea	92,3
Switzerland	129,2
Ukraine	82,3
United Kingdom	97,6
United States	101,4 (New-York) 90,5 (Washington)

Mobility allowance

Type: Unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit: **EUR 600** per person-month; see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

Family allowance

Type: unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit: **EUR 660** per person-month; see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

Education allowance

Type: Unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit*: see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

*Amount calculated as follows from 1 January 2021:
{**EUR 283.82** x number of dependent children¹²}

¹² For the estimated budget (Annex 2): an average should be used. (⚠ For the financial statements, the number of children (and months) must be adjusted according to the actual family status at the moment the secondment starts.)

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

METROPOLE DE LYON (GLY), PIC 924429401, established in 20 RUE DU LAC, LYON 69003, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

COMMUNE DE LYON (LYS), PIC 997468170, established in PLACE DE LA COMEDIE 1, LYON CEDEX 01 69205, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

HESPUL ASSOCIATION (HES), PIC 984234072, established in PLACE JULES FERRY 14, LYON 69006, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

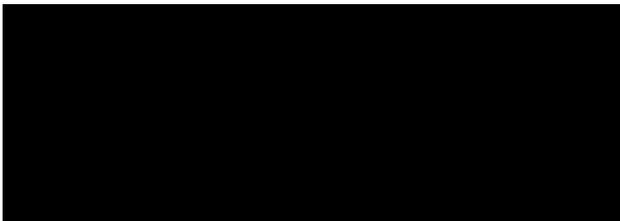
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

URBAN PRACTICES (UP), PIC 888373919, established in 3 COURS CHARLEMAGNE, LYON 69002, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

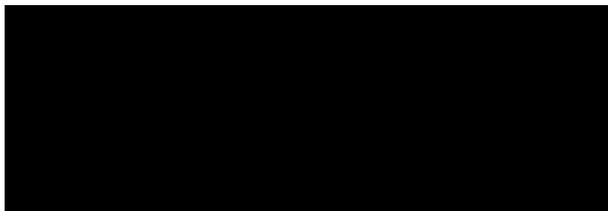
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ENERTECH (ETC), PIC 928689059, established in 65 LES BALCONS DE L'AMOURIER, PONT DE BARRET 26160, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

LANDESHAUPTSTADT MUNCHEN (LHM), PIC 997625601, established in BURGSTRASSE 4, MUNCHEN 80331, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

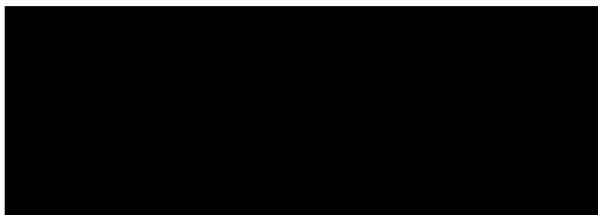
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNICCORN GMBH (UNC), PIC 911019830, established in AM FORLENWALD 3, GAIBERG 69251, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

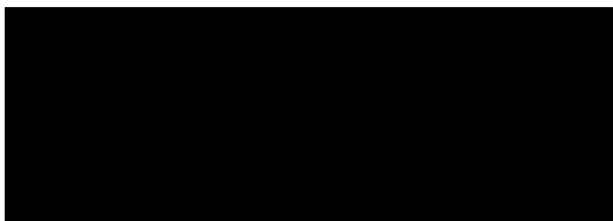
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

TECHNISCHE UNIVERSITAET MUENCHEN (TUM), PIC 999977463, established in Arcisstrasse 21, MUENCHEN 80333, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

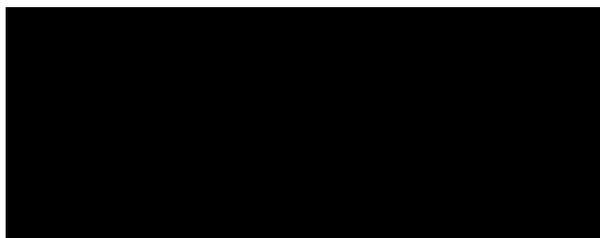
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ISARWATT EG (IW), PIC 886412676, established in ARNULFSTR 114, MUNCHEN 80636, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

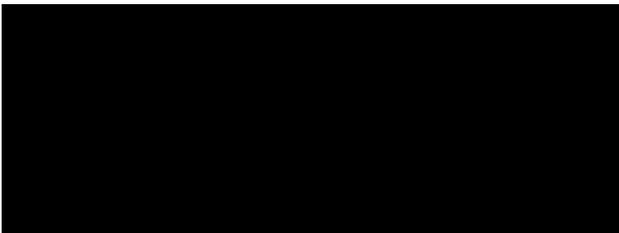
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

AVANCIS GMBH (AVC), PIC 885022278, established in SOLARSTRASSE 3, TORGAU 04860, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

SPECTRUM MOBIL GMBH (SPC), PIC 928729314, established in AIDENBACHSTR. 36, MUNCHEN 81379, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

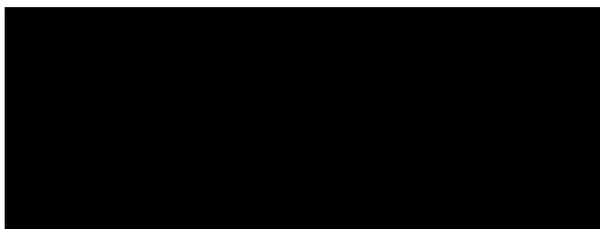
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNTERNEHMERTUM GMBH (UTUM), PIC 969082284, established in LICHTENBERGSTRASSE 6, GARCHING 85748, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

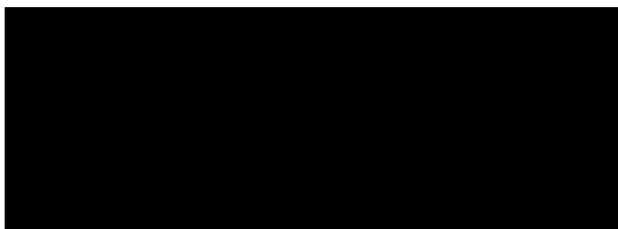
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

MUNICIPALITY OF ALBA IULIA (AIM), PIC 952991536, established in CALEA MOTILOR 5 A, ALBA IULIA 510134, Romania,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

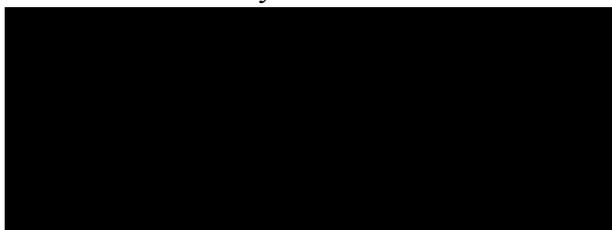
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

VILLE DE CHARLEROI (CHA), PIC 903356054, established in PLACE CHARLES II, CHARLEROI 6000, Belgium,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ADEPORTO - AGÊNCIA DE ENERGIA DO PORTO (PEN), PIC 909584812, established in RUA GONCALO CRISTOVAO 347 SALA 218, PORTO 4000 270, Portugal,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

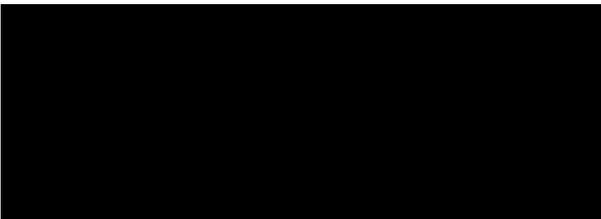
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

CMPEAE - EMPRESA DE AGUAS E ENERGIADO MUNICIPIO DO PORTO EM (AEP),
PIC 951510346, established in RUA BARAO NOVA SINTRA 285, PORTO 4300 367, Portugal,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

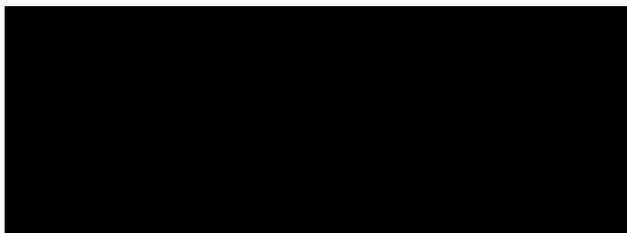
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By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

FUNDACAO DE SERRALVES (SRV), PIC 983080354, established in RUA JOAO DE CASTRO 210, PORTO 4150 417, Portugal,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

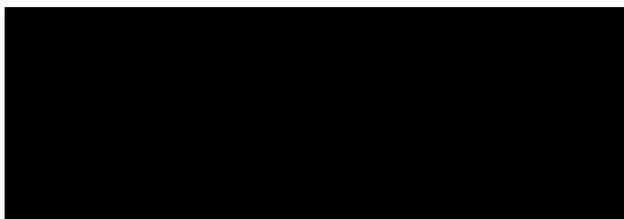
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ASSOCIACAO PORTO DIGITAL (APD), PIC 985621948, established in LARGO DO DR. TITO FONTES, 15, PORTO 4000 538, Portugal,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

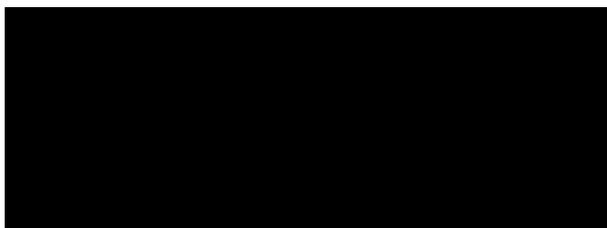
and mandates

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By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

CESKE VYSOKE UCENI TECHNICKE V PRAZE (CVUT), PIC 999848744, established in
JUGOSLAVSKYCH PARTYZANU 1580/3, PRAHA 160 00, Czechia,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

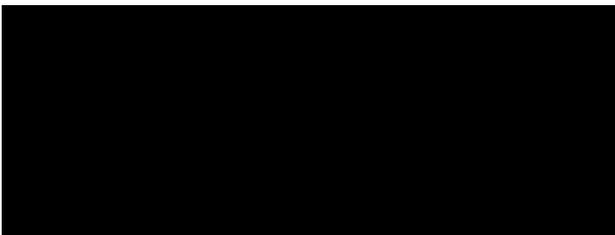
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By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

OPERATOR ICT AS (OICT), PIC 888144708, established in DELNICKA 213/12, PRAHA 170 00, Czechia,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

PRAZSKA DEVELOPERSKA SPOLECNOST PRISPEVKOVA ORGANIZACE (PDS), PIC 887655925, established in U RADNICE 10/2 STARE MESTO, PRAHA 1 110 00, Czechia,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

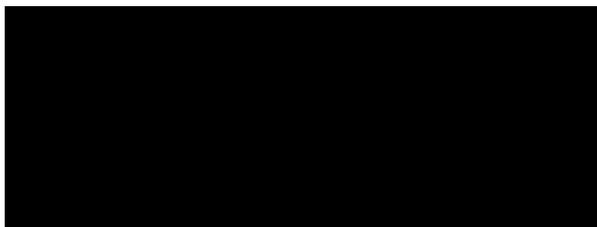
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

BUDAPEST FOVAROS ONKORMANYZATA (BUD), PIC 959102439, established in VAROSHAZ UTCA 9-11, BUDAPEST 1052, Hungary,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

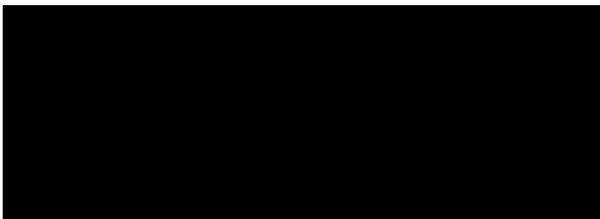
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

BKK BUDAPESTI KOZLEKEDESI KOZPONT ZARTKORUEN MUKODO RESZVENYTARSASAG (BKK), PIC 965804460, established in RUMBACH SEBESTYEN UTCA 19-21, BUDAPEST 1075, Hungary,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

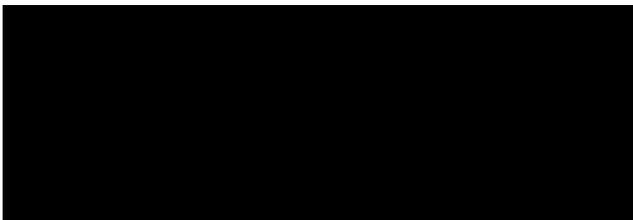
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ENERGY CITIES/ENERGIE-CITES ASSOCIATION (ENC), PIC 966036484, established in CHEMIN DE PALENTE 2, BESANCON 25000, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

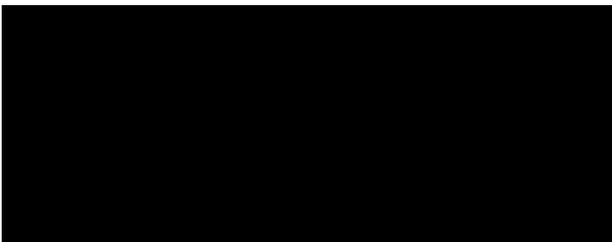
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

STOCKHOLMS STAD (STK), PIC 996559183, established in STADSHUSET/
REDOVISNINGSENHETEN, STOCKHOLM 105 35, Sweden,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

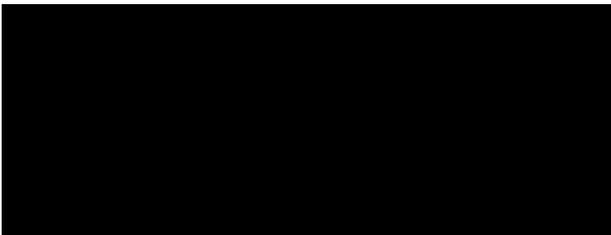
and mandates

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By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH (AIT), PIC 999584128, established in GIEFINGGASSE 4, WIEN 1210, Austria,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

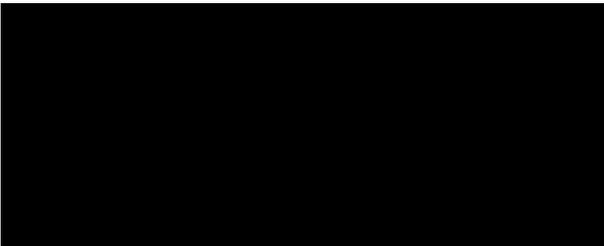
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By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

FUNDACION CARTIF (CAR), PIC 999929836, established in PQ TECNOLOGICO BOECILLO 205, BOECILLO 47151, Spain,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

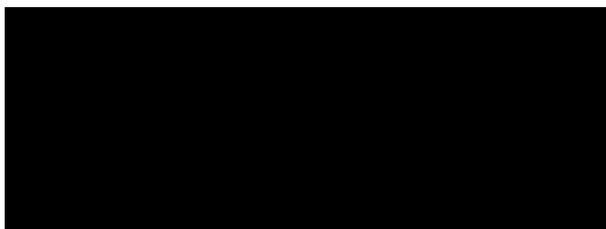
and mandates

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SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

UNIVERSITE DU LUXEMBOURG (UoL), PIC 999878620, established in 2 AVENUE DE L'UNIVERSITE, ESCH-SUR-ALZETTE 4365, Luxembourg,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

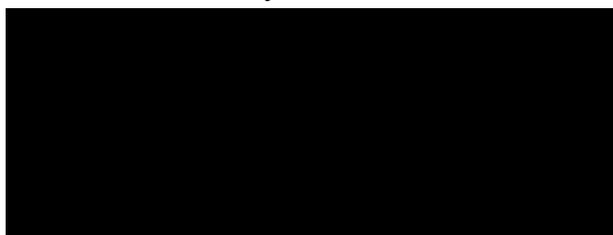
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the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

BLUE-SIGHT CONSEIL (BLS), PIC 894571928, established in 12 PLACE JULES FERRY, LYON 69006, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

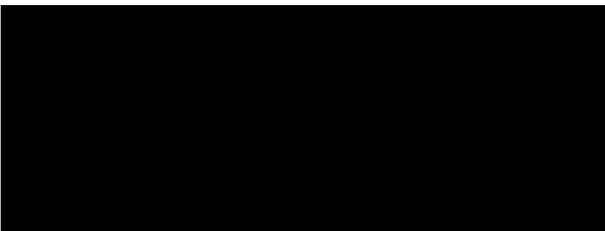
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

DATEN KOMPETENZZENTRUM STADTE UND REGIONEN DKSR GMBH (DKSR), PIC 890595025, established in AM KARLSBAD 16, BERLIN 10785, Germany,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

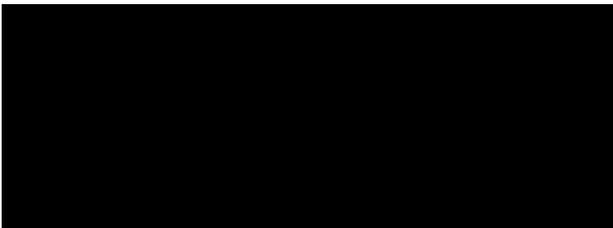
and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

CIVIESCO SRL (CIV), PIC 901780774, established in VIA VITTORIO VENETO 24, UDINE 33100, Italy,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

By signing this accession form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

TWENTY COMMUNICATIONS SRO (TWE), PIC 904952674, established in DOLEZALOVA 2923/35, SKALICA 909 01, Slovakia,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

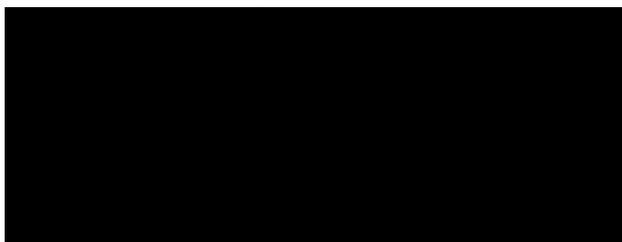
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SIGNATURE

For the beneficiary



ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

FOUCHAULT THOMAS ILKKA (ODY), PIC 887958953, established in 7 RUE DU DOYENNE, LYON 69005, France,

hereby agrees

to become beneficiary

in Agreement No 101096571 — ASCEND ('the Agreement')

between LYON CONFLUENCE (SPL) and the European Climate, Infrastructure and Environment Executive Agency (CINEA) ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

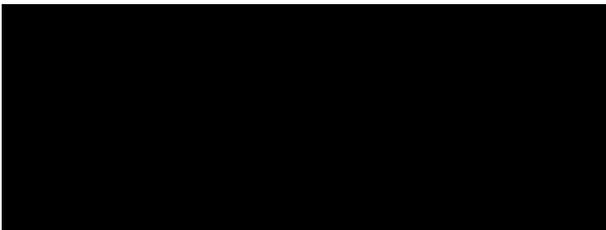
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SIGNATURE

For the beneficiary



ANNEX 4 HORIZON EUROPE MGA — MULTI + MONO

FINANCIAL STATEMENT FOR [PARTICIPANT NAME] FOR REPORTING PERIOD [NUMBER]

Eligible ¹ costs (per budget category)																	EU contribution ²				Revenues
Direct costs															Indirect costs	Total costs	EU contribution to eligible costs			Total requested EU contribution	Income generated by the action
A. Personnel costs			B. Subcontracting costs	C. Purchase costs			D. Other cost categories						E. Indirect costs ²	Funding rate % ³	Maximum EU contribution ⁴		Requested EU contribution				
Forms of funding	Actual costs	Unit costs (usual accounting practices)	Unit costs ⁵	Actual costs	Actual costs	Actual costs	Actual costs	/ Actual costs	Unit costs (usual accounting practices)	/ Unit costs ⁵	/ Unit costs ⁵	/ Actual costs	/ Unit costs ⁵	/ Actual costs	/ Actual costs	Flat-rate costs ⁶	U	g = f*U%	h	m	n
	a1	a2	a3	b	c1	c2	c3	[d1a]	d2	[d3]	[d4]	[d5]	[d6]	[d7]	[d8]	e = 0,25 * (a1 + a2 + a3 + b + c1 + c2 + c3 + d1a + d2 + d3 + d4 + d5 + d6 + d7 + d8)					
XX - [short name beneficiary/affiliated entity]																					

The beneficiary/affiliated entity hereby confirms that:
 The information provided is complete, reliable and true.
 The costs and contributions declared are eligible (see Article 6).
 The costs and contributions can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 19, 20 and 25).
 For the last reporting period: that all the revenues have been declared (see Article 22).

¹ Please declare all eligible costs and contributions, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account later on, in order to replace costs/contributions that are found to be ineligible.

² See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).
³ If you have also received an EU operating grant during this reporting period, you cannot claim indirect costs - unless you can demonstrate that the operating grant does not cover any costs of the action. This requires specific accounting tools. Please contact us immediately via the Funding & Tenders Portal for details.
⁴ See Data Sheet for the reimbursement rate(s).
⁵ This is the *theoretical* amount of EU contribution to costs that the system calculates automatically (by multiplying the reimbursement rates by the costs declared). The amount you request (in the column 'requested EU contribution') may be less.
⁶ See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).
⁷ See Data Sheet for the flat-rate.

ANNEX 5

SPECIFIC RULES

CONFIDENTIALITY AND SECURITY (— ARTICLE 13)

Sensitive information with security recommendation

Sensitive information with a security recommendation must comply with the additional requirements imposed by the granting authority.

Before starting the action tasks concerned, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task. The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary.

For requirements restricting disclosure or dissemination, the information must be handled in accordance with the recommendation and may be disclosed or disseminated only after written approval from the granting authority.

EU classified information

If EU classified information is used or generated by the action, it must be treated in accordance with the security classification guide (SCG) and security aspect letter (SAL) set out in Annex 1 and Decision 2015/444¹ and its implementing rules — until it is declassified.

Deliverables which contain EU classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving EU classified information may be subcontracted only with prior explicit written approval from the granting authority and only to entities established in an EU Member State or in a non-EU country with a security of information agreement with the EU (or an administrative arrangement with the Commission).

EU classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

ETHICS (— ARTICLE 14)

Ethics and research integrity

The beneficiaries must carry out the action in compliance with:

- ethical principles (including the highest standards of research integrity)

¹ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

and

- applicable EU, international and national law, including the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.

No funding can be granted, within or outside the EU, for activities that are prohibited in all Member States. No funding can be granted in a Member State for an activity which is forbidden in that Member State.

The beneficiaries must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

The beneficiaries must ensure that the activities under the action have an exclusive focus on civil applications.

The beneficiaries must ensure that the activities under the action do not:

- aim at human cloning for reproductive purposes
- intend to modify the genetic heritage of human beings which could make such modifications heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed)
- intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer, or
- lead to the destruction of human embryos (for example, for obtaining stem cells).

Activities involving research on human embryos or human embryonic stem cells may be carried out only if:

- they are set out in Annex 1 or
- the coordinator has obtained explicit approval (in writing) from the granting authority.

In addition, the beneficiaries must respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity².

This implies compliance with the following principles:

- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources
- honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way

² European Code of Conduct for Research Integrity of ALLEA (All European Academies).

- respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment
- accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts

and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

Activities raising ethical issues must comply with the additional requirements formulated by the ethics panels (including after checks, reviews or audits; see Article 25).

Before starting an action task raising ethical issues, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task, notably from any (national or local) ethics committee or other bodies such as data protection authorities.

The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary, which shows that the documents cover the action tasks in question and includes the conclusions of the committee or authority concerned (if any).

VALUES (— ARTICLE 14)

Gender mainstreaming

The beneficiaries must take all measures to promote equal opportunities between men and women in the implementation of the action and, where applicable, in line with the gender equality plan. They must aim, to the extent possible, for a gender balance at all levels of personnel assigned to the action, including at supervisory and managerial level.

INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE (— ARTICLE 16)

Definitions

Access rights — Rights to use results or background.

Dissemination — The public disclosure of the results by appropriate means, other than resulting from protecting or exploiting the results, including by scientific publications in any medium.

Exploit(ation) — The use of results in further research and innovation activities other than those covered by the action concerned, including among other things, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities.

Fair and reasonable conditions — Appropriate conditions, including possible financial terms or royalty-free conditions, taking into account the specific circumstances of the request for access, for example the actual or potential value of the results or background to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged.

FAIR principles — ‘findability’, ‘accessibility’, ‘interoperability’ and ‘reusability’.

Open access — Online access to research outputs provided free of charge to the end-user.

Open science — An approach to the scientific process based on open cooperative work, tools and diffusing knowledge.

Research data management — The process within the research lifecycle that includes the organisation, storage, preservation, security, quality assurance, allocation of persistent identifiers (PIDs) and rules and procedures for sharing of data including licensing.

Research outputs — Results to which access can be given in the form of scientific publications, data or other engineered results and processes such as software, algorithms, protocols, models, workflows and electronic notebooks.

Scope of the obligations

For this section, references to ‘beneficiary’ or ‘beneficiaries’ do not include affiliated entities (if any).

Agreement on background

The beneficiaries must identify in a written agreement the background as needed for implementing the action or for exploiting its results.

Where the call conditions restrict control due to strategic interests reasons, background that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded from it in the agreement on background — unless otherwise agreed with the granting authority.

Ownership of results

Results are owned by the beneficiaries that generate them.

However, two or more beneficiaries own results jointly if:

- they have jointly generated them and
- it is not possible to:
 - establish the respective contribution of each beneficiary, or
 - separate them for the purpose of applying for, obtaining or maintaining their protection.

The joint owners must agree — in writing — on the allocation and terms of exercise of their joint ownership (**‘joint ownership agreement’**), to ensure compliance with their obligations under this Agreement.

Unless otherwise agreed in the joint ownership agreement or consortium agreement, each joint owner may grant non-exclusive licences to third parties to exploit the jointly-owned results (without any right to sub-license), if the other joint owners are given:

- at least 45 days advance notice and
- fair and reasonable compensation.

The joint owners may agree — in writing — to apply another regime than joint ownership.

If third parties (including employees and other personnel) may claim rights to the results, the beneficiary concerned must ensure that those rights can be exercised in a manner compatible with its obligations under the Agreement.

The beneficiaries must indicate the owner(s) of the results (results ownership list) in the final periodic report.

Protection of results

Beneficiaries which have received funding under the grant must adequately protect their results — for an appropriate period and with appropriate territorial coverage — if protection is possible and justified, taking into account all relevant considerations, including the prospects for commercial exploitation, the legitimate interests of the other beneficiaries and any other legitimate interests.

Exploitation of results

Beneficiaries which have received funding under the grant must — up to four years after the end of the action (see Data Sheet, Point 1) — use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing.

If, despite a beneficiary's best efforts, the results are not exploited within one year after the end of the action, the beneficiaries must (unless otherwise agreed in writing with the granting authority) use the Horizon Results Platform to find interested parties to exploit the results.

If results are incorporated in a standard, the beneficiaries must (unless otherwise agreed with the granting authority or unless it is impossible) ask the standardisation body to include the funding statement (see Article 17) in (information related to) the standard.

Additional exploitation obligations

Where the call conditions impose additional exploitation obligations (including obligations linked to the restriction of participation or control due to strategic assets, interests, autonomy or security reasons), the beneficiaries must comply with them — up to four years after the end of the action (see Data Sheet, Point 1).

Where the call conditions impose additional exploitation obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) grant for a limited period of time specified in the request, non-exclusive licences — under fair and reasonable conditions — to their results to legal entities that need the results to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Additional information obligation relating to standards

Where the call conditions impose additional information obligations relating to possible standardisation, the beneficiaries must — up to four years after the end of the action (see Data Sheet, Point 1) — inform the granting authority, if the results could reasonably be expected to contribute to European or international standards.

Transfer and licensing of results

Transfer of ownership

The beneficiaries may transfer ownership of their results, provided this does not affect compliance with their obligations under the Agreement.

The beneficiaries must ensure that their obligations under the Agreement regarding their results are passed on to the new owner and that this new owner has the obligation to pass them on in any subsequent transfer.

Moreover, they must inform the other beneficiaries with access rights of the transfer at least 45 days in advance (or less if agreed in writing), unless agreed otherwise in writing for specifically identified third parties including affiliated entities or unless impossible under the applicable law. This notification must include sufficient information on the new owner to enable the beneficiaries concerned to assess the effects on their access rights. The beneficiaries may object within 30 days of receiving notification (or less if agreed in writing), if they can show that the transfer would adversely affect their access rights. In this case, the transfer may not take place until agreement has been reached between the beneficiaries concerned.

Granting licences

The beneficiaries may grant licences to their results (or otherwise give the right to exploit them), including on an exclusive basis, provided this does not affect compliance with their obligations.

Exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights.

Granting authority right to object to transfers or licensing — Horizon Europe actions

Where the call conditions in Horizon Europe actions provide for the right to object to transfers or licensing, the granting authority may — up to four years after the end of the action (see Data Sheet, Point 1) — object to a transfer of ownership or the exclusive licensing of results, if:

- the beneficiaries which generated the results have received funding under the grant
- it is to a legal entity established in a non-EU country not associated with Horizon Europe, and
- the granting authority considers that the transfer or licence is not in line with EU interests.

Beneficiaries that intend to transfer ownership or grant an exclusive licence must formally notify the granting authority before the intended transfer or licensing takes place and:

- identify the specific results concerned
- describe in detail the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or licence on EU interests, in particular regarding competitiveness as well as consistency with ethical principles and security considerations.

The granting authority may request additional information.

If the granting authority decides to object to a transfer or exclusive licence, it must formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information it has requested).

No transfer or licensing may take place in the following cases:

- pending the granting authority decision, within the period set out above
- if the granting authority objects
- until the conditions are complied with, if the granting authority objection comes with conditions.

A beneficiary may formally notify a request to waive the right to object regarding intended transfers or grants to a specifically identified third party, if measures safeguarding EU interests are in place. If the granting authority agrees, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

Granting authority right to object to transfers or licensing — Euratom actions

Where the call conditions in Euratom actions provide for the right to object to transfers or licensing, the granting authority may — up to four years after the end of the action (see Data Sheet, Point 1) — object to a transfer of ownership or the exclusive or non-exclusive licensing of results, if:

- the beneficiaries which generated the results have received funding under the grant
- it is to a legal entity established in a non-EU country not associated to the Euratom Research and Training Programme 2021-2025 and
- the granting authority considers that the transfer or licence is not in line with the EU interests.

Beneficiaries that intend to transfer ownership or grant a licence must formally notify the granting authority before the intended transfer or licensing takes place and:

- identify the specific results concerned
- describe in detail the results, the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or licence on EU interests, in particular regarding competitiveness as well as consistency with

ethical principles and security considerations (including the defence interests of the EU Member States under Article 24 of the Euratom Treaty).

The granting authority may request additional information.

If the granting authority decides to object to a transfer or licence, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

No transfer or licensing may take place in the following cases:

- pending the granting authority decision, within the period set out above
- if the granting authority objects
- until the conditions are complied with, if the granting authority objection comes with conditions.

A beneficiary may formally notify a request to waive the right to object regarding intended transfers or grants to a specifically identified third party, if measures safeguarding EU interests are in place. If the granting authority agrees, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

Limitations to transfers and licensing due to strategic assets, interests, autonomy or security reasons of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security reasons, the beneficiaries may not transfer ownership of their results or grant licences to third parties which are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless they have requested and received prior approval by the granting authority.

The request must:

- identify the specific results concerned
- describe in detail the new owner and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or license on the strategic assets, interests, autonomy or security of the EU and its Member States.

The granting authority may request additional information.

Access rights to results and background

Exercise of access rights — Waiving of access rights — No sub-licensing

Requests to exercise access rights and the waiver of access rights must be in writing.

Unless agreed otherwise in writing with the beneficiary granting access, access rights do not include the right to sub-license.

If a beneficiary is no longer involved in the action, this does not affect its obligations to grant access.

If a beneficiary defaults on its obligations, the beneficiaries may agree that that beneficiary no longer has access rights.

Access rights for implementing the action

The beneficiaries must grant each other access — on a royalty-free basis — to background needed to implement their own tasks under the action, unless the beneficiary that holds the background has — before acceding to the Agreement —:

- informed the other beneficiaries that access to its background is subject to restrictions, or
- agreed with the other beneficiaries that access would not be on a royalty-free basis.

The beneficiaries must grant each other access — on a royalty-free basis — to results needed for implementing their own tasks under the action.

Access rights for exploiting the results

The beneficiaries must grant each other access — under fair and reasonable conditions — to results needed for exploiting their results.

The beneficiaries must grant each other access — under fair and reasonable conditions — to background needed for exploiting their results, unless the beneficiary that holds the background has — before acceding to the Agreement — informed the other beneficiaries that access to its background is subject to restrictions.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for entities under the same control

Unless agreed otherwise in writing by the beneficiaries, access to results and, subject to the restrictions referred to above (if any), background must also be granted — under fair and reasonable conditions — to entities that:

- are established in an EU Member State or Horizon Europe associated country
- are under the direct or indirect control of another beneficiary, or under the same direct or indirect control as that beneficiary, or directly or indirectly controlling that beneficiary and
- need the access to exploit the results of that beneficiary.

Unless agreed otherwise in writing, such requests for access must be made by the entity directly to the beneficiary concerned.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for the granting authority, EU institutions, bodies, offices or agencies and national authorities to results for policy purposes — Horizon Europe actions

In Horizon Europe actions, the beneficiaries which have received funding under the grant must grant access to their results — on a royalty-free basis — to the granting authority, EU institutions, bodies, offices or agencies for developing, implementing and monitoring EU policies or programmes. Such access rights do not extend to beneficiaries' background.

Such access rights are limited to non-commercial and non-competitive use.

For actions under the cluster 'Civil Security for Society', such access rights also extend to national authorities of EU Member States for developing, implementing and monitoring their policies or programmes in this area. In this case, access is subject to a bilateral agreement to define specific conditions ensuring that:

- the access rights will be used only for the intended purpose and
- appropriate confidentiality obligations are in place.

Moreover, the requesting national authority or EU institution, body, office or agency (including the granting authority) must inform all other national authorities of such a request.

Access rights for the granting authority, Euratom institutions, funding bodies or the Joint Undertaking Fusion for Energy — Euratom actions

In Euratom actions, the beneficiaries which have received funding under the grant must grant access to their results — on a royalty-free basis — to the granting authority, Euratom institutions, funding bodies or the Joint Undertaking Fusion for Energy for developing, implementing and monitoring Euratom policies and programmes or for compliance with obligations assumed through international cooperation with non-EU countries and international organisations.

Such access rights include the right to authorise third parties to use the results in public procurement and the right to sub-license and are limited to non-commercial and non-competitive use.

Additional access rights

Where the call conditions impose additional access rights, the beneficiaries must comply with them.

COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)

Dissemination

Dissemination of results

The beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.

A beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.

Any other beneficiary may object within (unless agreed otherwise) 15 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests.

Additional dissemination obligations

Where the call conditions impose additional dissemination obligations, the beneficiaries must also comply with those.

Open Science

Open science: open access to scientific publications

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and
- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement.

Open science: research data management

The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:

- establish a data management plan ('DMP') (and regularly update it)

- as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions, this repository must be federated in the EOSC in compliance with EOSC requirements
- as soon as possible and within the deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a licence with equivalent rights, following the principle ‘as open as possible as closed as necessary’, unless providing open access would in particular:
 - be against the beneficiary’s legitimate interests, including regarding commercial exploitation, or
 - be contrary to any other constraints, in particular the EU competitive interests or the beneficiary’s obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP
- provide information via the repository about any research output or any other tools and instruments needed to re-use or validate the data.

Metadata of deposited data must be open under a Creative Commons Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.

Open science: additional practices

Where the call conditions impose additional obligations regarding open science practices, the beneficiaries must also comply with those.

Where the call conditions impose additional obligations regarding the validation of scientific publications, the beneficiaries must provide (digital or physical) access to data or other results needed for validation of the conclusions of scientific publications, to the extent that their legitimate interests or constraints are safeguarded (and unless they already provided the (open) access at publication).

Where the call conditions impose additional open science obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) immediately deposit any research output in a repository and provide open access to it under a CC BY licence, a Public Domain Dedication (CC 0) or equivalent. As an exception, if the access would be against the beneficiaries’ legitimate interests, the beneficiaries must grant non-exclusive licenses — under fair and reasonable conditions — to legal entities that need the research output to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Plan for the exploitation and dissemination of results including communication activities

Unless excluded by the call conditions, the beneficiaries must provide and regularly update a plan for the exploitation and dissemination of results including communication activities.

SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)

Implementation in case of restrictions due to strategic assets, interests, autonomy or security of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security, the beneficiaries must ensure that none of the entities that participate as affiliated entities, associated partners, subcontractors or recipients of financial support to third parties are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless otherwise agreed with the granting authority.

The beneficiaries must moreover ensure that any cooperation with entities established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) does not affect the strategic assets, interests, autonomy or security of the EU and its Member States.

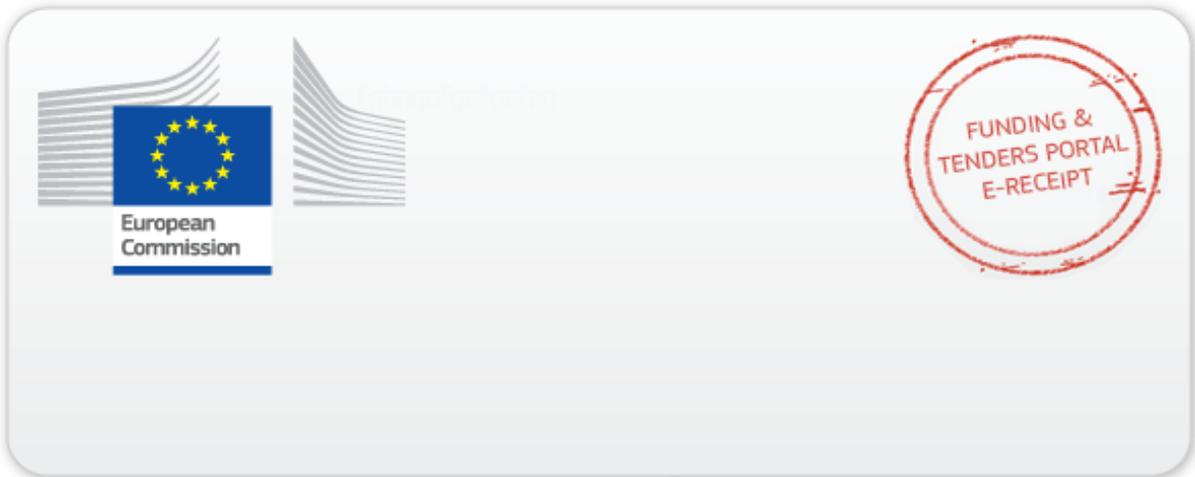
Recruitment and working conditions for researchers

The beneficiaries must take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers³, in particular regarding:

- working conditions
- transparent recruitment processes based on merit, and
- career development.

The beneficiaries must ensure that researchers and all participants involved in the action are aware of them.

³ Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).



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