EUROPEAN CLIMATE, INFRASTRUCTURE AND ENVIRONMENT EXECUTIVE AGENCY (CINEA)

CINEA.D – Natural resources, climate, sustainable blue economy and clean energy
D.1 – LIFE Energy + LIFE Climate

GRANT AGREEMENT

Project 101113988 — LIFE22-CCA-SK-FLOPRES

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':

ESPRIT SPOL. SRO (ESPRIT), PIC 945308069, established in PLETIARSKA 2, BANSKA STIAVNICA 969 01, Slovakia,

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

2. **GOSPACE LABS SRO (GOSPACE)**, PIC 914627163, established in ILKOVICOVA 8, BRATISLAVA 841 04, Slovakia,

3. **METEO SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA (Meteo)**, PIC 890655456, established in UL TYNIECKA 15/17/1, WARSZAWA 02-630, Poland,

4. **PRESOVSKY SAMOSPRAVNY KRAJ (PSK)**, PIC 882306569, established in NAMESTIE MIERU 2, PRESOV 08001, Slovakia,

5. **MALOPOLSKA AGENCJA ROZWOJU REGIONALNEGO SA (MARR SA)**, PIC 900122462, established in UL. KORDYLEWSKIEGO 11, KRAKOW 31-542, Poland,

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 action[1]
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

TABLE OF CONTENTS

DATA SHEET

1. General data

Project summary:

Project summary
Changing hydro-meteorological conditions due to climate change, intensification of land and water use and lack of adaptation measures are among the contributors to water-related risks, such as landslides or flash floods. Although water management has been changing its approach over the past decade and new technologies to improve flood risk prevention have been introduced, recurring flood incidents demonstrate deficiencies in forecasting flood risks and threat locations. Authorities responsible for local water governance and members of the general public such as farmers and landowners lack the knowledge and capacity to address the challenges posed by the need for climate change adaptation. FLOPRES project proposes an integrated solution to support flood modelling, forecasting, early warnings, integration and analysis of multimodal data both for authorities responsible for water and emergency management at all levels and private persons who might be impacted by the consequences of climate change-related hazardous events. Our intention is also to raise awareness of the public and various stakeholders on a nature-based solution to adapt to climate change and make local communities and authorities work together efficiently under the same objective. The project will contribute to better informed and more nature-based friendly decision-making processes in water management and management of water risks and disasters, based on up-to-date information, increased knowledge and strengthened collaboration among stakeholders, experts and the public. As a result, the resilience of municipalities and their citizens to climate-change-related events will be strengthened and the risks stemming from climate change lessened.

Keywords:

- CCA: Strategies, plans and state-of-the art tools.

Project number: 101113988

Project name: Flash Flood Prediction and Prevention System

Project acronym: LIFE22-CCA-SK-FLOPRES

Call: LIFE-2022-SAP-CLIMA

Topic: LIFE-2022-SAP-CLIMA-CCA

Type of action: LIFE Project Grants

Granting authority: European Climate, Infrastructure and Environment Executive Agency

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

Project starting date: fixed date: 1 September 2023

Project end date: 31 August 2026

Project duration: 36 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	ESPRIT	ESPRIT SPOL. SRO	SK	945308069	1 420 499.90	852 299.00
2	BEN	GOSPACE	GOSPACE LABS SRO	SK	914627163	739 412.80	443 647.00
3	BEN	Meteo	METEO SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA	PL	890655456	324 745.00	194 847.00
4	BEN	PSK	PRESOVSKY SAMOSPRAVNY KRAJ	SK	882306569	346 680.00	208 008.00

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
5	BEN	MARR SA	MALOPOLSKA AGENCJA ROZWOJU REGIONALNEGO SA	PL	900122462	369 792.00	221 875.00
6	AP	Malopolska	The Malopolska Region	PL	933782626	0.00	0.00
7	AP	City of Košice	Kosice City	SK	938386731	0.00	0.00
8	AP	City of Prešov	MESTO PRESOV	SK	920608183	0.00	0.00
9	AP	ICKK	Inovacne centrum Kosickeho kraja	SK	887311090	0.00	0.00
Total						3 201 129.70	1 920 676.00

Coordinator:

– ESPRIT SPOL. SRO (ESPRIT)

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)
3 201 129.70	60	1 920 676.00	1 920 676.00

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
  - A.5 Volunteers
- 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.1 Financial support to third parties
  - D.2 Land purchase
- E. Indirect costs

Cost eligibility options:

- Standard supplementary payments
- Limitation for subcontracting
- Travel and subsistence:
  - Travel: Actual costs
  - Accommodation: Actual costs
  - Subsistence: Actual costs

- Equipment: full costs and depreciation for listed equipment
- Costs for providing financial support to third parties (actual cost; max amount for each recipient: EUR 20 000.00)
- Indirect cost flat-rate: 7% of the eligible direct costs (categories A-D, except volunteers costs 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/ financial guarantee (if required) – whichever is the latest
1	1	18	Additional prefinancing report	60 days after end of reporting period	Additional prefinancing	60 days from receiving additional prefinancing report/ financial guarantee (if required) – whichever is the latest
2	19	36	Periodic report	60 days after end of reporting period	Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment		Prefinancing guarantee		
Type	Amount	Guarantee amount	Division per participant	
Prefinancing 1 (initial)	576 202.80	n/a	1 - ESPRIT	n/a
			2 - GOSPACE	n/a
			3 - Meteo	n/a
			4 - PSK	n/a
			5 - MARR SA	n/a
Prefinancing 2 (additional)	960 338.00	n/a	1 - ESPRIT	n/a
			2 - GOSPACE	n/a
			3 - Meteo	n/a

Prefinancing payment		Prefinancing guarantee		
Type	Amount	Guarantee amount	Division per participant	
			4 - PSK	n/a
			5 - MARR SA	n/a

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): No

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call condititions (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

No-profit rule: Yes

Late payment interest: ECB + 3.5%

Bank account for payments:

SK8702000000000269149422

Conversion into euros: Double conversion

Reporting language: Language of the Agreement

4.3 Certificates (art 24):

Certificates on the financial statements (CFS):

Conditions:

Schedule: interim/final payment, if threshold is reached

Standard threshold (beneficiary-level):

- financial statement: requested EU contribution to costs ≥ EUR 500 000.00

4.4 Recoveries (art 22)

First-line liability for recoveries:

Beneficiary termination: Beneficiary concerned

Final payment: Coordinator

After final payment: Beneficiary concerned

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

Limited joint and several liability of other beneficiaries — up to the maximum grant amount of the beneficiary

Joint and several liability of affiliated entities — n/a

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

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): 5 (or 3 for grants of not more than EUR 60 000)

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

Extension of findings from other grants to this grant (no later than X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

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 2018/1046[4] 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 2017/1371[5] and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995[6], 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 2988/95[7].

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 **101113988 — LIFE22-CCA-SK-FLOPRES** ('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

[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).

The grant is an action grant[8] which takes the form of a budget-based mixed actual cost grant (i.e. a 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 60% of the action's eligible costs.

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)[9] 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

[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".

[9] 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).

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, 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 total number of day-equivalents declared in EU grants, for a person for a year, cannot be higher than 215.

The personnel costs may also include supplementary payments for personnel assigned to the action (including payments on the basis of supplementary contracts regardless of their nature), if:

- it is part of the beneficiary's usual remuneration practices and is paid in a consistent manner whenever the same kind of work or expertise is required

- the criteria used to calculate the supplementary payments are objective and generally applied by the beneficiary, regardless of the source of funding used.

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 enterprises[10] not receiving a salary) or **natural person beneficiaries** (i.e. beneficiaries that are

[10] 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

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.

A.5 The work of **volunteers** for the action (i.e. persons who freely work for an organisation, on a non-compulsory basis and without being paid) may be declared as personnel costs, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions and are calculated as unit costs in accordance with the method set out in Annex 2a.

They:

- may not exceed the maximum amount for volunteers for the action (which corresponds to 50% of the total (ineligible and eligible) project costs and contributions estimated in the proposal)
- may not exceed the maximum amount for volunteers for each beneficiary set out in Annex 2
- may not make the maximum EU contribution to costs higher than the total eligible costs without volunteers.

If also indirect costs for volunteers are declared eligible in the call conditions, the amount of indirect costs may be added to the volunteers costs category in Annex 2, at the flat-rate set out in Point E.

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 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

- 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.

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** specifically for the action (or developed as part of the action tasks) may be declared as full capitalised costs if they fulfil the eligibility conditions applicable to their respective cost categories.

'Capitalised costs' means:

- costs incurred in the purchase or for the development of the equipment, infrastructure or other assets and,
- which are recorded under a fixed asset account of the beneficiary in compliance with international accounting standards and the beneficiary's usual cost accounting practices.

If such equipment, infrastructure or other assets are rented or leased, full costs for **renting or leasing** are 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.1 Financial support to third parties

Costs for providing financial support to third parties (in the form of **grants, prizes** or similar forms of support; if any) are eligible, if and as declared eligible in the call conditions, if they fulfil the

general eligibility conditions, are calculated on the basis of the costs actually incurred and the support is implemented in accordance with the conditions set out in Annex 1.

These conditions must ensure objective and transparent selection procedures and include at least the following:

(a) for grants (or similar):

(i) the maximum amount of financial support for each third party ('recipient'); this amount may not exceed the amount set out in the Data Sheet (see Point 3) or otherwise agreed with the granting authority

(ii) the criteria for calculating the exact amount of the financial support

(iii) the different types of activity that qualify for financial support, on the basis of a closed list

(iv) the persons or categories of persons that will be supported and

(v) the criteria and procedures for giving financial support

(b) for prizes (or similar):

(i) the eligibility and award criteria

(ii) the amount of the prize and

(iii) the payment arrangements.

D.2 Land purchase

Costs for land purchase from private entities (or long-term lease of land or one-off compensations for land use rights) are eligible, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions, are calculated on the basis of the costs actually incurred and:

(a) the purchase will contribute to improving, maintaining and restoring the integrity of the Natura 2000 network set up pursuant to Article 3 of Directive 92/43/EEC, including through improving connectivity by the creation of corridors, stepping stones, or other elements of green infrastructure

(b) land purchase is the only or most cost-effective way of achieving the desired conservation outcome

(c) the land purchased is reserved in the long term for uses consistent with the specific objectives of the LIFE Programme

(d) the Member State concerned ensures, by way of transfer or otherwise, the long-term assignment of such land to nature conservation purposes and the beneficiary documents this by ensuring that:

(i) the entry into the land register includes a condition that the land will be assigned definitively to nature conservation

(ii) or, if there is no land register or such a condition is not possible under national law, that

such a condition is either included in the land sale contract or guaranteed by equivalent means

(e) for land purchases by private entity beneficiaries: the beneficiaries ensure the long-term conservation by ensuring that:

(i) the entry into the land register includes a condition that, in case of their dissolution or incapacity to manage the land according to nature conservation requirements, the property will be transferred to an entity primarily active in the field of nature protection

(ii) or, if there is no land register or such a condition is not possible under national law, that such a condition is either included in the land sale contract or guaranteed by equivalent means

(f) for purchases of partial rights: the entry into the land register duly reflects the long-term nature conservation objectives and the requirements set out in this Article

(g) for land purchased to be exchanged at a later date for another parcel on which the action will be undertaken: the exchange is carried out before the end of the action and the land exchanged complies with the requirements set out in this Article

(h) for long-term leases: the lease is of at least 20 years and includes provisions and commitments that ensure the achievement of its objectives in terms of habitat and species protection.

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 7% of the eligible direct costs (categories A-D, except volunteers costs 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

(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 grant[11] 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.

CHAPTER 4 GRANT IMPLEMENTATION

SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS

ARTICLE 7 — BENEFICIARIES

[11] 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".

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'[12] (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)
- 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

[12] 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."

Not applicable

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':

- **The Malopolska Region (Malopolska)**, PIC 933782626
- **Kosice City (City of Košice)**, PIC 938386731
- **MESTO PRESOV (City of Prešov)**, PIC 920608183
- **Inovacne centrum Kosickeho kraja (ICKK)**, PIC 887311090

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 and the costs for the in-kind contributions are not eligible.

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

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/EC[13]
- 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

[13] 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).

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).

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 2015/444[14] and its implementing rules).

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

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.

[14] 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).

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 2018/1725[15].

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 2016/679[16]).

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).

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[15] 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 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).

[16] 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).

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:

(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):

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.

The general liability regime for recoveries (first-line liability) is as follows: At final payment, the coordinator will be fully liable for recoveries, even if it has not been the final recipient of the undue amounts. At beneficiary termination or after final payment, recoveries will be made directly against the beneficiaries concerned.

Beneficiaries will be fully liable for repaying the debts of their affiliated entities.

In case of enforced recoveries (see Article 22.4):

- the beneficiaries will be jointly and severally liable for repaying debts of another beneficiary under the Agreement (including late-payment interest), if required by the granting authority (see Data Sheet, Point 4.4)

- affiliated entities will be held liable for repaying debts of their beneficiaries under the Agreement (including late-payment interest), 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.

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**).

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.

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:

{final grant amount

minus

{prefinancing and interim payments made (if any)}}.

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

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 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 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 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:

{{total accepted EU contribution for the beneficiary

divided by

total accepted EU contribution for the action}

multiplied by

final grant amount for the action}.

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) by drawing on the financial guarantee(s) (if any)

(c) by holding other beneficiaries jointly and severally liable (if any; see Data Sheet, Point 4.4)

(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.

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 2015/2366[17] 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.

[17] 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).

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).

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 28) 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

23.1 Prefinancing guarantee

If required by the granting authority (see Data Sheet, Point 4.2), the beneficiaries must provide (one or more) prefinancing guarantee(s) in accordance with the timing and the amounts set out in the Data Sheet.

The coordinator must submit them to the granting authority in due time before the prefinancing they are linked to.

The guarantees must be drawn up using the template published on the Portal and fulfil the following conditions:

(a) be provided by a bank or approved financial institution established in the EU or — if requested by the coordinator and accepted by the granting authority — by a third party or a bank or financial institution established outside the EU offering equivalent security

(b) the guarantor stands as first-call guarantor and does not require the granting authority to first have recourse against the principal debtor (i.e. the beneficiary concerned) and

(c) remain explicitly in force until the final payment and, if the final payment takes the form of a recovery, until five months after the debit note is notified to a beneficiary.

They will be released within the following month.

23.2 Consequences of non-compliance

If the beneficiaries breach their obligation to provide the prefinancing guarantee, the prefinancing will not be paid.

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

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/EC[18] (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).

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

Not applicable

24.4 Systems and process audit (SPA)

Not applicable

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

[18] 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).

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 883/2013[19] and No 2185/96[20]

- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939

[19] 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).

[20] Council Regulation (Euratom, EC) No 2185/96 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).

- 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 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) additional GA suspension grounds: not applicable.

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) additional GA termination grounds: not applicable.

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 2988/95[21]).

[21] 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).

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).

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 1182/71[22], 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

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.

[22] 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).

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

Dušan KOČICKÝ with ECAS id nkocicdu signed in the Participant Portal on 19/06/2023 at 10:21:13 (transaction id SigId-21371-Z6s3t36w3pvVoJmCK8GYbvaPfPm9C0Kkt5oju9gOpzlkDe1xXg6aTaxZMM7xoJy0iezIaqkGeSrhR6NTXnuMCzm-jpJZscgsw0K4epxy2XYw0y-brZekYLyswq0Dm8vC0qxxXznAl1c9Uy8NKkqmHcE67o0U1MLs5P7segzyWVDp2fSyJ5U6cC8T6D3Enov7nf2YE). Timestamp by third party at 2023.06.19 10:21:20 CEST

For the granting authority

Signed by Agnieszka ROMANOWICZ with ECAS id romanaf as an authorised representative on 19-06-2023 11:56:16 (transaction id SigId-23603-5y0jxcNxmRKNEt1RUQFu7zK7CLs0zabp1GCSg7PgPASzWw1EvYahtxBWtpV32HmY4hGMqUgpOuHeZEwGP0wNxzu-jpJZscgsw0K4epxy2XYw0y-NpiQM6vbJFlIW1WlLhESmaBOa6mNh5jRCpMtZzzIwV1NPvQPk4PzmL1o6iyx7JrZrcAIisiuwkMpJpGpM8xxiTW) 2023.06.19 11:56:20 CEST

ANNEX 1

Programme for the Environment and Climate Action (LIFE)

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 *Grant Preparation (General Information screen) — Enter the info.*	
Project number:	101113988
Project name:	Flash Flood Prediction and Prevention System
Project acronym:	LIFE22-CCA-SK-FLOPRES
Call:	LIFE-2022-SAP-CLIMA
Topic:	LIFE-2022-SAP-CLIMA-CCA
Type of action:	LIFE-PJG
Service:	CINEA/D/01
Project starting date:	fixed date: 1 September 2023
Project duration:	36 months

TABLE OF CONTENTS

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.

Changing hydro-meteorological conditions due to climate change, intensification of land and water use and lack of adaptation measures are among the contributors to water-related risks, such as landslides or flash floods. Although water management has been changing its approach over the past decade and new technologies to improve flood risk prevention have been introduced, recurring flood incidents demonstrate deficiencies in forecasting flood risks and threat locations. Authorities responsible for local water governance and members of the general public such as farmers and landowners lack the knowledge and capacity to address the challenges posed by the need for climate change adaptation.

FLOPRES project proposes an integrated solution to support flood modelling, forecasting, early warnings, integration and analysis of multimodal data both for authorities responsible for water and emergency management at all levels and private persons who might be impacted by the consequences of climate change-related hazardous events. Our intention is also to raise awareness of the public and various stakeholders on a nature-based solution to adapt to climate change and make local communities and authorities work together efficiently under the same objective.

The project will contribute to better informed and more nature-based friendly decision-making processes in water management and management of water risks and disasters, based on up-to-date information, increased knowledge and strengthened collaboration among stakeholders, experts and the public. As a result, the resilience of municipalities and their citizens to climate-change-related events will be strengthened and the risks stemming from climate change lessened.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	ESPRIT	ESPRIT SPOL. SRO	SK	945308069
2	BEN	GOSPACE	GOSPACE LABS SRO	SK	914627163
3	BEN	Meteo	METEO SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA	PL	890655456
4	BEN	PSK	PRESOVSKY SAMOSPRAVNY KRAJ	SK	882306569
5	BEN	MARR SA	MALOPOLSKA AGENCJA ROZWOJU REGIONALNEGO SA	PL	900122462
6	AP	Malopolska	The Malopolska Region	PL	933782626
7	AP	City of Košice	Kosice City	SK	938386731
8	AP	City of Prešov	MESTO PRESOV	SK	920608183
9	AP	ICKK	Inovacne centrum Kosickeho kraja	SK	887311090

LIST OF WORK PACKAGES

Work packages

Grant Preparation (Work Packages screen) — Enter the info.

Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP1	Project management, Monitoring & Evaluation, Quality Assurance	1 - ESPRIT	72.00	1	36	D1.1 – Management and Contingency Plan D1.2 – Progress Report Documents 1 D1.3 – Progress Report Documents 2 D1.4 – Quality and Assurance Plan D1.5 – Monitoring & Evaluation Plan D1.6 – Extract of the project data from the LIFE KPI webtool 1 D1.7 – Extract of the project data from the LIFE KPI webtool 2 D1.8 – Green procurement guidelines D1.9 – Green procurement report
WP2	Preparatory actions and stakeholder engagement	4 - PSK	206.00	3	36	D2.1 – Technical reports on the chosen plots for sensor installation D2.2 – Stakeholder matrices D2.3 – Climate adaptation guidelines D2.4 – Marketing Strategy D2.5 – Lifelong learning course for the municipalities on climate adaptation and NBS D2.6 – Q&A roundtables / discussions / workshops during the national LIFE event 1 D2.7 – Q&A roundtables / discussions / workshops during the national LIFE event 2 D2.8 – Q&A roundtables / discussions / workshops during the national LIFE event 3 D2.9 – Q&A roundtables / discussions / workshops during the national LIFE event 4

Work packages

Grant Preparation (Work Packages screen) — Enter the info.

Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						D2.10 – Q&A roundtables / discussions / workshops during the national LIFE event 5 D2.11 – Letter expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management D2.12 – Support letter from relevant Slovak/Polish water agencies or ministries
WP3	Technical infrastructure	2 - GOSPACE	107.00	1	13	D3.1 – Operational plug & play manuals D3.2 – API/data integration protocol.
WP4	Implementation and testing of early-warning module	3 - Meteo	178.40	1	32	D4.1 – Technical report of the module implementation in Slovakia D4.2 – Technical report of the module implementation in Poland D4.3 – Application website D4.4 – Workshop report - early-warning module D4.5 – Description of the tool usage scenarios report D4.6 – Validation report
WP5	Implementation and testing of expert module	1 - ESPRIT	231.40	1	32	D5.1 – Prototype of a complex information system based on web GIS technology D5.2 – Workshop report - expert module D5.3 – A map of the flood risk D5.4 – A map of designated management measures D5.5 – Validation and adoption report
WP6	Sustainability, replication, and exploitation of project results	1 - ESPRIT	77.00	2	36	D6.1 – Business plan including replication component

Work packages

Grant Preparation (Work Packages screen) — Enter the info.

Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						D6.2 – Dissemination plan D6.3 – Web section on the website of the partners D6.4 – Report on realised measures to enhance the catalytic potential of the smart water systems D6.5 – Report on networking activities with other LIFE projects D6.6 – Sustainability plan D6.7 – Letter expressing intent of a relevant Slovak/Polish authority to use the project tools in land use planning or water management

Work package WP1 – Project management, Monitoring & Evaluation, Quality Assurance

Work Package Number	WP1	Lead Beneficiary	1. ESPRIT
Work Package Name	Project management, Monitoring & Evaluation, Quality Assurance		
Start Month	1	End Month	36

Objectives
-Manage the project to time & budget -Monitor data and knowledge management -Ensure the finished deliverables meet all criteria making them the best possible products -Ensure the proposed project reached its goals and created the intended impact

Description
T.1.1 Project administration, financial management, reporting (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1-M36 Coordinating and managing administrative matters and giving administrative support to all partners, prepare administrative reports to the Commission, ensure financial management (cost monitoring, accounting, cost statement preparation, distribution of funds), ensure compilation of project deliverables, ensure periodic reporting and communication with EC services and project officer(s) for purposes of coordination, progress monitoring and reporting. It will include project managers representing each project partner. The official Progress Report Documents will be generated after every period. At the end of the project, a Final Report will be issued. T.1.2 Project Management (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1-36 All the procedures needed for a correct execution of the planned tasks in the Work Plan. To this aim during the first months of the project, a Management and Contingency plan will be prepared by the project coordinator, which will include guidelines for financial reporting, presentation standards for deliverables and reports to the European Commission, measures to ensure timely reporting, payment procedures plan and calendar, IPR handling rules, mitigation strategies in case of project risks, etc. Project promoters will also prepare guidelines on inclusion of the green procurement principle in project management, which will define clear and verifiable environmental criteria for products and services in the procurement process. A Steering Committee represented by project managers from each organisation in the consortium will be established to take charge of the project strategic management decisions. Steering Committee meetings will be realised on a monthly basis. Internal communication procedures will be defined here with the aim of achieving the best results of the project execution. Three main annexes will be here included and updated during the project lifetime: internal personnel lists, members of the different committees and payment/budget evolution according to the internal rules, justifications and LIFE program financial rules. T.1.3 Monitoring & Evaluation, Quality Assurance (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M2-M36 Continuous monitoring and final assessment of whether and how the project is achieving/has achieved its objectives, creates the intended impact and all deliverables have met set criteria and quality requirements. The progress of project activities will be assured through ongoing internal impact monitoring. Final evaluation will evaluate the project success after its formal completion. Quality assurance activities will involve the review and auditing of project technical deliverables and activities to verify that they comply with applicable standards and procedures. At the beginning of the project, a plan for Monitoring and Evaluation activities (MEP) and Quality Assurance Plan (QAP) will be prepared, including a detailed description of monitoring and evaluation activities foreseen in the project, the list of KPIs and quality standards to be met. Monitoring and Evaluation Reports will be produced biannually and presented to the project Steering Committee. Reporting of estimated and achieved KPIs in the LIFE KPI web tool within the first 9 months from grant signature and at the end of the project will be ensured.

Work package WP2 – Preparatory actions and stakeholder engagement

Work Package Number	WP2	Lead Beneficiary	4. PSK
Work Package Name	Preparatory actions and stakeholder engagement		

Start Month	3	**End Month**	36

Objectives
-To create a stakeholder network and develop partnerships with local representatives -To increase awareness of local communities on climate change-related hazardous events, opportunities for prevention and adaptation practises -To prepare sites for implementation of technical solution - sensor installation -Develop guidance for municipalities to improve water management and promoting natural-based adaptation strategies

Description
T.2.1 Identification of pilot plots (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M3 - M8 Selection of the most suitable places in Prešov region and region of Lesser Poland regions from the hydrological point of view, where the sensors will be placed, and the system tested. Includes technical assessment of the sites to facilitate the installation of sensors and dealing with property rights. Preparation of legal agreements to purchase / lease of land and/or compensation payments for use rights. By the end of the activity, concrete plots are chosen and their property status clear. T.2.2 Stakeholder mapping and engagement (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M4 - M36 Identification of relevant stakeholders and local authorities responsible for water management, urban planning, emergency management and related decision making in selected regions in Slovakia and Poland, where the sensors will be implemented, and the new technological solution tested. Aiming to obtain support from relevant national water agencies or ministries regarding the potential integration of the project with national flood warning systems in Poland/ Slovakia. Development of catchment level partnerships and feasible plans to promote the implementation of sensors in plots identified in T.2.1. Establishment of effective cooperation between the project team and identified stakeholders in both regions through the foundation of the cross-disciplinary working groups and their regular meetings on quarterly basis (either online or offline). Project updates, best practices and lessons learnt during the project implementation will be shared at these meetings. By the end of year two of the project implementation, guidelines about the best flood adaptation strategies, technologies and support services to reduce vulnerability and enhance resilience will be collaboratively developed with the expert support from ESPRIT. Project promoters aim to obtain commitment letter from relevant local authorities on integrating the climate adaptation guidelines into local or regional planning/water management. T.2.3 Community involvement and awareness raising (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M4 - M36 During the management module development, the locations (municipalities) with the highest flash flood risk will be specified. Project partners PSK and MARR will then contact individual identified municipalities within their governance area and use their communication channels to inform the relevant target groups about engagement activities. This will ensure that local individuals/target groups will be effectively notified about any upcoming engagement activities. Involving special target groups who are dependent on land, forests, or agriculture, such as farmers, landowners, forest owners, etc. into consultations with local authorities will harmonise all interests for everyone’s benefit and give both the residents and local authorities a sense of empowerment and personal responsibility. Increasing their understanding of natural disasters, opportunities for prevention and climate change adaptation through expert workshops during the annual national LIFE info day event. Awareness raising will be further supported through the organisation of the regular roundtable events (every 6 months) between community representatives and local authorities in Prešov region and region of Lesser Poland, and 2 open project Q&A presentation days both in Slovakia and Poland during the first year of the project implementation. Where appropriate, project promoters will also use other notification channels, such as direct contact of individuals/associations. Project promoters will prepare video recording of all public engagement activities. These recordings will be uploaded on the project promoters’ websites, and project promoters will inform relevant target groups about this fact through their standard communication channels. Target groups will have an easy-to-access option of being informed about engagement activities and their conclusions, and will have an opportunity to provide their feedback and comments. T.2.4 Life-long learning (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M6-M12 Development of the web-based online learning course for both individuals and municipality representatives to acquire new knowledge on climate change and adaptation measures in towns and municipalities. The learning content will be offered in English language, as we plan to promote it also outside the project partners´ countries and on the EPALE

learning platform for adults. The course will be primarily based on instructional videos prepared at different stages of the project implementation:
• The first phase of the project – awareness raising, explanation of terms, and visual demonstration.
A short video will be prepared that will generally describe the landscape management process in the watershed with a description of various interventions in the landscape structure and landscape cover and their effects (positive/negative) on the rainfall-runoff ratios of the site. The target group is general public. Therefore, the video will be prepared in a way to reflect the need to be educational and beneficial for general audience.
• The project phase after the application is completed – explanation, instructions for using the application, demo.
A short video will be prepared that will describe the landscape management process in the watershed with practical instructions for a web application for modelling interventions in the landscape structure and landscape cover, and their effects (positive/negative) on the rainfall-runoff ratios of the site. The video will be practically-oriented to reflect the needs of a primary target group - representatives of local governments, territorial planning, crisis management.
The videos will be placed on the EPALE e-learning platform, and therefore the number of sessions or trained recipients is not limited.
By fostering awareness, capacity building and innovation, climate change learning helps communities and individuals to effectively adapt to the changing climate. The on-line course will be presented and tested during one of the regular quarterly meetings of the cross-disciplinary working groups both in Prešov region and region of Lesser Poland. Feedback from the learners will be collected to adapt the content to the needs of the target group.

T.2.5 Digital marketing (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR – BEN) M4 - M36
Developing digital marketing strategy: a plan for establishing an internet presence through online channels such as newsletter, twitter, facebook page to keep the community engaged, increase their awareness about the action and inform them about important milestones. Auditing existed and creating the new content for the channels. Advertising on specific platforms (e.g. Google Ads, Facebook Ads, or Instagram Ads).

Work package WP3 – Technical infrastructure

Work Package Number	WP3	**Lead Beneficiary**	2. GOSPACE
Work Package Name	Technical infrastructure		
Start Month	1	**End Month**	13

Objectives
-Calibration and adjustment of IoT sensors for specific measurements and compatibility with modules -Installation of the sensors in pilot sites

Description
Proposed IoT based smart hydrological station will be measuring 4 key parameters in real-time: water level, flow-velocity, soil moisture and precipitation in any given measurement point. Hydrological station will be designed in a way that other peripherals/special IoT sensors can be wirelessly/seamlessly connected to the station in the later stages with minimum need for additional development resources. T.3.1 Production of core IoT sensors (Meratch) with water level measurement functionality, adjustment, and customisation of the sensors addressing project needs. Further IoT sensors (Meratch) development and enhancement to measure water flow-velocity in the real-time. Integration of water level and flow-velocity IoT sensors into overall hydrological station measurement system. (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1 - M12 Under this task, core IoT sensors (Meratch) with water level measurement functionality will be produced (only for production/assembling costs). Consequently, further adjustment and customization of IoT sensors will be performed. Physical testing and calibration of the IoT sensors will be performed to meet precise real-time measurement needs of the project. Further IoT sensors (Meratch) development and enhancement to measure water flow-velocity in the real-time. Detailed testing and calibration of water flow-velocity sensors will be executed within this task. These two critical functionalities (1. water level measurement and 2. flow-velocity measurement) will be integrated in one IoT device/sensor which will be also integrated into an IoT hydrological station within this task. Within this task also API will be prepared to ensure data transfer and integration with other systems.

The actions will take place at GOSPACE premises, located in Bratislava, Slovakia. Meetings will take place online. IoT sensors will be prepared for plug & play installation and operations thus travelling to the deployment location of pilot sites in Slovakia and Poland will be realised only in urgent needs and troubleshooting during the installation phase.

T.3.2 Development of auxiliary IoT soil moisture sensors - to accurately measure soil moisture in the real-time. Design, development, testing, and calibration of IoT soil moisture sensors. Integration of IoT soil moisture sensors into the overall hydrological station framework (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1 - M8
Under this task, a special IoT sensor for precise measuring of soil moisture in real-time will be designed and developed. Physical testing and calibration of the sensors will be performed in the lab as well as real operation conditions to meet specific real-time soil moisture data measurement project needs. Detail testing and calibration of soil moisture sensor will be executed within this task. Integration of the sensor into the whole hydrological station measurement system will also be realised within this task. Functionality of wireless IoT devices and wireless communication allows location of soil moisture sensors either in the vicinity of the hydrological station or elsewhere within the network reach.
Within this task also API will be prepared to ensure data transfer and communication with other systems.
The actions take place at GOSPACE premises, located in Bratislava, Slovakia. Testing will take place in laboratory and testing locations, located in Bratislava and near Bratislava. Project coordination meetings will take place mostly online. IoT soil moisture sensors will be prepared for plug & play installation together with water level measurement and flow-velocity measurement sensors and installation is planned to be realised by the external company.

T.3.3 Development of innovative IoT precipitation sensors – cutting edge innovation and cost effective/scalable solution for precipitation measurement based on IoT. Integration of IoT precipitation sensors into the overall hydrological station real-time measurement system. (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1 - M12
Under this task a truly innovative and cutting-edge solution based on IoT for measuring precipitation in real-time will be developed. Thanks to leverage of modern IoT and IoT networks the proposed solution is unique and scalable - current solutions on the market for real-time precipitation monitoring are considerably more expensive and cumbersome. IoT precipitation sensors for precise measurement of precipitation in real-time will be fully designed and developed as an integral part of a full-fledged hydrological station. Detail testing in the lab as well as in real operational conditions will be performed. Further calibration of the IoT precipitation sensors will be performed to meet specific real-time precipitation data measurement needs. Full integration of the IoT precipitation sensors into the whole hydrological station measurement system will also be realised within this task. By successful integration of IoT precipitation sensors into the overall measurement system we will achieve a full-fledged hydrological station. Within this task also API will be prepared to ensure data transfer, communication, and smooth integration with other systems.
The actions take place at GOSPACE premises, located in Bratislava, Slovakia. Testing will take place in laboratory and testing locations, located in Bratislava and near Bratislava. Some testing may be realised in cooperation with local GOSPACE partners from hydrology or meteorology – currently running pilots together. Project coordination meetings will take place mostly online. IoT precipitation sensors will be prepared for plug & play installation together with other hydrological station sensors. Installation is planned to be realised by the external company.

T.3.4 Integration of all IoT elements and measurement into the innovative full-fledge IoT- based hydrological station. Preparation of plug & play installation and operation manuals (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M6 - M12
Under this task integration of all IoT elements into one full-fledged IoT-based hydrological station will be realised. Due to its cutting-edge approach and novelty of the concept of one full-fledged IoT- based hydrological station we will allocate resources to ensure all IoT elements are integrated and work seamlessly in full-fledged hydrological stations. Preparation for connection of other IoT based peripherals / measurement sensors will be performed also within this task. API will be prepared to ensure real-time data transfer, communication, and smooth integration with other systems implemented within the project.
Under this task all (online/printed) installation and operation manuals for hydrological station and all IoT sensors / set up / APIs will be prepared and finalised. Installation and operation manuals will be created for plug & play installation and operations. Front end design (for end users) of installation and operation manuals will also be realised within this task.
The task will take place at GOSPACE premises, located in Bratislava, Slovakia. Coordination meetings will take place online.
The task will be implemented in 6 months. With exception of project tech coordination and controlling – this task will last 12 months.

T.3.5 Installation of sensors in pilot sites (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M10 - M13
Outsourcing of external installation of the sensors in pilot plots selected in T2.1 in Prešov self-governing region and

Lesser Poland region. Deploying the sensors in real conditions in watersheds realised by third-party following the operational plug&play manual

Work package WP4 – Implementation and testing of early-warning module

Work Package Number	WP4	**Lead Beneficiary**	3. Meteo
Work Package Name	Implementation and testing of early-warning module		
Start Month	1	**End Month**	32

Objectives
-Adaptation, testing and validation of early-warning module -Integration with national warning system

Description
T.4.1 Analysis of available hydrometeorological data sources (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) - M1 - M3 The main objective of the task is a data survey. According to different types of data that can be used in the project, recognition process will contain local and regional services which provides data related to the project needs: • Numerical Weather Prediction data • Real-time meteorological data from weather stations • Meteorological radar data • Water level measurement • Land classification model • Digital Terrain Model • Digital Terrain Cover Model This type of data will be recognized in scope of: format, historical and real-time availability, time and terrestrial resolution, cost. Partial activities of the task: • Identification of data scope needed in the project • Data availability review at open databases, governmental services and commercial sources. • Data Value vs. Data Cost analysis The tasks will take place at METEO premises, located in Warsaw, Poland. Meetings will take place online or by travelling to the deployment location of pilot sites in Slovakia and Poland, if necessary. T.4.2 Adaptation and solution adjustment for specific use case (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) - M3 - M16 T.4.2.1 Integration of ESPRIT / METEO / GOSPACE This task includes the preparation of the module for collecting and integrating the data prepared in the previous stage. The module will be responsible for supplying the hydrological model with the necessary information, also historical, current and forecasts. The implementation of the task includes the following actions: • Project of data supply for a test location in Poland and Slovakia • Identification of locally available sources of measurement data and preparing the test locations with measurement equipment • Preparation of map documents and terrain for the test locations • Preparation of the workspace and IT tools to support the process of collecting and archiving data for the purposes of supplying the hydrological model • Implementation of hydrological and hydraulic modelling for a test location • Hydrological model – water balance model development for watershed saturation real time modelling. Model will use current meteorological data (ESPRIT + METEO meteorological expertise) • hydraulic model development and simplification using forecast meteorological data, and/or data from water level sensors (ESPRIT + METEO meteorological expertise) • preparing an integration module for communication between meteorological data flow and hydro models (METEO + ESPRIT hydrological modelling expertise)

• Preparation of data distribution tools from the hydrological model to regional warning systems

T.4.2.2 Integration with national / regional warning system (risk management)
The objective of the task is to develop a tool for distribution of the results of the hydrological model to local warning systems.
The implementation of this task includes the following actions:
• Consultation with organisations managing relevant systems in Poland and Slovakia (ESPRIT - COO - consultations in Slovakia)
• Preparation of IT solutions for supplying information to local warning systems
• Preparing the WEB interface for the developed system (ESPRIT - COO)

T.4.3 Testing and optimization in cooperation with end users - (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) - M15 - M24
The aim of this task is to test the developed solutions with the participation of end users of the system. These activities will lead to a better adjustment of the form and content of the generated information to the needs and expectations of the end recipient group.
The implementation of the task includes the following actions:
• Organisation of a group of testers with the participation of end-users
• Analysis of scenarios for the use of the developed tool (ESPRIT - COO)
• Conducting workshops with end-users
• Verification of workshop results and tool optimization
• Preparation for the validation (testing part) - (ESPRIT - COO)
All Associated Partners will actively participate in this task, mainly by providing feedback to the software/early-warning module utilisation, as well as to the educational materials to be prepared within the project.

T.4.4 Validation of early-warning module - (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) - M23 - M32
The objective of this task is to carry out tests aimed at answering the question whether the prepared solution meets the adopted technical requirements in terms of availability and correct operation. Testing tools for generating multi-level alerts will be particularly important.
The implementation of this task includes the following actions:
• Elaboration of validation criteria
• Elaboration of validation scenarios
• Providing of validation
• Evaluation of results and formulation of validation conclusions

Work package WP5 – Implementation and testing of expert module

Work Package Number	WP5	**Lead Beneficiary**	1. ESPRIT
Work Package Name	Implementation and testing of expert module		
Start Month	1	**End Month**	32

Objectives
-Adaptation of the expert module to end users -Testing, validation and implementation of expert module

Description
T.5.1 Analysis of available spatial data sources and spatial database preparation (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1-M23 Processing a unified basic database of spatial and non-spatial data and parameters of the proposed expert system, which will also integrate the partial results of other tasks and work packages. The implementation of this task includes the following actions: ● Analysis and concentration of spatial data significant for modelling elements of the hydroclimatic system (data sources, data structure, data quality) ● Mapping and deriving new analytical information

● morphometric and morphoclimatic parameters controlling the vertical and horizontal distribution of water in the landscape
● geological and hydrogeological parameters of the environment
● soil hydrophysical parameters: soil depth, soil units and hydrolimits
● land cover parameters
● Spatial and content harmonisation of thematic layers
● Derivation of purpose-built spatial underlying layers or refinement of the existing layers spatial distribution
● Integration of outputs from other activities
The task will be carried out at the ESPRIT premises in Banská Štiavnica. Meetings will be held online or at partners' premises as needed.

T.5.2 Adaptation and solution adjustment for specific use case (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M1 - M23
Development of an experimental system to support the assessment of the threat of flash floods from rains of various intensities and a system for the creation of blue-green infrastructure proposals to mitigate the negative impacts of extreme rainfall events. The system will integrate the results of individual work packages into an interactive webGIS application to support decision-making.
The application will be solved in two levels of spatial detail, as:
• regional - adapted for analysis of available data for the entire territory of the region
• system enabling detailed analysis of selected model territories (will serve as a prototype of a complex solution on a small watershed)
Modules for estimating design rainfall intensity, modelling the hydrological response of the watershed and the effect of extreme rainfall on soil degradation in the country will be implemented in the system. The system will also include a module for the design of blue-green infrastructure and the evaluation of its impact in the form of a response to a change in the size of the runoff or erosion-accumulation processes in the watershed.
The implementation of this task includes the following actions:
• Analysis and design of system logic and structure
• Creation of an optimised data model
• Implementation of spatial data into the Information System
• Integration with hydrometeorological data (WP4) and IoT sensors - creation of interfaces
• Development and implementation of user tools and applications for efficient analysis, distribution and use of data for actors operating in the field of watershed management
• Creation of an information portal based on the Geographical Information System (GIS), integrating model outputs with other relevant information

T.5.3 Testing and optimization in cooperation with end users (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M22 - M30
The functional prototype of the system developed in the previous task will be tested by end-users. Following the testing, the system's functionality and user interfaces will be optimised to ensure its effective usability for the individual groups of users.
The implementation of this task includes the following actions:
• Organisation of a group of testers with the participation of end-users
• Analysis of scenarios for the use of developed tools
• Implementation of workshops with end-users
• Incorporating user comments into the system
All Associated Partners will actively participate in this task, mainly by providing feedback to the software/expert module utilisation, as well as to the educational materials to be prepared within the project.

T.5.4 Validation of expert module (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M24 - M32
With the help of the developed modelling and analytical tools in the ongoing tasks, the overall proposal for the management of the territory will be processed based on the assessment and coordination of the proposed measures - economic, social and environmental and the evaluation of their mutual impacts. The result will be management plans of model territories, including the quantification of their effects on individual components of the environment and natural processes.
This will include testing the detail and accuracy of input data for analysis results.
The implementation of this task includes the following actions:
• Validation and calibration of model outputs based on real measured data (monitoring and measurement network, IoT sensors)
• Development of an alternative spatial design for watershed management

• Testing the impact of scenarios on runoff processes

Work package WP6 – Sustainability, replication, and exploitation of project results

Work Package Number	WP6	**Lead Beneficiary**	1. ESPRIT
Work Package Name	Sustainability, replication, and exploitation of project results		
Start Month	2	**End Month**	36

Objectives
-Ensure and maximise the visibility of the project outputs. -Ensure the commercialization and sustainability of the FLOPRES products and services during and beyond the project's lifetime -Stimulate international cooperation -Facilitate the market uptake of FLOPRES products and services

Description
T.6.1 Communication (PSK - BEN, METEO - BEN, GOSPACE - BEN, ESPRIT - COO, MARR - BEN) M2-M36 Communication starts at the outset of the project and will continue throughout its lifespan with the aim to promote the action and inform about the results to multiple audiences. It will include a structured networking strategy with other relevant LIFE projects and key stakeholders. The objective is to maximise the operational application of the project at the EU level by exchanging information, data, methods, models and most important ideas and outcomes with other relevant projects and key actors that may be interested in our technical solution. Project promoters plan to network with the following LIFE projects: LIFE Clinomics (LIFE15 CCA/ES/00010 2); LIFE RESYSTAL (LIFE20 CCA/GR/00174 7); LIFE-IP SK AQ Improvement (LIFE18 IPE/SK/000010); RainBO (LIFE15CCA/IT/00035); LIFE LOGOS 4 WATERS (LIFE20CCA/HU/001604). Developing communication materials, identifying key dissemination events (e.g., conferences on climate change during Polish presidency in the CoE in 2023), and development of the communication strategy to promote the project outcomes as well as to engage stakeholders abroad. Project promoters will also identify and implement specific measures to enhance the catalytic potential of the smart water systems through addressing the appropriate water technology market media and events during the project lifespan, such as: • Attending industry events e.g. water technology trade shows, conferences, and exhibitions. This will provide an opportunity to showcase the smart water system and connect with potential customers and partners. • Participating in speaking engagements at industry events, universities, and other forums to share information about the smart water system project and its benefits. • Collaborating with industry experts to develop and promote the smart water system. This could include partnering with water technology companies, universities, and research institutions. • Engaging with the media to promote the smart water system project. This could include issuing press releases, organizing media events, and pitching stories to relevant journalists. T.6.2 Dissemination (PSK - BEN, METEO - BEN, GOSPACE - BEN, ESPRIT - COO, MARR - BEN) M24 - M36 Dissemination will aim to transfer and circulate the lessons learnt, results and outcomes to the ones who can make the best use of it and further build on the project's results to maximise the impact. The dissemination plan will be prepared by the project lead that will specify and explain the strategy that the consortium of the project will follow in order to ensure effective and efficient dissemination and sustainability of the project. The activities will include publishing press releases, presenting the technical solution at a conference on EU level during the Polish presidency at CoE, presenting project results to local community groups and other local stakeholders and other activities defined in communication strategy during T.6.1. T.6.3 Replication and exploitation (ESPRIT - COO, METEO - BEN, GOSPACE - BEN, PSK - BEN, MARR - BEN) M30 - M36 Exploitation will focus on making concrete use of technical solutions for commercial, societal, and political purposes. Replication is seen as the implementation of FLOPRES concept within the project time frame while exploitation considers the future business plans and deployment. The general methodology for replication and exploitation will be based on: ● Identification of replicable key outcomes based on the Knowledge Management and Transfer methodology

- Lessons learned from the project, market analysis
- Developing business plan and getting stakeholder feedback on the developed software
- Development of sustainability plan and exploitation strategy based on the lessons learned and market analysis

The aim of the replication and exploitation activities are to get an overview of the market (potential) and devise strategies to overcome barriers; find concrete replication opportunities and pursue exploitation opportunities; create roadmaps for future development and market approach; identify opportunities for continued development in follow up projects.

STAFF EFFORT

Staff effort per participant

Grant Preparation (Work packages - Effort screen) — Enter the info.

Participant	WP1	WP2	WP3	WP4	WP5	WP6	Total Person-Months
1 - ESPRIT	72.00	14.00		83.00	229.00	5.00	403.00
2 - GOSPACE			107.00				107.00
3 - Meteo				93.00			93.00
4 - PSK		84.00				36.00	120.00
5 - MARR SA		108.00				36.00	144.00
6 - Malopolska				0.60	0.60		1.20
7 - City of Košice				0.60	0.60		1.20
8 - City of Prešov				0.60	0.60		1.20
9 - ICKK				0.60	0.60		1.20
Total Person-Months	72.00	206.00	107.00	178.40	231.40	77.00	871.80

LIST OF DELIVERABLES

Deliverables

Grant Preparation (Deliverables screen) — Enter the info.

The labels used mean:

Public — fully open (⚠ automatically posted online)
Sensitive — limited under the conditions of the Grant Agreement
EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Management and Contingency Plan	WP1	1 - ESPRIT	R — Document, report	PU - Public	2
D1.2	Progress Report Documents 1	WP1	1 - ESPRIT	R — Document, report	PU - Public	6
D1.3	Progress Report Documents 2	WP1	1 - ESPRIT	R — Document, report	PU - Public	18
D1.4	Quality and Assurance Plan	WP1	1 - ESPRIT	R — Document, report	PU - Public	3
D1.5	Monitoring & Evaluation Plan	WP1	1 - ESPRIT	R — Document, report	PU - Public	3
D1.6	Extract of the project data from the LIFE KPI webtool 1	WP1	1 - ESPRIT	R — Document, report	PU - Public	9
D1.7	Extract of the project data from the LIFE KPI webtool 2	WP1	1 - ESPRIT	R — Document, report	PU - Public	36
D1.8	Green procurement guidelines	WP1	1 - ESPRIT	R — Document, report	PU - Public	6
D1.9	Green procurement report	WP1	1 - ESPRIT	R — Document, report	PU - Public	36
D2.1	Technical reports on the chosen plots for sensor installation	WP2	1 - ESPRIT	R — Document, report	SEN - Sensitive	6
D2.2	Stakeholder matrices	WP2	4 - PSK	R — Document, report	PU - Public	4
D2.3	Climate adaptation guidelines	WP2	1 - ESPRIT	R — Document, report	PU - Public	24
D2.4	Marketing Strategy	WP2	4 - PSK	R — Document, report	SEN - Sensitive	6

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D2.5	Lifelong learning course for the municipalities on climate adaptation and NBS	WP2	1 - ESPRIT	DEC —Websites, patent filings, videos, etc	PU - Public	24
D2.6	Q&A roundtables / discussions / workshops during the national LIFE event 1	WP2	4 - PSK	OTHER	PU - Public	6
D2.7	Q&A roundtables / discussions / workshops during the national LIFE event 2	WP2	4 - PSK	OTHER	PU - Public	12
D2.8	Q&A roundtables / discussions / workshops during the national LIFE event 3	WP2	4 - PSK	OTHER	PU - Public	18
D2.9	Q&A roundtables / discussions / workshops during the national LIFE event 4	WP2	4 - PSK	OTHER	PU - Public	24
D2.10	Q&A roundtables / discussions / workshops during the national LIFE event 5	WP2	4 - PSK	OTHER	PU - Public	36
D2.11	Letter expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management	WP2	1 - ESPRIT	R — Document, report	PU - Public	36
D2.12	Support letter from relevant Slovak/Polish water agencies or ministries	WP2	1 - ESPRIT	R — Document, report	SEN - Sensitive	6
D3.1	Operational plug & play manuals	WP3	2 - GOSPACE	R — Document, report	PU - Public	12
D3.2	API/data integration protocol.	WP3	2 - GOSPACE	R — Document, report	SEN - Sensitive	12

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D4.1	Technical report of the module implementation in Slovakia	WP4	3 - Meteo	R — Document, report	SEN - Sensitive	16
D4.2	Technical report of the module implementation in Poland	WP4	3 - Meteo	R — Document, report	SEN - Sensitive	16
D4.3	Application website	WP4	3 - Meteo	DEM — Demonstrator, pilot, prototype	PU - Public	16
D4.4	Workshop report - early-warning module	WP4	3 - Meteo	R — Document, report	PU - Public	24
D4.5	Description of the tool usage scenarios report	WP4	3 - Meteo	R — Document, report	SEN - Sensitive	24
D4.6	Validation report	WP4	3 - Meteo	R — Document, report	SEN - Sensitive	32
D5.1	Prototype of a complex information system based on web GIS technology	WP5	1 - ESPRIT	DEM — Demonstrator, pilot, prototype	PU - Public	23
D5.2	Workshop report - expert module	WP5	1 - ESPRIT	R — Document, report	PU - Public	30
D5.3	A map of the flood risk	WP5	1 - ESPRIT	DEM — Demonstrator, pilot, prototype	PU - Public	32
D5.4	A map of designated management measures	WP5	1 - ESPRIT	DEM — Demonstrator, pilot, prototype	PU - Public	32
D5.5	Validation and adoption report	WP5	1 - ESPRIT	R — Document, report	SEN - Sensitive	32
D6.1	Business plan including replication component	WP6	1 - ESPRIT	R — Document, report	PU - Public	32

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D6.2	Dissemination plan	WP6	4 - PSK	R — Document, report	PU - Public	18
D6.3	Web section on the website of the partners	WP6	4 - PSK	OTHER	PU - Public	12
D6.4	Report on realised measures to enhance the catalytic potential of the smart water systems	WP6	1 - ESPRIT	R — Document, report	PU - Public	36
D6.5	Report on networking activities with other LIFE projects	WP6	1 - ESPRIT	R — Document, report	PU - Public	36
D6.6	Sustainability plan	WP6	4 - PSK	R — Document, report	PU - Public	30
D6.7	Letter expressing intent of a relevant Slovak/ Polish authority to use the project tools in land use planning or water management	WP6	1 - ESPRIT	R — Document, report	PU - Public	36

Deliverable D1.1 – Management and Contingency Plan

Deliverable Number	D1.1	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Management and Contingency Plan		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	2	**Work Package No**	WP1

Description
The MCP provides guidelines for project managers from each organisation to manage the project according to set rules and standards,as well as a plan for unexpected events and recovery strategies in case of negative developments to ensure business continuity.

Deliverable D1.2 – Progress Report Documents 1

Deliverable Number	D1.2	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Progress Report Documents 1		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	6	**Work Package No**	WP1

Description
The biannual PRD will provide information about project updates, status on the achievement of the indicators and KPIs and progress made towards the completion of work packages and tasks. Format: digital Language: Slovak

Deliverable D1.3 – Progress Report Documents 2

Deliverable Number	D1.3	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Progress Report Documents 2		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP1

Description
The biannual PRD will provide information about project updates, status on the achievement of the indicators and KPIs and progress made towards the completion of work packages and tasks. Format: digital Language: Slovak

Deliverable D1.4 – Quality and Assurance Plan

Deliverable Number	D1.4	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Quality and Assurance Plan		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP1

Description
The QAP accounts for: quality objectives, quality standards, quality control, roles and responsibilities, tools and plans for reporting quality control, key project deliverables and processes to be reviewed for the satisfactory quality level. The purpose of QAP is to provide the Steering Committee, donor and other relevant stakeholders with appropriate insight into the activities and solutions being used and developed Format: digital Language: English, Slovak

Deliverable D1.5 – Monitoring & Evaluation Plan

Deliverable Number	D1.5	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Monitoring & Evaluation Plan		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP1

Description
The MEP will define, implement, track and improve a monitoring and evaluation strategy of the project. It will entail: proposed timeline for M&E, proposed monitoring activities, data collection and monitoring methodologies, M&E tools for data collection, indicators and expected results. Format: digital Language: English, Slovak

Deliverable D1.6 – Extract of the project data from the LIFE KPI webtool 1

Deliverable Number	D1.6	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Extract of the project data from the LIFE KPI webtool 1		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	9	**Work Package No**	WP1

Description
Extracting the project data from the LIFE KPI webtool.

Deliverable D1.7 – Extract of the project data from the LIFE KPI webtool 2

Deliverable Number	D1.7	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Extract of the project data from the LIFE KPI webtool 2		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP1

Description
Extracting the project data from the LIFE KPI webtool.

Deliverable D1.8 – Green procurement guidelines

Deliverable Number	D1.8	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Green procurement guidelines		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	6	**Work Package No**	WP1

Description
Final version of guidelines on green procurement prepared. Format: digital Language: English, Slovak

Deliverable D1.9 – Green procurement report

Deliverable Number	D1.9	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Green procurement report		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP1

Description
Report on green procurement activities realised throughout the project.

Deliverable D2.1 – Technical reports on the chosen plots for sensor installation

Deliverable Number	D2.1	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Technical reports on the chosen plots for sensor installation		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	6	**Work Package No**	WP2

Description
Two reports (one for Slovakia, one for Poland) summarising the hydrological and geographical information and feasibility of the sites chosen for installation of the sensors in both regions. Format: digital Language: Slovak, Polish

Deliverable D2.2 – Stakeholder matrices

Deliverable Number	D2.2	**Lead Beneficiary**	4. PSK
Deliverable Name	Stakeholder matrices		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	4	**Work Package No**	WP2

Description

Matrix mapping the stakeholders according to their levels of participation, interest, and influence in the project; and determining how best to involve and communicate each of these stakeholder groups throughout. One matrix for each pilot region. Format: digital Language: Slovak, Polish

Deliverable D2.3 – Climate adaptation guidelines

Deliverable Number	D2.3	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Climate adaptation guidelines		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	24	**Work Package No**	WP2

Description
Strategies for local authorities and stakeholders for operationalising nature-based solutions in the public sector and within their own functioning developed during the meetings of the cross- disciplinary working groups in Slovakia and Poland. Format: digital Language: English, Slovak, Polish

Deliverable D2.4 – Marketing Strategy

Deliverable Number	D2.4	**Lead Beneficiary**	4. PSK
Deliverable Name	Marketing Strategy		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	6	**Work Package No**	WP2

Description
A plan to keep the project stakeholders and general public informed throughout the project lifecycle. It will cover marketing goals, messages and channels and develop concrete tools and content, such as newsletter, twitter account, etc. Format: digital Language: English, Slovak, Polish

Deliverable D2.5 – Lifelong learning course for the municipalities on climate adaptation and NBS

Deliverable Number	D2.5	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Lifelong learning course for the municipalities on climate adaptation and NBS		
Type	DEC —Websites, patent filings, videos, etc	**Dissemination Level**	PU - Public
Due Date (month)	24	**Work Package No**	WP2

Description
On-line learning course on the dedicated project web section on the webpage of the project COO. The course will cover topics ranging from climate change solutions to adaptation measures in towns and municipalities. It will equip the individuals and stakeholders with necessary knowledge on climate adaptation strategies. The course will be published also on the platform EPALE.

Language: English, Slovak, Polish

Deliverable D2.6 – Q&A roundtables / discussions / workshops during the national LIFE event 1

Deliverable Number	D2.6	**Lead Beneficiary**	4. PSK
Deliverable Name	Q&A roundtables / discussions / workshops during the national LIFE event 1		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	6	**Work Package No**	WP2

Description
Series of regular awareness raising events the form of which will vary depending on the target group. These will be 2 expert workshops (approx. 50 people/ 1 workshop) during national LIFE info day in Slovakia and Poland, open Q&A presentation days for the public both in Slovakia and Poland (approx. 100 people / 1 event), 6 round tables for the local community in chosen pilot locations in region of Prešov, Slovakia and region of Lesser Poland (approx. 50 people / 1 event). Invitation, agenda, signed presence list, target group (local communities´ representatives, wide public), number of estimated participants (between 25 - 100 per event), duration of the event (1 day / event), report of the event, training material package, presentations, evaluation report, feedback questionnaire

Deliverable D2.7 – Q&A roundtables / discussions / workshops during the national LIFE event 2

Deliverable Number	D2.7	**Lead Beneficiary**	4. PSK
Deliverable Name	Q&A roundtables / discussions / workshops during the national LIFE event 2		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	12	**Work Package No**	WP2

Description
Series of regular awareness raising events the form of which will vary depending on the target group. These will be 2 expert workshops (approx. 50 people/ 1 workshop) during national LIFE info day in Slovakia and Poland, open Q&A presentation days for the public both in Slovakia and Poland (approx. 100 people / 1 event), 6 round tables for the local community in chosen pilot locations in region of Prešov, Slovakia and region of Lesser Poland (approx. 50 people / 1 event). Invitation, agenda, signed presence list, target group (local communities´ representatives, wide public), number of estimated participants (between 25 - 100 per event), duration of the event (1 day / event), report of the event, training material package, presentations, evaluation report, feedback questionnaire

Deliverable D2.8 – Q&A roundtables / discussions / workshops during the national LIFE event 3

Deliverable Number	D2.8	**Lead Beneficiary**	4. PSK
Deliverable Name	Q&A roundtables / discussions / workshops during the national LIFE event 3		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP2

Description
Series of regular awareness raising events the form of which will vary depending on the target group. These will be 2 expert workshops (approx. 50 people/ 1 workshop) during national LIFE info day in Slovakia and Poland, open Q&A presentation days for the public both in Slovakia and Poland (approx. 100 people / 1 event), 6 round tables for the local community in chosen pilot locations in region of Prešov, Slovakia and region of Lesser Poland (approx. 50 people / 1 event). Invitation, agenda, signed presence list, target group (local communities´ representatives, wide public), number of estimated participants (between 25 - 100 per event), duration of the event (1 day / event), report of the event, training material package, presentations, evaluation report, feedback questionnaire

Deliverable D2.9 – Q&A roundtables / discussions / workshops during the national LIFE event 4

Deliverable Number	D2.9	**Lead Beneficiary**	4. PSK
Deliverable Name	Q&A roundtables / discussions / workshops during the national LIFE event 4		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	24	**Work Package No**	WP2

Description
Series of regular awareness raising events the form of which will vary depending on the target group. These will be 2 expert workshops (approx. 50 people/ 1 workshop) during national LIFE info day in Slovakia and Poland, open Q&A presentation days for the public both in Slovakia and Poland (approx. 100 people / 1 event), 6 round tables for the local community in chosen pilot locations in region of Prešov, Slovakia and region of Lesser Poland (approx. 50 people / 1 event). Invitation, agenda, signed presence list, target group (local communities´ representatives, wide public), number of estimated participants (between 25 - 100 per event), duration of the event (1 day / event), report of the event, training material package, presentations, evaluation report, feedback questionnaire

Deliverable D2.10 – Q&A roundtables / discussions / workshops during the national LIFE event 5

Deliverable Number	D2.10	**Lead Beneficiary**	4. PSK
Deliverable Name	Q&A roundtables / discussions / workshops during the national LIFE event 5		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP2

Description
Series of regular awareness raising events the form of which will vary depending on the target group. These will be 2 expert workshops (approx. 50 people/ 1 workshop) during national LIFE info day in Slovakia and Poland, open Q&A presentation days for the public both in Slovakia and Poland (approx. 100 people / 1 event), 6 round tables for the local community in chosen pilot locations in region of Prešov, Slovakia and region of Lesser Poland (approx. 50 people / 1 event). Invitation, agenda, signed presence list, target group (local communities´ representatives, wide public), number of estimated participants (between 25 - 100 per event), duration of the event (1 day / event), report of the event, training material package, presentations, evaluation report, feedback questionnaire

Associated with document Ref. Ares(2023)4192990 - 16/06/2023

Deliverable D2.11 – Letter expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management

Deliverable Number	D2.11	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Letter expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP2

Description
Obtained letter from relevant local authorities expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management. Format: digital Languages: English, Slovak, or Polish

Deliverable D2.12 – Support letter from relevant Slovak/Polish water agencies or ministries

Deliverable Number	D2.12	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Support letter from relevant Slovak/Polish water agencies or ministries		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	6	**Work Package No**	WP2

Description
Obtaining a support letter from the relevant national water agencies or ministries regarding potential integration of the project with Slovak/Polish flood warning systems and its future potential uptake. Format: digital Languages: English, Slovak, or Polish

Deliverable D3.1 – Operational plug & play manuals

Deliverable Number	D3.1	**Lead Beneficiary**	2. GOSPACE
Deliverable Name	Operational plug & play manuals		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	12	**Work Package No**	WP3

Description
Installation and operational plug & play manuals are prepared for third party installation and operations. Format: digital Language: English, Slovak

Deliverable D3.2 – API/data integration protocol.

Deliverable Number	D3.2	**Lead Beneficiary**	2. GOSPACE
Deliverable Name	API/data integration protocol.		

Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	12	**Work Package No**	WP3

Description
API/data integration protocol is prepared. Format: digital Language: English, Slovak

Deliverable D4.1 – Technical report of the module implementation in Slovakia

Deliverable Number	D4.1	**Lead Beneficiary**	3. Meteo
Deliverable Name	Technical report of the module implementation in Slovakia		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	16	**Work Package No**	WP4

Description
Report providing in detail the implementation process and technical specifications of the module in pilot plots in Slovakia. Format: digital Language: English, Slovak, Polish

Deliverable D4.2 – Technical report of the module implementation in Poland

Deliverable Number	D4.2	**Lead Beneficiary**	3. Meteo
Deliverable Name	Technical report of the module implementation in Poland		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	16	**Work Package No**	WP4

Description
Report providing in detail the implementation process and technical specifications of the module in pilot plots in Poland. Format: digital Language: English, Slovak, Polish

Deliverable D4.3 – Application website

Deliverable Number	D4.3	**Lead Beneficiary**	3. Meteo
Deliverable Name	Application website		
Type	DEM — Demonstrator, pilot, prototype	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP4

Description
The application website of the early-warning module summarising the information about the module to the general public.

Format: digital Language: English

Deliverable D4.4 – Workshop report - early-warning module

Deliverable Number	D4.4	**Lead Beneficiary**	3. Meteo
Deliverable Name	Workshop report - early-warning module		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	24	**Work Package No**	WP4

Description
Report concluding the results of the workshops with end users. Format: digital Language: English

Deliverable D4.5 – Description of the tool usage scenarios report

Deliverable Number	D4.5	**Lead Beneficiary**	3. Meteo
Deliverable Name	Description of the tool usage scenarios report		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	24	**Work Package No**	WP4

Description
Output of the analysis of scenarios for the use of the developed tool. Format: digital Language: English

Deliverable D4.6 – Validation report

Deliverable Number	D4.6	**Lead Beneficiary**	3. Meteo
Deliverable Name	Validation report		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	32	**Work Package No**	WP4

Description
Evaluation of results and summarization of the conclusions of the validation process of early-warning module implementation. Format: digital Language: English

Deliverable D5.1 – Prototype of a complex information system based on web GIS technology

Deliverable Number	D5.1	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Prototype of a complex information system based on web GIS technology		

Type	DEM — Demonstrator, pilot, prototype	**Dissemination Level**	PU - Public
Due Date (month)	23	**Work Package No**	WP5

Description
Creation of an information portal based on the Geographical Information System (GIS), integrating model outputs with other relevant information. Format: digital Language: English, Slovak

Deliverable D5.2 – Workshop report - expert module

Deliverable Number	D5.2	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Workshop report - expert module		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP5

Description
Report concluding the results of the workshops with end users. Format: digital Language: English, Slovak

Deliverable D5.3 – A map of the flood risk

Deliverable Number	D5.3	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	A map of the flood risk		
Type	DEM — Demonstrator, pilot, prototype	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
A map of the flood risk caused by flash floods, which expresses in relative values the magnitude of the risk not only for permanent watercourses but also for other parts of the territory without permanent drainage and critical points of interaction with the built-up area. Format: digital Language: English, Slovak

Deliverable D5.4 – A map of designated management measures

Deliverable Number	D5.4	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	A map of designated management measures		
Type	DEM — Demonstrator, pilot, prototype	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
A map of designated nature-based management measures for adaptation and mitigation of the risks of flash floods. Format: digital Language: English, Slovak

Deliverable D5.5 – Validation and adoption report

Deliverable Number	D5.5	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Validation and adoption report		
Type	R — Document, report	**Dissemination Level**	SEN - Sensitive
Due Date (month)	32	**Work Package No**	WP5

Description
A report on the results of the validation and the scope of the system's usability, and confirming the adoption of the expert module in the territories of the whole Prešov self-governing region and Malopolska region. Format: digital Language: English, Slovak

Deliverable D6.1 – Business plan including replication component

Deliverable Number	D6.1	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Business plan including replication component		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP6

Description
A business plan summarises the operational and financial objectives of a business and contains detailed plans and budgets showing how the objectives are to be realised. It will serve as the main data source and decision-making tool. The replication component will present the planned activities, resources (technical and financial) through which the project results will be maintained and exploited. It will contain lessons learned, evaluation of barriers and stakeholder feedback gained during the FLOPRES project, technical and human resources needed, definition of the necessary administrative and legislative acts. Format: digital Language: Slovak, English

Deliverable D6.2 – Dissemination plan

Deliverable Number	D6.2	**Lead Beneficiary**	4. PSK
Deliverable Name	Dissemination plan		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP6

Description
The Dissemination Plan will provide in detail the philosophy and the rationale of the project, the needs that the project

meets, the project's expected results and the beneficiaries that the project will be addressed to through the process of dissemination. Format: digital Language: Slovak, English

Deliverable D6.3 – Web section on the website of the partners

Deliverable Number	D6.3	**Lead Beneficiary**	4. PSK
Deliverable Name	Web section on the website of the partners		
Type	OTHER	**Dissemination Level**	PU - Public
Due Date (month)	12	**Work Package No**	WP6

Description
Each project partner will create a dedicated web section about the project on their websites. The web section will contain information about the project events, progress and results. Format: digital Language: Slovak, English

Deliverable D6.4 – Report on realised measures to enhance the catalytic potential of the smart water systems

Deliverable Number	D6.4	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Report on realised measures to enhance the catalytic potential of the smart water systems		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP6

Description
Comprehensive report (including e.g. presentations, articles, event descriptions, photos) on all measures realised by the project promoters which aim to enhance the catalytic potential of the smart water systems. Format: digital Language: English

Deliverable D6.5 – Report on networking activities with other LIFE projects

Deliverable Number	D6.5	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Report on networking activities with other LIFE projects		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP6

Description
Report on all realised networking activities with other LIFE projects. Format: digital Language: English

Deliverable D6.6 – Sustainability plan

Deliverable Number	D6.6	**Lead Beneficiary**	4. PSK
Deliverable Name	Sustainability plan		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP6

Description
A document to ensure the exploitation and sustainability of FLOPRES results beyond the end of the project as well as their adoption and replication by other cities. The plan will include the Innovation and IPR Management Strategy of the project, an analysis of the market(s) that are relevant to FLOPRES, and the project assets per individual partner. This plan will be periodically updated during the course of the project to reflect the most recent developments of the project. Format: digital Language: English

Deliverable D6.7 – Letter expressing intent of a relevant Slovak/Polish authority to use the project tools in land use planning or water management

Deliverable Number	D6.7	**Lead Beneficiary**	1. ESPRIT
Deliverable Name	Letter expressing intent of a relevant Slovak/Polish authority to use the project tools in land use planning or water management		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	36	**Work Package No**	WP6

Description
Obtaining a letter from relevant Slovak/Polish authority expressing its intent to use the project tools in land use planning or water management. Format: digital Language: English

LIST OF MILESTONES

Milestones

Grant Preparation (Milestones screen) — Enter the info.

Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
1	Started preparation of green procurement guidelines	WP1	1-ESPRIT	Initial draft of guidelines.	1
2	First Steering Committee meeting	WP1	1-ESPRIT	Meeting minutes	2
3	Purchase / lease of land and / or compensation payments for use rights	WP2	4-PSK	Legal contracts	13
4	Memorandum of understanding	WP2	4-PSK	Document	6
5	Support letter from relevant Slovak/Polish water agencies or ministries	WP2	1-ESPRIT	Document	6
6	Full-fledge IoT based hydrological station	WP3	2-GOSPACE	Full-fledge IoT based hydrological station.	5
7	Installation of the IoT sensors in pilot site in Slovakia	WP3	2-GOSPACE	Photos and map of installation sites.	13
8	Installation of the IoT sensors in pilot site in Poland	WP3	2-GOSPACE	Photos and map of installation sites.	13
9	Database of available data	WP4	3-Meteo	Database	3
10	Technical documentation	WP4	3-Meteo	Document	24
11	Report on Associated Partners activities - early-warning module	WP4	1-ESPRIT	Document	24
12	Database of spatial and non-spatial data	WP5	1-ESPRIT	Database	23
13	Report on Associated Partners activities - expert module	WP5	1-ESPRIT	Document	30
14	Communication campaign	WP6	4-PSK	Materials from the campaign: publications, leaflets, photos, banners	34

Milestones

Grant Preparation (Milestones screen) — Enter the info.

Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
15	List of measures to enhance the catalytic potential of the smart water systems	WP6	1-ESPRIT	Document	6

LIST OF CRITICAL RISKS

Critical risks & risk management strategy

Grant Preparation (Critical Risks screen) — Enter the info.

Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
1	Inability to sign the right to use agreements with landowners (low risk).	WP2	The risk of delay associated with community and landowner engagement is mitigated by the fact that, as a part of the expert module development, an analysis of all suitable locations for sensors placement will be prepared. The analysis will work as a variant-based solution, and therefore the project promoters will not be bound to a single location for sensor placement. If any problems (such as in relation with community/landowner engagement) will arise in connection with any single location, project promoters will just choose another viable location based on the conducted analysis. Compensation costs will be covered where necessary, and priority will be given to publicly owned land.
2	External damage caused to the IoT sensors (medium risk).	WP3	The sensors will be visibly placed with a warning to prevent them from being unknowingly damaged.
3	Difficulty in engaging sufficient numbers of relevant target groups (medium risk).	WP2, WP6	The consortium partners have been chosen based on their strong positions within their respective fields and have sufficient networks of companies and public organisations. A customised communication campaign will be designed at the start of the project. More strategic partners will be engaged to increase the outreach in the EU Member States. Moreover, project promoters will prepare video recording of all public engagement activities, which will be uploaded on the project promoters' websites, and project promoters will inform

Critical risks & risk management strategy

Grant Preparation (Critical Risks screen) — Enter the info.

Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
			relevant target groups about this fact through their standard communication channels. Target groups will have an easy-to-access option of being informed about engagement activities and their conclusions, and will also have an opportunity to provide their feedback and comments. This approach shall ensure sufficient number of relevant participants.
4	Exceeding the proposed budget (medium risk).	WP3, WP2, WP5, WP6, WP4, WP1	Efficient planning is essential to deliver project results. The budget was prepared based on previous experiences with similar projects, including EU-funded programmes.
5	Difficulty in engaging stakeholders (medium risk).	WP2, WP6	The main stakeholders have been mapped and their list is included in the proposal. The list results from consortium partners' networks and relations and reflects existing partnerships. The aim is also to further increase the number of stakeholders by launching a strong communication campaign at the start of the project to demonstrate the value proposition of the project (including public authorities, but also the inhabitants and businesses).
6	Project staff availability. The amount of monthly man hours for this project is appropriate, but the project is spread across several years and unexpected events could affect staff availability (low risk).	WP3, WP5, WP4	The WP design was prepared after consultations with each of the participants. Unforeseeable circumstances can occur and staffing of each project stage will be coordinated by the consortium leader. Consortium partners have a long history and are well- established in their fields, capable of supplementing the missing competences/staff.
7	Quality of project delivery. The scope of activities is diverse, and some parts are novel, customised to solve the current problems (low risk).	WP3, WP5, WP4	The consortium was composed of established professionals with extensive experience in business support. The project also begins with a thorough preparatory phase, involving discussion and cooperation of diversity of experts from each participant and relevant stakeholder. Project coordinator will run regular quality checks throughout the project on the delivered content.
8	The national system for issuing an alert is not available (medium risk).	WP4	The national EU-ALERT systems mandated by the EU were to be implemented by individual states by 21 June 2022. In case of a significant delay, alternative methods (SMS notifications, local alarm or warnings available on the website) can also serve the purpose of warning about a risk event, until successful implementation of the national system EU-ALERT.

ANNEX 1

Programme for the Environment and Climate Action (LIFE)

Description of the action (DoA)

Part B

TABLE OF CONTENTS

1. RELEVANCE

*Fill in **only** sections 1.1-1.4 at stage 1 (concept note). Fill in **all sections** at stage 2 (full proposal).*

1.1 Background and general project objectives

Background and general project objectives

Explain the problem and the needs to be addressed in the project. Describe the background, starting point / quantified baseline of the project.

Please explain in which location and/or sector the main activities of the project will take place and justify that choice.

For Nature and Biodiversity:

Provide a clear and quantified description of the conservation issue and threats targeted, as well as relevant background information and quantified figures defining the baseline to justify the proposed Interventions by

At stage 1 (concept note) when relevant, describe the main species/habitats directly targeted by the project: scientific name; refer to the Annex(es) of the EU Birds or Habitats Directive where they are listed; population size within each project area; conservation status; habitat name and Natura 2000 code; % of the cover within each project area; conservation status.

At stage 2 (full proposals), when relevant, provide a brief description of the areas where conservation actions will be implemented and main species and / or main habitats directly targeted by the project, and submit the following annexes:

- *maps*
- *description of sites*
- *description of species and habitats*

Describe the previous conservation efforts in the project area or for the habitats/species targeted.

For Circular Economy and Quality of Life (n/a to Environmental governance topics):

Describe the previous technical preparatory work and results of previous research and development activities, showing the status of technical development achieved for the proposed solution, including the technical readiness level (TRL) where relevant and proving its technical feasibility.

Explain the scale at which such results have been obtained and if prototypes have been already developed and tested. Their scale/dimension and relevant results and conclusions have to be clearly presented. Illustrate available best practices in the relevant sector (state of the art) and clearly and concisely explain the environmental, technical and economical improved performances/ advantages introduced by the proposed solution in case this is claimed to be innovative/ demonstrative.

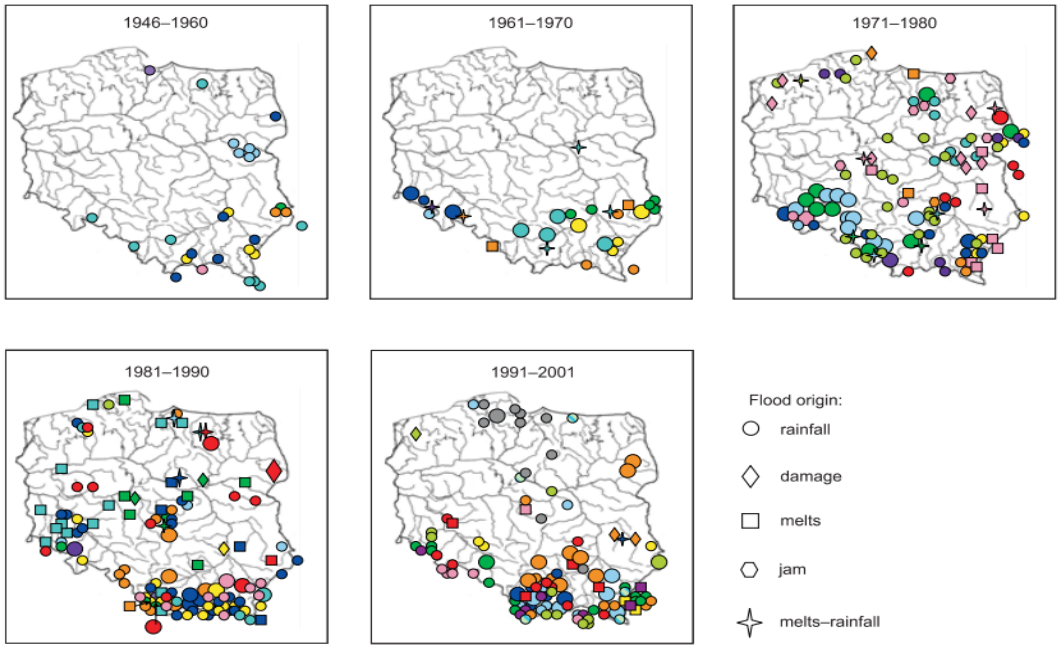
1. Introduction

Changing hydro-meteorological conditions due to the climate change, intensification of land and water use and lack of adaptation measures are among the contributors of the water-related risks, such as landslides or flash floods. Flood hazards present an imminent threat to the property of a significant proportion of the population across the globe. Worldwide, floods are the most common disasters, accounting for 44% of natural disaster events reported over the last two decades (Report from the World Meteorological Organization, 2021). On average, permanent flooding is projected to cut back the global GDP by 0.19% in present value terms, with welfare declining by 0.24% due to the relocation of people to less attractive amenities (Evaluating the economic cost of coastal flooding", Desmet et al., American Economic Journal: Macroeconomics 13(2), 2021). Central Europe is particularly vulnerable to flood hazards, as a consequence of increasing autumn and winter rainfall. In June 2021, a series of storms brought flash flooding to parts of Poland, Czechia, Germany and Italy. The city of Poznan in western Poland was among the hardest hit areas, where buildings including a hospital were damaged. The State Fire Service carried out 1,685 interventions in response to storm damage in Wielkopolska, Małopolska, Mazovia, Kuyavian-Pomeranian and Lodzkie. In Slovakia in May 2021, severe flash flooding struck the village of Rudno nad Hronom in Banská Bystrica Region of central Slovakia. The flooding destroyed multiple bridges, damaged gas connections, prompted hundreds of people to evacuate and caused one fatality.

Several studies based on the European Flood Database indicate that climate change has been the main driver of extreme weather events that become more common and, without mitigating action, could result in even greater losses in the coming years (An indicator-based report. In *Climate Change, Impacts and Vulnerability in Europe 2016*; European Environment Agency: Copenhagen, Denmark, 2017; Ensemble flood risk assessment in Europe under high end climate scenarios. *Glob. Environ. Chang.* 2015,Global warming increases the frequency of river floods in Europe. *Hydrol. Earth Syst. Sci.* 2015). The cause of floods is a complicated process and a complex of several factors, including both natural and human activities (Flooding in river mouths: Human caused or natural events? Five centuries of flooding events

in the SW Netherlands, 1500–2000). One of the main causes of locally flooding are also immediately or intensively rainfall. As **a rapid source of runoff** can be served too by **small ungauged watersheds** and therefore is **need to be know their characteristic**.

FIGURE I. The change in the flood occurrence in Poland between the reference period 1946 – 2001



Furthermore, climate change has also affected the timing of annual floods: it now happens more often that various neighbouring river basins are flooded at the same time, which can create new challenges for flood risk management. Although water management has been changing its approach over the past decade and new technologies to improve flood risk prevention have been introduced, recurring flood incidents demonstrate deficiencies in forecasting flood risks and threat locations. **Authorities responsible for local water governance** but also members of the general public such as farmers and landowners, **lack the knowledge and capacity to address the challenges posed by the need for climate change adaptation**. Members of the scientific community and experts on disaster risk prevention and urban planning emphasise **nature-based solutions (NBS)** to reduce the flood hazard. These measures, if properly designed, also have a significant synergistic effect on the entire hydrological system and **contribute to reducing the impacts of other climate change-related threats** such as: acceleration of erosion-accumulation processes or the risk of drought. Furthermore, they have a positive impact on the overall increase of the ecological stability of the territory. Nature-based solutions are also suggested by the EU as a complementary and sustainable way of addressing a variety of environmental, social and economic challenges. However, **implementation of NBS requires a solid base of high-quality and up-to-date open data**, long-term knowledge on the state of the hydrological system of river basins, **deep knowledge of the territory and spatial information**, and **effective information exchange** among various involved actors (municipalities, academic or private sector). Furthermore, **to assess the probability of floods and the subsequent solution** of the situation in the decision-making process, it is **necessary to have** local **spatial data** which meet the imposed requirements with their quality (A combined hydrologic and hydraulic modeling approach for testing efficiency of structural flood control measures. *Nat. Hazards* **2010).** The quality of current available spatial data varies as regards to watercourses and they are not integrated in one database to support disaster forecasting and management. **The effects of NBS are difficult to quantify**, and therefore they challenge traditional methods to assess and justify measures. Plus, the land where NBS is needed is often owned by private landowners rather than the public sector and when NBS cannot be justified, their realisation on private land is hardly welcomed or supported. More effort, therefore, is needed to **explain to the land owners** (such as farmers) the social, economic and environmental **benefits of NBS**. New approaches for

collaboration between municipality representatives, experts and private land users to realise risk reduction and adaptation measures on private land should be tested. Although various platforms, theories and methodologies are already used both in Slovakia and Poland for disaster forecasting and management, they **lack a hydrological and hydraulic modelling function** that would be **available** and comprehensible also **for single users**, such as land owners or farmers. Therefore, **to support** both **local authorities** responsible for water management strategies as well as **local communities and private personnels**, there is a need to develop **a novel,** state-of-the-art **solution**, capable of creating analysis and modelling tool **that allows** all target groups **to track and understand climate risk related events,** particularly flash floods, and **make forecast for better risk management.**

Model studies of the socio-economic impacts of river floods conducted by the Joint Research Centre (JRC) suggest that future climate change will increase population affected and economic damages from floods in almost all countries in Europe. The strongest increase in flood risk is projected for countries in western and central Europe, such as Austria, Hungary, Slovakia and Slovenia. Among the most vulnerable and affected are the communities living near the water sources, such as Roma people who, as a tragic event from Prešov region, Slovakia in 1998 illustrate, has little to no chance against the water discharge. During the deadly flood in the town of Jarovnice, 58 people lost their lives and another 61 were injured. 10 850 inhabitants were directly affected, from those 756 people were left without shelter. During rescue operations, 3 618 people were evacuated. The total direct damage amounted to 850 million Slovak crowns (an equivalent to 65 million EUR today). Three main explanations can be used to account for such disaster: lack of information about flood hazards and climate change adaptation measures available in the public domain, absence of an early-warning system to predict flash floods, and poor living conditions of marginalised communities.Therefore, particular importance must be put to **raise the awareness of** these **vulnerable target groups** on natural hazards due to global warming and to **support** their **collaboration with local decision makers** to take action against climate change.

2. Economic and social impacts of flood hazard

Between 1980 and 2020, weather and climate-related extremes accounted for around 80% of total economic losses caused by natural hazards in the European Economic Area (EEA) Member States, amounting to EUR 487 billion. This is equivalent to EUR 11.9 billion per year. Although analysing trends in economic losses is difficult, partly as a result of high variability from year to year, climate-related extremes are becoming more common and, without mitigating action, could result in even greater losses in the coming years.

Worldwide, the Emergency Event Database (EM-DAT) recorded 432 disastrous events related to natural hazards in 2021. This number is considerably higher than the average of 357 annual catastrophic events for 2001-2020. Floods dominated these events, with 223 occurrences, up from an average of 163 annual flood occurrences recorded across the 2001-2020 period. In July, floods in central Europe and subsequent landslides resulted in USD 40 billion of economic costs in Germany alone and stood as the second most costly disaster.

A tenth of Europe's urban population is currently living in flood-risk zones. Floods can be deadly and costly, destroying buildings, infrastructure (transport, energy, communication) and livelihoods for all in their path. Between 1980 and 2017, **floods have taken some 4,300 lives and cost Europe's economy more than EUR 170 billion**, representing nearly a third of the total damage from natural hazards. If the homes are damaged beyond repair, the displacement of inhabitants may be permanent, which means they do not return to their neighbourhood. As a consequence, some neighbourhoods deteriorate, and the social cohesion and population distribution is altered. The social impact is not felt equally by all. Some are more vulnerable and have more trouble adjusting to the consequences. People with limited financial resources, such as the elderly and those who are movement-impaired, Roma people with a limited command of the language, and people who live in outdated houses. As stated by the European Union Adaptation Strategy, resilience of the communities must be strengthened and ensured that Europe is well prepared to manage the risks and adapt to the impacts of climate change, thus minimising economic losses and other harms.

The EU Member States and their national authorities should concentrate on minimising the impacts of climate change, utilising all of the available means. The European Climate Adaptation Platform (Climate-ADAPT) is a partnership between the European Commission's Directorate-General for Climate Action (DG CLIMA) and the European Environment Agency (EEA). Its main objectives are to share the knowledge base and practical experiences in the field of climate change adaptation, to assist an effective uptake of this knowledge by decision-makers, and to contribute to a greater level of coordination among the relevant sectoral policies and different institutional levels. It is already a key established reference tool and knowledge resource in Europe. Under the new EU Adaptation Strategy, it should be further expanded with new knowledge components to support better-informed decision-making for a more climate-resilient Europe.

3. Characteristic of floods in Central Europe

Fifty-year river flood levels are projected to increase across most of Europe, especially in central and central-eastern Europe. Expected changes in southern Europe are more varied and uncertain, with decreases projected for some regions but increases for many others, including regions where overall precipitation is projected to fall. Likewise, annual maximum five-day precipitation is projected to increase considerably, especially in the region of central Europe.

Central Europe is likely to experience harsher weather extremes (heavy precipitation, river floods, droughts and fire hazards), with mixed changes in annual precipitation and aridity. In southern Europe, annual precipitation and summer rainfall are projected to decrease, whereas aridity, droughts and fire hazards are all likely to increase. Mixed changes are projected for heavy precipitation and river floods.

TABLE I. Weather extremes

Category	Wet and dry					
	Mean precipitation		Heavy precipitation and river flood			
	Total precipitation (annual)	Total precipitation (summer)	Maximum consecutive 5-day precipitation	Extreme precipitation total	Frequency of extreme precipitation	River flood index using runoff
Northern Europe	↗	⤭	↗	↗	↗	⤭
Central Europe	⤭	↘	↗	↗	↗	↗
Southern Europe	↘	↘	⤭	→	→	⤭

Global warming is projected to lead to higher intensity of precipitation as well as longer dry periods in Europe. Restricting ourselves to the European continent, it can be noted that regional conditions specific to each area show that climate change can affect the magnitude and frequency of floods in different ways. In Northwest Europe (in the belt between Iceland and Austria), the observed increase in flood magnitude is mainly caused by an increase in autumn and winter precipitation, in Southern Europe the decrease in flood magnitude is associated with a decrease in the frequency of precipitation and an increase in average air temperature, while in the Eastern European region an increase in air temperature causes a decrease in the thickness of snow cover, which also results in a decrease in flood magnitude [Blöschl et al. 2019].

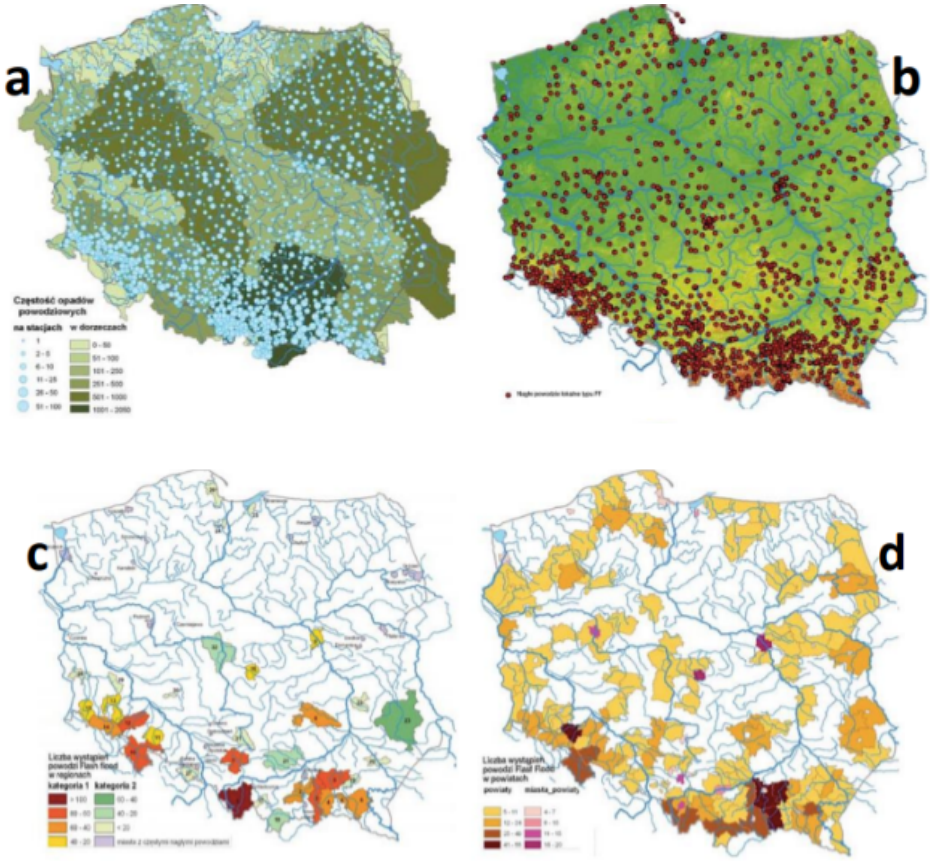
3.1 Poland

So far in Poland, we have also mostly observed floods related to river flooding. Such as in 1997 or 2010. With the changing climate and the increasing frequency of flash floods as a result, the nature of floods is also changing. But climate is not the only cause of this change. Of great importance here is the impact

of human activity over the past few decades. The way cities are built, and the lack of drainage infrastructure, means that excess water does not find an outlet. Violent precipitation is a characteristic of our climate, but only in recent years has its impact been so devastating. The frequency of flood precipitation is shown in the figures below (a), the spatial distribution of flash floods (b), the regions of their occurrence (c) and the counties with the highest risk of sudden flash floods (d) from 1971 to 2010.

(Source: METEO IMGW - PIB)

FIGURE II: Distribution of the flash floods



Increasingly common symptoms of climate change are extreme weather events, such as floods and torrential rains, among others (Legutko-Kobus 2017) As a result of analysis of current and expected climate change, including climate change scenarios for Poland, it is predicted that by 2030, some of the greatest threats to the economy and society will be extreme weather events, including, among others, torrential rains resulting in floods and flooding (SPA 2020 -2013). Relevant in this context are the conclusions of the analysis of the National Environmental Policy 2030 PEP 2030 - 2019), which notes that the risk of floods will increase in all parts of Poland. The reasons for this include insufficient retention capacity of natural and artificial reservoirs and a significant increase in the share of impervious surfaces, especially in cities. **The increasing danger of flooding should** therefore **be met by the progressive activity of state institutions and local government** units aimed at adapting endangered areas to the changing situation. Also, **the appropriate adaptation of legislation**, particularly in the area of flood planning standards, **should be an obvious response to the described risks**. Floods are not a homogeneous phenomenon that can be easily characterized. It should be mentioned here, however, that the classification of floods can be by source or mechanism of origin, as well as by flood characteristics, as used in the Updated Methodology for Preliminary Flood Risk Assessment (Wody Polskie 2018). From the point of view of the increase in flood risk in the territory of Poland resulting from climate change, it is worth paying special attention to the phenomenon of flash floods, which is considered one of the

characteristic consequences of climate change (Kundzewicz 2012; Babś, Marcinowicz 2019; Szpiller 2020).

The intensity of precipitation is further intensified by urban architecture and the way it is shaped, contributing to the formation of so-called urban heat islands, where temperatures are higher than in surrounding areas. In this situation, even significant investments in so-called small retention may not be sufficient to offset the threat of flooding (Kolerski, Kalinowska 2017). The problem is further compounded by the obligation to discharge rainwater to combined sewer systems, which is the reason for its overloading during heavy rainfall (Romanowicz 2014). The above indicates the need for special adaptation measures, especially in terms of adapting flood planning standards that take into account the need to design flood control infrastructure in urban areas to the specifics of flash floods. In this context, there is a need to develop and implement solutions focused on countering the threat that does not come from river basins. Currently, there are known architectural solutions that take into account potential excess water, also coming from torrential rainfall, which contribute to improving flood safety in urban areas. These are the so-called blue-green infrastructure solutions. Well-planned urban areas that provide easy access to natural green spaces, especially riverfront areas, and enable the creation of blue-green infrastructure, can provide benefits for human health and quality of life, as well as mitigate the effects of climate change felt by urban residents (PEP 2030 - 2019). Therefore, cities are increasingly investing, as a form of adaptation to climate change, in so-called ponds, underground retention tanks, rainwater harvesting, and new green spaces, i.e. places where excess water can be stored.

Characteristic of floods in Malopolska

The average outflow of about 10l/s/km2 is almost twice as high as the average for Poland of 5.2l/s/km2; it is the region of Poland with the greatest variability of flows. The Carpathian rivers (Soła, Skawa, Raba and Dunajec with tributaries), which shape the water resources of the upper Vistula River, are of greatest importance for the water management of the country and the province. Within the province, it is possible to distinguish 3 areas where certain types of flood summons are predominant:

- Precipitation-flood swells caused by continuous precipitation occur in the southern and eastern parts of the voivodeship, in the districts of Limanowa, Nowy Sącz, Krakow, Tarnow, Dąbrowa, Myślenice and Bochnia.
- Precipitation-navigation swells caused by violent summer precipitation pose dangers in areas adjacent to mountain rivers and streams in the districts of Limanow, Novosadecki, Nowy Sacz, Gorlice and Tatra; the districts of Olkusz and Krakow, as well as most cities with sewer systems with poor permeability, are also vulnerable to local flooding.
- Ice and sluice floods occur mainly on the Poprad River, the Dunajec River and some small watercourses in the foothills in the districts of Nowy Sącz, Nowy Targ and Myślenice.

The worst consequences are the floods of most regional range - these are the floods of rainfall in the summer period caused by spillover rains with a significant value of daily totals lasting for a period of several days. The floods caused by intensive torrential rainfall are usually local.

3.2 Slovakia

National reports of the Slovak Republic on climate change are drawn up by a team of experts commissioned by the Ministry of the Interior of the Slovak Republic approximately every 4 years, in accordance with its obligations under the UN Framework Convention on Climate Change, the Kyoto Protocol.

During the period 1881-2017, the following was observed in Slovakia:

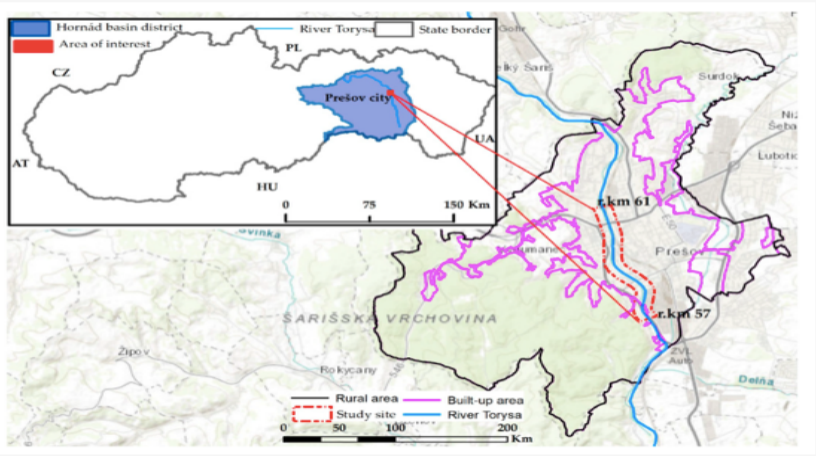
- Increase in the average annual air temperature by about 1.7 to 2.0 °C (regarding the season, the fastest warming occurs in summer and spring).
- Spatially different trend of the annual totals of atmospheric precipitation, on average, an increase of about 0.8% (in the south of Slovakia, the decrease was even more than 10% in places, in the north and northeast, the total precipitation increased from 3 to 5% in rare cases).

- Decrease in relative air humidity (by 5% in the south of Slovakia from 1901 until now, less in the rest of the territory).
- Decrease in all characteristics of the snow cover up to a height of 1000 m in almost the entire territory of Slovakia (an increase was recorded at higher altitudes).
- Changes in the variability of the climate (especially precipitation totals) - examples are extremely wet and dry years alternating in a short time interval: the extremely dry year 2003 and partly also 2007, the extremely wet years 2010 and 2016 and the exceptionally dry year 2011 and partly also 2012. In the past 15 years, there has been a significant increase in the occurrence of extreme daily and several-day precipitation totals, which has resulted in an increase in the risk of local floods in various areas of Slovakia. On the other hand, in the period 1989-2017, local or widespread drought occurred much more often than before, which was caused primarily by long periods of relatively warm weather with small amounts of precipitation in some part of the growing season. The drought was particularly pronounced in the years 1990-1994, 2000, 2002, 2003 and 2007, and in some regions in the west of the Slovak Republic in 2015 and 2017.
- The decade 1991-2000, but also the period 2001-2010, with the characteristics of air temperature, total precipitation, evaporation, snow cover, as well as other elements, came closer to the predicted climate conditions around 2030, which were calculated in terms of climate change scenarios for our territory, the only exceptions are lower precipitation totals in the cold half-year and in winter in the decade 1991-2000.
- It turns out that the weather has become more extreme in recent decades. Statistical processing of monthly temperature extremes points to fluctuations in the occurrence of extreme temperatures and precipitation during individual decades from 1961 until now, but the trends of the given characteristics are relatively clear.

Characteristic of floods in Prešov region

According to the Preliminary Flood Risk Assessment study in the Slovak Republic carried out by the Ministry of Environment in 2018, the Prešov region is assessed as a geographical area with significant flood risk. Pluvial floods and flash floods, which are triggered by intense local precipitation events, are likely to become more frequent in upcoming years, due to an increase in convective rainfall. The area of the Hornád river sub-basin covers 4 414 km2 and is in the territory of three self-governing regions (Košice, Prešov, and Banská Bystrica regions). The Torysa river flows through the second-largest city in the basin, Prešov with a population of 91 782. The average runoff in the sub-basin (period 1961–2000) is 210 mm and the average rainfall reached 701 mm (Management plan for the Hornád river sub-basin).

Figure 2. Study area—river Torysa flowing through the residential area of the city of Prešov.



(Source: Evaluation of Selected Sub-Elements of Spatial Data Quality on 3D Flood Event Modeling, Bindzárová et al., 2020)

Historical events confirm that flood zarad events are **highly dangerous in the region of Prešov, which was the place of the biggest flood tragedy** in Slovakia in the 20th century. In 1998, the flood was the most intense in the course of Mala Svinka and the hardest hit villages were Dubovica, Jarovnice, Renčišov and Uzovské Pekľany. The cause of the flood was a storm accompanied by extremely intense rain, which fell on basins saturated by previous rainfall. Another factor which contributed to the occurrence of the flood wave in Jarovnice and its surroundings was the poorly permeable geological bedrock and terrain, as the valley of Mala Svinka is only five kilometres wide in the upper part. In all affected watercourses, the maximum flow of the flood was greater than the flow that can be reached or exceeded on average once in more than 1000 years. **During the flood, 58 people lost their lives and another 61 were injured.**

In July 2004, the eastern part of Slovakia was affected by extensive floods, which also affected the partial catchment of the Hornád river, which includes the Torysa river. The flood had a limited area and short time duration and by its manifestation, it ranked among extraordinary statistical significance. Furthermore, the area affected by flooding due to extreme long-lasting rainfall hitting large areas of Slovakia was examined in 2010. The floods that occurred in Slovakia in May and June 2010 were from a hydrological point of view, exceptional for their temporal and spatial distribution. In early June 2010, extreme rainfall hit the water-saturated Basin of Torysa and caused floods with 50–100-year significance.

4. Nature based solutions

The Covenant of Mayors is an EU initiative that aims to engage and support cities and towns to commit to reaching the EU climate mitigation and adaptation targets. Under the new Policy Support Facility of the Covenant of Mayors, the European Commission is assisting local and regional authorities implement adaptation strategies for 12 selected countries. The use of nature-based solutions (NBS) is one of the activities to be supported. Nature-based solutions encompass a range of ecosystem-based approaches that aim to increase resilience to climate change. These are typically stakeholder-driven and tailored to regional conditions.

Key messages concerning nature-based solutions are:

- Nature-based adaptation focuses on ecosystem restoration and enhancement of ecosystem services to protect society against negative impacts of climate change. As climate change makes itself increasingly felt through, e.g., droughts, flooding or extreme temperatures, the urgency of adaptation measures increases.
- Nature-based solutions are recognised as multi-purpose solutions that are often having larger co-benefits than traditional technical measures. The recently updated EU Adaptation Strategy puts a strong emphasis on ecosystem-based approaches, and particularly on nature-based solutions. Relevant EU policy frameworks are thus not only the EU Adaptation Strategy, but also the Green Infrastructure Strategy and the Biodiversity Strategy. The targets regarding ecosystem restoration are particularly relevant in this respect.
- The reliance on regional stakeholder initiatives underlines the importance of capacity building and knowledge sharing. At EU level, several relevant information platforms have been created for this purpose. The regional initiatives are further supported through dedicated EU funding schemes and networking initiatives including the EU Mission on adaptation to climate change.

The effectiveness of NBS is highly dependent on the local context. Importantly, **there is currently very little cost-benefit analysis on nature-based solutions**. For this reason it is important to gather more information on the effectiveness of nature-based solutions, and to ensure that this information is scientifically rigorous.

5. The current status of early warning systems in Europe

a. EFAS EU

Enhanced ability to forecast peak discharges remains the most relevant non-structural measure for flood protection. Flood warning lead-times of 3-10 days give the possibility to set up the needed civil protection

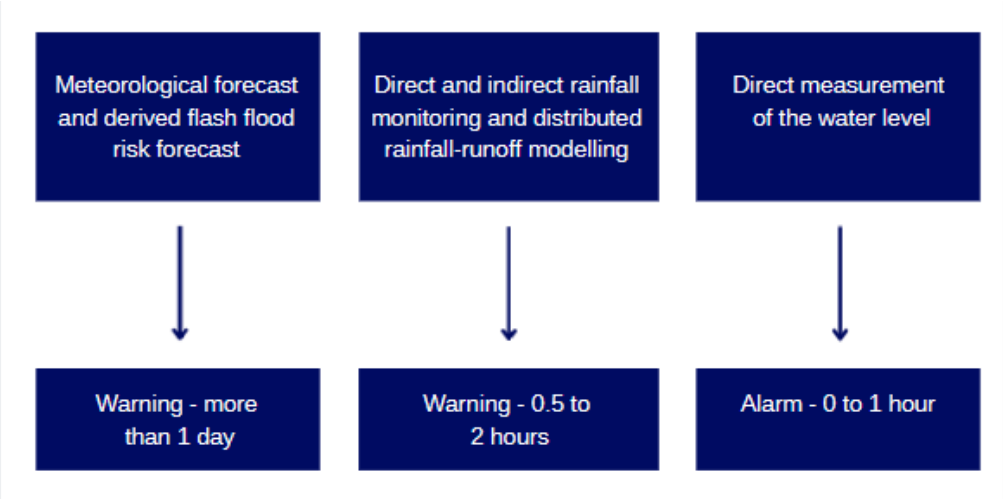
and emergency measures, minimising the impacts in terms of human lives and economic losses. The European Flood Awareness System (EFAS) supports preparatory measures before major flood events strike, particularly in the large trans-national river basins and throughout Europe in general. EFAS has been developed and tested at the Joint Research Centre in close collaboration with national hydrological and meteorological services, European Civil Protection and other research institutes.

EFAS is the first operational European system monitoring and forecasting floods across Europe. It provides complementary, added-value information (e.g. probabilistic, medium range flood forecasts, flash flood indicators or impact forecasts) to the relevant national and regional authorities. Furthermore, EFAS keeps the Emergency Response Coordination Centre (ERCC) informed about ongoing and possibly upcoming flood events across Europe. However, **EFAS flash flood notifications are issued for administrative regions not for basins.**

Criteria for flash flood notifications:

- Catchment part of CoA (Condition of Access)
- Probability of 5 year ERIC return period is >= 30%
- Lead time to the event is <= 48 hours ahead

SCHEME I. General scheme of the warning system



b. EWS

Early warning systems (EWS) are also highly supported by the Climate-ADAPT tool as **key elements of climate change adaptation and disaster risk reduction**, and aim to avoid or reduce the damages caused from hazards. To be effective, early warning systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently and ensure that there is a constant state of preparedness and that early action is enabled. The significance of an effective early warning system lies in the recognition of its benefits by local people.

Early warning systems for climate-related risks must rely on a sound scientific and technical basis and focus on people or sectors mostly exposed to risk. This implies the adoption of a system approach incorporating all relevant risk factors, whether arising from the climate-hazards or social vulnerabilities, and from short-term or long-term processes. Early warning systems include detection, analysis, prediction, and then warning dissemination followed by response decision-making and implementation. Such systems are in place, in many parts of the world, to monitor, forecast, and warn people about e.g. tropical cyclones, floods, storms, tsunami, avalanches, tornadoes, severe thunderstorms, volcanic

eruptions, extreme heat and cold, forest fires, drought, etc. To be effective and complete, an early warning system needs to comprise four interacting elements namely:

- Risk knowledge
- Monitoring and warning services
- Dissemination and communication
- Response capability

For the public authorities, warning the population on the occurrence of a possible disaster is one of their responsibilities. They will use for this purpose all means of communication, in relation with the specific features of the disaster (e.g. the level of risks, it can be forecast or not; the coverage is limited or broad).

c. EU-ALERT

The Netherlands have taken the lead in an EC funded project on "Cell Broadcast for Public Warning" having announced publicly that the Netherlands will implement such a service in 2010. A number of European countries have investigated the possibility of deploying a Public Warning Service (PWS) in their own country and have given their support to the EC funded project. The generic name for the European PWS is EU-ALERT. The letters EU will be replaced by characters identifying a particular country (e.g. NL-ALERT signifying the Netherlands, SK-ALERT signifying Slovakia and PL-ALERT signifying Poland). Such a strategy will allow each country to configure their own PWS to meet their specific national requirements whilst incorporating it within a common core specification agreed by all European countries. By this approach roaming will be supported and terminal behaviour will be uniform, irrespective of the country which the subscriber is roaming in.

As per 11 December 2018, the Council of the European Union has adopted the new Directive on European Electronic Communications Code (EECC). **Under the Directive, all EU Member States have to set up a public warning system to protect citizens.** This system will send alerts to all citizens and visitors mobile phones in a specific area in the event of a natural disaster, terrorist attack or other major emergency in their area.

According to the Directive a PWS must be able to:

- Target the affected population by specific geography so as not to cause widespread panic
- Reach a high percentage of people in the targeted area, not just residents but roaming visitors using their native language
- Send messages in real-time, within seconds and with a high degree of reliability
- Send message without the need for the public to have to opt-in
- The transmission of public warning messages should be free of charge for end-users not just residents but also roaming visitors

By 21 June 2022, Member States shall ensure that, when public warning systems regarding imminent or developing major emergencies and disasters are in place, public warnings are transmitted by providers of mobile number-based interpersonal communications services to the end-users concerned. However, there is **no update on the status of the implementation of EU-ALERT system either in Slovakia or Poland**, although other solutions to support forecasting and early warning exists on national levels.

TABLE II. Available best practices and advantages of the proposed solution

REFERENCE	DESCRIPTION	ADVANTAGES OF THE PROPOSED SOLUTION
AllertaMeteo IT	The alert system of the Emilia-Romagna Region, for civil protection purposes, concerns the weather, hydrogeological and hydraulic, coastal and avalanche risks. It consists of defined and shared entities, instruments, procedures, aimed at risk prediction, alerting and activation activities of structures that are part of the regional civil protection system. The system has three functions: To predict the expected meteorological, hydrogeological and hydraulic situation and assess the criticality on the territory related to the expected meteorological phenomena. To activate operational phases of civil protection related to the planned event scenario and equip themselves with the management of the current event emergency. To promote communication between institutional, non-institutional and citizens, in order to be able to implement the actions provided for in the Civil Protection Plans and the correct behavioural rules for self-protection.	The AllertaMeteo portal publishes warnings at the district level in the region. However, the occurrence of flash floods is a phenomenon that is very difficult to estimate on such a scale and occurs mostly in specific basins. Main advantage of FLOPRES early-warning solution is the possibility to monitor real-time data in a specific basin, which is also supplemented by meteorological forecasts and consequently evaluates the risk situation for vulnerable municipalities and cities. This way, it can better predict the occurrence of flash floods in a timely manner and by integrating with the national or local emergency system to notify specific persons effectively - for example, by delivering emergency notifications directly to phones in the area (covering not only permanent residents, but also visitors in the area).
RainBO Life LIFE15CCA/IT/00035	The overall objective of the RainBO was to develop and improve methods and tools to predict severe rainfall events and their impact, focusing on the hydrologic response of the small watercourses within the urban area of Bologna. The aim is to reach a higher resilience in such watercourses, by means of a monitoring and modelling system allowing it to forecast any sudden flooding event.	Early-warning systems are already established on the market, but their primary focus is on river monitoring, most often by measuring the level of water. The FLOPRES solution addresses the problem comprehensively, monitoring four parameters on both, rivers and watersheds - level of water and river flow, but also the saturation of the basin (soil moisture) and current precipitation, which can differ from meteorological forecasts. The monitoring makes it possible to better predict the risk of flash floods in specific basins where heavy rainfall occurs in a small area.

LOGOS 4 WATERS LIFE20CCA/HU/001604	The overall aim of the project is to improve climate resilience of local municipalities by mitigating the negative water-balance situation through the demonstration of integrated ecosystem-based water management solutions applied in small catchments in a coordinated manner, and the promotion and increased uptake of these measures for climate adaptation.	Communication and education about the possibilities of nature-based solutions are some of the ways to increase stakeholder interest in implementation. FLOPRES offers an expert module that makes it possible to easily verify the effectiveness and outcome of selected adaptation measures. On the other hand, it also serves as an aid in the decision-making process and analysis of the watershed characteristics after natural disasters, significant or risky construction, deforestation and any change of the landscape.

6. Activities of project partners in respective domain

ESPRIT has been systematically engaged in research and development activities, together with consulting the field of hydrology, geography and landscape ecology since its foundation in 1992. The company is also a top technological workplace in the field of design and development of complex solutions in the field of geographic information systems (GIS), specialised software applications in the field of natural process modelling. Competence in the context of solving the presented project is supported by previous research in the field of geoinformatics associated with the use of geostatistical methods and computer modelling methods for evaluating the spatial and temporal distribution of natural phenomena and processes in a GIS environment. The company is also involved in modelling the hydrological balance and rainfall-runoff processes using several hydrological and balance models, and is also the author and owner of the source codes for several of its own hydrological models and other hydrological applications. In the field of hydrological modelling, ESPRIT also developed the application of models to estimate the hydrological response of the basin during extreme precipitation events, climate change and land cover change. In these areas, the company handled several research and development projects, financed through grant schemes, as well as large-scale projects implemented on the basis of commercial contracts with customers. The results of these researches, which will be applied in the project, are primarily:

ISSOP - Integrated system for the simulation of rainfall-runoff processes - is a complex simulation and modelling tool that contains tools and an extensive database of input geographic data for rainfall-runoff modelling, erosion and pollution spread modelling, adapted to conditions in Slovakia and providing extensive possibilities for assessment and prediction of changes in the behaviour of the entire basin system depending on natural and anthropogenic influences. The modelling tool was used in several projects and tasks (e.g. Hydrofor (HUSKROUA/1101/262), National Forestry Centre, SVP - Evaluation of the possible impact of existing and proposed preventive measures in the basin on achieving the goals of the flood risk management plan - rainfall-runoff modelling processes and hydrological response of the basin to defined scenarios).

Two reports of the current simulation and modelling tool developed by ESPRIT were generated as a showcase for the selected watershed of Mala Svinka in Slovakia, where a disastrous flash flood took place in the end of 20th century. They are describing the characteristics of watershed for two different scenarios and two municipalities that were affected the most by aforementioned flash flood (Uzovské Pekľany a Renčišov):

1. Uzovské Pekľany: Scenario with mitigation measures is being modelled. In such a scenario, risky arable land with a slope greater than 7° is changed to a deciduous forest, which has a greater water-holding capacity. **The simulation result - peak flow would decrease by almost 20%.**
2. Renčišov: Natural disaster scenario is modelled. This means that in the selected area the coniferous forest was removed and replaced with sparse vegetation. For the model, a precipitation event with the probability of repeating once every 100 years is used and applied to the selected territory. The system derives all the parameters of the model automatically, and on the last page the impact on the flow wave in the specified hydrological profile is described in text and graphics. **The simulation result - peak flow would increase by more than 15%.**

Output PDF reports are attached to the proposal with additional explanatory notes about scenarios and observed changes.

WEB GIS application to support expert activities of integrated watershed management - containing several GIS and modelling tools for the operative solution of water management tasks, was integrated into the Technical Information System of the Slovak Water Management Company. The application allows, among other things, to interactively model the impact of land use change scenarios on flood wave parameters.

ESPRIT has extensive experience in the field of interdisciplinary **landscape-ecological research and landscape planning**, as well as the transfer of this acquired know-how into practice through a number of developed nature and landscape protection documentations.

In the field of development of geographic information systems, the company prepared special GIS applications ranging from personal solutions for a small number of users to large enterprise solutions, programming and publishing maps and other spatial services in the web environment using a three-layer system architecture. A three-layer application architecture is a modular client-server architecture that consists of a presentation tier, an application tier and a data tier. We consider the following to be the most important solutions already implemented in this area:

- Surveillance Center of the Flood Warning and Forecast System (POVAPSYS)
- GeoIS – Geological Information System
- Geological Portal for Integrated Landscape Management
- Summary Records on Water – GIS Part
- Spatial Database System of Institute of Landscape Ecology at Slovak Academy of Sciences (ÚKE SAV)
- Web GIS application of Climatic Atlas of the Slovak Republic
- System for the comprehensive provision of environmental information for the identification of natural and semi-natural areas in the context of creating the Local territorial system of ecological stability documents

The company also achieved extraordinary success in the field of geovisualization and cartographic creation, where it was the processor of several large-scale cartographic works, from which we select the most important: Atlas of the Slovak Republic, Atlas of the Czech Republic (First place at the International Cartographic Exhibition in Paris), Population Atlas of Slovakia, Climatic Atlas of Slovakia, Atlas of representative potential geo-ecosystems.

As a result of these projects, ESPRIT possesses **extensive databases, know-how and developed solutions** that are **necessary for the successful implementation** of the project.

METEO is a spin-off company from the Interdisciplinary Centre of Mathematical and Computer Modelling at the University of Warsaw. By the licence agreement, Meteo provides Numerical Weather Forecast (NWF) based products to the market and develops new fields of implementation. Meteo is already providing a set of tools and products based at previous R&D activities:

- NWF based at Unified Model with 1,5km and 4km grid resolution
- NWF based at Weather Research and Forecasting Model with 3,4km grid resolution
- NWF based at Global Forecast System Model with 25km grid resolution
- Real-time data stream product based at weather station network

Above products **are already at the TRL 9 and can be used as a foundation** for a new type of precipitation service dedicated to hydrological models used in this project.

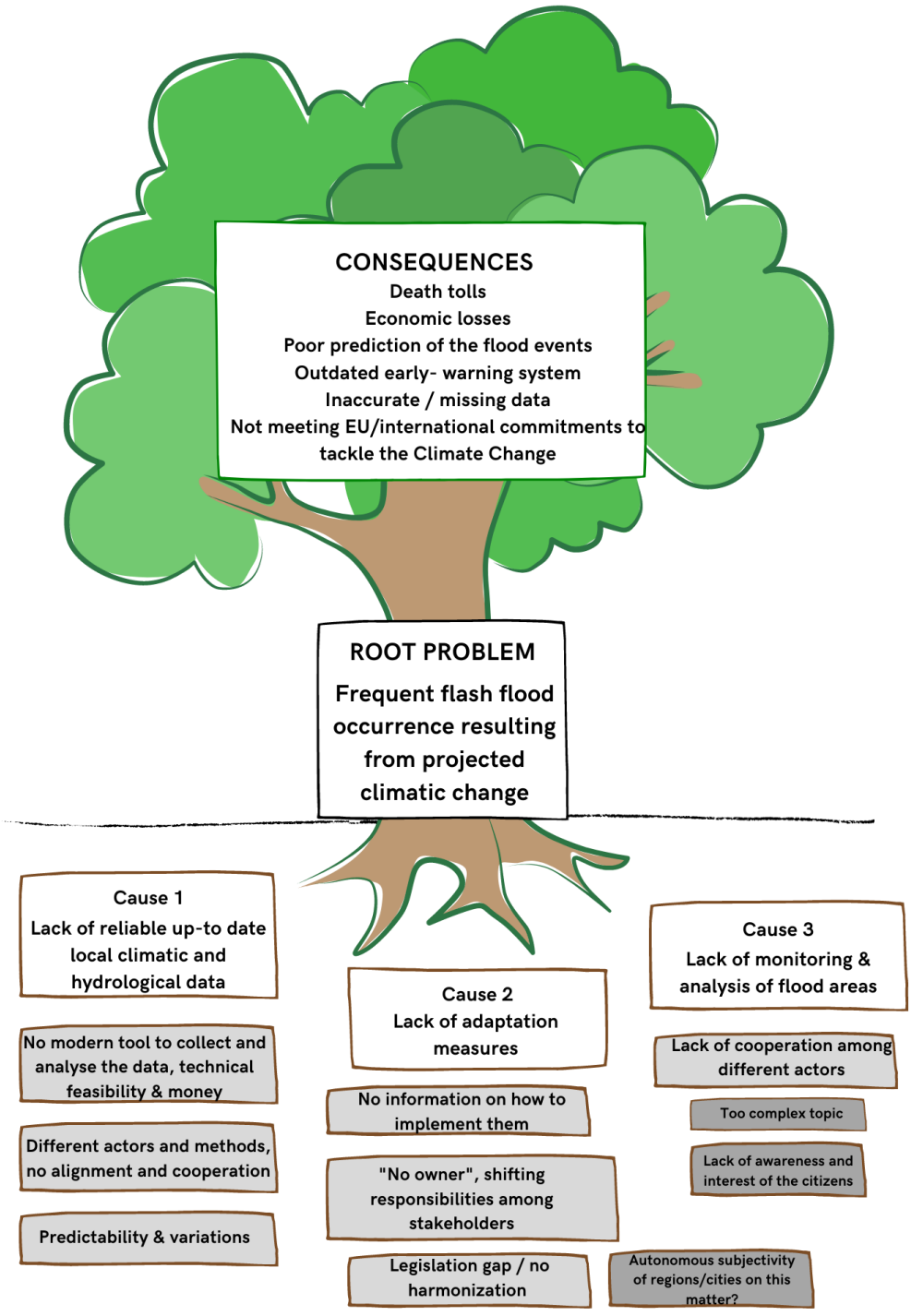
GOSPACE has become a pioneer in the field of IoT with their in-house hardware products. Not only at the level of providing physical sensors, but also as the network provider processing data further on its cloud infrastructure. GOSPACE has **deep IoT market understanding** (deployed ~ 15k sensors, digitising (transfer from analog to digital) 30 countries) and builds applications to address various use-cases.

MERATCH is an **advanced contactless radar** designed for **precise distance measurement** from the instrument to the surface of the various fluids. This functionality is achieved by transmitting an electromagnetic wave in the 60 GHz frequency range and measuring the frequency shift of the electromagnetic wave reflected from the water surface. Instruments are characterised by **low power consumption**, supported by multiple communication interfaces, compatible with third-party data loggers, and support remote configuration of all instrument settings over any available digital communication interface. The narrow beam width of only 5° allows simple installation because of the wireless principle, small form factor, and ability to communicate via satellite infrastructure. Its deployment is straightforward and available everywhere regardless of conventional IoT connectivity. The functionality of the solution is supported by special peripherals - simple and cost-efficient devices conducting various useful measurements that are transmitted locally to MERATCH further to the cloud.

The project is building on this extensive technical preparatory work, expertise in the respective fields, previous R&D activities and achieved aforementioned results. **The overall goal of the project is to improve climate resilience of vulnerable municipalities in Slovakia and Poland by reducing their risks stemming from climate change.** For this purpose, the proposal will offer testing, introducing, monitoring and fostering the integration of sustainable nature-based climate change adaptation approaches into strategies and land use planning practice of local governments and relevant stakeholders. Additionally, the goal is to offer a reliable early-warning system to prevent flash floods and avoid or minimise the negative impacts of flooding.

Our project, therefore, proposes an integrated solution to support flood modeling, forecasting, early warnings, integration and analysis of multimodal data both for authorities responsible for water and emergency management at all levels, and private persons who might be impacted by the consequences of climate change related hazardous events.

FIGURE III. Problem tree



1.2 Specific project objectives

Specific project objectives *Describe the specific objectives of your project (clear, measureable, realistic and achievable within the duration of the project).*
The project aims to contribute to better informed and more NBS-friendly decision-making processes in water management and management of water risks and disasters, based on the up-to-date information,

increased knowledge and strengthened collaboration among stakeholders, experts and public. As a result, the resilience of municipalities and their citizens to climate-change related events will be strengthened and the risks stemming from climate change lessened.

To achieve the overall project aim**,** several specific objectives ("measurable actions") were identified that will lead to the successful completion of the project. To measure whether the specific objectives were achieved or not, concrete quantitative and qualitative indicators have been assigned to each objective. These indicators do not replace KPIs (benchmarks to show progress towards completion of the project outcomes) but rather complement them and show the changes in processes, on a behavioural and community level, to be accomplished in order to fulfil the project mission.

The specific goals address firstly, **the need to collect up-to-date and relevant hydrological data** in selected locations and analyse them in order to inform the decision-makers and other relevant stakeholders responsible for water management and security strategies. Secondly, the need **to improve the knowledge base of local communities on climate change related risks and raise awareness of local authorities** on nature based adaptation strategies. Finally, the need **to develop and test an innovative state-to-art system** aiming to help municipalities, responsible authorities, companies and individuals to explore prevention of water-related risks and disasters and adaptation to climate change, and emergency response measures.

TABLE III. Specific objectives

SPECIFIC OBJECTIVES	INDICATORS	PURPOSE
1.To **develop and pilot** a smart WEB GIS-based **IoT system** that will enable the end users to access, analyse and model different **hydrometeorological** scenarios (e.g., storms, flash floods, floodplain restoration) **to simulate and predict their impact** in particular locations.	**S1.I1:** Number of active users of the FLOPRES software: 250 **S1.I2:** Number of paid subscriptions by the end of the project: 100 **S1.I3:** 85% of users with positive experience using the FLOPRES system	To determine the number of people and paying customers (experts, municipalities representatives or farmers, landowners, etc.) who are regularly engaging with the FLOPRES software and to measure their satisfaction with the proposed solution.
2. **Improve and update the data** on the current climatic, hydrological characteristics in the selected areas **to provide** reliable and accurate **information for** regional planning **authorities to formulate** nature-based climate change adaptation measures, implement **risk reduction interventions** and manage land use.	**S2.I1:** Number of new entries in the database of the pilot plots, where the sensors are installed: 150.000 **S2.I2:** 80% increase of reliability and accuracy of the flash-flood predictions compared to the state before the project. **S2.I3:** Number of NBS policy recommendations or guidelines created: 2	To measure how much and what kind of data were acquired during the project and to what extent they contributed to the better predictability and accuracy of the flood prediction. Furthermore, to measure the impact of the new data on the development of water management related strategies and policies on local and / or regional level.
3. Help **reduce negative impact of flood incidents** by developing the innovative **early-warning system** for flash floods based on the real-time data	**S3.I1:** 30% reduction of economic losses due to floods compared to the 25% before the project*	To assess if the proposed solution helped to reduce the economic losses and civil casualties caused by flash floods.

monitoring, and its **integration into** the national (regional) **emergency system**	S3.I2: 100% reduction of civil casualties due to the floods. *https://publications.jrc.ec.europa.eu/repository/handle/JRC97266	
4. **Increase** the capacities and **knowledge on climate change adaptation,** risk for flash floods, providing NBS for landscape sustainability, natural water retention measures of the local authorities responsible for water management and regional planning in Poland and Slovakia.	**S4.I1**: 100 local authorities and stakeholders with the desired knowledge and skills of NBS and flash floods hazards **S4.I2:** Number of municipality representatives with a favourable attitude towards climate change adaptation measures: 50	To measure the learning benefits of knowledge and skills-transfer activities, such as training, demonstrations and awareness-raising sessions. Furthermore, to measure the proportion of the target group with a favourable attitude towards the use of NBS measures.
5. **Raise awareness** amongst citizens, relevant stakeholders and local authorities, in the selected areas **about land utilisation and flood risks** and promote their collaboration **in the actions addressing** climate change **adaptation.**	**S5.I1**: 90% of community members, from those at least 10% of Roma people, who believe that nature-based solutions for land utilisation reduces the risk of casualties **S5.I2**: 500 of local citizens who recall hearing or seeing at least 2 out of 30 promoted campaign messages **S5.I3**: number of partnerships established between the local authorities, the private sector and civil society addressing issues which impact the quality of life in the target area: 2	To assess the effectiveness of the awareness raising and communication activities on the target group and the following impact on their behaviour. Also, to measure the extent to which the local authorities, private sector and civil society actors cooperate on addressing shared issues that impact the life of their community.
6. **Ensure** the **transferability, replicability and sustainability** of the project **through the market uptake** of the key exploitable outputs and stimulation of **the international cooperation.**	**S6.I1:** Number of professional / expert events visited, where the FLOPRES system was promoted: 8 **S6.I2**: Number of users that actively use at least 1 of the promoted key outputs: 1000 **S6.I3:** 60% return on investment within 5 years of launching the project.	To measure the reach of the key outputs and the extent to which were the promoted solution adopted by the target businesses. Further, to assess how cost-effective the set of project-related investments was.

1.3 Compliance with LIFE programme objectives and call topic

Compliance with LIFE Programme objectives

Explain how the project contributes to the specific objectives of the LIFE Programme and the sub-programme targeted by the call (Nature and Biodiversity, Circular Economy and Quality of Life, Climate Change Mitigation and Adaptation or Clean Energy Transition).

The focus and the impact of the project **directly fulfils the general objective and specific goals of the LIFE program.**

TABLE IV. Compliance with LIFE programme

	OBJECTIVE	COMPLIANCE
Article 3 of the LIFE Regulation - Objectives	The general objective of the LIFE Programme shall be to contribute to the shift towards a sustainable, circular, energy-efficient, renewable energy-based, climate-neutral and - resilient economy, in order to protect, restore and improve the quality of the environment, including the air, water and soil, and to halt and reverse biodiversity loss and to tackle the degradation of ecosystems, including by supporting the implementation and management of the Natura 2000 network, thereby contributing to sustainable development. The LIFE Programme shall also support the implementation of general action programmes adopted in accordance with Article 192(3) TFEU.	The aim of the proposal is to contribute to the shift towards a sustainable economy with the aim of restoring and improving the quality of the environment.
LIFE programme - specific objectives	**A,** to develop, demonstrate and promote innovative techniques, methods and approaches for reaching the objectives of Union legislation and policy on the environment, including nature and biodiversity, and on climate action, including the transition to renewable energy and increased energy efficiency, and to contribute to the knowledge base and to the application of best practice, in particular in	FLOPRES framework contributes to the development, demonstration and promotion of innovative techniques, methods and approaches for reaching the objectives of Union legislation and policy on the environment, including nature by implementing nature-based solutions, and to contribute to the knowledge base and to the application of best practice, in

	relation to nature and biodiversity, including through the support of the Natura 2000 network.	particular in relation to nature and nature-based solutions.
	B, to support the development, implementation, monitoring and enforcement of relevant Union legislation and policy on the environment, including nature and biodiversity, and on climate action and the transition to renewable energy or increased energy efficiency, including by improving governance at all levels, in particular by enhancing the capacities of public and private actors and the involvement of civil society	Combining the developed solutions into modules and cooperation with partners from the public and private sector will result in improved management at multiple levels in the area of implementation and enforcement of relevant legislation and Union policy in the field of environment.
	C, to act as a catalyst for the large-scale deployment of successful technical and policy-related solutions for implementing relevant Union legislation and policy on the environment, including nature and biodiversity, and on climate action and the transition to renewable energy or increased energy efficiency, by replicating results, by integrating related objectives into other policies and into public and private sector practices, by mobilising investment and by improving access to finance.	The expert module of our solution will help local authorities in the development of highly accurate, effective and science-based adaptation strategies and plans, crisis management and decision support in case of need. By replicating best practice and deploying the results, investments in nature-based solutions will be mobilised.
European Green Deal	The European Green Deal will transform the EU into a modern, resource-efficient and competitive economy. The European Green Deal will improve the well-being and health of citizens and future generations.	The proposal also fulfils the goals and objectives of the European Green Deal mainly through improvement of the EU's natural capital by using the FLOPRES expert module and protecting the health and well-being of citizens from environmental and climate risks and impacts in the form of flash

		floods by using the FLOPRES warning module.
EU Biodiversity Strategy 2030	It aims to put Europe's biodiversity on a path to recovery by 2030 with benefits for people, the climate and the planet. It aims to build our societies' resilience to future threats such as climate change impacts, forest fires, food insecurity or disease outbreaks, including by protecting wildlife and fighting illegal wildlife trade.	The proposal is in accordance with the EU Biodiversity Strategy 2030, to which the LIFE programme also contributes through sub-programmes. The link between the proposal and the EU Biodiversity Strategy is in the similar aim, which is to focus on building society's resilience to future threats, such as climate change effects by early-warning module and awareness raising activities.
EU Adaptation Strategy	Smarter adaptation	FLOPRES will combine a huge quantity of historical data, real-time data, and meteorological predictions to create smart models accessible to the general public. FLOPRES is based on knowledge on adaptation by professionals from the private and public sector, so that it is possible to gather more and better data on climate-related risks and losses.
	Faster adaptation	FLOPRES is based on functioning systems, which means that it can be put into practice in a short time, and at the same time, actions to help reduce climate-related risk can be implemented right after the end of the project.
	More systematic adaptation	Within this priority, the strategy directly talks about supporting further development and implementation of adaptation strategies and plans at all levels of governance, which is also one of the specific goals of the project.

		Our project also represents a connection with cross-cutting issues within the framework of systematic adaptation: nature-based solutions for adaptation and local adaptation action.

Compliance with the call topic

Indicate the call topic to which your proposal relates, and explain how the proposed project addresses the scope of the topic description in the Call document.

The proposal is submitted within the Climate Action field and specifically the Climate Change Mitigation and Adaptation sub-programme. Within the specific objectives of this sub-programme, the proposal contributes to the fulfilment of the given objectives:

TABLE V. Compliance with call topic

	OBJECTIVE	COMPLIANCE
Climate Change Mitigation and Adaptation sub-programme	To develop, demonstrate and promote innovative techniques, methods and approaches for reaching the objectives of the EU legislation and policy on climate action and to contribute to the knowledge base and to the application of best practice	The innovative project concept using IoT sensors contributes to develop, demonstrate and promote innovative techniques, methods and approaches for reaching the objectives of the EU legislation and policy on climate action precisely by using a software solution of the warning and expert module and to contribute to the knowledge base and to the application of best practice at the local, national and international level.
	To support the development, implementation, monitoring and enforcement of the EU legislation and policy on climate action, including by improving governance at all levels, in particular through enhancing capacities of public and private actors and the involvement of civil society	In the project, a consortium of partners is created so that both the private and public sectors are involved for the widest possible usability and replication of the achieved results, which will result in the enforcement of the EU legislation and policy on climate action.
	To catalyse the large-scale deployment of successful technical and policy related solutions for implementing the EU legislation and policy on climate action by replicating results, integrating related objectives into other policies and into public and private sector	At the same time, our project aims to draw attention to nature-based solutions, their deployment and thus the mobilisation of investments in the green economy.

	practices, mobilising investment and improving access to finance.	

Within the call - Climate Change Adaptation, the project contributes to the general objective of the call by preparing a tool for adaptation to climate change in the field of extreme events.

At the same time, the impact of the project will help the implementation of the European Climate Law[1] by:

Creating a system for monitoring progress and take further action if needed, by creating an expert modul for landscape planning

Provide predictability for investors and other economic actors by creating a tool that predicts flash floods and thus enables decisions to be taken about development in a chosen area.

To achieve the given goals, the proposal defines clear and convincing intervention logic, which includes:

- A specific climate risk, which is flash floods
- A suitable tool that combines preventive and adaptive functions
- Implementation of measures during project duration
- Tools for sustainability and possible monitoring of project progress even after its duration.

At the same time, the project and the project consortium are built to achieve synergy with EU strategies and concepts, including the private and public sector, and mobilise additional investments by replicating the results.

TABLE VI. Call areas of intervention and the benefits of the proposed project

Call area of intervention	Direct and indirect benefits of the proposed project
Adaptation policy development, and adaptation strategies and plans	With its results and the selected type of partnership, the project will help national, regional and local authorities to further develop and improve effective and science-based adaptation policies and strategies in the field of landscape planning and deployment of nature-based solutions. The project has a cross-border character, as the main partners are actors from Slovakia and Poland - directly regional actors - the Prešov region and the region of Lesser Poland. The project supports the revision of regional adaptation strategies and plans, as the results that the project will be reflected in the strategies and concepts of the included regions and they will recommend specific solutions also for the municipalities in their territory (through comments and recommendations to the Economic and social development programs of the municipality - which is basic medium-term planning document of municipalities in Slovakia)

[1] Official Journal of the European Union, *REGULATION (EU) 2021/1119 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')*. 2021. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119.

State-of-the-art tools and solutions for adaptation	The result of the project will be modules for adaptation modelling, risk assessment, management and decision support in case of flash floods Through the use of IoT sensors the monitoring, reporting and evaluation of adaptation will be possible.
Nature-based solutions in the management of land, forests, coasts and marine areas	The specific goal of the project is the implementation of nature-based solutions in landscape planning, so in this area the project contributes directly to the call concept.
Adapting cities and regions to climate change	Cooperation with regional partners will guarantee the adaptation of regions to climate change in the project and will be shown as best practice for other regions and the national level adaptation planning.
Water management	The created modules are directly related to watershed management and the proposed nature-based solutions will have positive effects on water retention in nature.
Preparedness for extreme weather events	Within the given area, the project offers a warning module, which warns the citizens in case of extreme weather changes in the form of flash floods. The implementation of this module will directly increase the preparedness of residents for impending danger.

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1.4 Concept and methodology

Concept and methodology

Describe the overall intervention logic of the project, including the main idea and assumptions (i.e. how are the proposed activities and steps of your project expected to lead to the intended changes in terms of outcomes and impacts).

Explain the methodology, i.e. the main tools, techniques, methods and procedures you will use to implement the technical part of your project. Justify why the proposed methodology is the most suitable for achieving the project's objectives.

For Clean Energy Transition:

Describe the market barriers, the needs and constraints of market actors, and how your concept will address them concretely.

For Circular Economy and Quality of Life (n/a to Environmental governance topics):

Describe the technical details of the proposed solution (process, material, product etc.) using a flowchart and including, where possible, the general mass and energy balance. Explain how you plan to establish your supply chain.

Specify the scale (e.g. production capacity) and output of the project (e.g. quantity produced/sold during the project). The chosen technical scale should be one that allows the evaluation of the technical and economic viability of the proposed solution. In case of close-to-market conditions the target should be industrial/commercial scale already during the project.

Although various flood hydrological models using Geographical Information System (GIS), satellite, remote sensing products, and historical records (such as flood traces or flood marks) have been developed and widely utilised in water resources management, it is observed that they do not involve flood modelling. Additionally, for areas where necessary flood-related data are not available or scarce, the ability of these models to predict and compute future flooding is diminished, as it is the case of many regions in Slovakia, where there are currently still many data-scarce and ungauged river basins. Due to the unavailability of real-time data monitoring, the hazards of flood velocity, flood depths, and flood duration are not usually considered in detail. In cases when the occurrence of extreme events cannot be prevented by implemented measures, it is necessary to build forecasting and warning systems in the most vulnerable locations and integrate it into the national emergency system.

The project, therefore, strives:

- To improve and update the data on the current climatic and hydrological characteristics in the selected areas by providing and piloting the new expert and warning system integrating WEB GIS and IoT technologies (FlashA). It is expected that the system will help reduce negative impacts of flood incidents by providing reliable and accurate information for decision-making processes in integrated river basin management. Through the use of IoT sensors the monitoring, reporting and evaluation of effects of the adaptation measures will be assessed and justified. The system will allow interactive modelling of the impact of possible scenarios of extreme hydrometeorological situations, scenarios of change in the use of the river basin as well as proposals for nature-based measures on drainage processes. It is assumed that the system will help the regional planning authorities to design the precautionary measures, formulate regulations and manage land use, but also raise awareness amongst citizens about NBS and flood risks, as they will have the opportunity to use the system on the web / through smartphone app.
- To improve flood risk communication with the public in case of risk of flash floods. It is assumed that by early notification system the local population in selected areas will be timely and better prepared for emergencies, the risk management will be more effective and the impact of the flash flood threat mitigated. The prediction of the risk of the flood will be timely and accurate, economic and human losses are minimised. The overall preparedness of residents for extreme weather events will be strengthened.
- To raise the awareness and knowledge of the private landowners, experts and municipality representatives in the Prešov Self-Governing Region and the Region of Lesser Poland on the benefits of NBS, and strengthen its implementation in regional and local urban landscape planning. Evidence based on the social, economic and environmental effectiveness of NBS, including a comparison with more traditional solutions will be discussed during joint meetings of municipal representatives, local communities and experts. The municipalities in selected regions will be encouraged to implement the EU strategy on adaptation to climate change, international cooperation and partnership between Slovak and Polish academic, public and private sector established and capacities of the selected local authorities strengthened.
- To transfer the key project knowledge and results with the aim to enable other public or private entities to use it and take up within their policies and activities, thus maximising the impact of the project
- To support the modernization and digitalization of the water sector by providing a state-to art IoT based solution for the monitoring, prediction and management of water-related hazards

Outcomes:

- Flood-related data and information base on local and regional hydrological system and water basins are improved and available for use in water management decisions, climate indices are provided
- Decision making on water management and related risks is improved through increased availability of real-time data and knowledge
- Improved resilience of the cities and communities to climate-related hazardous events
- Implementation of NBS to address social, economic and environmental challenges are promoted within selected regions
- Cities and communities in Prešov region and Region of Lesser Poland are more resilient to flash flood hazards through appropriate urban and landscape planning
- Communication with public in case of flood emergencies is improved
- Awareness and knowledge of the public on NBS is enhanced, skills and capacities of the local authorities and other relevant stakeholders are increased
- Good practice and lessons learnt from the project provide other municipalities examples to follow, creating added value across the EU
- The key project results bring benefits to research communities, the public and private sector, policy makers and regulatory bodies.

Methodology

The project methodology follows the distribution of individual Work Packages (WP) and consists of 6 related or concurrent work batches divided over three years. The initial phase of the project focuses on preparation activities to implement the proposed IoT solution in selected project locations, identification of relevant stakeholders and actors whose involvement is necessary to replicate the key project results and their true and lasting engagement in the project (WP2). Technical preparation and advancement of the IoT system and its implementation in the pilot locations will follow, including data collection procedure and data monitoring (WP3). Consequently, adaptation, testing and validation of the early-warning module and its integration with the national warning system will be carried out (WP4). Testing, optimization, validation and adaptation of the expert module to end users, including analysis of available spatial data sources will follow in WP5. From the beginning of the project, the crucial project knowledge, such as data, methodologies and approaches will be collected with the aim to identify key project exploitation results. These will be further used during the replication, and exploitation phase of the project (WP6) to identify their commercial potential and, therefore, enhance project sustainability. Project management, communication and monitoring activities will be realised throughout the whole duration of the project (WP1).

The technological solution will be based on the construction of an integrated system for the collection, archiving, analysis and distribution of current and long-term data on the status of the hydrological system of river basins based on the integration of WEB GIS and IoT technologies, consisting of two interconnected components:

1. Expert subsystem for hydrological process assessment and Integrated Watershed Management

The expert subsystem will consist of a comprehensive set of software tools for the assessment of extremes of selected climatic, hydrological variables. The expert system will work as a superstructure on top of the GIS system. The individual tools implemented in the system will serve as an analytical and modelling superstructure on top of the established database, which will provide users with a wide range of interactive tools to support efficient information retrieval, modelling of the current state or scenarios of hydrological characteristics and natural hazards, and subsequent visualisation and reporting.
A rainfall-runoff model calibrated for pilot catchments or other methods for determining design variables will be implemented in the system in the form of a software application linked to a centralised database of underlying data and model parameters. The tool will allow interactive modelling of the impact of possible extreme hydrometeorological scenarios or scenarios of change in catchment use on the hydrological design variables.

The system will include a spatial database that will integrate:
- analytical background data (internal, external),
- spatial data processed in the individual methodological steps,
- interpreted data on flash flood risk in small catchments,
- data from IoT systems and their spatio-temporal interpretations,
- water status (water level),
- rainfall,
- soil moisture,
- flow velocity,
- sunshine.

The system will provide tools for efficient distribution and use of data for actors involved in river basin management. The system will provide spatial, tabular and graphical outputs through an internal web-map application - a map interface with GIS functionality with dynamic map services. Such a system will enable the creation of an integrated database of relevant data that are necessary for individual methodological steps or are needed to increase the informational value of the outputs for the user. In order to increase

the quality and consistency of the data, methods of geographical typification, regionalisation, landscape-ecological synthesis, which are elaborated in detail within the relevant scientific disciplines, will be used.

2. Flash Flood Warning Subsystem

The system will provide real-time information on the current climatic, hydrological and soil-moisture characteristics of the territory, as well as warnings of the risk of flash floods in order to manage the risks caused by the adverse development of hydrometeorological elements and improve flood risk communication with the general public.

The system also enable:

- estimation of the current flash flood risk based on the current saturation of the catchment at a daily time step and the following,
- continuous simulation and prediction of the current flash flood risk in a 5 min time step.

A distributed water balance model with a daily time step, directly linked to meteorological data provided by the project partner ICM METEO will be used to estimate the current risk of flash flooding and will allow operational simulation and prediction of the saturation of the landscape and its components. ICM METEO will feed the subsystem with the numerical weather forecasts up to 1.5 km with time resolution, and meteorological data for selected locations and areas, containing all the necessary parameters for comprehensive support of production, decision-making and planning processes.

Estimation of the current risk of flash flood occurrence or occurrence: following the previous section, an event-based model working in a 5-minute time step will be integrated into the system to estimate the areas, river sections and municipalities affected by flash floods, including an approximate quantification of the magnitude of the flow (or the magnitude of the flood). The time horizon is approximately equal to the time of inflow from the place affected by the torrential rainfall as detected by the radar system or predicted by the rainfall forecast model provided by ICM METEO. The outputs will be implemented by SMS, e-mail notifications and web publishing through a GIS application dynamically displaying the affected flow.

WEB GIS solution for hydrological analyses will be designed **for intranet users** with functionality applied in standard web browsers (or smartphones). Through cooperation with Prešov Self-Governing Region, the Region of Lesser Poland, the University of Prešov and the University of Warsaw, as well as municipalities and other partners in the territory, **workshops on NBS and related legislation and policy** will be organised for regional stakeholders and representatives. **Fact sheets on climate adaptation** will be distributed and public events on “green and blue infrastructure” (such as green infrastructure in cities, decentralised rainwater management) will be held for the general public. Furthermore, by the end of the project, **information events with the municipalities and experts** of the involved project regions **to transfer the best practise on water management** and successful adaptation strategies in the fields of strategic regional planning and urban land-use planning will be organised.

As for the **transferability and replication of the project**, these are seen as the identification of the main project knowledge which will be shared with the public and other special target groups, while exploitation considers the future commercial potential of the developed IoT solution. The strategy for replication and exploitation is based on the two concepts, **Knowledge Management and Transfer methodology**, that determines the key results to be shared and adaptation of the **Beachhead strategy** that clarifies how, with whom and on what markets the results will be shared. Each project partner will be responsible to identify key events and relevant organisations / bodies, which might be interested in project results. **Networking with other LIFE or Horizon projects** will be encouraged and a contact list of stakeholders developed. Also, meetings and discussions with other potential users’ representatives at the commercial and expert events are envisaged, including public presentation of the developed IoT system. A **communication campaign** and dedicated **marketing strategy** will be developed to promote the action and inform about the results to multiple audiences, with particular **focus on engaging local**

communities, including the most vulnerable ones (such as **Roma people**) and **raising** their **awareness on NBS** and climate change-related risks.

The proposed technical solution will be designed to offer a **very effective flood modelling and predicting system**, taking into account the cost of the platform while aiming at a **very high return-on-investment ratio.** Thanks to the partners' IoT experience and innovative approach, we can develop full-fledged smart and autonomous hydrological station that is deployable on a large scale for a very favourable development/production costs, significantly lower compared to other solutions available on the market - which are cumbersome and considerably more expensive. In fact, there is no similar smart IoT solution with similar real-time functionalities and precision that could be deployed on a large scale or in remote areas and for comparable costs. Proposed IoT based smart hydrological station is design for future global scalability and large-scale deployments. As for the use of collaborative methods and involvement of different actors and municipalities, experience in Europe illustrates good practices in cooperation for the management of water-related risks and disasters. Cooperation in managing water-related risks and disasters is necessary as river basins frequently transcend national borders, and the risks and challenges associated with river basin flood management are increasingly shared amongst neighbouring countries, as it is illustrated in Poland and Slovakia. Therefore, synergies arising from cooperation offers unique opportunities to enhance the efficiency and effectiveness of plans and programmes.

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1.5 Upscaling results of other EU funded projects *(n/a for concept note)*

Upscaling results of other EU funded projects *(n/a for concept note)*

Explain if and how the proposal builds on or up-scales results of other EU funded projects.

The proposal is linked to the following projects and intervention realised in the same topic area:

TABLE VII. Upscale

REFERENCE	IMPLEMENTED	SCOPE	UPSCALE
Development of a system for flash flood risk assessment and to support the design of green infrastructure	2022-2023	Research project focusing on the possibility of software implementation of methods and algorithms for flash flood threat assessment and for the purpose of developing blue-green infrastructure proposals to mitigate the impacts of flash flood threat. The project activities will result in the design of a working prototype system that will make use of the spatial and non-spatial data generated within the project as well as the knowledge from the individual methodological steps. The system should automatically provide the information needed for the subsequent expert analysis envisaged in the proposal.	The project realised by the Slovak Academy of Science is directly linked to the proposal, insofar as its expected results will provide a methodological and technological data base for the intended IoT system

SMART PSK – Future of Better Quality – Catching-Up Regions 1., 2. And 3 Stage – Geo-infrastructure of spatial data	2018-2022	The Geo-Infrastructure Platform of the Prešov Region was created as a part of the Catching-up Regions initiative with support of the European Commission, the World Bank and the Office of the Deputy Prime Minister for Investment and Informatization. The Prešov Self – Governing Region in cooperation with University of Prešov are participating in activities towards the creation of a regional spatial information structure. The solution is based on building a comprehensive database of high-quality and up-to-date open data.	Our proposal will build on the results of the SMART PSK project by using open data and information about regional spatial structure, which will be reflected in the proposed technological solution - FLOPRES software. Furthermore, the data collected and analysed during project implementation will be shared on a public geo-portal https://geopresovregion.sk/home/en/start-en/ developed within SMART PSK project.
LIFE IP - Air Quality Improvement Project (LIFE18 IPE/SK/000010)	2020 - 2027	Project realised by PSK with the aim to support the implementation of air quality improvement programmes in Slovakia by strengthening the capacities and competences of regional and local authorities and supporting air quality measures.	The project is realised in the Prešov Self-Governing Region and its activities include global campaigns and educational programmes to raise awareness of the importance of air quality and promote green infrastructure in the cities. Our proposal will complement the awareness raising activities of the LIFE IP project by providing workshops and public events on climate change adaptation strategies and urban land-use planning.
Applied research on methods for determination of climatic and hydrological design variables ITMS 26220220132	2011 - 2015	The aim of the project was the development of an expert operational system for the determination of hydrological and climatic design variables for flood protection of towns and villages in the Slovak Republic	Our proposal will build on the results of the research and use the data generated within the research when developing an early warning system and its functionalities.

Integrated system for simulation of drainage processes ITMS 26220220066	2010 - 2014	Within a project a comprehensive system containing tools and an extensive set of input geographic data for precipitation and drainage modelling, erosion modelling and pollution propagation modelling was developed and adapted to Slovak conditions	The proposed technological solution will build on the available tools and geographic data generated within this project. Lessons learnt from the project will be shared with the project consortium, to avoid setbacks and promote good practice.
Groundwater vulnerability research for sustainable groundwater management in the Bratislava Self-Governing Region (BSK) ITMS 26240220059	2010-2014	The aim of the project was to assess the risks of groundwater quality in BSK with the development of proposals for protective measures for their sustainable use.	Conclusions on flood risks and outputs from the reporting sheets of the flood hazard maps and flood risk maps will be used in the development of communication materials for target groups, which will be shared during awareness raising activities.

1.6 Complementarity with other actions *(n/a for concept note)*

Complementarity with other actions *(n/a for concept note)*

Explain how the project is complementary to other regional, national or international initiatives/activities/projects. How will it integrate the results from these other actions?

The proposal will built on the following Green infrastructure and Climate adaptation projects as well as natural water retention projects realised in Europe / on regional level:

TABLEVIII. Complementarity with Green infrastructure and Climate adaptation projects as well as natural water retention projects

REFERENCE	ACRONYM	IMPLEMENTED	COMPLEMENTARITY & INTEGRATION
LIFE15 CCA/ES/000102	LIFE Clinomics	2016-2020	The project aimed for better integration of climate change adaptation into the work of local authorities. Available lessons learnt and best practise from the project, particularly how to encourage municipalities to start implementing adaptation measures in key vulnerable sectors, such as disaster risk prevention and management, urban planning, and modules of climate change adaptation actions for municipalities across

			the EU will serve as knowledge base for the educational and knowledge sharing activities of our project.
LIFE20 CCA/GR/001747	LIFE FROSTDEFEND	2021-2025	The project aims to design and develop a smart IoT-based system for monitoring selected atmospheric and agronomic parameters, forecasting frost events, and providing early warnings of adverse conditions. Our proposal is complementary in a way that it addresses the same target group (landowners and farmers) who can benefit from complex solutions to assess and predict weather-related hazards. By networking with the LIFE FROSTDEFEND consortium, we can exchange knowledge, share lessons learnt and both reach new end-users, who can be interested in project outcomes.
H2020-SU-SEC-2018-2019-2020 Grant agreement ID: 832876	aqua3S	2019-2022	The project introduces novel technologies in water safety and security on European waterways, aiming to standardise existing sensor technologies complemented by state-of-the-art detection mechanisms. We intend to cooperate with the project consortium in terms of scientific and technological collaboration - the exchange of historical data samples, metadata as well as from other external resources (e.g. risk maps, data for socio economic assets etc.)

On the regional level, the proposal is complementary to the following projects and documents linked to measures for climate change mitigation in Prešov Self-Governing Region (PSK):

TABLE IX. Complementarity to the following projects and documents linked to measures for climate change mitigation in Prešov Self-Governing Region (PSK)

REFERENCE	IMPLEMENTED	COMPLEMENTARITY & INTEGRATION
Modern Technologies II – Operational Programme Integrated Infrastructure	2022-2023	The project aims at introducing modern technologies (including sensors in traffic and smart metres for energy consumption) as a smart tool for decision-making in selected areas of the Prešov Region, that are going to be used and visualised in PSK geo-portal too. Our proposal aims to complement the PSK geo-portal with hydrological data from the region, which are currently missing.

Low-carbon strategy of organisations under the PSK's jurisdiction	2021-2022	Support for low-carbon strategy including support for a sustainable multimodal city mobility and adaptation measures that aim at climate change mitigation (Operational Programme Quality of Environment). Our proposal will complement the strategy with recommendations on the use of NBS in the PSK.
SMART PSK – Future of Better Quality – Catching-Up Regions 3. Stage – Basic Environmental Infrastructure in the District of Snina	JAN 2021 - DEC 2021	Hydrogeological survey, preparation of project documentations for public water pipeline, sewage network and water treatment plant, execution of construction works for selected municipalities of the District of Snina (European Social Fund Efficient Public Administration, Operational Programme Slovakia)
Adaptation strategy for climate change of Prešov Self-Governing (AS PSK)	2021-2023	The main aim of AS PSK is to evaluate the vulnerability and adaptability of the territory and impacts of climate change to the environment, urbanised area, selected infrastructure and socio-economic characteristics of the territory of the region, including activities focused on division into economic sectors. Our proposal will complement the strategy with data and information from the hydrological analysis that will specify the most vulnerable and sensitive territories of the Region to flash flood hazards.
Competence centre of knowledge technologies for innovation of production systems in industry and services (ITMS 26220220155)	2011-2015	The centre focuses on targeted basic and applied research and development in the areas of geospatial services. The results of the research will be used within our project in the development of the application interface of the web GIS portal.

1.7 Synergies and co-benefits with other LIFE sub-programmes *(n/a for concept note)*

Synergies and co-benefits with other LIFE sub-programmes *(n/a for concept note)*

Describe synergies with other LIFE sub-programmes (Nature and Biodiversity, Circular Economy and Quality of Life, Climate Change or Clean Energy Transition). Describe spillover effects (co-benefits) in addition to those targeted by the project. If possible, quantify the contribution.

Identify the activities/tasks that address these policy objectives of other LIFE sub-programmes.

The proposal contributes to fulfilling the objectives of the **"Nature and biodiversity"** sub-programme

TABLE X. Co-benefits with other LIFE sub-programmes

	OBJECTIVE	CO-BENEFITS

Nature and biodiversity sub-programme	To develop, demonstrate, promote and stimulate scale up of innovative techniques, methods and approaches (including nature-based solutions and ecosystem approach) for reaching the objectives of the EU legislation and policy on nature and biodiversity, and to contribute to the knowledge base and to the application of best practices, including through the support of the Natura 2000	By preventing the occurrence of flash floods by deploying nature-based measures, existing habitats and biodiversity in the affected areas are also directly protected. According to Biodiversity and nature-based solutions report[2], nature-based solutions will play a central role in mainstreaming biodiversity across sectoral policies, as they benefit and are based on biodiversity, while also delivering multiple wider societal, environmental and economic benefits. Several EU-funded projects have identified types of NBS that have offered particularly high benefits for biodiversity. Preliminary monitoring results from NBS implemented in RECONECT (EU Horizon 2020 Project ID: 776866) show positive effects and increased biodiversity, reintroduction of rare species and higher perceived naturalness. As mentioned, some of the flash floods have a less frequent occurrence - they appear once every 10, 50, 100 or even 1000 years. Existing habitats are not prepared for such a flood and it is possible that they will be destroyed during flooding and if soil erosion also occurs, there is no possibility to restore the given habitat later.
	To support the development, implementation, monitoring and enforcement of EU legislation and policy on nature and biodiversity, including by improving governance at all	It is assumed that the implemented measures will also affect the NATURA 2000 system, since in June 2021 a total of 26,935 protected bird areas and areas of European

[2] European Commission and Directorate-General for Research Innovation, *Biodiversity and nature-based solutions : analysis of EU-funded projects.* 2020. Available from: https://op.europa.eu/en/publication-detail/-/publication/d7e8f4d4-c577-11ea-b3a4-01aa75ed71a1/language-en.

	levels, in particular through enhancing capacities of public and private actors and the involvement of civil society, also taking into due consideration the possible contributions provided by citizen science	importance were defined within the EU (outside the United Kingdom). The area of terrestrial locations is 764,222 km² (18.5% of the area of the member states of the European Union)[3]. The protected bird areas, for example, need to be approached sensitively, and the expert module for designing nature-based solutions with a direct demonstration of the impacts on the given area can be a very valuable tool for landscape planning in these areas.
	To catalyse the large-scale deployment of successful solutions/approaches for implementing EU legislation and policy on nature and biodiversity, by replicating results, integrating related objectives into other policies and into public and private sector practices, mobilising investment and improving access to finance.	At the same time, by implementing nature-based solutions, new continuous green areas will be created in the future, which will form their own ecosystems in the long term.

Within the Climate Change Mitigation and Adaptation sub-programme, our project has a direct spill-over effect with the **"Climate Change Mitigation"** priority area.

TABLE XI. Co-benefits with Climate Change Mitigation

	OBJECTIVE	CO-BENEFITS
Climate Change Mitigation priority area	Projects under the Climate Change Mitigation Priority Area should contribute to the socially just and sustainable transition towards a climate neutral economy by 2050 and to reaching the EU emission reduction target for 2030 of at least 55% compared with 1990 levels.	By implementing the NBS, our solution will contribute to the mitigation of climate change, especially by reducing the CO2 in the atmosphere, and at the same time, the implementation of the NBS has a direct impact on reducing the global temperature. These impacts are in line with the main objective of

[3] Ministry of the Environment of the Slovak Republic, *Natura 2000.* n.d. Available from: https://www.minzp.sk/ochrana-prirody/uzemna-ochrana/natura-2000.html.

		this priority area - The development of land management practices which have an impact on emissions and removals of emissions, conservation and enhancement of natural carbon sinks. According to the analysis by Cécile A. J. Girardin, the new model estimates that if NBS are ramped up by 2025, assuming that only NBS with a cost of up to $100/tCO2 are implemented, then they could remove 10 Gt CO2 from the atmosphere each year over coming decades. To put this figure in context, the global annual emissions from the transport sector were 8 Gt CO2 in 2018. The authors modelled the effect of this scale of implementation on the "peak temperature" reached this century. This revealed that if non-NBS actions to reduce emissions managed to limit the peak of warming to a 1.5°C rise by 2055, then the additional implementation of NBS could reduce this warming by 0.1°C. In other words, NBS could allow us to peak at just 1.4°C of warming, keeping us well within Paris Agreement Targets.[4]

1.8 Synergies and co-benefits with other EU policy areas *(n/a for concept note)*

Synergies and co-benefits with other EU policy areas *(n/a for concept note)* *Describe the synergies and positive spillover effects (co-benefits) with other EU policy areas (for example agriculture, health, civil protection, jobs and growth, etc.). If possible, quantify the contribution.* *Identify the activities/tasks that address these other EU policy objectives.*
The proposal has several spill-over effects with other **EU policy areas.** The most important effects are between the areas:

[4] Girardin, C.A.J., et al., *Nature-based solutions can help cool the planet — if we act now.* 2021. Available from: https://www.nature.com/articles/d41586-021-01241-2.

1. Employment and social affairs

The impact of the project by replicating its results is expected to be an increase in employment during the implementation of nature-based solutions. The assumption is - the creation of short-term jobs by deploying solutions (planting trees, bushes, etc.) and the creation of long-term jobs by maintaining greenery and deployed solutions. The number of employees in green space maintenance can function as a proxy for job creation. However, this co-benefit also includes job and/or business creation for the implementation of an NBS. Estimations could be based on average monthly/annual maintenance hours per unit of green space or from reported impact in NBS case studies.[5]

The natural systems play a vital role in supporting employment. Some 1.2 billion jobs in sectors such as farming, fisheries, forestry and tourism are dependent on the effective management and sustainability of healthy ecosystems. Half of the world's Gross Domestic Product is, to a greater or lesser degree, dependent on nature. Stressing or destroying vital ecosystems will have enormous economic as well as environmental and social costs.

Nature-based solutions offer an opportunity to create immediate "no harm" jobs, while at the same time supporting a transition to a greener and job-rich economy. They also enable better alignment and integration of agriculture and energy sectors with economic, employment, social, climate and biodiversity goals.[6]

2. Environment

Primarily, our project fits within the framework of environmental policy into the theme - water resources. The impact of our solution also has a co-benefits in the topics - urban environment and clean air. Our expert module will be used in landscape planning, which municipalities can use in designing green zones and increasing sustainability. At the same time, the proposed nature-based solutions reduce the amount of CO2 in the air and create a better climatic environment and space for the creation and maintenance of biodiversity. Bronson Griscom and colleagues recently estimated that cost-effective nature-based solutions could contribute about 20% of the mitigation needed between now and 2050 to keep global warming below 2°C.[7]

Benefit areas:

- Air quality
- Carbon Storage & Sequestration by Vegetation
- Carbon Storage & Sequestration by Soil
- Noise Attenuation
- Soil Health
- Temperature Regulation
- Habitat Quality

3. Public health and civil protection

The warning module and overall protection against flash floods has a direct impact on residents living in areas affected by these floods. The study published by IFRP (Integrated Flood Resilience Programme) identified that in every community, the loss was not as much as the previous devastating flood in 2017. About 66% of the economic loss was reduced as the result of introducing the FEWS (Flood Early Warning

[5] Ommer, J., et al., *Quantifying co-benefits and disbenefits of Nature-based Solutions targeting Disaster Risk Reduction.* International Journal of Disaster Risk Reduction, 2022. **75**. Available from: https://www.researchgate.net/publication/360047982_Quantifying_co-benefits_and_disbenefits_of_Nature-based_Solutions_targeting_Disaster_Risk_Reduction.

[6] World Wide Fund for Nature, *Nature Hires: How nature-based solutions can power a green jobs recovery.* 2020. Available from: https://wwf.panda.org/wwf_news/?943816/Nature-based-solutions-jobs-report.

[7] Griscom, B.W., et al., *Natural climate solutions.* Proceedings of the National Academy of Sciences, 2017. **114**(44). Available from: https://doi.org/10.1073/pnas.1710465114.

System) at four communities.[8] This is an important decrease which proves that with an early warning system it is possible to prevent death loss and property damage and ensure residents feel safe.

The second aspect in this area is Health & Well-being. NBS benefits are determined considering several aspects: increased recreational areas, reduced heat stress (e.g., quantifiable with the Universal Thermal Climate Index), air quality improvement, noise attenuation, ecosystem disservices but also by enhanced social cohesion and inclusion or the created jobs and income from tourism. Literature has been focusing on monetizing these benefits, for instance, by estimating avoided costs in the health sector or with the willingness to pay for better living locations.[9]

4. Development cooperation

Within the project, cooperation of partners results in the greatest benefits for the project's goals, and at the same time, this international cooperation directly contributes to the Sustainable Development Goals.

Also recent international and European agreements on climate and disaster risk have highlighted the interconnections between ecosystems and societal vulnerability, as well as the role nature can play in managing increasing environmental risks.

These include, for example:

1. **The Paris Agreement on climate change**[10] is the first general, legally binding global agreement in this area.

The objective of the agreement in Article 2 is: "Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience", which is in direct compliance with the presented project within the framework of adaptation to climate change. Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response.

Also, Parties acknowledge in the Agreement that adaptation action should follow a country-driven, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions. All of these approaches are taken into account in our project as well.

2. The United Nations **Convention for Biological Diversity**[11] at its 14th Conference of the Parties formally decided to integrate climate change issues into national biodiversity strategies and vice versa, bringing important interdependencies to light with nature-based solutions.

Within the measures that should be adopted, it is also defined to develop national strategies, plans or programs for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programs. We will also apply this approach within the project.

[8] Bangladesh Red Crescent, *Effectiveness of Flood Early Warning System to Reduce Economic Loss at Four Communities.* 2020. Available from: https://reliefweb.int/report/bangladesh/effectiveness-flood-early-warning-system-reduce-economic-loss-four-communities.

[9] Ommer, J., et al., *Quantifying co-benefits and disbenefits of Nature-based Solutions targeting Disaster Risk Reduction.* International Journal of Disaster Risk Reduction, 2022. **75**. Available from: https://www.researchgate.net/publication/360047982_Quantifying_co-benefits_and_disbenefits_of_Nature-based_Solutions_targeting_Disaster_Risk_Reduction.

[10] Official Journal of the European Union, *PARIS AGREEMENT.* 2016. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:22016A1019(01)&from=SK.

[11] Convention on Biological Diversity, n.d. Available from: https://www.cbd.int/.

3. **The Sendai Framework for Disaster Risk Reduction**[12] (2015- 2030) recognises the need to shift from primarily post disaster planning and recovery to the proactive reduction of risks, and specifies that strategies should consider a range of ecosystem-based (nature-based) solutions.

The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines four priorities for action to prevent new and reduce existing disaster risks:

A, Understanding disaster risk;

B, Strengthening disaster risk governance to manage disaster risk;

C, Investing in disaster reduction for resilience and;

D, Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

All these priorities are directly the content of our project for the risks associated with flash floods and reflect all 4 principles of risk prevention by developing the warning and expert module.

4. On the basis of these agreements, high-level efforts have advocated for the use of nature-based solutions. The 2018 **United Nations World Water Development Report**[13] focused on nature-based solutions, calling on countries to scale up implementation.

The 2019 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Report and the Climate Change and Land Report of the Intergovernmental Panel on Climate Change endorsed the use of nature-based solutions to address climate related issues. Nature-based solutions were one of the nine key action areas for the United Nations Climate Action Summit that took place in September 2019.

5. The **2030 Agenda for Sustainable Development**[14] was adopted by all United Nations Member States in 2015, so it is also relevant for EU countries. Within the Agenda's 17 goals, our project contributes to 3 of them, and they are:

A) sustainable cities and communities

Within target 11.b, we have a common link with our project in substantial increasing the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and to develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

B) climate action

Within the climate action targets, we have significant compliance:

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Target 13.2: Integrate climate change measures into national policies, strategies and planning.

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[12] United Nations Office for Disaster Risk Reduction, *Sendai Framework for Disaster Risk Reduction 2015-2030.* 2015. Available from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030.

[13] United Nations Development Programme, *The United Nations World Water Development Report 2022: Groundwater: Making the Invisible Visible.* 2022. Available from: https://www.undp.org/publications/united-nations-world-water-development-report-2022-groundwater-making-invisible-visible?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=Cj0KCQjwyOuYBhCGARIsAIdGQRM7mXv70sd_T0Z02hee-iF0EUtT3-WVjfpN9bEfMqN4EB5IdeZfNyYaAv-9EALw_wcB.

[14] United Nations, *Sustainable Development Goals.* n.d. Available from: https://sdgs.un.org/goals.

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change adaptation, impact reduction and early warning.

Target 13.b: Promote mechanisms for raising capacity for effective climate change-related planning and management, including focusing on local and marginalized communities.

C, partnership for the goals, especially in targets:

Target 17.16: Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilise and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals.

Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.

6. **Mission for the Climate resilient Europe - Implementation Plan**[15] - The objective of the Mission is to support at least 150 European regions and communities to become climate resilient by 2030. Specific objective 1: Preparing and planning for climate resilience is connected with our framework by the aim to provide general support to European regions and communities to better understand, prepare for and manage climate risks and opportunities.

Also, we addressed the **EU Mission 'Adaptation to Climate Change and the Biodiversity strategy for 2030** and mutual compliance in section 1.3 of this proposal.

7. The implementation of nature-based solutions within the framework of water retention and anti-flood measures also contributes with its impact to the ambition on reducing greenhouse gas emissions and to the ambition of cost-effective path to achieving climate neutrality which is the main objective of the **2030 Climate Target Plan**[16]**.**

In synergy with the area of the EU policy - civil protection, an important impact of the solution offered is the protection of the residents from risks arising from climate change, which include flash floods. This aspect of our project contributes to the objectives of **European Disaster Risk Management**[17]**.**

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2. IMPACT

*Fill in **only** sections 2.1-2.3 at stage 1 (concept note). Fill in **all sections** at stage 2 (full proposal).*

2.1 Ambition of the impacts

Ambition of the impacts

Identify and quantify the effects of the project (during the implementation and up to 5 years after its end).

Be specific and provide only information about impacts that are a result of your project. The impact of other projects should not be taken into account.

Wherever possible, use quantified indicators and targets.

Note: *In addition to the description above, for stage 2 (full proposals) include quantified indicators in Part C of the application forms (both horizontal KPIs for the LIFE programme as well as any specific KPIs relevant to the proposal). Ensure correspondence between Part B and Part C.*

[15] European Commission, *Climate Change Adaptation Mission Implementation Plan.* 2021. Available from: https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/climat_mission_implementation_plan_final_for_publication.pdf.

[16] European Commission, *2030 Climate Target Plan.* n.d. Available from: https://www.eea.europa.eu/policy-documents/2030-climate-target-plan.

[17] European Commission, *European Disaster Risk Management.* 2022. Available from: https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/european-disaster-risk-management_en.

IMPACT

The implementation of the project will bring direct and indirect impacts on the target groups.

The impacts and results of the project are listed in a table for better demonstration and comprehensibility. The purpose is to provide detailed and structured information for indicator development.

The project plans to achieve following effects:

1. short-term, related to specific project objectives – measured during the project (after 2 years of the project start)
2. medium-term, related to project results – measured after project conclusion
3. long-term, related to ecosystem – up to 5 years after projects end

Expected benefits:

In the field of improved knowledge and stimulation the use of data-driven solutions of decision-makers, key experts, relevant stakeholders and local communities:

TABLE XII. Indicators I.

Output	Period	Impact	Indicator
Smart WEB GIS-based IoT system	Short term	Opportunity for end-users to participate in the development of the expert module	Number of realised workshops involving end-users
	Medium term	Access for end-users to assess, analyse and model different hydro-meteorological scenarios to simulate and predict their impact in particular locations	Number of climate responsive tools developed and tested
		Access to data-driven solutions for actors involved in planning, licensing and implementation of green infrastructural solutions (water engineers, architects with a focus on water retention measures, public authorities, municipal decision-makers and experts, water management professionals) regarding the integrated use of NBS at local, regional and	Number of km2 covered by the expert module in Poland
			Number of km2 covered by the expert module in Slovakia

		national water management level.	
	Long term	Data-driven landscape planning	Cumulative investments triggered by the projects or finance accessed (mEuro)
		Priority use of nature-based solutions over concrete solutions	Reduction of the area particularly vulnerable to climate change (km2)
			Number of jobs created
			Number of people less vulnerable to the adverse effects of climate change due to climate adaptation measures of the LIFE project

Improved climate resilience and adaptive capacity:

TABLE XIII. Indicators II.

Output	Period	Impact	Indicator
Early-warning module	Short term	Opportunity for end-users to participate in the development of a early-warning module	Number of installed sensors in Slovakia
			Number of installed sensors in Poland
			Number of realised workshops involving end-users
	Medium term	Coverage of 2 watersheds - one pilot site in Slovakia and the other one pilot site in Poland - with sensors that generate real-time data and provide more accurate flash flood warnings	Number of climate responsive tools developed and tested

		Increased protection of residents of Slovakia and Poland against the negative effects of climate change - the possibility of an earlier reaction to the impending danger in the form of flash floods	Number of inhabitants including marginalised communities protected by the early-warning system
	Long term	Reduction of property damage and disaster relief costs caused by extreme climate events (flash floods)	% of reduction of flood damage and disaster relief costs due to improved flood emergency preparedness
		Reduction of deaths caused by flash floods	
		Expansion of the early warning system to other watersheds, territories and countries to improve flash flood emergency preparedness	

Awareness raising and educational activities:

***TABLE XIV. Indicators* III.**

Period	Output	Impact	Indicator
Short term	Awareness raising and educational activities	Creation of a stakeholder network	Number of stakeholders involved
		Awareness raising of flash floods protection, FLOPRES module and climate change adaptation measures	Number of workshop participants including marginalised communities
		Awareness raising about nature-based solutions and co-benefits	
		Creating an environment for the design and implementation of data-based adaptation strategies	Number of workshops and roundtables organised

Medium term	Workshops, roundtables and lifelong learning course	Increased awareness of land utilisation and flood risks among local stakeholders and local communities, including the most vulnerable marginalised communities.	Number of workshop participants including marginalised communities
		Development of knowledge and capacity of actors involved in planning, licensing and implementation of green infrastructural solutions (water engineers, architects with a focus on water retention measures, public authorities, municipal decision-makers and experts, water management professionals) regarding the integrated use of NBS at local, regional and national water management level	Number of lifelong course users
		Expanding the network of relevant stakeholders	Number of stakeholders involved
Long term		Better climate governance at local and regional levels achieved by improved cooperation of municipalities and local stakeholders	

LONG TERM IMPACT (exceeding a 5-year period after the end of the project) AND RELEVANT INDICATORS

Indicators that do not relate directly to project outputs and are the result of the long-term impact of the project have their potential limitations. These indicators require a data series across decades (usually of at least 30 years) to be able to associate any observed trends in climate variables to climate change (versus climate variability). Indicators leading to the fulfilment of the goals of adaptation to climate change are difficult to measure and their effect depends on many variables and especially a long time of observation.

These indicators include:

A, Indicators associated with NBS deployment

Nature-based solutions are of increasing importance around the world due to their co-benefits for the environment, society, and economy. While NBS are addressing Disaster Risk Reduction, co-benefits are rather supporting the SDGs, targets of the Paris Agreement and the CBD. This trend of NBS is a significant step towards the aforementioned global frameworks. The possible co-benefits are wide-ranging.

As part of the project, an expert module will be developed for landscape planning and planning the most suitable deployment of NBS in the country. However, NBS will not be deployed during the implementation of the project. Even with potential deployment, it is possible to quantify the effect of NBS only after a certain time, at least 10 years (in the best measurable case, 30 years).

Potential indicators can be selected by using developed matrices or by reviewing case studies from NBS databases such as the OPERANDUM NBS Catalogue.

Areas of long-term NBS impact monitoring:

- Air quality
- Carbon Storage & Sequestration by Vegetation
- Carbon Storage & Sequestration by Soil
- Noise Attenuation
- Soil Health
- Temperature Regulation
- Habitat Quality

FIGURE IV. Impact of NBS[18]

[18] Wood, S.L.R., et al., *Distilling the role of ecosystem services in the Sustainable Development Goals.* Ecosystem Services, 2018. **29**. Available from: https://www.sciencedirect.com/science/article/pii/S2212041617300207.

B, Indicators associated with the impact of extreme weather changes

Extreme weather fluctuations are an increasingly frequent phenomenon, however, it is not possible to guarantee that the given phenomena will already occur during the monitored period in the project and it will be possible to adequately quantify the impact of the project - during the duration of the project it will not be possible to collect enough data to calculate the related indicator.

TARGET GROUPS

PRIMARY TARGET GROUPS:

LOCAL COMMUNITIES

It is known that social processes among people at the local level can help enhance the capacity of a community to adapt to climate change. Adaptation to climate change can be limited depending on its social capital. The way communities define adaptive strategies is based on social interactions among people who may have different levels of influence and trust. Focusing on local communities threatened by the risk of flash floods is a very important part of the project, also due to the long-term impact of the project and to strengthening the acceptance of the need for adaptation to climate change. Local communities will be involved with the proposed activities under WP2.

One of the subgroups of this target group will also be marginalised communities on the territory of the Prešov self-governing region. The largest number of Roma live in the districts of Kežmarok, Sabinov and Vranov nad Topľou, while in the first two named districts, Roma already are more than 30% of the population (within the towns and villages with the presence of MRC). This community is a very vulnerable community to extreme weather effects, mainly due to housing conditions, low awareness of climate change and prevention options. For the given reasons and from the relevant data mentioned in the

Background section, this subgroup was identified as essential to be involved in awareness raising activities, as they are very susceptible to the negative effects of climate change.

INSTITUTIONS AND EXPERTS RESPONSIBLE FOR LANDSCAPE PLANNING AND WATERSHED MANAGEMENT AT LOCAL, REGIONAL AND NATIONAL LEVEL

One of the main target groups of the project are users of the expert module. The application of the expert module has several possibilities, from landscape planning, construction planning with regard to flood risks, to planning water retention measures, to planning the optimal deployment of NBS, to the use of map documents and calculated data.

From this point of view, the expert module is a suitable tool for several individual actors:

- experts in the field of landscape planning and creation of territorial plans,
- experts in the field of watershed and watercourse management,
- experts in the field of Disaster risk management,
- experts in the field of creation and planning of water retention measures and adaptation strategies,
- decision-makers at the local, regional and national level,
- policy-makers,
- municipalities.

SECONDARY TARGET GROUPS:

The aim of the project is to subsequently also reach the secondary target groups of the project, which can benefit from the results of the project.

1. Land owners, farmers, utility providers, private bodies

The expert module and NBS deployment planning has significant benefits for farmers and landowners as well. The framework by Simelton a co-authors establishes four essential functions for NBS in agriculture:

- Sustainable practices - with a focus on production
- Green Infrastructure - mainly for engineering purposes such as water and soil, and slope stabilisation
- Amelioration - for restoration of conditions for plants, water, soil or air and climate change mitigation;
- Conservation - focusing on biodiversity and ecosystem connectivity.

For these actors, the usability of the expert module is not only limited to planning the deployment of NBS, but also to predicting possible flood risks in the territories in which they plan further activity.

2. Insurance companies

The use for insurance companies can mainly consist in assessing the risks of flood activity for insurance applicants.

3. Academic community, research institutions

For academics, the expert module can be a valuable source of data and predictions, as well as map representations and modelling of various probable scenarios, even for research purposes.

KPI

TABLE XV. KPIs

Indicator	Unit	WP	Project-start Value (baseline)	Project-end value	3 / 5 years beyond Project-end value

Expert module					
Number of realised workshops involving end-users	Number of workshops	5	0	1	1
Number of climate responsive tools developed and tested	Number of tools	5	0	1	1
Number of km2 covered by the expert module	km2	5	0	24 081	98 070
Number of jobs created	FTE	6	0	2	4
Number of people less vulnerable to the adverse effects of climate change due to climate adaptation measures of the LIFE project	Number of people	6	0	20 000	100 000
Number of km2 moduled by expert module by new users	m2	5	0	100	500
Early-warning module					
Number of installed sensors in Slovakia	Number of sensors	3	0	130	200
Number of installed sensors in Poland	Number of sensors	3	0	130	200
Number of realised workshops involving end-users	Number of workshops	4	0	1	1
Number of climate responsive tools developed and tested	Number of tools	4	0	1	1
Number of inhabitants protected by the early-warning system in Slovakia	Number of inhabitants	4	0	8000	24 000
Awareness raising					
Number of stakeholders involved	Number of stakeholders	2	0	30	50

Number of workshop participants including marginalised communities	Number of participants	2	0	150	300
Number of workshops and roundtables organised	Number of participants	2	0	5	5
Number of lifelong course users	Number of users	2	0	400	1000

2.2 Credibility of the impacts

Credibility of the impacts

Show the steps of your calculations and base yourself on the activities mentioned in your work plan.

Justify and substantiate the baselines, benchmarks and assumptions you used, making reference to relevant publications, studies or statistics.

Try to use the same methodologies for calculating impacts (avoid using different methodologies for each partner, region or country).

The methodology for determining the indicators was chosen with regard to the focus of the project and accordingly with the same approach to the project partners and the regions included in the indicators.

When developing and defining indicators, substantial criteria were taken into account:

- Relevance - the indicators were chosen with regard to the scope of the project and closely linked to the objectives to be reached
- Familiarity - indicators are clearly defined, accessible to non experts, unambiguous and easy to interpret
- Data availability - data for the selected indicators are available
- Measurability - indicators are objectively measurable
- Reliability - the indicators are reliable and the outputs have low error rate
- Non-redundancy - individual indicators do not measure the same aspect
- Completeness - indicators are defined so that they completely cover the scope of the project and the proposed adaptation measures.

The baseline for determining the input and output value of the indicators was a qualified realistic estimate of the outputs of project activities, and the second group were indicators whose values were based on published studies, publications of other projects and available statistics regarding adaptation to climate change and regarding flash floods at the local and European level.

To ensure the credibility of the project results, relevant partners and stakeholders were included, who will directly contribute to achieve the set values of the project indicators. Within the framework of WP2, a separate task is planned, which is devoted directly to mapping, addressing and involving other stakeholders and communities in the project implementation process, which will result in the fulfilment of the set indicators and directly also in the dissemination of the project.

Work Package 2: Preparatory actions and stakeholder engagement

Ensuring results in the field of project dissemination, awareness raising activities and educational activities is mainly based on the experience of the involved partners, associated partners, stakeholders and addressed communities.
Prešov self-governing region has experience in the implementation of many international projects, but also in the organisation of roundtables, workshops, presentations and promotional activities. The experience of this partner will also be used in communicating the project externally and communicating

project results to the general public. Quantifying the indicators by the partner was based on previous experience and qualified estimates with regard to the size of the territory that will be covered within the activities, also with regard to the type of activity that is chosen. Within WP2, an activity is planned in which relevant stakeholders will be identified - decision-makers, expert public, farmers, private owners, watershed management experts. Also, PSK is actively engaged in work with marginalised communities through its department of social affairs and social workers.
The cities of Košice and Prešov, which are signatories of the Covenant of Mayors, will be involved as associated partners of the project. As part of its links to other cities and organisations and the sharing of good practice, the results will be disseminated to a wider audience and the visibility of the project will be ensured at the European level.

TABLE XVI. Means of verification I.

KPI	Task	Means of verification
Number of stakeholders involved	T2.2	Stakeholder matrices
Number of workshop participants including marginalised communities	T2.3	Signed presence list
Number of workshops and roundtables organised	T2.3	Invitation, agenda, report of the event
Number of lifelong course users	T2.4	Statistics from the software and database, number of subscriptions

Work Package 3: Technical infrastructure and Work Package 4: Implementation and testing of early-warning module

The quantification of the resulting values achieved within the implementation of WP 4, which is connected with the development of the early -warning module, was based directly on the proposed activities and tasks T4.1. to T.4.4 and the calculation of their implementation.

The number of inhabitants including marginalised communities protected by the early-warning system is based on the number of inhabitants of the locations covered by the early-warning system. The selected municipalities are the municipalities of Jarovnice, Uzovské Pekľany and Renčišov, which have a total of 8,094 inhabitants (permanent population - 31 December 2021, source: Statistical Office of the Slovak Republic). Within five years after the completion of the project, it is assumed the expansion of the early-warning system to another 3-4 watershed, which in summary represents app. 24 300 inhabitants.

It is widely acknowledged that effective EWS presents an inherent component of good-practice Disaster Risk Reduction (DRR) and their importance has been emphasised in global policies[19]. Many global and regional studies have highlighted empirical evidence that shows the effectiveness of EWS in terms of reducing human casualties and saving property. Quantifying benefits of EWS is considered a difficult task, also in this project. When defining the value of the indicator, it was based on the policy report, which states that the monetary benefit of flood early warning in Europe has been assessed using EFAS as a reference system, taking into account different factors including different flood protection scenarios. Results show that flood early warning systems in Europe have the potential of reducing the costs of flood

[19] Rai, R.K., et al., *Cost-benefit analysis of flood early warning system in the Karnali River Basin of Nepal.* International Journal of Disaster Risk Reduction, 2020. **47**. Available from: https://www.sciencedirect.com/science/article/pii/S2212420920300868.

damages by about 25%, saving an estimated 30,000 million EUR over the next 20 years.[20] Using real-time data, the early-warning module will have more accurate measurements and will be able to react more flexibly to the potential for flash floods. Using the example of the Prešov self-governing region, a 25% reduction in expenses for flood rescue work compared to the reference period July - December 2021 would amount to 255,194 EUR. Flood rescue work is carried out to save lives, health, property, cultural heritage and the environment of flood risk, during a flood and after a flood in flood-prone areas and flood-inundated areas. In the second half of 2021, expenses incurred for carrying out flood rescue work in the territory of PSK was in the amount of 1,020,776.26 EUR.[21]

TABLE XVII. Means of verification II.

KPI	Task	Means of verification
Number of installed sensors in Slovakia	T3.5	Installation report, Photos
Number of installed sensors in Poland	T3.5	Installation report, Photos
Number of realised workshops involving end-users	T4.3	Workshop report
Number of climate responsive tools developed and tested	T4.4	Tool/module
Number of inhabitants protected by the early-warning system in Slovakia	T4.4	Installation report, maps
% of reduction of flood damage and disaster relief costs due to improved flood emergency preparedness	T4.4	Report, statistics

Work Package 5: Implementation and testing of expert module and Work Package 6: Sustainability, replication, and exploitation of project results

The quantification of the resulting values achieved within the implementation of WP 5, which is connected with the development of the expert module, was based directly on the proposed activities and the calculation of their implementation.

The indicator of the area covered by the expert module is based on the assumption that at the end of the project the territories of the whole Prešov self-governing region and Malopolska region will be covered. The area of Prešov region is 8973 km2 and the area of Malopolska region is 15 108 km2. 5 years after the implementation of the project, there is an assumption of an increase in the marketing potential of the solution and thus the continued development of the expert module to cover the whole area of Slovakia - 49 035 km2 and the comparable area in other European countries.

As for further investments triggered by projects, it is not simple to quantify the effects of the project. When determining the value, it was based on implemented projects and already achieved measurable results from the deployment of Nature-based solutions and recent studies. The results of study provided by Naturvation indicate that nature-based solutions deliver high economic value to residents of European cities, with a total value of 1.52 billion USD per year and an average value of 883,203 USD per hectare on an annual basis. Each hectare of nature, on average, delivers value that is twice the annual GDP per capita in European Union countries. Moreover, many nature-based solutions are delivering excellent value for money, with estimated yearly benefits surpassing total project costs. While an approximation,

[20] Thielen Del Pozo, J., et al., *The benefit of continental flood early warning systems to reduce the impact of flood disasters.* Publications Office of the European Union, 2015. Available from: https://publications.jrc.ec.europa.eu/repository/handle/JRC97266.

[21] Ministry of the Environment of the Slovak Republic, *Report on the progress and consequences of floods in the territory of the Slovak Republic in the period from July to the end of December 2021.* 2021. Available from: https://www.minzp.sk/files/sekcia-vod/ochrana-pred-povodnami/2021/sprava-priebehu-nasledkoch-povodni-uzemi-sr-za-2-polrok-2021.pdf.

these estimated values demonstrate high collective appreciation of NBS by the public, and a substantial monetary equivalent.[22]

The indicator referring to the number of jobs created is also based on already implemented studies and projects, where the average number of jobs created in connection with NBS is indicated. This analysis realised by Cambridge Econometrics estimates that the upfront capital investments in restoration could be expected to create around 3 temporary jobs for every 100 hectares of habitat.[23]

In order to be able to calculate the Number of people less vulnerable to the adverse effects of climate change due to climate adaptation measures of the LIFE project, it is necessary to know the specific places of deployment of the NBS and thus calculate the number of people living in the given territory, on whom the implementation will have an impact. For the purposes of the project, the resulting value was derived from the expected percentage of NBS deployment in the countries covered by the expert module and then the implementation of the given percentage to the percentage of the country's population.

TABLE XVIII. Means of verification III.

KPI	Task	Means of verification
Number of realised workshops involving end-users	T5.3	Workshop report
Number of climate responsive tools developed and tested	T5.4	Tool/module
Number of km2 covered by the expert module	T5.4	Report, Maps, Statistics from the software
Number of jobs created	T5.4	Report
Number of people less vulnerable to the adverse effects of climate change due to climate adaptation measures of the LIFE project	T5.4	Report, statistics
Number of km2 moduled by expert module by new users	T6.3	Statistics from the software and database

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2.3 Sustainability of project results

Sustainability of project results

Describe your strategy to sustain the project's results after the EU funding ends. Consider the following aspects:

- *How will the project impact be ensured and sustained? Which tasks will you carry out during the project to ensure that?*
- *Which parts of the project should be continued or maintained? How will this be achieved and which resources will be necessary?*

Sustainability is among the core values of the project functioning for its members and is one of the main parts of the WP6.The strategic aim of all dissemination and exploitation activities of the project is to pave the way towards the widespread adoption and sustainability of its results beyond the end of the grant,

[22] NATURVATION, *Monetary Value of European Nature-based Solutions.* n.d. Available from: https://naturvation.eu/sites/default/files/result/files/briefing_note_monetary_value_of_european_nbs_final.pdf.
[23] Dicks, J., O. Dellaccio, and J. Stenning, *Economic costs and benefits of nature-based solutions to mitigate climate change* Cambridge Econometrics, 2020. Available from: https://www.camecon.com/wp-content/uploads/2021/03/The-economic-costs-benefits-of-nature-based-solutions_final-report_FINAL_V3.pdf.

thus maximising their impact. This constitutes a major priority and challenge for our consortium, given the high potential that the project's results hold for the local communities, experts and stakeholders but also, for example, farmers and landowners. The strategy to sustain the project's results is based on the interaction of exploitation and impact, and will rely on three pillars:

1. An active and strong commitment of all partners

Sustainability of a project is about not only good findings, but also about the people that are involved in the project. An active and strong commitment of all partners is, therefore, key to delivering and ensuring high quality results. Establishing a proactive cooperation between local stakeholders, policy representatives, experts and local community at an early stage of the project and involving implementation partners is necessary to develop a shared understanding of project goals and the intended impact. To ensure that, we will carry out the following tasks:

- Identify their motivation to join the a cross-disciplinary working group and what are they bringing in the group
- Identify their network & run the project activities in synergy with existing initiatives and other projects, including LIFE Climate adaptation projects
- Creating a stakeholder matrix identifying their interests, motivation and level of involvement
- Organise separate roundtables and meetings with policy and decision makers and special target groups (such as farmers, landowners)
- Find key contacts in the relevant science / education Ministers at national level and link them with the project´s team.

2. Effective dissemination and exploitation activities

Sustainability will be achieved through the transfer of the technological solution - FLOPRES system - to other EU markets which could benefit from its features. It includes activities for commercial purposes, in further research activities, and/or to improve policies, by project partners or end-users of the developed technological solution. Following tasks are envisaged to be carried out during the WP6:

- The exploitation of the developed technological solution through its availability via a user-friendly web tool, accompanied by guidelines of the methodological approach
- Sharing best practices and examples from pilot implementation within and outside regions of the project realisation
- Developing e-learning module on the use of the FLOPRES system and related topics on NBS
- Promoting results of the project and the technical solution abroad
- Identifying opportunities for continued development in follow up projects

3. Knowledge Management and Transfer methodology

The Knowledge Transfer system will be used throughout the project as it encourages innovation and the sustainability of the project's results by disseminating the project knowledge (main results) across the target groups, stakeholders and project partners. This methodology focuses on identifying the 'Key Exploitable Results' (KERs) - tangible or intangible output of the project, such as data, knowledge and information whatever their form or nature which have been determined to be of high priority for project transfer actions and potential commercial applications. The KERs will be collected by MEAL experts through structured questionnaires and interviews with partners responsible for developing the project outputs. Collected and analysed results will be assessed based on criteria related to their replication potential for market uptake, relevance to the sector and adherence to the project, call objectives and expected impact. This approach will increase the likelihood that KERs will be transferred and exploited successfully. PSK will support ESPRIT in identification of relevant stakeholders, events etc. and dissemination activities needed for transfer. The Knowledge Transfer process will consist of three tasks:

1. Identify & Collect: it helps to identify potential applications, target and end-users and the eventual impact of the project knowledge (outputs), such as data, information, methodology,

technological platform, market experience to be reviewed and assessed for potential application and impact.

2. Analyse & Validate: the collected knowledge is reviewed and assessed for potential application and impact on the target groups.

3. Transfer & Share: transferring the knowledge and ensuring its availability for the target groups and future users

Sustainability on the community and policy level

The project will have a long-term sustainable impact on the development of the respective cities, i.e. approximately 10,000 people (or more), by providing activated citizens with the skills and experience to address the region's climate-related risks and to communicate constructively and effectively between local government and civil society. Due to the participatory approach and the active role that local stakeholders themselves have in implementing activities, a high level of participation of the beneficiaries is expected to be maintained. In terms of networking, ESPRIT and PSK participating in the consortium will have a central role in linking stakeholders to the project. The link between FLOPRES and the stakeholders will be guaranteed by developing two instruments: (a) the Memorandum of Understandings aims to share FLOPRES's results with stakeholders and relevant partners on the local level responsible for water management, urban planning, emergency management; (b) the Collaboration on Bilateral Basis will be reinforced at the local, national and international level to strengthen the relations between the project and its networks. Sustainability on the policy level will be ensured by the developed and approved climate adaptation guidelines that will be integrated in every municipal department within its urban spatial development and planning unit. The PSK county representatives will act as the middleman, providing guidance, control and advisory services on the implementation of the guidelines in regional municipalities within the county.

Financial sustainability

Financial sustainability of the project outcomes will be ensured by its business and replicability components with the aim to attract commercial funding on the local and EU market. The replication component will be identified and followingly, the business plan including marketing analysis to assess the viability of the developed solution will be produced. Furthermore, by developing working relationships with state and regional stakeholders, the project partners will increase their ability to access local government funding for projects and activities. Project partners will have the potential to earn income from their expertise on policy, knowledge and practise for climate change adaptation and disaster risk reduction by providing training to other institutions. PSK and Malopolska region themselves will be able to raise funds by providing training to other public and private bodies. As the activities are self-sustaining post-training and, the action does not anticipate the need for further funding although partners will have greater capacity to raise funds themselves if required.

Technological sustainability

As per the FLOPRES model, the sustainability of the application is ensured twofold. Firstly, a back-end is designed to provide access to an administration user with a capability to insert new datasets and to update already existing data. Secondly, the lifetime of the application is extended by hosting the web application in a ESPRIT's subdomain and by ensuring the future support of it with ESPRIT's funds from the commercial use of the application. It is expected that the warning module of the IoT system will be integrated into the state alert system and, therefore, administered by the state authorities. Synergies and technical support will be provided by METEO upon request. The installed sensors have a long service life and minimal maintenance costs are required. After the end of the project, continuous collection and evaluation of sensor data will be provided by ESPRIT staff or other designated staff within the region of implementation as part of their work agenda. The online life-long learning module will remain accessible on the dedicated web section on the website of the ESPRIT, and regularly updated with new findings.

Environmental sustainability The project itself addresses environmental sustainability by developing a system that will help to adapt to the climate change impacts. Furthermore, it will address environmental sustainability through a pilot action that will work with communities to develop guidelines on nature adaptation measures that can be used by municipalities in many different contexts. These guidelines will raise awareness and understanding on climate change related risks and promote tangible actions to climate change adaptation and environmental sustainability for local communities such as forest plantation and preservation and natural resource management.

Business sustainability: The proposed technical solution is designed to offer a very effective flood modelling and risk detection system, taking into account the cost of the sensors and target at a very high return-on-investment ratio. It is expected that the expert module of the FLOPRES system will be promoted on the local and EU markets, some of its features possibly adapted to the local needs and challenges, with the aim to generate financial gains or profits and continue to function on earned income. Furthermore, access rights to existing knowledge and property rights resulting from the project might be used for commercial purposes.

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2.4 Exploitation of project results *(n/a for concept note)*

Exploitation of project results *(n/a for concept note)*

Do you foresee other ways of exploiting the project's results (e.g. utilisation in further research, in developing / creating / marketing a product or process, in creating / providing a service, in standardisation activities etc.)? Who are the targeted users?

For close-to-market projects: Describe the reference market: actual and potential market size, features of prospective customers and of their demand, competitors, market and regulatory barriers, etc. Explain the economic feasibility of the proposed solution comparing cost, price or other economic investment variables (e.g. payback period, net present value, etc.).

***Note:** Don't forget to include the activities in the mandatory Work Package for Sustainability, replication, and exploitation of project results.*

The project foresees the exploitation of the main result, FLOPRES system, an advanced technology solution for modelling and predicting flash floods, including an integrated warning submodule. Furthermore, the acquired real-time hydrological data and knowledge on local river basins might be exploited in further research in the water management area and can augment local and/or regional water datasets of the relevant organisations, such as water management bodies. Other key project results might have potential to be used, if identified during the Knowledge Transfer process.

ESPRIT, the project consortium lead partner, has experience in exploiting its previous IoT product - a mapping application that identifies potential natural and anthropogenic threats in a specific area - using evidence-based data, scientifically validated research, real-life testing, interactive videos, etc. (see https://www.albert.plus/). We will build on this approach and extend it by other strategies such as beachhead strategy. **Beachhead strategy** will be adopted during WP6 activities meaning that an initial niche (such as a product category or smaller market segment) will be chosen by which to initiate further business and expand the concept. Such an approach is well suited for state-to-art concepts. Rather than approaching a whole market (e.g. EU), the effort is focussed on getting initial products with visionary customers from a certain segment, building the service for that segment, and then expanding to a new segment. The beachhead strategy will be further expanded and reviewed over the course of the project with the full collaboration and commitment of the partners. It will be additionally communicated to external potential future stakeholders and customers as well as smart water management vendors through a dedicated web sector on the website of the project partners and on the expert events, such as The International Conference on Connected Smart Cities or IoT Week Conferences.

The exploitation of the project will be based on two pillars:

1. **Knowledge Transfer System** - the technology and academic partners of the project dedicated to the development of devices, modules and tools will identify key exploitable results (KERs) of the overall project that may be exploited and ultimately commercialised both individually as well as at the consortium

level. Consequently, local authority partners and relevant stakeholders will focus on the integration needs, and the assessment of the FLOPRES integrated solution for climate change related hazardous events.

2. **Project consortium collaboration** - after definition of the KERs the partners will develop and implement the beachhead exploitation strategy and derive priority actions plan for further business exploitation. Key points to examine include (i) a competition analysis to understand the market opportunities and constraints, and (ii) questions about (a) likely customers of the technology/solution and/or the corresponding services, as well as (b) the development of potential partnerships with local authorities, utilities and/or third-party technology providers that might commercialise outputs of the project.

The following actions are envisaged during the exploitation phase:

- Collection and analysis of the project knowledge in order to identify KERs.
- Characterisation of key exploitable results
- Definition and discussion on Intellectual property claims
- Definition of individual exploitation paths aligned to each organisation roles and internal strategy
- Consortium discussion about the beachhead exploitation strategy of the FLOPRES system
- Meetings and discussions with other potential users' representatives at the commercial and expert events in order to confirm the value of the results and the business models.

As a result of these activities, the business plan with a replication component will be developed and presented to the project stakeholders.

As for the reference market, it can be concluded that the Water Security market with Smart Water Systems as its subdomain is the most relevant for the exploitation of the project results. Details on the market size are provided further in the proposal, in the part "Catalytic potential". The prospective customers are the following:

- public-sector agencies involved in water resources (water authorities, utilities and municipalities, regional governments)
- private-sector organisations and companies with water interests (insurance companies, commercial architects)
- private personnels with water interests (farmers and other landowners)
- SMEs that produce software or hardware for the water sector

We assume that the public sector is one of the key segments that can potentially adopt the FLOPRES solution either at a state, regional or municipality level. However, major potential is seen in the private sector, since water management affects a variety of business domains, from security segment to water service operations.

As indirect competition for FLOPRES can be considered the following companies that dominate the water sector with their hardware and software solution:

- ABB group
- Elster Group Gmbh (Honeywell Elster)
- RS Hydro
- Itron, Inc. (Itron),
- Suez SA (SUEZ)
- Huawei Technologies Co., Ltd. (Huawei),
- Trimble Water
- Sensus
- HydroPoint Data Systems, Inc. (HydroPoint)
- i2O Water Ltd. (i2O)
- XENIUS
- SenzIoT,
- TaKaDu Ltd. (TaKaDu)
- Badger Meter, Inc. (Badger Meter)

- AQUAMATIX LIMITED (AquamatiX).

However, on a strategic level, these companies don't always address the same water segment as FLOPRES (water security) or don't offer integrated solutions: real-time modelling of flash floods based on the data monitoring and subsequent warning system.

As for the barriers to entry the market, the key challenges of implementing smart water systems are the the following issues: lack of a strong business case (customer propositions/pricing/availability), cooperation between water utilities and/or between other utilities based on open data approaches, policy and regulation (privacy/security/encryption), standards and reference architectures (technology and protocols, both national and international), matureness of technology architecture (systems integration/ communications/ event handling).

Drivers for the growth of the smart water systems include: rising need of sustainable water solutions; need for a significant reduction in loss due to non-revenue water; increasing need to replace the ageing water infrastructure; consumer awareness and perspectives; and key national priorities for the sustainable development of water.

2.5 Catalytic potential: Replication and upscaling

Catalytic potential: Replication and upscaling *(n/a for concept note)*

Describe the potential for the results to be replicated in the same or other sectors or places. Which factors might favour or limit the replication?

Describe the potential for the results to be up-scaled by public/private actors or through mobilising larger investments or financial resources. What is the coverage and size of the market? Who are the potential users of the results?

Describe the strategy and tasks to multiply the impact of the project (during implementation or afterwards). How will its main actions and results be replicated elsewhere?

***Note:** Don't forget to include the activities in the mandatory Work Package for Sustainability, replication, and exploitation of project results.*

The main result of the project will be a state-to-art IoT system for hydrological process assessment and Integrated Watershed Management. The replication strategy for the FLOPRES is therefore, based on a replication of two individual components in suitable local and EU markets by engaging with relevant stakeholders and specific end users. The FLOPRES project focuses on creating commercially viable smart IoT system to enhance flood predictions and make better decisions when adapting to climate change. That is a replication strategy itself, since the objective is not to create completely new technological solutions but rather build on the locally available data, improve their monitoring and collection, advance the business model and test them on the market. The target segment is the smart water management market that is represented by professional associations, municipalities or private owners / businesses. Since these represent end-user groups (clients), their long-term involvement in the project and shared commitment for the project goals are of key importance. To this end a number of activities are envisaged focusing on the stakeholder engagement and their awareness raising on developed solution (WP2) and their involvement in the testing of the system (WP5).

Potential for the replication

The main project result, a state-to art IoT system, for modelling and predicting flash floods, help to address two persistent issues: 1) the increasing complexity of managing water resources that requires a transition from more traditional tools of water management to more automated ones; and 2) the subsequent importance of the up-to-date data, tools and systems to help responsible stakeholders respond immediately to flood-related emergencies. These issues are of crucial importance in the Visegrad Group countries (Slovakia, Hungary, Poland, Czech Republic), which share several significant transboundary river basins and face repetitive disastrous flooding (from the late 1990s until now), with particularly Slovakia experiencing disastrous flash floods and snow-melting floods almost every year. However, the proposed solution has the potential to be replicated also outside the Visegrad Group markets, either at a state, regional or municipality level of countries dealing with the same flood hazard related challenges. Europe has around 3.5 million kilometres of the water distribution network which

poses great challenges for the water experts and relevant stakeholders to manage. The EU Commission has also laid out a vision for the future of smart water across the region in its Digital Single Market for Water Services Action Plan that will further drive the market growth. Furthermore, significant initiatives, to develop smart water systems, are evident in the Asian countries, like Malaysia, Vietnam, and Thailand, which are home to more than 2.1 billion urban residents, with over two-third estimated to be living in cities by 2050. The rising number of smart cities in the region is expected to create substantial business opportunities for the smart water management solution, such as FLOPRES. Since the system does not require high Capital Expenditure (CAPEX) from utility's end, meaning the assets purchased have a useful life of one year or more, it makes it attractive to invest into. Furthermore, FLOPRES will have a modification for internet/intranet users with functionality applied in standard web browsers and as such represent low initial investment costs for commercial users and public. Modernization and regular update of the system is foreseen without additional costs for end-users.

The factors that might limit the replication are the different needs for standardisation and regulation among countries, claims related to privacy and security, or uncertainty in the possible compatibility with local-specified water management systems. However, key barriers will be addressed during marketing strategy development in WP6. The strategies to overcome barriers will relate to the lessons learned and stakeholder feedback.

To identify the replication potential and replication markets, following activities will be carried out during WP6 - Sustainability, replication, and exploitation of project results:

- Developing of sustainability and business plan
- Conducting marketing analysis
- Creating road maps
- Identifying other LIFE / HORIZON projects related to the topic and its key target groups
- Collecting stakeholder feedback and lessons learnt
- Presenting the technological solution to the local community and at various expert events, such as conferences, sector-specific workshops, etc.
- Finding opportunities to replicate elements and lessons of FLOPRES in other segments

Water security market overview

Smart Water Management (SWM) aims not only at the water quality and exploitation of water at the regional or city level, but also at operating and improving the city's existing flood control structures on the basis of sustainability and self-sufficiency. This exploitation is carried out through the use of innovative technologies, such as real time control and monitoring systems based on rainfall radar nowcasts, hydrological and hydraulic model forecasts. Within the Smart Water Management market, the security segment is an important part that still poses a global and growing challenge. As populations, cities and economies grow, and the climate changes accelerate, greater pressure is being placed on water resources, increasing the exposure of people and assets to water-related risks. Water security is also interlinked with economic growth, which means that now and, in the future, investments are necessary to help that segment grow even more. Investing in water security protects society and sectors from specific water risks and can have a profound positive effect in economic growth, inclusiveness and the structure of economies. Consequently, investments should be developed in order to be robust to uncertainties and to support adaptive management as risks, opportunities, and social preferences change.

According to the research published in Nature Scientific Journal (2021) climate change is likely exacerbating the frequency and intensity of the extreme flood events. Researchers also expect that, as the climate warms, flash floods will get "flashier," meaning that the timing of the floods will get shorter while the magnitude gets higher. Flashier floods can be more dangerous and destructive.To manage the risks and be better prepared for such events, the municipalities and relevant authorities have to be equipped with tools that enable real time flood predictions and monitoring so they can be warned of hazards immediately and without delay. At the same time, more NBS that conserve or restore nature to support conventionally built infrastructure systems need to be integrated in the decision making, as they

can reduce disaster risk and produce more resilient and lower-cost solutions. Currently, the focus is high on the adoption of advanced water metres, MDM, and SCADA solutions for water utilities in many countries. This is expected to change gradually towards smart technology solutions, such as predictive maintenance, workforce management, and analytics.

Within this framework, **the global Smart Water Management market size** is expected to grow from **USD 11.7 billion in 2019 to USD 21.4 billion by 2024**, at a Compound Annual Growth Rate (CAGR) of 12.9%. As showcased above, the **key factors driving the growth of the market** include the need to replace ageing water infrastructure, **rising digitalization of the utilities sector**, and **government regulations favouring the development of smart water management solutions.** The enterprise asset management segment is estimated to hold the highest market share owing to the increasing adoption of real-time condition monitoring and predictive maintenance of assets.

The **forecast for the water industry** indicates that there are several changes expected as a result of:

- The effects of climate change are related to water in one way or another and affect agricultural production, contribute to sea level rise, trigger wildfires, and bring about drought and flood events. For example, with more than half of the world's population living within 200 km of the coast by 2050, sea level rise and extreme storm surges will affect coastal communities to a large extent
- A customer-led revolution, since consumers are more than ever empowered by digital technology. As a result, they continuously expect more personalised products and services to optimise their work, improve their way of life and help them reach their goals. To meet these expectations, businesses must deal with the reality of an empowered customer.
- The smart and intelligent network technologies of water infrastructure by collecting and analysing data more efficiently. The use of Internet of Things (IoT) devices and data analytics not only help to better manage infrastructure and reduce non-revenue water losses, but also support important changes to the ways in which water utilities and companies operate. Smart end-to-end water networks offer businesses the opportunity to improve productivity and efficiency while enhancing customer service.

The trends that are going **to shape the Smart Water Management segment** within the next few years are:

- Digitalisation: Along with the adoption of connected technologies and interoperability of data, digitization of the sector is impacting all applications of smart water management solutions, by revolutionising the way smart water management systems interact with the surroundings in the residential sector
- Data: Efficient and effective use of data and interoperability of data, are another trend. Up until now providers and companies typically used a small portion of data to perform tasks or to solve specific problems but left the majority of data unexploited. In many cases, the inconsistency of data within or across organisations made it difficult to aggregate data for analysis and as a result extract useful information. But the trend seems to be for exchange and interoperability of data, from various sources, for more complete and complicated analysis to take place. The result of those will be the provision of insights across organisations and outside them (i.e. with customers).
- Consumers: On top of the technology trends, they are customers on their own merits that are upgrading their residences by adopting smart water management software and hardware. This adoption rate is rapidly proliferating, as software and hardware are becoming cheaper and affordable.

Potential users of the results and customer segmentation

The **water security sector** is a relatively small subfield of the overall water management sector, but still an important one. Software tools for assessing the extremes of selected climatic, hydrological parameters can help in mitigating impacts of droughts and heavy precipitation, reducing the risk of floods and erosion and subsequently establishing security measures. As such, the use of the state-to-art tools and systems might bring many benefits to municipalities, entities responsible for water management and risk planning at local and national levels, but also for private persons, such as farmers, landowners or private bodies (e.g. insurance companies). Practitioners from water, agricultural emergency and insurance sector and utility providers will be enabled to employ the FLOPRES system to monitor and assess the risks of the

flood hazardous events and help them make the necessary decisions. The potential users (customers) benefiting from the results can be, therefore, divided into four groups:

- Public bodies: local policy makers and stakeholders responsible for decision-making in water management sector, housing and planning authorities
- General public: local communities and citizens, landowners (such as farmers)
- Academics: climate scientists and other environmental scientists, engineers, social scientists
- Commercial users: insurance companies, manufacturers, civil engineers

A list of potential customers will be developed as part of the business plan during WP6. To reach out to the largest possible users, each project partner will use its own network of contacts at the local, national, and international level.

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3. IMPLEMENTATION

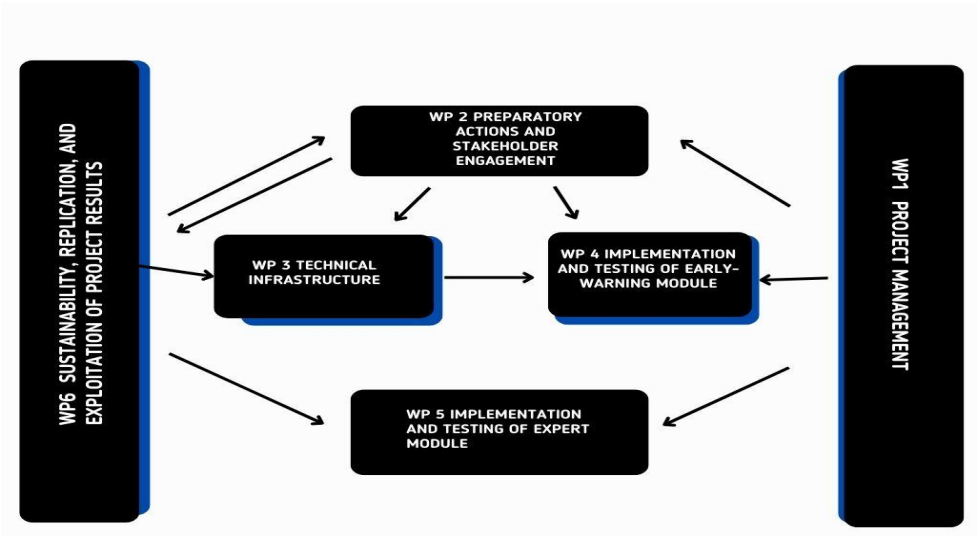
*Fill in **only** section 3.1 and 3.3 at stage 1 (concept note). Fill in **all sections** at stage 2 (full proposal).*

3.1 Work plan

Work plan

Provide a brief description of the overall structure of the work plan (list of work packages or graphical presentation (Pert chart or similar)).

FIGURE V. Workplan



In order to achieve the set specific goals and declare the results of the project, 6 work packages were created:

1. Project management
2. Preparatory actions and stakeholder engagement
3. Technical infrastructure
4. Implementation and testing of early-warning module
5. Implementation and testing of expert module
6. Sustainability, replication, and exploitation of project results

Work package 1 covers the entire implementation of the project and its task is to coordinate the implementation process.

Work package 2 is an essential package for the successful implementation of the proposed solutions and is directly linked to work packages 3 and 4. At the same time, it is also directly connected to the dissemination and replication of the project results - that is, work package 6, as it will include stakeholder mapping and awareness raising activities.

Work package 3, 4 and 5 are focused on technical and software solutions of FLOPRES modules.

Work package 6 is focused on the sustainability of the project in the following years, to ensure the replicability of the solution and the visibility of the project's results.

All work packages are necessary to achieve the general objective of the project.

3.2 Timetable (n/a for concept note)

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	M 1	M4	M 7	M 10	M 13	M 16	M 19	M 22	M25	M 28	M 31	M 34
WP1 - Project management, Monitoring & Evaluation, Quality Assurance	■	■	■	■	■	■	■	■	■	■	■	■
Task 1.1 - Project administration, financial management, reporting	■	■	■	■	■	■	■	■	■	■	■	■
Task 1.2 - Project Management	■	■	■	■	■	■	■	■	■	■	■	■
Task 1.3 - Monitoring & Evaluation, Quality Assurance	■	■	■	■	■	■	■	■	■	■	■	■
WP2 - Preparatory actions and stakeholder engagement	■	■	■	■	■	■	■	■	■	■	■	■
Task 2.1 - Identification of pilot plots	■	■	■									
Task 2.2 - Stakeholder mapping and engagement		■	■	■	■	■	■	■	■	■	■	■
Task 2.3 - Community involvement and awareness raising		■	■	■	■	■	■	■	■	■	■	■
Task 2.4 - Life-long learning		■	■	■								
Task 2.5 - Digital marketing		■	■	■	■	■	■	■	■	■	■	■
WP3 - Technical infrastructure	■	■	■	■	■							
Task 3.1 - Production of core IoT sensors (Meratch) with water level measurement functionality, adjustment, and customisation of the sensors addressing project needs. Further IoT sensors (Meratch) development and enhancement to measure water flow-velocity in the real-	■	■	■	■								

time. Integration of water level and flow-velocity IoT sensors into overall hydrological station measurement system												
Task 3.2 - Development of auxiliary IoT soil moisture sensors - to accurately measure soil moisture in the real-time. Design, development, testing, and calibration of IoT soil moisture sensors. Integration of IoT soil moisture sensors into the overall hydrological station framework												
Task 3.3 - Development of innovative IoT precipitation sensors – cutting edge innovation and cost effective/scalable solution for precipitation measurement based on IoT. Integration of IoT precipitation sensors into the overall hydrological station real-time measurement system												
Task 3.4 - Integration of all IoT elements and measurement into the innovative full-fledge IoT- based hydrological station. Preparation of plug & play installation and operation manuals												
Task 3.5 - Installation of sensors in pilot sites												
WP4 - Implementation and testing of early-warning module												
Task 4.1 - Analysis of available hydrometeorological data sources												
Task 4.2 - Adaptation and solution adjustment for specific use case												
Task 4.3 - Testing and optimization in cooperation with end users												
Task 4.4 - Validation of early-warning module												

WP5 - Implementation and testing of expert module												
Task 5.1 - Analysis of available spatial data sources and spatial database preparation												
Task 5.2 - Adaptation and solution adjustment for specific use case												
Task 5.3 - Testing and optimization in cooperation with end users												
Task 5.4 - Validation of expert module												
WP6 - Sustainability, replication, and exploitation of project results												
Task 6.1 - Communication												
Task 6.2 - Dissemination												
Task 6.3 - Replication and exploitation												

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3.3 Stakeholder engagement

Stakeholders engagement

Identify any key stakeholders outside the consortium that are required to ensure the success of the project. How will you mobilise them to contribute to your project activities or participate in these?

Annex Letters of support to demonstrate the type and level of commitment already secured (if any).(n/a for concept note)

For Nature and Biodiversity: If your project (or a part of it) depends on support of the competent authority or stakeholders, provide letters of support to show their commitment to the project (needed for full proposal, n/a for concept note)

The project was created so that the impact of the project reached the largest possible target group and had an impact not only at the local but also at the European level. During the planning of the project activities, other institutions outside the project consortium were also approached for the project's visibility and dissemination of the project's results. Addressed collaborating institutions, organisations and municipalities were chosen with regard to the scope of the project, its focus and mutual benefits for both parties.

In order to achieve a smooth implementation, the preliminary stakeholder mapping is included below.

TABLE XIX: Stakeholder mapping

LEVEL	TYPE	STAKEHOLDER
Local	Local authorities	Municipalities
		District authorities
	Local communities	People in vulnerable areas
		Farmers
		Activists
		Experts
Regional	Regional authorities	Self-governing regions
	Organisations	Association of Towns and Municipalities of Slovakia
		Association of Self-governing Regions SK8
		Development companies
		Associations of farmers
		Companies with focus on meteorology or hydrology
National	State	Ministry of environment of Slovak republic
		Ministry of environment of Poland
		Slovak Water Management Company (Slovenský vodohospodárky podnik)
European	European authorities	Covenant of Mayors
		ICLEI

Institutions outside the project consortium were also approached in order to increase the potential for replication of project results. The institutions addressed include:

Covenant of Mayor

The project partner - PSK is the coordinator of the Covenant of Mayors in Slovakia and was the first region in Slovakia to join the covenant (2012). Simultaneously, we directly established cooperation with the city of Prešov and city of Košice - signatories of the Covenant, and as associated partners, cities are interested in disseminating the results of the project with the other signatories, as The Covenant of

Mayors - Europe Office also allows signatories to learn from each other within the section My Covenant, for example, in the creation of adaptation strategies and at the same time sharing resources for adaptation to climate change.

ICLEI

Our project has a spill-over effect with one of the main topics of ICLEI - biodiversity and nature-based solutions, as ICLEI is a long-term advocate of the importance of urban biodiversity and green spaces and supports local governments in maintaining and encouraging it. By working with cities to implement nature-based solutions, ICLEI also helps them to improve their resilience and create a cohesive urban society. The reach of ICLEI is a global network of more than 2500 local and regional governments committed to sustainable urban development active in 125+ countries.

ZMOS

In order to maximise the impact and actually support the use of the solutions, it is necessary to reach out to organisations that cover local actors. Within Slovakia, that organisation is ZMOS - Association of Towns and Municipalities of Slovakia. An important aspect for establishing cooperation with the association is the fact that the responsible actors of deploying a nature-based solution are mainly municipalities and towns, as well as in implementation of the early-warning module. The local level of self-governments has the final responsibility for compliance with adaptation strategies and concepts and their implementation.

Self-governing regions

The self-governing regions were chosen as relevant stakeholders for the dissemination and replication of the project's results. For example Košice self-governing region is a neighbouring region of the Prešov self-governing region and many rivers from PSK flow through its territory. According to the Report on the progress and consequences of floods in the territory of the Slovak Republic in the period from July to the end of December 2021, there are areas in the Košice self-governing region where there is a frequent risk of flash floods and in the second half of 2021, there were districts declared II. and III. level of flood activity (according to the Slovak classification, level III is the highest level). The situation is similar in other regions of Slovakia. Dissemination within regions will ensure the usability of our solution.

Municipalities

As part of the project, cooperation will be established especially with municipalities where flash floods are frequent and there are vulnerable localities in their cadastre. Municipalities will be involved as part of activities to increase knowledge about NBS and also in networking with the local communities for awareness raising activities.

Experts

In order to strengthen the use of data-driven solutions, it is necessary to include the relevant professional public:

- experts in the field of landscape planning and creation of territorial plans,
- experts in the field of watershed and watercourse management,
- experts in the field of disaster risk management,
- experts in the field of creation and planning of water retention measures and adaptation strategies.

Local communities

Local communities have a significant position in the formation of opinion at the local and regional level. Individuals are influenced by the opinion of the group, so it is important to focus activities on raising awareness of climate change adaptation and flood protection with local communities.

Activists in the field of green solutions and climate change adaptation

During the presentation of the modules, the focus will also be on local activists who are involved in environmental issues. Activists' pressure on public institutions has a significant role, and communication

of the aspect that our modules can help in planning the deployment of NBS by activists to the outside can significantly help to spread the results of the project.

Rescue and security forces

Rescue and security forces are the first on the scene to deal with the effects of flash floods. For these forces, the flash flood early warning module is a valuable tool when planning departures to the most affected areas.

Farmers, developers, insurance companies, private companies

Modelling the impacts of NBS on specific parcels can be a suitable tool for planning activities for individuals or private landowners.

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3.4 Impact monitoring and reporting *(n/a for concept note)*

Impact monitoring, evaluation and reporting strategy *(n/a for concept note)*

Describe your overall approach to monitor and evaluate the impact indicators during your project. Ensure that you include specific tasks to monitor, evaluate and report impacts in the work plan (section 2 of this template).

Monitoring and evaluation will help the project realisators to make sure that they are on the right track in achieving the intended impact, assess whether or not their resources are spent wisely, and assess how to correct their course if needed. **Monitoring activities** will be **iterative** and take place over the whole project duration to fulfil its purpose. The **impact of the project** will be **measured against outcome indicators** and completion of the actions, as well as keeping track of the implementation cost. During the lifetime of the project, we will intend to monitor: the actions and activities planned; the changes which we hope to achieve as a result of our actions; any unintended consequences of the strategies and approaches which will be used in this action; the resources which have been invested (time, human resources, money). A comprehensive MEAL plan will be developed to implement MEAL related activities in a timely and efficient fashion, and to ensure continuous learning throughout the project and programme cycle.

MEAL plan will comprised from the following components:

- system for monitoring and assessment of adaptation to climate change
- framework of monitoring indicators
- a set of monitoring procedures and framework of responsibilities for the collection, processing, reporting and dissemination of monitoring indicators
- planned evaluations (projects/programme reviews, mid-term, final)
- methods for analysing and assuring the quality or validating the data gathered
- accountability activities (e.g. information needs assessment, establishing and maintaining complaints response mechanisms, ways of sharing information)

The **development of the monitoring plan** will consider a structured sequence of actions that together will form a coherent data collection plan, with specific requirements regarding types of data, target populations and samples to be used, specific data analysis techniques and provisions for the protection and storage of data. Tools for monitoring will be set in place and linked to the specific methods chosen for each indicator. Project partners will be assigned different roles in the monitoring and data collection process: those in charge of making key strategic decisions; those in charge of particular research activities involved in monitoring; those carrying out the monitoring activities in the field, and those who provide general assistance or support across all stages.

Independent evaluation will be conducted during the last three months of the project; methodologies used will include process tracing exercises to evaluate how change happened. The evaluation will assess the project's contribution to possible outcomes. It will draw on data gathered through: monitoring and

reporting against indicators; interviews/surveys with internal staff, project partners, target groups; collection of case studies of change, etc.

Annually, we will organize **a participatory review and reflection** process with project management team, third parties and relevant stakeholders to reflect on the project activities and processes. This has been found to enhance participation, accountability and transparency in project implementation. The review and reflection processes also serve as a forum for sharing of lessons learned, and for absorbing new and promising practices. An **annual financial audit** (expenditure verification) will also be carried out to verify eligibility of expenditure as per the EU grant contract requirements.

Following aspects will be specifically measured and analysed:

- **Performance and efficiency indicators**

According to KPI targets set in the proposals, the KPIs will be used to report on the achieved progress and results, and the ratios will be included in the monitoring and analysis of the project-related activities to adapt the project strategies and ensure continuous quality of their operations.

- **Improved climate resilience and adaptive capacity**

Several KPIs are defined to measure the impact of the proposed solution, IoT system, to contribute to the climate change adaptation and tackle negative consequences of climate change related hazardous events.

- **Awareness raising and educational activities**

KPIs, which will help to understand the impact of awareness raising activites on local stakeholders and communities, including the marginalised groups, and their willingness to adopt the intended approach and behaviour.

- **Market uptake of the key exploitable outputs**

Indicators which measure transferability, replicability and sustainability of the key project results, as well as return on investment to produce the key exploitable results.

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3.5 Communication, dissemination and visibility *(n/a for concept note)*

Communication, dissemination and visibility of funding *(n/a for concept note)*

Define your target audience(s). Describe the planned communication and dissemination activities to promote the action and its results and maximise the impact (to whom, which format, how many copies, etc.). Clarify how you intent to reach each target audience, and explain the choice of the dissemination channels. Describe the methods and indicators (quantitative and qualitative) to monitor and evaluate the outreach and coverage of the communication and dissemination activities and results.

Describe how the visibility of EU funding will be ensured.

1. Communication objectives

The communication strategy will be developed in order to ensure the strongest impact and longevity of the impact on Slovakia's as well as Poland and EU ecosystem. Professionally planned and carried out communication campaigns will also add to the project's sustainability and attract partners, start-ups, scale-ups, innovative SMEs and other stakeholders to engage with the project's activities. The purely internal communication activities are not covered by the communication work package (WP6) as they rely closer to project management. The main roles of the communication strategy are therefore to:

• increase awareness of the project and LIFE programme and opportunities it provides for local SMEs,
• inform about the project, its activities, outcomes, the issues it tackles and its achievements, highlighting the quality and the value of its services;
• mobilise, recruit, and to call-to-action;
• promote and recognize the key results and share the success stories of collaboration with experts and investors.

Successful communication needs to set up a clear management body (2), that will ensure the adoption of a communication strategy and guidelines (3) and Communication Activities Work Plan (4), which will, in turn, contribute to fulfilling specific KPIs (5).

2. Communication management

The project's communication management is organised by the consortium's Communication Correspondent (CC). Each partner designates a Communication Officer (CO), coordinating and carrying vertical-specific communication tasks with stakeholders showing interest in project activities, services as well as consulting with the CC.

3. Communication strategy

Communication strategy will be developed in order to ensure the strongest impact and longevity of the impact on Slovakia's as well as Europe's environment. Professionally planned and carried out communication campaigns will also add to the project's sustainability and attract partners, academics, experts, municipalities, scaleups, innovative SMEs and other stakeholders to engage with the project's activities. The main roles of the communication strategy are therefore to:

- increase awareness of FlashA solution as a mean to adapt to climate change related hazardous events
- inform about the project, its activities, outcomes, the issues it tackles and the project achievements, highlighting the quality and the value of its services;
- mobilise, recruit, and to call-to-action;
- promote and recognize IoT solutions in the smart water management sector for their innovative products and processes and share the success stories of collaboration with the academics, experts and investors.

Communication activities will be carried out through the project duration as well as after its completion. Chronologically, there will be three phases of communication strategy **and** activities: Preparatory phase, Mobilisation and Engagement phase and Posteriori communication phase.

PHASE 1 – PREPARATORY

In the preparation stage of the project, a full and thorough Communication Campaigns Plan will be developed by the Communication Correspondent outlining the exact channels to use, draft messages and the exact timeline of the communication means. Communication Campaigns Plan will be an addition to the provided Communication Activities Work Plan (4). The Communication Campaigns Plan will be narrowed down to every communication campaign detail and together with the Communication Guidelines, they will form the backbone of the communication strategy. The following components and activities in table will be carried out in the preparatory phase:

TABLE XX. Communication

THE COMMUNICATION NARRATIVE	The CC will develop a catalogue of the key messages and concepts to be consistently present in the communication, as well as the Communication Campaigns Plan, encompassing all aspects of the project (to inform, mobilise, recruit, promote, raise awareness and recognize)
ESTABLISHING CHANNELS	The CC will establish a project-specific Facebook page, LinkedIn page, Twitter account and Instagram account that he or she will be in charge of managing. Moreover, the CC will identify and will make initial contact with the main regional ecosystem players through which the Network could promote its activities, raise awareness and establish collaborative partnerships. Such players can be service providers, professional associations, business event organisers, media partners, governmental institutions, and others who have wide reach to the SME community

VISUAL ATTRACTIVITY	Adopt the provided Visual Identity Guidelines which will be meticulously applied throughout the project, its deliverables and its internal as well as external communications
COMMUNICATION KICK-OFF	The CC will coordinate the project communication kick-off, the first communication “push” to engage stakeholders’ interest and to be present in the media.
CONTACT WITH THE STAKEHOLDERS	It's important to start early communication with the stakeholders whose involvement is necessary for successful project activities. Each interested stakeholder will be contacted individually presenting the project’s benefits for each of them and inviting them to be involved.

PHASE 2 – MOBILISATION AND ENGAGEMENT

During this phase, the main goal is to mobilise communities and the public for awareness raising activities. The project’s communication management team uses a diversification strategy of communication channels tools to disseminate information about project’s including activities:
1) providing target groups with the necessary knowledge and skills for adaptation to climate change;
2) bringing end-users (e.g. farmers, land owners) and decision makers into contact with each other for e.g. experimentation and testing of the FlashA software, or public administrations and ESPRIT to promote co-creation.

Main communication channels to spread awareness and the main messages are listed in the table below.

TABLE XXI. Communication channels

COMMUNICATION CHANNEL	AIM
DEDICATED WEB SECTION ON THE PROJECT PARTNERS' WEBSITE	The main resource for the promotion of the project activities and results. The dedicated web section will be set up and it will be then continuously updated and enriched during the project lifetime. The details and the success stories will be available after the end of the project as well, to further its sustainability. The project partners and the Communication Officers will be directly reachable by interested individuals or organisations through the website (“contact us” section).
SOCIAL MEDIA	The project will establish a Facebook page, LinkedIn page, Twitter account and an Instagram account. Social media will be used for both targeted and general communication and interaction about the project and its activities. Paid promotion of posts and banners will be used to maximise the reach. The partners will also use their own social media channels for the communication of main messages.
ASSOCIATED WEBSITES/MEDIA ACCOUNTS/COMMUNITIES	The CC will coordinate content-sharing about the project with the most relevant ecosystem players providing us reach to their communities. We will send them shareable announcements, posts, events and other communication materials which will be shared on their websites and social media accounts/pages. Moreover, we will use partners' websites and their media accounts/communication channels for communication. Partners will be obliged to place the

	project logo and LIFE programme logo and an explanatory text of the project on a principal and widely visited page of their website.
STRATEGIC PARTNERSHIPS	The CC will establish strategic partnerships with the key ecosystem players in order to collaborate, to organise joint promotion activities (promoting the AI Hub and its activities) as well as to make use of their contacts database, newsletters. Moreover, CC will establish regular media/press partnerships in order to appear in general and business news, start up, scale up or SME media channels.
PARTICIPATION IN RELEVANT EVENTS	The CC and COs will participate in smart water solution events, IoT, AI, funding and SME's relevant events such as conferences, roundtable discussions, large trade fairs, podcasts etc. promoting the project and its activities.
EMAIL INVITATIONS / NEWSLETTERS	The CC will decide on the use of professional marketing platforms, to automate the distribution of information among the contacts and to manage the pool of contacts. Newsletters will be sent to the individuals and organisations from the target groups, whose contact information will be gathered. Newsletters will inform about the events, outcomes, reminders to register and success stories.

PHASE 3: A POSTERIORI COMMUNICATION

A posteriori communication will be conducted both during the project run and after its completion.
• After each activity, a content describing the success stories will be prepared and disseminated through our established communication channels. Role of sharing the success stories is to recognize the hard work and progress made by participating organisations
• After each year we will organise the annual public event with a targeted audience of 200 people. This event will be promoted using all established communication channels.

The success of a posteriori communication will be dependent on securing the following aspects:
• Attractive audio-visual content to support the success stories (Instagram-stories, videos, photos)
• Developing a convincing narrative, completed by the aforementioned audio-visual content to be ready for dissemination

4. Measuring success

The table below gives specific targets for the Key Performance Indicators related to dissemination, communication, and stakeholder management activities as defined at the proposal stage. The targets are aggregated for all partners:

TABLE XXII. Communication KPIs

NO.	KPI DESCRIPTION	VALUE
1	Number of followers across the project's social media channels (Facebook, Twitter, Instagram, and Linkedin)	1000
2	Number of press mentions published about the project or its events	35
3	Average monthly website visitors	100
4	Number of views of published videos	500

5	Number of social media impressions across the project's and its key personnel's social media channels (Facebook, Twitter, Instagram, and Linkedin)	100 000
6	Number of media partnerships during the project period	5

5. Visibility of EU funding

The Consortium plans to publish information on the financial support provided by the European Union. Information to be included in the promotion materials shall include information on the awarded funding from the EU LIFE programme and the respective symbols referring to the value of that funding and title of the Project (as well as other requirements in accordance with „Publicity guidelines and logos"). Types of promotional announcements planned: websites and social media accounts; information brochures, leaflets, newsletters, posters; reports and publications; presentations.

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4. RESOURCES

*Fill in **only** section 4.1 at stage 1 (concept note). Fill in **all sections** at stage 2 (full proposal).*

4.1 Consortium set-up

Consortium cooperation and division of roles (if applicable)

Describe the consortium composition. How will all the partners together bring the necessary expertise?

In what way does each of the participants contribute to the project? Show that each has a valid role and adequate resources to fulfil that role.

For stage 2 (full proposal), fill out the Participant information (annex) with more details on the participants and their project teams (key staff).

TABLE XXIII. Consortium

Partner	Type	Role in the project
ESPRIT	Research and consulting company in the field of landscape ecology, geography and hydrology	Responsibility for the project management, Lead partner in expert module development WP1, WP5, WP6
METEO	Spin-off in field of meteorology	Lead partner in early-warning module WP4
GOSPACE	A pioneer in the IoT sector	Lead partner in technical infrastructure and IoT sensors development and adjustment. WP3
PSK	Self-governing region	Responsibility for stakeholder engagement and exploitation of project results in Slovakia WP2, WP6
MARR	Regional development agency	Responsibility for stakeholder engagement and exploitation of project results in Poland WP2, WP6

ESPRIT

Esprit is a research and consulting company in the field of landscape ecology, geography and hydrology and has an expertise of design and development of complex solutions in the field of GIS, specialised software applications in the field of natural process modelling and geostatistical spatial modelling. The company achieved extraordinary success in the field of geovisualization and cartographic creation, where it was the processor of several large-scale cartographic works.

Focus of the company:

- Geoscience disciplines

Company provides consultations, processing of primary data, analysis and synthesis, as well as processing of large-scale complex projects in the following areas:

- Creation of spatial databases for geographic information systems (GIS), landscape planning and environmental, hydrological and socio-economic modelling
- Geostatistics and spatial modelling
- Hydrological and environmental modelling
- Landscape planning
- Geological survey and research

Esprit uses geophysical methods as part of other methods of geological research and exploration in the field of basic geology, deposit geology, hydrogeology, but also archaeology, construction and water management. From the complex of light non-destructive geophysical methods, the company uses geoelectricity, radiometry, magnetometry, gravimetry, thermometry, gasometry and conductivity.

- Geographic information systems
- Comprehensive proposal for an information system solution focused on spatial data
- Creation of a functional database of spatial and alphanumeric data in a specific technological environment of commercial SQL databases, or in the environment of personal or file geodatabases
- Analytical creation of purposeful logical and spatial combinations of information, interpolation of point measurements and modelling of continuous fields, morphometric relief analysis, modelling of propagation, visibility..., analysis of spatial dependencies of geosystem parameters and prediction of their spatial distribution, temporal analysis, network analysis, logistic optimization, support of decision-making, rainfall-runoff modelling, erosion modelling
- Purposeful interpretation of data and creation of presentation outputs in the form of map compositions or complex reports
- Programming and publishing server GIS functionality in the form of map geoprocessing and analytical web services
- Development and implementation of desktop or web and mobile map GIS applications from personal to large enterprise solutions
- Administration of application and geodatabase GIS servers Integration of GIS with external information structures mainly through standardised services for the transfer of GIS data and functionality
- Digital cartography
- Map creation is one of the core activities of ESPRIT. Map documents are prepared as separate publications, but also within other projects - visualisation of the achieved results. They are edited in the form of map sheets, in book form (as atlases) and in digital form (as digital maps or part of geographic information systems). Since the processing process is carried out digitally and each element of the map has a precisely defined geographic position, ESPRIT can adapt the content

of the map very effectively for use in geographic information systems, or as a basis for electronic or multimedia map systems

Competence in the context of solving the presented project is supported by previous research, expertise in modelling the hydrological balance and precipitation-runoff processes, the developed expert module and levere its technical expertise and capabilities.

The main competence of the coordinator in the project will be the connection (integration) of existing systems from other partners, especially METEO and GOSPACE, into a functional system that will warn against flash floods and at the same time offer opportunities for the deployment of nature-based solutions that will contribute to the reduction of the risk resulting from flash floods. Furthermore, ESPRIT will ensure coordination and effective collaboration with the other partners in areas of adaptation strategies, as well as communication and dissemination of results.

ESPRIT will lead the WP1: Project management and communication as coordinator partner, WP5: Implementation and testing of the expert module, WP6: Sustainability, replication and exploitation of project results and will significantly contribute to WP4: Implementation and testing of the early-warning module.

METEO

Meteo Co. is a University of Warsaw company that draws on the experience of ICM UW dating back to 1994. Today Meteo is the only centre in this part of Europe that forecasts the weather based on the effective Met Office (UM - Unified Model) and it is also the only entity working so closely on scientific grounds with a recognized university. Meteo specialists carry out research and development projects and take an active part in validating the UM model in a part of the world where weather forecasting is relatively difficult due to geographical conditions. Thanks to the close cooperation with the University of Warsaw, it is possible to use the results of the scientific work in commercial activities. Meteo provides products based on Numerical Weather Forecast through a licence agreement and develops new areas of implementation. To fulfil project objectives, meteorological information provided by Meteo is crucial in terms of planning, monitoring and alert system development. Besides data acquired from river monitoring devices, different meteorological data sets need to be used. In general, data sets are divided to those groups:

- Archive NWF – data collected since 2012 based on Unified Model with 4km horizontal grid resolution
- NWF (60h,120h,240h) – data developed by Unified Model (60h and 120h forecast) and Global Forecast System model (240h forecast). Unified model brings 1,5km and 4km horizontal grid resolutions, GFS model is around 25km horizontal grid resolution.
- Weather stations – data from automated weather station from Malopolska region will be taken as additional input for weather conditions
- Radar data – from Tarnów region FURUNO WR110 meteorological radar 300m x 300m will be used

The above data set will be used to prepare a multisource data stream for a hydrological model. The main goal to use high resolution NWF is a possibility of model forecast hypothetical situations with given probability, which can be used directly for alert purposes.

The wide spectrum of data and forecasting models that METEO has will be used especially in the implementation of the early-warning module. Therefore, METEO will be responsible for WP4: Implementation and testing of the early-warning module.

GOSPACE

GOSPACE gained a unique experience with space hardware projects including cooperation with the European Space Agency (ESA) and continues its journey with IoT based on virtues like miniaturisation, long-distance communication, space-qualified electronics, and telecommunication technologies.

GOSPACE is a pioneer in the IoT field with established close connections with big telecoms across Europe and the US.

GOSPACE is an innovation leader developing new IP-protected technological features for its hardware and software solutions. The company stands out by its innovative potential and unique value proposition for either municipality, integrators, or individual clients.

The main task of GOSPACE results from their expertise and focus, and within the project they will provide technical IoT sensors that will generate the data needed for the expert module and early-warning system in real time. At the same time, it will be possible to verify the functionality of both systems with the help of sensors.

GOSPACE will lead WP3: Technical infrastructure.

PREŠOV SELF-GOVERNING REGION

The Prešov region is located in the northeast of the Slovak Republic. With its area of 8,973 km2, it occupies 18.3% of the state's area, making it the second largest region in Slovakia. The long northern border represents the state border with Poland. Most of the territory of the region is mountainous, as a result of which flash floods often appear in the region.

The location bordering Poland as well as the georelief is a suitable prerequisite for deploying modules and at the same time for educational activities.

The Prešov self-governing region, as a public institution, has several options for engaging relevant stakeholders and at the same time has access and opportunities to address local stakeholders within the framework of direct cooperation and involvement. In the first phase of the project, PSK will be involved in preparatory actions:

- Participation in the identification of a suitable place for the installation of sensors within PSK, as it knows the issues of a specific territory and individual municipalities best among the involved partners, and at the same time has developed an adaptation strategy that deals with the given problem areas
- Participation in the mapping and involvement of relevant stakeholders from the public and private sectors, who have an interest in the deployment of nature-based solutions or who have decision-making authority during the deployment of the given solutions
- Addressing land owners for the installation of IoT sensors in selected cadastral territories. Gaining access to the property of municipalities or private owners will be the main task of PSK within WP2

Within WP6, PSK will lead dissemination activities and exploitation of the results of the project.

PSK will lead WP2: Preparatory actions and stakeholder engagement and WP6: Sustainability, replication and exploitation of project results.

MARR

Małopolska Regional Development Agency is a key regional institution that supports local development. Also, it is one of the most important partners of national institutions and regional self-government in shaping the policy of innovative regional development. MARR is the only official partner of the Polish Investment and Trade Agency in the region.

MARR actively cooperates with local universities by organising training, post-graduate studies, developing expertise, carrying out analyses and preparing publications. It also organises apprenticeships and internships.

Agency has been working for 25 years to develop and increase the competitiveness of entrepreneurs from the Małopolska Region. Its strengths are experience and credibility, consistency, ambition and creativity. Agency creates favourable conditions and space for doing business. Its aim is to support companies at every stage of their development that is why it specialises in comprehensive know-how and modern financial solutions to business.

The Małopolska Regional Development Agency, as a development agency, has several options for engaging relevant stakeholders and at the same time has access and opportunities to address local

stakeholders within the framework of direct cooperation and involvement in Poland. The agency will take the same actions as Prešov self-governing region but in Poland.

The Malopolska Region

The Malopolska Region is an associated partner of the project. Lesser Poland Voivodeship or Lesser Poland Province, also known as Małopolska region, is a voivodeship (province), in southern Poland. It has an area of 15,108 square kilometres, and a population of 3,404,863 (2019). The region is bounded on the north by the Świętokrzyskie Mountains (Góry Świętokrzyskie), on the west by Jura Krakowsko-Częstochowska (a broad range of hills stretching from Kraków to Częstochowa), and on the south by the Tatra, Pieniny and Beskidy Mountains. Politically it is bordered by Silesian Voivodeship to the west, Świętokrzyskie Voivodeship to the north, Subcarpathian Voivodeship to the east, and Slovakia (Prešov Region and Žilina Regions) to the south. Almost all of Lesser Poland lies in the Vistula River catchment area. The mountainous landscape of the region makes it a suitable partner for deploying the solution.

The region implements many projects focused on environmental topics and environmental protection. EkoMałopolska project aims to increase the activity of the Małopolska Region in the field of environmental protection and development. His most important tasks include: updating the air protection program, strengthening the role of ecological transport sources, implementation of pro-environmental measures at the stage of public procurement in the Marshal's Office of the Małopolska Region. However, ecoMałopolska is not only regulations and legal solutions, but above all an invitation for the inhabitants of the region to actively engage in caring for the region. Also, the implementation of the Air Protection Program for the Małopolska Region has been strengthened thanks to the integrated project, LIFE "Implementation of the Air Protection Program for the Małopolska Region - Małopolska in a healthy atmosphere".

The associated partner expressed interest in FLOPRES modules and their deployment in the region. At the same time, the partner will provide cooperation in the involvement of relevant stakeholders from Poland and the creation of a stakeholder matrix.

City of Košice

The city of Košice, the second largest city in Slovakia, is located in the eastern part of Slovakia, near the borders with Hungary (20 km), Ukraine (80 km) and Poland (90 km). The city is located in the Košice Basin in the wide valley of the Hornád River, bordered to the west by the spurs of the Slovenské rudohorie mountain range. The city of Košice was the holder of the title European Capital of Culture for 2013 together with the French city of Marseille. After the prestigious title of European Capital of Culture 2013, Košice was the first city in Slovakia to receive another important title – European City of Sport 2016. Since 2019, the city of Košice has been a signatory to the Covenant of Mayors.

Establishing cooperation with the city is important from the point of view of spreading the results of the project.

City of Prešov

In addition to the Prešov self-governing region, the city of Prešov is an associated partner of the project. The involvement of the city is important in terms of its connection to local stakeholders and European actors and institutions.

The city of Prešov is an important economic and administrative centre of eastern Slovakia. Prešov is the third largest city in Slovakia in terms of population. The city lies in the Košice Basin and is surrounded by the Slánské vrchy and the Šarišská vrchovina. The rivers Torysa and Sekčov flow through Prešov. With the Torysa River, the city has had problems with the level of the river rising during torrential rains for several years.

The city of Prešov has been a signatory to the Covenant of Mayors since 2016. It has also submitted an action plan as part of the Covenant. It focuses on all 3 areas of involvement - climate change mitigation, climate change adaptation and energy poverty.

ICKK (Inovačné centrum Košického kraja - Innovation centre of Košice region)

The Regional Innovation Centre of the Košice Region is a bridge between entrepreneurs and innovations in the region. Our main responsibility is to implement the regional innovation strategy and stimulate the further development of the regional innovation ecosystem. Its network of partners, institutions and scientific organisations provides unique advantages that accelerate innovative ideas.

The regional innovation centre was founded by the Košice self-governing region, the City of Košice, the PJ Šafárik University, the Technical University of Košice and the University of Veterinary Medicine and Pharmacy. Its activities are based on the Regional Innovation Strategy, which was approved in June 2021. Main ambition of the centre is to increase the regional innovation potential, reduce the number of people leaving the Košice Region and manage the regional innovation ecosystem.

ICKK is an associated partner of the project.

#§CON-SOR-CS§# #@PRJ-MGT-PM@#

4.2 Project management *(n/a for concept note)*

Project management, quality assurance and monitoring of progress *(n/a for concept note)*

Describe the management structures and decision-making mechanisms within the consortium. Explain how decisions will be taken and how regular and effective communication will be ensured.

Describe the measures and methods planned to ensure good quality, monitoring, planning and control of project implementation.

Project management

The project will be coordinated by a lead Project Manager from ESPRIT and other assigned Project Managers (PM) from participating organisations, who will be assisted by the Project Management Team members and the Quality Assurance Advisor (QAA). The QAA will be part of the Project Management Team and will work closely with the PM, overseeing the development of the Quality Plan, monitoring its implementation and guiding the project team in this respect. The PM, assisted by the QAA and Project Assistants, will be responsible for the overall management of the project. The PM will be the main contact person between the Consortium and the European Commission. The PM will coordinate the team and the activities and will ensure that they deliver within the deadlines and comply with the highest quality standards. The PM will also ensure the timely submission of the reports, deliverables and any supporting documents. Steering Committee composed of the key personnels of each participating organisation will be established, as a main decision-making body responsible for the strategic processes during the project. At the same time, Steering Committee members will maintain a regular flow of information and collaboration with other relevant stakeholders in their networks, in order to keep them informed and involved in strategic matters, and to highlight the added value of the mutual collaboration toward achieving the project's goals.

Quality assurance

The approach to quality assurance is based on an ISO9001-certified and GDPR-compliant system that sets out clear procedures for quality, risk and compliant management, business continuity and continuous improvement. Applying this system to this project, the Consortium commits to:

1. Assuming clear roles and responsibilities around QA for the duration of this project:

- The PM will assume project-specific QA responsibilities pertaining to delivery, milestones, progress, and client interactions, as well as ensuring a strong local leadership and presence. The Project Manager will provide overall monitoring and coordination of each activity and milestone from a time perspective, paying special attention to the impact if any of changes in the schedule.
- A dedicated QAA will oversee the development of Quality Plan and monitor its implementation, guiding the Project Team. He will perform a quality review of the key deliverables as needed and will also participate in key project meetings to assess client satisfaction.

2. Establishing a **Project Quality Plan** (PQP), tailored to the context and the needs of this project. This will contain, as a minimum: The Quality Management aspects of the project as outlined above; Monitoring and control procedures; Reporting procedures, frequency and format; Risk management; Conflict resolution; Communication procedures; Corrective actions. The PQP will include a 'risk register', which

is further descried in chapter 4.5. This plan will be developed in full and agreed upon during the project inception.

3. Translating this project's goals into a clear set of key performance indicators (KPIs); selecting indicators to ensure the quality and monitoring of the services and deliverables against the KPIs; and extracting lessons/recommendations for future delivery, based on project performance against the KPIs.

The following quality management measures will be adopted:

- Quality planning: this defines the quality system policies, objectives and requirements. It also explains how such policies will be applied and how objectives and requirements will be met;
- Quality control: this ensures that all quality objectives and requirements are being met. Consistent monitoring throughout the project will permit the identification and swift resolution of any performance problems;
- Quality assurance: the project team will demonstrate to the European Commission services throughout the duration of the project that quality standards are being respected by providing detailed progress reports at commonly agreed intervals.
- Quality improvement: the project team will commit to modify any aspects of performance in order to further enhance its ability to meet quality requirements.
- Quality training: the dynamic transmission of quality principles approaches and best practices.

Continuity of service

The project will operate on a business continuity mechanism that provides for the swift and effective replacement of project team members and key experts. In such a case, the Project Manager will immediately notify the client and suggest a shortlist of suitably qualified replacements. If needed (e.g. in case of a sudden illness), a temporary replacement will provide cover. To source the most suitable candidates and ensure the swift replacement of team members, the breadth of expertise and skills put forward by the consortium will guarantee that appropriate replacements can be quickly identified. The replacement team member/expert will be provided with a detailed induction on the specific contract and his/her role. S/he will also be closely monitored and supported in the months immediately after to make sure that s/he has settled in and fully operational. Training courses provided by the lead project partner will be seen as an addition to the (essential) induction of new staff provided by the host organisation. The latter will include information about the consortium and its work programme, the regional environment and the functioning of the Steering Committee in general, and the host organisation in particular.

Internal information flow

A stringent communication flow between the coordinator and the work package leaders on the one hand, and work package leaders and their teams on the other hand, are the prerequisites for an optimal exchange of updated information between all work packages. Internal project communication will be via:

- Consortium meetings, to report and review progress against the work plan;
- Regular telephone/skype conferences will be organised with task leaders and partners on specific task implementation;
- Interim reviews and reports on specific elements of the work plan, co-ordinated by the project manager and involving the appropriate project partners.

Conflict resolution

The procedures described above, especially those relating to internal communication within the consortium and to and from the Commission are designed to minimise the chances of conflicts arising. The Project Manager will ensure that all decisions are made in a fair and ethical manner, and are made within the confines of the consortium itself. Nevertheless, if problems do occur, the first step in resolution will be for the Project Manager to discuss the problem with the involved parties in order to seek an amicable settlement. If resolution is still not achieved, then the second step will be to bring it to the Steering Committee. If the issue can still not be resolved by consent of the parties, then depending on the exact nature of the conflict, it may prove useful to involve the Project Officer informally as well as the Agency representative

4.3 Green management *(n/a for concept note)*

Green management *(n/a for concept note)*

Describe the measures proposed to reduce the environmental impact of your project, for example through the use of green procurement, environmental management systems, etc.

Throughout the project lifecycle, special attention to the project's green management and limitation of the carbon footprint will be given. The main target of the partners is to use an organisation process of the activities in which environmental targets and strategies are fully integrated into the operation in order to strengthen the impact through green travelling, online communication, sustainability, continuous learning and social responsibility. Also building carbon reduction into the initial planning stage of the project could result in some financial gains.

The project coordinator will ensure that all project stakeholders will comply with the principles of environmental sustainability to maximise the environmental impact of the project also by associated activities besides the project tasks.

TABLE XXIV. Areas and implemented measures to create additional environmental impact of the project

Area	Implemented measures
Project communication	Most of the project communication will be realised by email, online communication and shared file transfer to minimise the paperwork and use of the printed materials. The amount of printed publications will be kept to a minimum and instead electronic communication will be used.
Travelling	Transport accounts for around one-fifth of global CO2 emissions. So, if everybody travelled a little less, there is certainly room for large reductions in collective CO2 emissions. Instead of travelling long distances for project meetings or events, the impacts of travel will be minimised by switching to online meetings or online events, if suitable and possible. This will save commuting times and travel expenses, and will also reduce the project's travel emissions. If the meetings or events must be held in person, using public transport or shared cars will be preferred as much as possible instead of air travel, particularly if the journeys to these trips or events will be single-passenger journeys.
Recycling and recycled materials	Partners already implemented recycling collections at their workplace to nurture a greener work culture. As with recycling, using recycled materials increases environmental impact to aid the conservation of the earth's resources. As an example, using recycled paper products can help to reduce deforestation and preserve natural habitats, which has a spill-over effect with specific objectives of the project. In case of need to print the necessary materials, partners will maximise the effort to use recycled materials (recycled paper).

4.4 Budget (n/a for concept note)

Estimated budget — Resources *(n/a for concept note)*
See detailed budget table/calculator (annex 1 to Part B).

#§FIN-MGT-FM§# #@RSK-MGT-RM@#

5. OTHER

5.1 Ethics

Ethics
Not applicable

#§ETH-ICS-EI§# #@SEC-URI-SU@#

5.2 Security

Security
Not applicable

#§SEC-URI-SU§# #@DEC-LAR-DL@#

6. DECLARATIONS

Higher funding rate *(for Nature and Biodiversity; n/a for concept note)*	**YES/NO**
Do you fulfil the conditions set out in the Call document for a higher funding rate (75% or 67%)? If YES, explain and provide details.	**NO**
N/A	

Double funding *(n/a for concept note)*	
Information concerning other EU grants for this project ⚠ *Please note that there is a strict prohibition of double funding from the EU budget (except under EU Synergies actions).*	**YES/NO**
We confirm that to our best knowledge neither the project as a whole nor any parts of it have benefitted from any other EU grant *(including EU funding managed by authorities in EU Member States or other funding bodies, e.g. EU Regional Funds, EU Agricultural Funds, etc.)*. If NO, explain and provide details.	YES
We confirm that to our best knowledge neither the project as a whole nor any parts of it are (nor will be) submitted for any other EU grant *(including EU funding managed by authorities in EU Member States or other funding bodies, e.g. EU Regional Funds, EU Agricultural Funds, etc.)*. If NO, explain and provide details.	YES

Financial support to third parties (if applicable) *(n/a for concept note)*

If in your project the maximum amount per third party will be more than the threshold amount set in the Call document, justify and explain why the higher amount is necessary in order to fulfil your project's objectives.
N/A

Seal of Excellence (if applicable) *(n/a for concept note)* *If provided in the Call document, proposals that pass the evaluation but are below the budget threshold (i.e. pass the minimum thresholds but are not ranked high enough to receive funding) will be awarded a Seal of Excellence.* *In this context we may be asked to share information about your proposal with other EU or national funding bodies.*	
Do you agree that your proposal (including proposal data and documentation) is shared with other EU and national funding bodies to find funding under other schemes?	YES

#§DEC-LAR-DL§#

ANNEXES

LIST OF ANNEXES

Standard

Detailed budget table/Calculator (annex 1 to Part B)

Participant information

Special

Letters of Support of Associated Partners

Report: Drainage characteristics of the basin to the specified profile - river kilometre 17

Report: Drainage characteristics of the basin to the specified profile - river kilometre 21

PARTICIPANT INFORMATION

(To be filled in by the participants and uploaded as part of the application. To add information for more participants, copy the table as many times as necessary. This section is not bound by any page limit.)

PROJECT	
Project name and acronym:	Flash Flood Prediction and Prevention System — FLOPRES

Participant 1 *(use same partner numbering as on Submission System screens).*	
Legal name (short name):	ESPRIT spol. s r.o., (ESPRIT)

Description of participant

Provide a short description of the participant, with an explanation on how it matches its main role and tasks in the proposal.

Esprit is a research and consulting company in the field of landscape ecology, geography and hydrology and has an expertise of design and development of complex solutions in the field of GIS, specialised software applications in the field of natural process modelling and geostatistical spatial modelling. The company achieved extraordinary success in the field of geovisualization and cartographic creation, where it was the processor of several large-scale cartographic works.

Competence in the context of solving the presented project is supported by previous research, expertise in modelling the hydrological balance and precipitation-runoff processes, the developed expert module and levere its technical expertise and capabilities.

ESPRIT will lead the WP1: Project management and communication as coordinator partner, WP5: Implementation and testing of the expert module, WP6: Sustainability, replication and exploitation of project results and will significantly contribute to WP4: Implementation and testing of the early-warning module.

Key staff

Provide a short description of the profile of the persons who will be primarily responsible for carrying out the proposed activities.

Dušan KOČICKÝ, male, permanent, expert in landscape planning and draft measures

Mgr. Dušan Kočický, PhD. is an expert in landscape planning and draft measures. Kočický, PhD. has been the CEO of ESPRIT since 2020. His main expertise is research and development, expert and consulting activities in the field of geoscientific disciplines, GIS, information technologies, cartographic creation. He has been working in the field of geology and hydrology since 2013. Mr. Kočický has been involved in a large number of interdisciplinary projects on a national scale. The projects focused on designing large spatial databases and information systems (e.g. the Geological information database for the needs of the Integrated Landscape Management – the State Geological Institute of Dionýz Štúr or GIS Water – the Slovak Meteorological Institute) but also, he worked on strategic studies (e.g. the Complex program of anti-erosion protection and a draft of measures to increase the retention capacity of the territory of Slovakia divided into partial basins or the Model of representative geo-ecosystems on a regional level).

Mr. Kočický concentrate on the research in the domain of hydrology with a special focus on spatially distributed hydrological modeling of the rainfall-runoff processes and in the field of design parameters, he deals with parametrization of hydrological models, conceptualization and algorithmicizing of hydrological processes and applied research focusing on the assessment of the impact of landscape structure changes on the dynamics of hydrological processes.

Martin MARETTA, male, permanent, expert for hydrological modeling

RNDr. Martin Maretta, PhD. is an expert for hydrological modeling. RNDr. Martin Maretta, PhD. – expert for hydrological modeling. mr. Maretta has been working for ESPRIT since 2019 as a Senior specialist of geoscience, Hydrology and Hydraulic modeling. Before that, he worked for 10 years as a Senior

geoinformatist, Hydrology and Hydraulic modeling. He has been engaged in GIS analysis since 2004, worked as a Geoecology specialist and Database specialist.

Martin ZÁPOTOCKÝ, male, permanent, expert for the development of web gis applications

Ing. Martin Zápotocký, PhD. is an expert for the development of web gis applications.Ing. Martin Zápotocký, PhD. – expert for the development of web gis applications. mr. Zápotocký has been working for ESPRIT since 2022 as a GIS analyst. Previous work experience: GIS developer, Front-end developer, Administrator of the map portal of the Technical University in Zvolen, CAD planning engineer. In 2019, he received his PhD. in Forest management.

Projects or Activities

List of up to 5 relevant previous projects or activities, connected to the subject of this proposal.

Projects and activities of the company:

1. GEOIS PROJECTING IS

Analysis of the current state and proposal of solutions Inventory, cataloging and integration of spatial and non-spatial data of all components of ŠGÚDŠ on a unified database platform. Design of the structure and implementation of a geodatabase server, including conversions and creation of geological data using SDE (Spatial database engine) technologies. Development and publication of map services in a map environment server Development of spatial and non-spatial application prototypes in the application GIS server environment.

2. ATLAS OF THE POPULATION OF SLOVAKIA

The publication Atlas of the Population of Slovakia was created as part of the state research and development program "Current issues of the development of society" in the project Changes in the Demographic Development of Slovakia, Atlas of the Population of Slovakia. The purpose of the Atlas was a cartographic interpretation of the demographic situation in Slovakia. It is the first complex processing of all basic information about the development, distribution, housing dynamics, structures and forecasts of the development of the population of Slovakia.

3. UKE SAV

The project represents a comprehensive information system solution for the needs of all scientific and research activities of the Institute of Landscape Ecology.

4. KLIMAP

The climate atlas of Slovakia is the result of many years of efforts to better understand the regularity of the climate in the center of Europe. The atlas is compiled in such a way that it is not just a set of individual maps, but an organic whole that expresses the connection of individual elements from a regional and national perspective. The atlas was created as part of the project "Development of technology for spatial processing of climate system data". The holder of the project was SHtMÚ Bratislava. The work was published in 2015.

Affiliated Entities / Associated Partners

Does the participant envisage that part of its work is performed by affiliated entities or associated partners? If yes, please describe the entity / partner, their link to the participant, and describe and justify the tasks foreseen to be performed by them.

As part of the Work Package 5: Implementation and testing of expert module, the associated partners will participate in the Task 5.3 Testing and optimization in cooperation with end users.

All Associated Partners will actively participate in this task, mainly by providing feedback to the software/expert module utilization, as well as to the educational materials to be prepared within the project.

Participating associated partners:

The Malopolska Region

Lesser Poland Voivodeship or Lesser Poland Province, also known as Małopolska region, is a voivodeship (province) in southern Poland. The region implements many projects focused on environmental topics and environmental protection and the mountainous landscape of the region makes it a suitable partner for deploying the solution.

Contact person:

Name: Mr. Piotr ŁYCZKO

Position: Deputy Director of the Department of Environment of the Marshal's Office of the Malopolska Region

E-mail: sekretariat.sr@umwm.malopolska.pl

City of Košice

Košice is the second-largest city in Slovakia, located in the eastern part of the country. Environmental goals are crucial to Košice as the city has recognized the importance of sustainable development to improve the quality of life of its citizens and protect its unique natural heritage. The issue of flash floods is a crucial environmental concern for Košice, and addressing this problem is essential to ensure the safety and well-being of the city's residents and visitors. Therefore, the city sees a great potential in and supports projects aiming to tackle this problem.

Contact person:

Name: Mr. Richard DLHÝ

Position: Head of the Department of strategic development

E-mail: richard.dlhy@kosice.sk

City of Prešov

The city of Prešov is an important economic and administrative centre of eastern Slovakia. The city has had problems with the level of the river rising during torrential rains for several years, and therefore seeks solutions how to prevent or mitigate risks arising from flash floods. Consequently, the City of Prešov welcomes the initiative of the project promoters and wants to support them in finding effective flood prevention measures, through which the city can reduce the risk of flooding and mitigate the potential damage caused by this natural disaster.

Contact person:

Name: Mrs. Veronika VOZÁROVÁ

Position: Head of the Integrated Regional Operational Programme for the City of Prešov

E-mail: veronika.vozarova@presov.sk

ICKK (Inovačné centrum Košického kraja - Innovation centre of Košice region)

The Regional Innovation Centre of the Košice Region is a bridge between entrepreneurs and innovations in the region. The main responsibility is to implement the regional innovation strategy and stimulate the further development of the regional innovation ecosystem. Its network of partners, institutions and scientific organisations provides unique advantages that accelerate innovative ideas.

Contact person:

Name: Mr. Peter BREYL

Position: CEO

E-mail: peter.breyl@ickk.sk

Participant 2 *(use same partner numbering as on Submission System screens).*	
Legal name (short name):	GOSPACE TECH S.R.O. (GOSPACE)
Description of participant *Provide a short description of the participant, with an explanation on how it matches its main role and tasks in the proposal.*	

GOSPACE gained a unique experience with space hardware projects including cooperation with the European Space Agency (ESA) and continues its journey with IoT based on virtues like miniaturization, long-distance communication, space-qualified electronics, and telecommunication technologies.

GOSPACE is a pioneer in the IoT field with established close connections with big telecoms across Europe and the US.

GOSPACE is an innovation leader developing new IP-protected technological features for its hardware and software solutions. The company stands out by its innovative potential and unique value proposition for either municipality, integrators, or individual clients.

The main task of GOSPACE results from their expertise and focus, and within the project they will provide technical IoT sensors that will generate the data needed for the expert module and early-warning system in real time. At the same time, it will be possible to verify the functionality of both systems with the help of sensors.

GOSPACE will lead WP3: Technical infrastructure.

Key staff

Provide a short description of the profile of the persons who will be primarily responsible for carrying out the proposed activities.

Alexander KUTKA, male, permanent, software developer

Alexander specializes in frontend and server application development with experience as a business consultant and project development team leader. His professional skills in PHP, MySQL, Java and JavaScript/CSS/HTML, together with his passion for innovation and automatization, make him responsible for the main serverArchitecture and overall data integrity. Alexander has over 10 years of experience in software engineering.

Ondrej ZÁVODSKÝ, male, permanent, hardware developer

Being a postgraduate student at the Electrotechnical faculty, he is experienced in RF engineering, HW design and development and MCU programming with C language. In GOSPACE he is responsible for continual development of IoT devices.

Ľubomír PASTERNÁK, male, permanent, firmware developer

Ľubomír is a software engineer with an emphasis on Embedded Systems development. His expertise ranges from C/C++ programming for microcontroller platforms, particularly ARM-Cortex cores, to the hardware design of onboard computer PCBs, namely their schematic design, placement, anf wire routing. During his studies at University of Žilina, he worked in the area of control of classical electrical machines and electrical machines for particular purposes.

Branislav Šmidt, male, permanent, Head of Business Development

Branislav is passionate and resilient business and venture creator, new ideas maker with broad experience and results from corporates, startups and civic organizations. He is Chief Operating Officer / Head of Business Development in GOSPACE TECH and he is also Co-Founder / Managing Director of Impact HUB Bratislava - For Impact HUB, purpose and positive impact are equally important as financial performance.Impact HUB cares what is happening around and its ambition is to be a force for good in business and society through supporting meaningful & purpose-driven individuals, projects, startups and ventures with positive social impact making them sustainable and scalable.

Projects or Activities

List of up to 5 relevant previous projects or activities, connected to the subject of this proposal.

Past technology achievements:

Digital Parking portfolio: HW: IoT Parking Sensor - the foundation of Fleximodo - digital parking portfolio, 15k deployed in 30 countries / IoT Permit Card - allowing authentication and authorization / E-Parking Pass - serves as an automatic gate opener and enhances indoor navigation / IoT GO (Gate Opener) - unique HW with the functionality of every parking gate/ramp opener / P-Sentry - new generation of wireless parking infrastructure / IoT Parking Guidance Signage / ANPR Camera /// SW: IoT HUB - the central cloud server system capable of handling IoT communication with various types of devices / CityPortal - the web-based responsive app designed for 3 types of users - Driver, Mayor, Enforcement officer / Parking App for residential developers / Parking Apps for commercial developers & company

parking /// Other projects (beyond parking): MERATCH - Masure & Watch Online (level measuring); Waste Monitoring; SALSA - Stratospheric Autonomous Landing System Application (project for ESA).

Past marketing achievements:

As students, we have launched the first Slovak satellite into orbit. As entrepreneurs, we have brought intelligent parking sensors (IoT Parking Sensor) and parking cards (IoT Permit Cards) to outdoor parking in 30 countries, from UAE to the USA. 15k sensors are deployed already with 80 international partners, including telcos like Vodafone, Deutsche Telekom, or T-Mobile US (GS as a solution partner). We create a dedicated team of experts for a new generation of parking infrastructure (technology) and also develop our software or applications. We scratched the surface with 1M EUR of revenue in 2021 in the parking industry without any external funding.

affiliated Entities / Associated Partners

Does the participant envisage that part of its work is performed by affiliated entities or associated partners? If yes, please describe the entity / partner, their link to the participant, and describe and justify the tasks foreseen to be performed by them.

N/A

Participant 3 *(use same partner numbering as on Submission System screens).*	
Legal name (short name):	Meteo Co, (METEO)

Description of participant

Provide a short description of the participant, with an explanation on how it matches its main role and tasks in the proposal.

Meteo Co. is a University of Warsaw company that draws on the experience of ICM UW dating back to 1994. Today Meteo is the only center in this part of Europe that forecasts the weather based on the effective Met Office (UM - Unified Model) and it is also the only entity working so closely on scientific grounds with a recognized university. Meteo specialists carry out research and development projects and take an active part in validating the UM model in a part of the world where weather forecasting is relatively difficult due to geographical conditions.

The wide spectrum of data and forecasting models that METEO has will be used especially in the implementation of the early-warning module. Therefore, METEO will be responsible for WP4: Implementation and testing of the early-warning module.

Key staff

Provide a short description of the profile of the persons who will be primarily responsible for carrying out the proposed activities.

Maciej WRONA, male, permanent, team leader

Maciej holds the title of Master of Business Administration "MBA for Engineers"; Koźminski University, Warsaw; and his working career consisted of 12 years in GNSS industry, 5 years as R&D team leader, 9 R&D projects as operational, 4 R&D projects implemented in industry, 5 R&D projects as team leader.

Marta K. KOPEC, female, permanent, researcher

Marta has been a researcher at the Interdisciplinary Center for Mathematical and Computational Modeling since 2018. Until then, she worked for 2 years as a research assistant at the University of Warsaw.

Published works:

* Influences of Subsidence and Free-Tropospheric Conditions on the

Nocturnal Growth of Nonclassical Marine Stratocumulus

Journal of Advances in Modeling Earth Systems

2018 - journal-article

* Effects of wind shear and radiative cooling on the stratocumulus topped boundary layer

Quarterly Journal of the Royal Meteorological Society

2016 - journal article

* Physics of Stratocumulus Top (POST): Turbulence characteristics

Atmospheric Chemistry and Physics Discussions

2016 - journal article

Michal ZYGULA, male, permanent, developer

Michal has been working as a Junior developer and analyst for METEO.pl since 2020. As part of his work, he focuses on the technical position in HPC center at University of Warsaw, working with GFS and UM models, providing customized forecasts for business clients, analysis of the verifiability of weather forecasts, development of internal websites, preparation of meteorological databases, working in the python environment and with the Linux system.

Projects or Activities

List of up to 5 relevant previous projects or activities, connected to the subject of this proposal.

1) ICM UW team leader - SESAR SJU projects(SESAR JOINT UNDERTAKING H2020): Grant no. 734143 PJ 10.02b "Separation Management En-Route and TMA" and Grant no. 733121 PJ.04.02: "Enhanced Collaborative Airport Performance Management"

2) MUT contractor - project NCBiR 0960/R/T02/2010/10 10, "Providing real time services for ASG-EUPOS network" (1.11.2010-31.10.2013)

3) MUT contractor - MNiSW 1649/B/T00/2010/40 "Integrated measurement system for periodic bridge constructions monitoring and control against destructive events"(04.05.2011-03.11.2012)

4) MUT contractor - 1476/B/T02/2009/37 „Final reprocessing of GNSS data from EPN network from period of 1996-2007" (09.2009 – 08.2011)

Affiliated Entities / Associated Partners

Does the participant envisage that part of its work is performed by affiliated entities or associated partners? If yes, please describe the entity / partner, their link to the participant, and describe and justify the tasks foreseen to be performed by them.

As part of the Work Package 4: Implementation and testing of early-warning module, the associated partners will participate in the Task 4.3 Testing and optimization in cooperation with end users.

All Associated Partners will actively participate in this task, mainly by providing feedback to the software/early-warning module utilization, as well as to the educational materials to be prepared within the project.

Participating associated partners:

The Malopolska Region, City of Košice, City of Prešov, ICKK (Innovation center of Košice region).

Further information about individual Associated Partners is provided above.

Participant 4 *(use same partner numbering as on Submission System screens).*	
Legal name (short name):	PREŠOV REGION (PSK)

Description of participant

Provide a short description of the participant, with an explanation on how it matches its main role and tasks in the proposal.

The Prešov region is located in the northeast of the Slovak Republic. With its area of 8,973 km2, it occupies 18.3% of the state's area, making it the second largest region in Slovakia. The long northern border represents the state border with Poland. Most of the territory of the region is mountainous, as a result of which flash floods often appear in the region.

Within WP6, PSK will lead dissemination activities and exploitation of the results of the project.

PSK will lead WP2: Preparatory actions and stakeholder engagement and WP6: Sustainability, replication and exploitation of project results.

Key staff

Provide a short description of the profile of the persons who will be primarily responsible for carrying out the proposed activities.

Martin ČONTOFALSKÝ, male, permanent, referent

Martin works as a referent of the Spatial Planning Department and environment until 2022, before that he worked as a property management officer. He has worked for a long time since 2004 as the Chief Counselor for the Regional/Regional/District Office of Prešov.

Janette DUGASOVÁ, female, permanent, referent

Janette has more than 20 years of experience in the field of the environment with a focus on conceptual work, cross-sectional assessment of the state of the environment and individual components of the environment, with a more detailed focus on water management and the water component of the environment. Specialization in the issue of water management and water as a component of the environment at the regional (district) level, within the East Slovak region, SR, including cross-border connections, with a focus on the issue of groundwater and surface water pollution in the SR and regions, on an overview of sources of drinking water, drinking water supply, wastewater treatment to the extent necessary for characterizing and evaluating the state of the environment. Over time, even from the position of a senior worker, Janette focused on the assessment of the state of other components of the environment (air, soil, rock environment, including waste management) and also on the coordination of tasks.

Anna HUSOVSKÁ, female, permanent, referent

Anna works as a referent of the Spatial Planning Department and environment from 2023. Before she worked as referent of the Department of schools as national project administrato from 2020 to 2023. Now she is a referent for environment and she also participates on the project IP LIFE.

Jakub KOVAŘ, male, permanent, referent

Jakub has been an independent specialist officer since 2021, and before that he worked as an external GIS analyst. His knowledge is:

- advanced knowledge of the geographic information system QGIS
- advanced knowledge of Geoserver tools
- basic knowledge of statistical software (Statistica)
- basic knowledge of javascript, html, CSS

Projects or Activities

List of up to 5 relevant previous projects or activities, connected to the subject of this proposal.

1. Modern Technologies II – Operational Programme Integrated Infrastructure

   The project aims at introducing modern technologies (including sensors in traffic and smart metres for energy consumption) as a smart tool for decision-making in selected areas of the Prešov Region, that are going to be used and visualized in PSK geo-portal too. Our proposal aims to complement the PSK geo-portal with hydrological data from the region, which are currently missing.

2. Low-carbon strategy of organisations under the PSK's jurisdiction

   Support for low-carbon strategy including support for a sustainable multimodal city mobility and adaptation measures that aim at climate change mitigation (Operational Programme Quality of Environment). Our proposal will complement the strategy with recommendations on the use of NBS in the PSK.

3. SMART PSK – Future of Better Quality – Catching-Up Regions 3. Stage – Basic Environmental Infrastructure in the District of Snina

   Hydrogeological survey, preparation of project documentations for public water pipeline, sewage network and water treatment plant, execution of construction works for selected municipalities of the District of Snina (European Social Fund Efficient Public Administration, Operational Programme Slovakia)

4. Adaptation strategy for climate change of Prešov Self-Governing (AS PSK)

   The main aim of AS PSK is to evaluate the vulnerability and adaptability of the territory and impacts of climate change to the environment, urbanised area, selected infrastructure and socio-economic characteristics of the territory of the region, including activities focused on division into economic sectors. Our proposal will complement the strategy with data and information from the hydrological analysis that will specify the most vulnerable and sensitive territories of the Region to flash flood hazards.

5. Competence centre of knowledge technologies for innovation of production systems in industry and services (ITMS 26220220155)

   The centre focuses on targeted basic and applied research and development in the areas of geospatial services. The results of the research will be used within our project in the development of the application interface of the web GIS portal.

Affiliated Entities / Associated Partners

Does the participant envisage that part of its work is performed by affiliated entities or associated partners? If yes, please describe the entity / partner, their link to the participant, and describe and justify the tasks foreseen to be performed by them.

N/A

Participant 5 *(use same partner numbering as on Submission System screens).*

Legal name (short name):	Małopolska Regional Development Agency S.A.. (MARR)

Description of participant

Provide a short description of the participant, with an explanation on how it matches its main role and tasks in the proposal.

Małopolska Regional Development Agency is a key regional institution that supports local development. Also, it is one of the most important partners of national institutions and regional self-government in shaping the policy of innovative regional development. MARR is the only official partner of the Polish Investment and Trade Agency in the region.

The Małopolska Regional Development Agency, as a development agency, has several options for engaging relevant stakeholders and at the same time has access and opportunities to address local stakeholders within the framework of direct cooperation and involvement in Poland. The agency will take the same actions as Prešov self-governing region but in Poland.

Key staff

Provide a short description of the profile of the persons who will be primarily responsible for carrying out the proposed activities.

Romana TOFT, female, permanent, researcher

Graduate of Law and Administration Faculty at the Jagiellonian University in Krakow and the University of St. Thomas, St. Paul, MN, USA (Masters of International Management).

Present position at MARR SA: Specialist for cooperation with local governments / for knowledge of the market of new technologies / implementation of innovations in the project entitled

"GovTech_InnoLab_Innovative Local Governments of the Future. Support for local governments in the process of implementing innovations for local communities"(2 year-long project financed by the Operational Programme Intelligent Development) – project under implementation. Under the project she actively cooperates with several dozen local governments (municipalities, poviats, voivodships). Also: Chief specialist for Project Management in the MARR Department of Innovation and Business Development.

Jacek ZALEWSKI, male, permanent, project director

Project Director leading projects on a pre-design, concept design stage in water management sector, including flood prevention, adaptation to climate change, river management and maintenance and cities development. Extensive experience in leading project related to flood mapping based on 1D/2D hydrodynamic modeling and GIS, flood risk assessment and flood protection concepts, including flood monitoring: rain gauges and flow/level meters. Experience include Feasibility Studies, EIA preparation, due diligences, design, flood assessment, institutional support. Water / Environmental Engineer with practice on several construction sites, team leader. Project Manager of a Technical Assistance projects in the water/wastewater sector. Good practical knowledge of various kinds of FIDIC Conditions of Contracts gained while working on site and preparing several proposals according to EU requirements. Giving trainings on FIDIC and Quality Assurance for projects co-financed by EU Funds. Experience in managing a multidisciplinary team and subconsultants on a large scale infrastructure project. Broad experience of working in an international environment on complex infrastructure projects including projects financed by international clients and international bodies like EU, The World Bank, Swiss and Norwegian Funds and EBRD. As a SPeAR Operator (Sustainability Project Appraisal Routine – a tool developed by Arup for assessing the sustainability of projects) conduction of several sustainability appraisals of many investment projects. Licensed Engineer of the Polish Chamber of Engineers.

Anna SOWA-JADCZYK, female, permanent, researcher

Anna has been working since 2015 as Kondrat&Partners – Patent Attorney: preparation of registration forms for trademarks, industrial designs; utility models, inventions, development of trademark regulations; preparation of pleadings; participation in hearings; conducting training; assessment of patentability and purity.

She has also been working for Małopolska Regional Development Agency S.A. since 2005. (from 01/01/2009 as the Deputy Director of the Project and Program Management Department, including the Supervision Section Manager):

1) participation in the creation of a seed capital fund and supervision over its functioning (project manager "Capital for innovation" and "Capital Fund Medical Technologies" - Med. Fund. Value of PLN 28 million).

2) conducting training in the field of: financing and commercialization of innovations for enterprises and science institutions, valuation of contribution, elements of commercial and civil law, intellectual property.

3) specialist in the "VIEW"; project regarding intellectual property.

4) preparation of international cooperation projects with foreign institutions;

5) project manager of the "Winnica Małopolski" project (2005-2007)

Lilianna PIWOWARSKA - SOLARZ, female, permanent, economic expert

Lilianna is M.Sc. in Commodity Science and has been working as financial expert in Malopolska Regional Development Agency since 2017. Key qualifications (relevant to the programme):

- Preparation of feasibility studies and business plans for investment projects - institutional, financial and economic aspects

- Preparation of applications for co-financing

- Financial clearance of EU projects

- Financial management at limited liability companies

- Team management.

Key project:

SOUSTENERGY (European Commission programme INTERREG III C) – the objective of the project was to bring about a change in the energy culture in European society. Common methodologies have been

developed, tested and disseminated to adopt regional or local strategies for energy saving and efficiency based on education and increased social awareness.

SPLASH (European Commission programme ALTENER) - the goal of the project was to promote renewable energy sources through the idea of planning small installations (up to 1 MW) of hydroelectric power plants.

PROMENLAB (European Commission programme SAVE II) – the goal of the project was to promote energy labels for existing buildings.

ENERGY AGENCIES (European Commission programme SAVE II) – the goal of the project was to create an energy and environment agency.

Projects or Activities

List of up to 5 relevant previous projects or activities, connected to the subject of this proposal.

1) Water Centre for Excellence,

Associate

Pre-concept stage advice on the preparation of the project consisting of new water treatment works (capacity of approx. 30 000 m3/d with potential for extension), education center and research center in Poland.

2) The Vistula Study Project, Wloclawek, Poland

Project Manager Jacek ZALEWSKI (Client: Energa S.A.); 9 March 2010 – current

Concept design, FS and EIA of a new weir with a 70 MW hydropower plant, navigation lock and earth dam on the polish larger river (with average flow of 900 m3/s) near Wloclawek, Poland.

The 3 year project covered 35 various products starting from review of archive data, desk top studies, site intrusive geological investigations, extensive nature inventory (over 40km2), satellite and aerial geodetic data preparation, hydrology, hydraulics with river modeling, GIS extensive database, through review of 17 potential schemes, multicriteria analysis, concept design of two options, feasibility study with the cost benefit analysis and environmental impact assessment conducted in the Natura 2000 environmentally protected areas. A large environmental compensation plan was developed together with the project sustainability assessment.

Project capital value exceeds €850mln.

3) The Dobczyce Reservoir Studies, 02.05.2012 - current

Preparation of strategic investment program for the recreational use of the drinking water reservoir near Krakow, Poland.

Project Manager Jacek ZALEWSKI (Client: MPWiK w Krakowie S.A.)

The program for recreational use is one of the results. An extensive GIS database is also prepared and public consultations are conducted in order to prepare the sustainability assessment using SPeAR® (Sustainability Project Appraisal Routine).

4) The Wroclaw Floodway System, April 2010 – Feb 2013

Monitoring and Evaluation Expert Jacek ZALEWSKI (Client: Project Co-ordination Unit)

Wroclaw, Poland

Key expert in the team of consultants rendering services of monitoring and project evaluation for Project Coordination Unit on the Wroclaw Flood

Protection Project. Capital value is approx. 500 mln Euro, finances and procedures provided by World Bank.

5) The Upper Raba Spawning Grounds, 27 May 2010 – 29 July 2010,

March 2012 - current

Project Manager Jacek ZALEWSKI, Client: Ab Ovo Foundation

Małopolska Region, Poland

The Swiss Fund financed a project aiming at restoration of the trouts' spawning grounds in the Raba river and its Tributaries. Arup prepare the feasibility study and the concept of the project and recently is

performing the role of evaluation and monitoring of the project implementation together with sustainability assessment and public consultations.
affiliated Entities / Associated Partners *Does the participant envisage that part of its work is performed by affiliated entities or associated partners? If yes, please describe the entity / partner, their link to the participant, and describe and justify the tasks foreseen to be performed by them.*
N/A

Letters of Support of Associated Partners

MAŁOPOLSKA

LETTER OF SUPPORT FOR THE PROJECT FLOPRES

Understanding the importance of proper water-management to prevent water-related risks such as flash floods, project promoters from Slovakia: ESPRIT spol. s r.o., GOSPACE TECH s.r.o., Prešovský samosprávny kraj, and from Poland: Meteo sp. z o.o., Malopolska Agencja Rozwoju Regionalnego, decided to collaborate on the implementation of a cross-border project **Flash Flood Prediction and Prevention System (FLOPRES)**.

FLOPRES project proposes an integrated solution to support flood modelling, forecasting, early warnings, integration and analysis of multimodal data both for authorities responsible for water and emergency management at all levels and private persons who might be impacted by the consequences of climate change-related hazardous events. The project will contribute to better informed and more nature-based friendly decision-making processes in water management and management of water risks and disasters, based on up-to-date information, increased knowledge and strengthened collaboration among stakeholders, experts and the public. As a result, the resilience of municipalities and their citizens to climate-change-related events will be strengthened and the risks stemming from climate change lessened

Project promoters submitted a successful funding application for the project FLOPRES under the Programme for Environment and Climate Action (LIFE) of the European Union, call LIFE Subprogramme Climate Action (LIFE-2022-SAP-CLIMA), in October 2022 under the project ID 101113988. The Malopolska Region welcomes the initiative of the project promoters to launch the FLOPRES project and understands the potential impact of the project on the future development of preventive measures in the water management which will benefit the regions and citizens of the Slovakia and Poland. Moreover, such large-scale projects create special challenges that require joint and coordinated approach concerning working methods, scientific knowledge or overall project management. Therefore, the Malopolska Region sees the added value of actively participating in the project, thus contributing to smooth cross-border cooperation.

Based on the above, the **Malopolska Region would like to hereby express its full support of the project FLOPRES and willingness to actively participate on and contribute to the project implementation and results dissemination from the position of an Associated Partner.**

In Krakow on 30.03.2023

On behalf of the Department of Environment of the Marshal's Office of the Malopolska Region

Piotr Łyczko
Deputy Director of the Department of Environment of the Marshal's Office of the Malopolska Region

PREŠOV
Európske podnikateľské mesto

LETTER OF SUPPORT FOR THE PROJECT FLOPRES

Understanding the importance of proper water-management to prevent water-related risks such as flash floods, project promoters from Slovakia: ESPRIT spol. s r.o., GOSPACE TECH s.r.o., Prešovský samosprávny kraj, and from Poland: Meteo sp. z o.o., Malopolska Agencja Rozwoju Regionalnego, decided to collaborate on the implementation of a cross-border project **Flash Flood Prediction and Prevention System (FLOPRES)**.

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Based on the above, the **City of Prešov would like to hereby express its full support of the project FLOPRES and willingness to actively participate on and contribute to the project implementation and results dissemination from the position of an Associated Partner.**

In Prešov, on 18.04.2023

On behalf of the City of Prešov

MESTO 33 PREŠOV

František Oľha
The Mayor of the City of Prešov

KOŠICE

LETTER OF SUPPORT FOR THE PROJECT FLOPRES

Understanding the importance of proper water-management to prevent water-related risks such as flash floods, project promoters from Slovakia: ESPRIT spol. s r.o., GOSPACE TECH s.r.o., Prešovský samosprávny kraj, and from Poland: Meteo sp. z o.o., Malopolska Agencja Rozwoju Regionalnego, decided to collaborate on the implementation of a cross-border project **Flash Flood Prediction and Prevention System (FLOPRES).**

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Based on the above, the **City of Košice would like to hereby express its full support of the project FLOPRES and willingness to actively participate on and contribute to the project implementation and results dissemination from the position of an Associated Partner.**

In Košice on 05.04.2023

On behalf of the City of Košice

Richard DLHÝ
Head of the Strategic Development Department
and Deputy Director of the Košice City Office

Inovačné centrum
Košického kraja

LETTER OF SUPPORT FOR THE PROJECT FLOPRES

Understanding the importance of proper water-management to prevent water-related risks such as flash floods, project promoters from Slovakia: ESPRIT spol. s r.o., GOSPACE TECH s.r.o., Prešovský samosprávny kraj, and from Poland: Meteo sp. z o.o., Malopolska Agencja Rozwoju Regionalnego, decided to collaborate on the implementation of a cross-border project **Flash Flood Prediction and Prevention System (FLOPRES)**.

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Project promoters submitted a successful funding application for the project FLOPRES under the Programme for Environment and Climate Action (LIFE) of the European Union, call LIFE Subprogramme Climate Action (LIFE-2022-SAP-CLIMA), in October 2022 under the project ID 101113988. The Košice Region Innovation Center welcomes the initiative of the project promoters to launch the FLOPRES project and understands the potential impact of the project on the future development of preventive measures in the water management which will benefit the regions and citizens of the Slovakia and Poland. Moreover, such large-scale projects create special challenges that require joint and coordinated approach concerning working methods, scientific knowledge or overall project management. Therefore, the Košice Region Innovation Center sees the added value of actively participating in the project, thus contributing to smooth cross-border cooperation.

Based on the above, the **Košice Region Innovation Center would like to hereby express its full support of the project FLOPRES and willingness to actively participate on and contribute to the project implementation and results dissemination from the position of an Associated Partner.**

In Košiceon 05.04.2023

On behalf of the Košice Region Innovation Center

Ing. Peter Breyl
CEO

Report: Drainage characteristics of the basin to the specified profile - river kilometre 17

esprit

Report

Report: Drainage characteristics of the basin to the specified profile
Stream name: Malá Svinka
River kilometre: 17

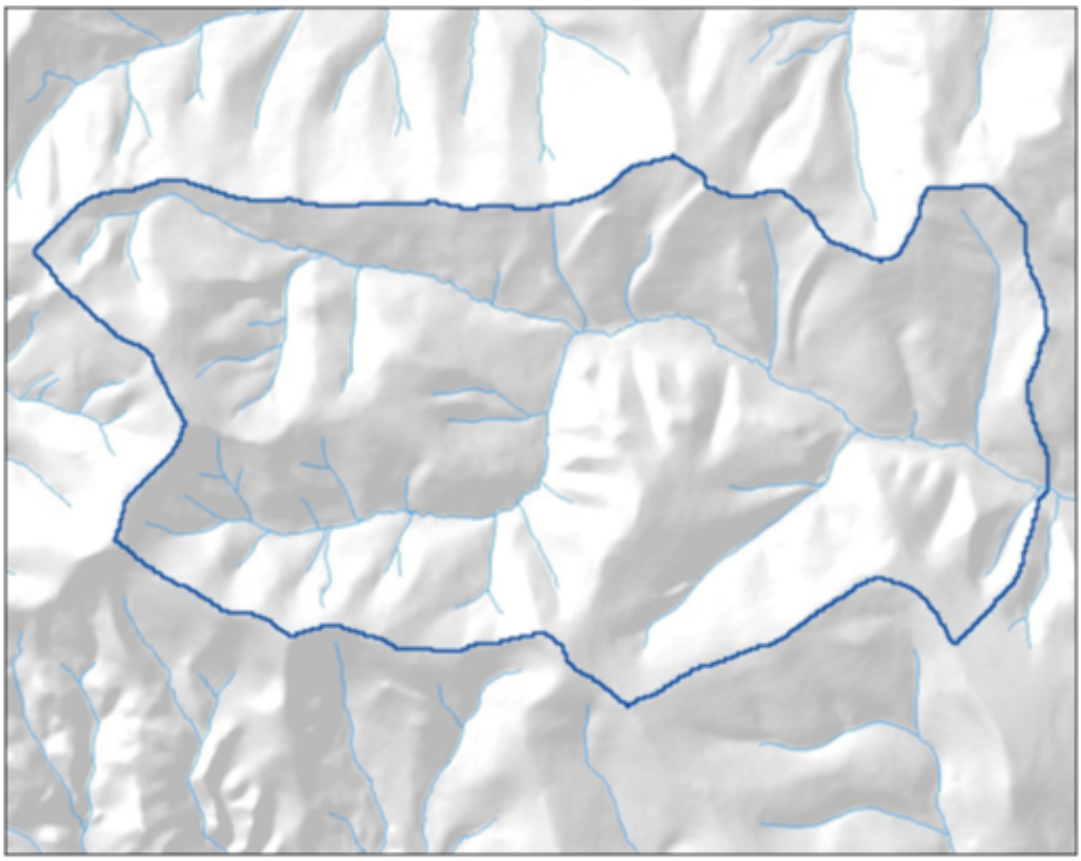
Content:

Created: 22.September, 2022, 14:45
Number of pages: 7

1. Identifikácia profilu

Identification of the geographical area	
Partial watershed	Hornád
Watercourse (name)	Malá Svinka
Watercourse (ID)	1651
Section start [r.km]	17
Region	Prešovský kraj
County	Sabinov
Municipality	Uzovské Pekľany

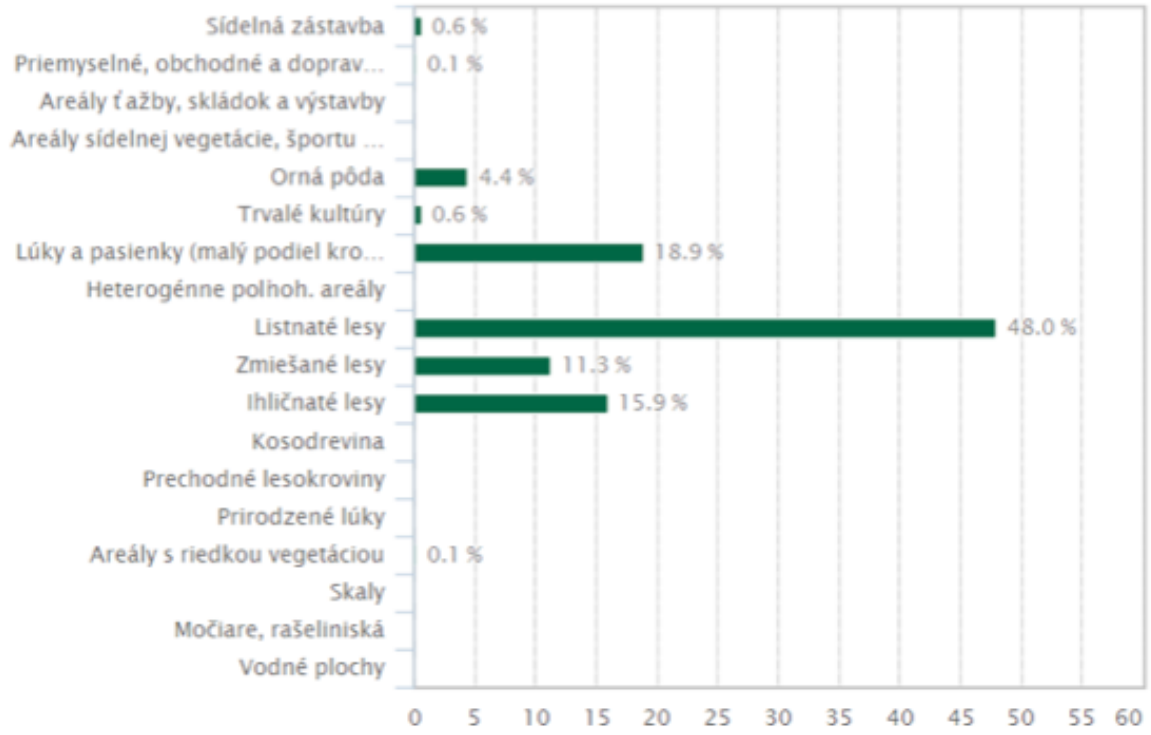
Topographic situation of the basin



2. Geografické a odtokové charakteristiky povodia k zvolenému profilu

Drainage characteristics of the basin	
Basin area [km^2]	24.65
Basin elevation [m n.m.]	
• Min:	488.51
• Max:	1073.52
• Average:	753.72
Average slope of the basin [°]	14.63
River network density [km/km^{-2}]	1.49
Woodiness [%]	75.22
Average annual flow [m^3.s^{-1}]	0.14

Representation of land cover groups in the watershed



3A. Scenáre opatrení v povodí založené na zmene využívania zeme

Zastúpenie tried využitia zeme v povodí pre aktuálnu krajinnú pokrývku a navrhovaný scenár využitia zeme

Scenár	súčasný stav(%)	scenár(%)	scenár (rozdiel %)
Sídelná zástavba	0.62	0.62	0
Priemyselné, obchodné a dopravné areály	0.13	0.13	0
Areály ťažby, skládok a výstavby	0	0	0
Areály sídelnej vegetácie, športu a rekreácie	0	0	0
Orná pôda	4.38	0.37	-4.01
Trvalé kultúry	0.63	0.63	0
Lúky a pasienky (malý podiel krovín)	18.87	18. 87	0
Heterogénne poľnoh. areály	0	0	0
Listnaté lesy	47.95	51.96	4.01
Zmiešané lesy	11.33	11.33	0
Ihličnaté lesy	15.94	15.94	0
Kosodrevina	0	0	0
Prechodné lesokroviny	0	0	0
Prirodzené lúky	0	0	0
Areály s riedkou vegetáciou	0.15	0.15	0
Skaly	0	0	0
Močiare, rašeliniská	0	0	0
Vodné plochy	0	0	0

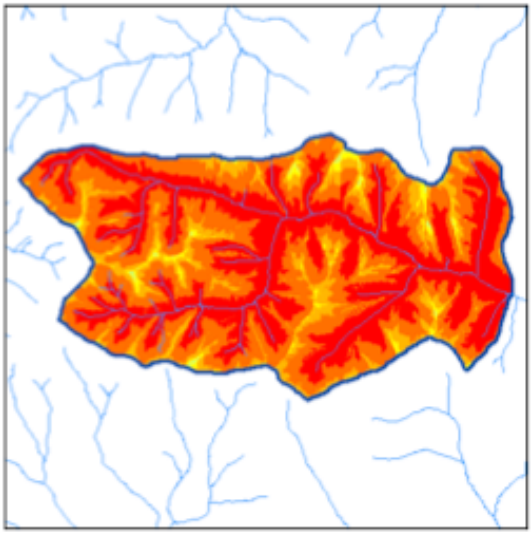
Scenario is that afforestation is made on of all arable land in the basin, where the slope is more than 7°.

3B. Scenáre opatrení v povodí založené na zmene využívania zeme

Here you can see the scenario in the country. Brown is currently arable land and it is changed to a forest in the picture below.

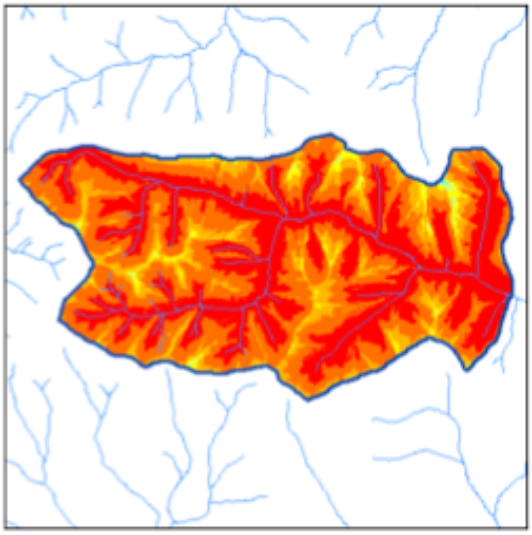
Current land use

Inflow times for the current use of the territory



The proposed land use scenario

Inflow times for the proposed land use



Krajinná pokrývka:

- Sídelná zástavba
- Priemyselné, obchodné a dopravné areály
- Areály ťažby, skládok a výstavby
- Areály sídelnej vegetácie, športu a rekreácie
- Orná pôda
- Trvalé kultúry
- Lúky a pasienky (malý podiel krovín)
- Heterogénne poľnoh. areály
- Listnaté lesy
- Zmiešané lesy
- Ihličnaté lesy
- Kosodrevina
- Prechodné lesokroviny
- Prirodzené lúky
- Areály s riedkou vegetáciou
- Skaly
- Močiare, rašeliniská
- Vodné plochy

Čas dotoku [hod]:

0 1 2 3 4 5 6 7 8 9 a viac

5

3C. Scenáre opatrení v povodí založené na zmene využívania zeme

Risk areas for the occurrence of a flood with a proposed change of use

riziková oblasť

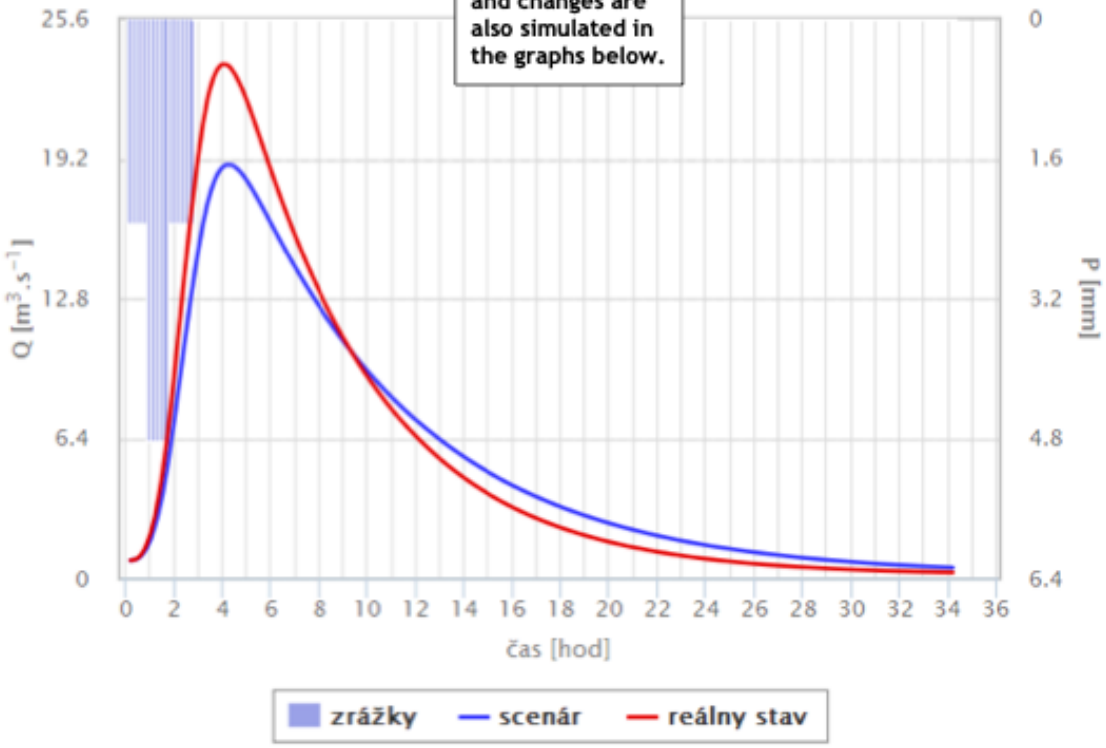
4. Návrhové veličiny Q/n/ pre aktuálny stav povodia a scenáre opatrení v povodí

Comparison of design parameters for individual scenarios

	Current status		Scenario	
Concentration time [hod]	4	100%	4.17	104.17%
Designed rainfall intensity In[mm.h^{-1}]	18.73	100%	18.73	100%
Runoff coefficient [-]	0.54	100%	0.53	98.15%
Designed flow Qn [m^3.s^{-1}]	23.54	100%	18.92	80.37%
Flow difference	0	0%	-4.62	-19.63%
Designed wave volume [m^3]	666246.62	100%	653761.31	98.13%

The simulation result - peak flow would decrease by almost 20% and changes are also simulated in the graphs below.

Designed waves for individual scenarios



*) Použitý model je primárne vyvinutý pre povodia s plochou do 20 km^2. Pri použití na veľkých povodiach môže byť veľkosť návrhového prietoku ovplyvnená faktormi, ktoré nie sú zohľadnené v konceptualizácii modelu, v dôsledku čoho sa vierohodnosť použitého modelu znižuje.

Report: Drainage characteristics of the basin to the specified profile - river kilometre 21

esprit

Report

Report: Drainage characteristics of the basin to the specified profile
Stream name: Malá Svinka
River kilometre: 21

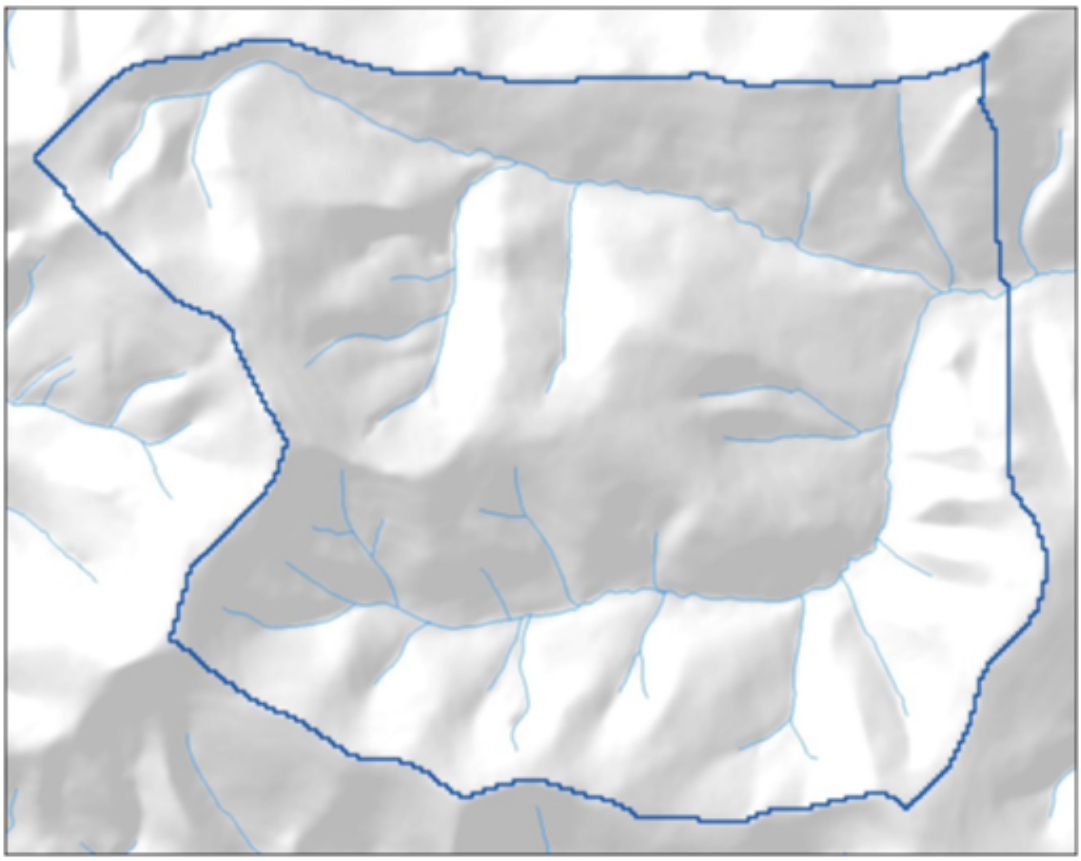
Content:

Created: 22.September, 2022, 14:18
Number of pages: 7

1. Identifikácia profilu

Identification of the geographical area	
Partial watershed	Hornád
Watercourse (name)	Malá Svinka
Watercourse (ID)	1651
Section start [r.km]	21
Region	Prešovský kraj
County	Sabinov
Municipality	Renčišov

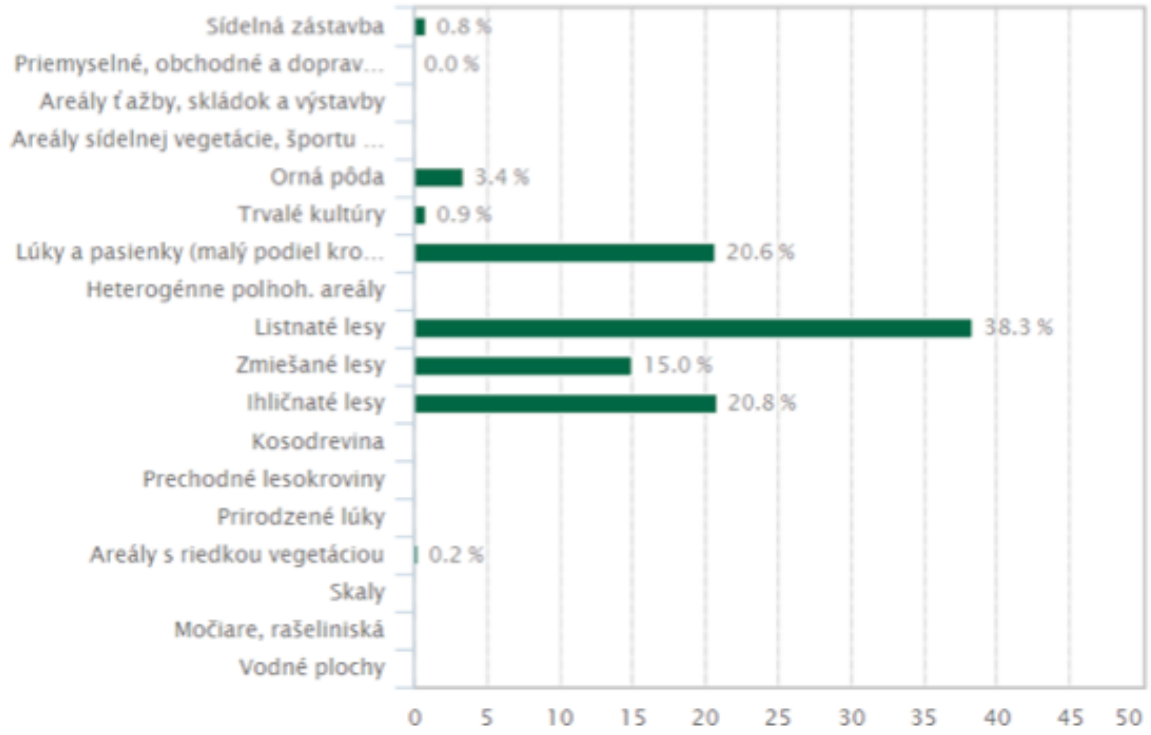
Topographic situation of the basin



2. Geografické a odtokové charakteristiky povodia k zvolenému profilu

Drainage characteristics of the basin	
Basin area [km^2]	13.2
Basin elevation [m n.m.]	
• Min:	586.78
• Max:	1073.52
• Average:	815.45
Average slope of the basin [°]	15.16
River network density [km/km^{-2}]	1.85
Woodiness [%]	74.12
Average annual flow [m^3.s^{-1}]	0.08

Representation of land cover groups in the watershed



3A. Scenáre opatrení v povodí založené na zmene využívania zeme

Zastúpenie tried využitia zeme v povodí pre aktuálnu krajinnú pokrývku a navrhovaný scenár využitia zeme

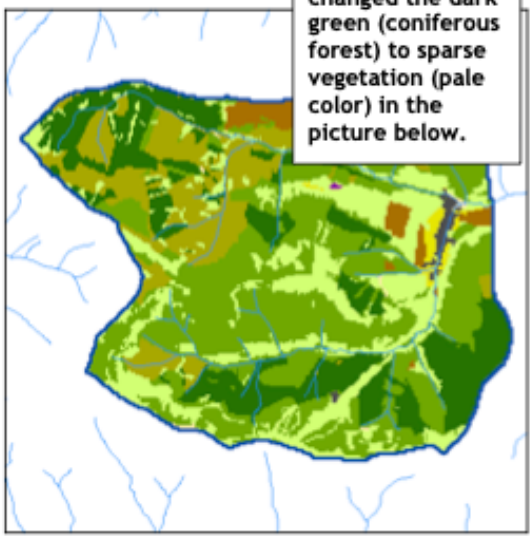
Scenár	súčasný stav(%)	scenár(%)	scenár (rozdiel %)
Sídelná zástavba	0.75	0.75	0
Priemyselné, obchodné a dopravné areály	0.04	0.04	0
Areály ťažby, skládok a výstavby	0	0	0
Areály sídelnej vegetácie, športu a rekreácie	0	0	0
Orná pôda	3.38	3.38	0
Trvalé kultúry	0.88	0.88	0
Lúky a pasienky (malý podiel krovín)	20.6	20.6	0
Heterogénne poľnoh. areály	0	0	0
Listnaté lesy	38.32	38.32	0
Zmiešané lesy	14.98	14.98	0
Ihličnaté lesy	20.82	11.04	-9.78
Kosodrevina	0	0	0
Prechodné lesokroviny	0	0	0
Prirodzené lúky	0	0	0
Areály s riedkou vegetáciou	0.23	10.01	9.78
Skaly	0	0	0
Močiare, rašeliniská	0	0	0
Vodné plochy	0	0	0

NOTE: Here we made a scenario (calamity). We assumed that all coniferous trees were removed in the defined area.

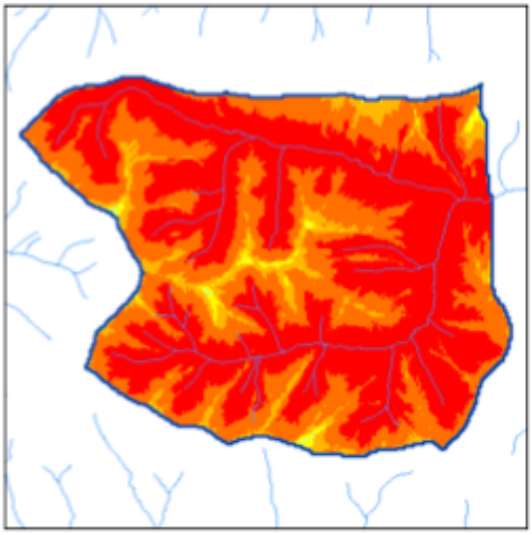
3B. Scenáre opatrení v povodí založené na zmene využívania zeme

Here we can see the change in the country - we changed the dark green (coniferous forest) to sparse vegetation (pale color) in the picture below.

Current land use

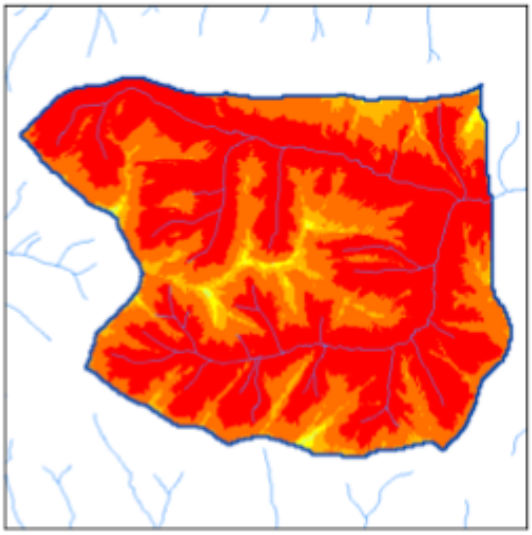


Inflow times for the current use of the territory



The proposed land use scenario

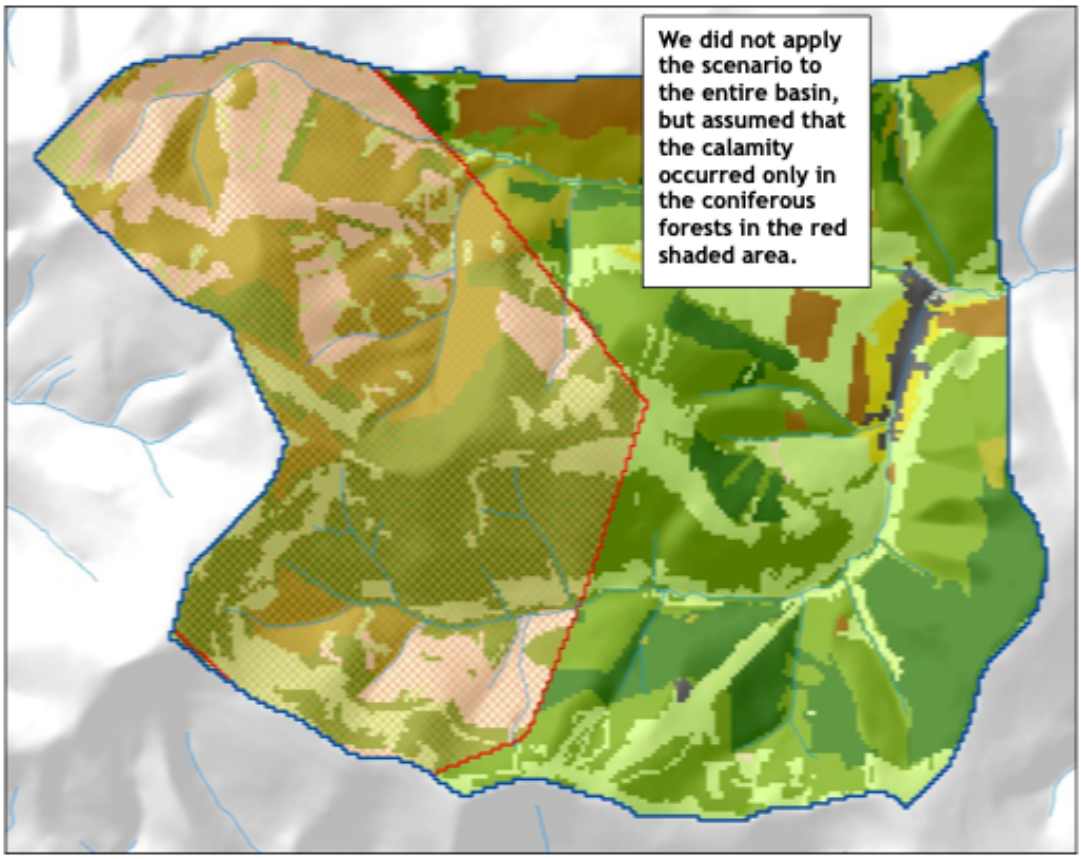
Inflow times for the proposed land use



5

3C. Scenáre opatrení v povodí založené na zmene využívania zeme

Risk areas for the occurrence of a flood with a proposed change of use



6

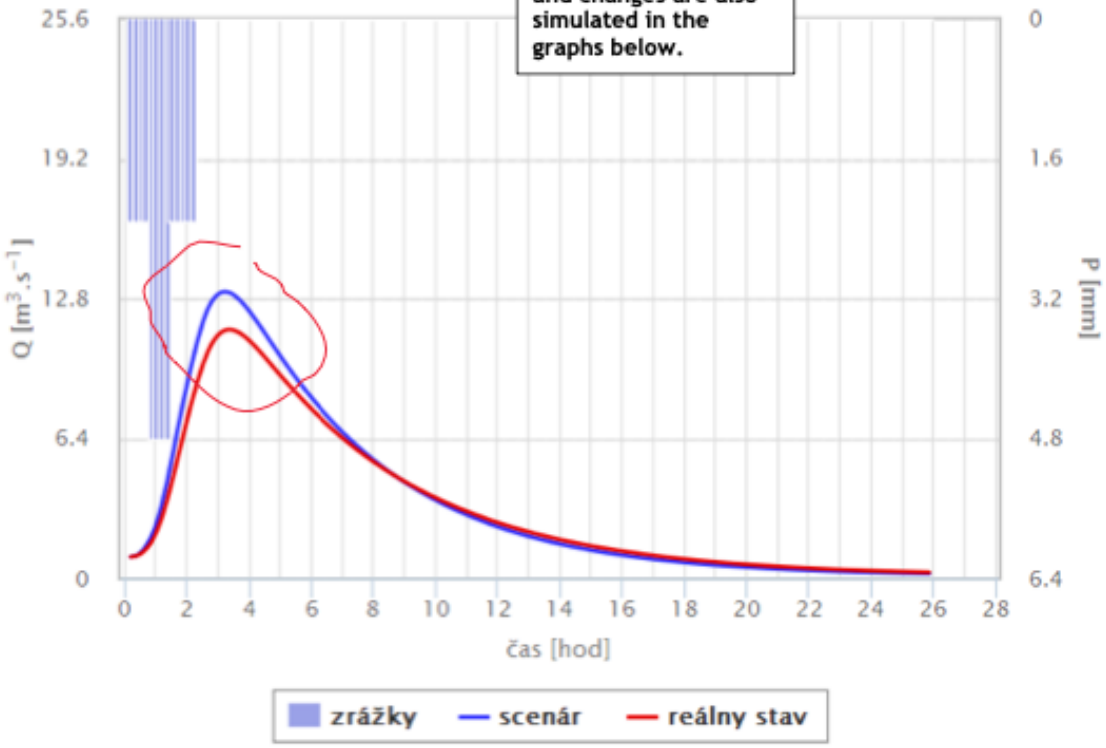
4. Návrhové veličiny Q/n/ pre aktuálny stav povodia a scenáre opatrení v povodí

Comparison of design parameters for individual scenarios

	Current status		Scenario	
Concentration time [hour]	3.33	100%	3.17	95%
Designed rainfall intensity In[mm.h^{-1}]	18.43	100%	18.43	100%
Runoff coefficient [-]	0.55	100%	0.58	105.45%
Designed flow Qn [m^3.s^{-1}]	11.36	100%	13.09	115.23%
Flow difference	0	0%	1.73	15.23%
Designed wave volume [m^3]	288568.81	100%	305816.84	105.98%

The simulation result - peak flow would increase by 15.23% and changes are also simulated in the graphs below.

Designed waves for individual scenarios



HISTORY OF CHANGES		
VERSION	PUBLICATION DATE	CHANGE
1.0		Initial version
2.0	16.5.2023	• Added explanation on target groups notification to the Task 2.3 *Community involvement and awareness raising.* • Support for the potential integration with national flood warning systems added in Task 2.2 *Stakeholder mapping and engagement*. • *In WP2 added a new Milestone 5 Support letter from relevant Slovak/Polish water agencies or ministries with a due date in M6.* • *In WP2 added a new Deliverable 2.8 Support letter from relevant Slovak/Polish water agencies or ministries with a due date in M6.* • Measures to enhance the catalytic potential of the smart water systems added in the Task 6.1 *Communication*. • *Added new Milestone 15 List of measures to enhance the catalytic potential of the smart water systems.* • *In WP6 added a new Deliverable 6.4 Report on realised measures to enhance the catalytic potential of the smart water systems.* • *Confidentiality levels of deliverables have been reviewed and updated.* • *Deleted Milestone 1 Interim reports and Milestone 2 Final report in WP1.* • In the Task 1.2 *Project Management* text was added on guidelines on inclusion of the green procurement principle in project management. • In the Task 1.2 *Project Management* the frequency of SC meetings was specified (monthly). • *In WP1 added new Milestone 1 and Started the preparation of green procurement guidelines.* • *In WP1 added a new Milestone 2 First Steering Committee meeting.* • *In WP1 added new Deliverable 1.6 Green procurement guidelines.* • *In WP1 Added a new Deliverable 1.7 Green procurement report.* • Added further details about the learning course in the Task 2.4 *Life-long learning*. • *In WP2 added a new Deliverable 2.4 Letter expressing commitment to integrate climate adaptation guidelines into local or regional planning/water management.* • In the Task 6.1 *Communication* the list of LIFE projects, which project promoters plan to contact for the networking purposes, was added. • *In WP6 we added a new Deliverable 6.5 Report on networking activities with other LIFE projects.*

		• *Removed Milestone 12 Sustainability plan and changed it into a new Deliverable 6.6 Sustainability plan.* • *In WP6 added a new Deliverable 6.7 Letter expressing the intent of a relevant Slovak/Polish authority to use the project tools in land use planning or water management.* • The due date of Milestone 3 *Purchase / lease of land and / or compensation payments for use rights* was prolonged. • The explanation on mitigation of the risk of delays associated with community and landowner engagement added to the Risk Management table, Risk No 1. • Mitigation measure concerning the risk of delay associated with wider community engagement was added to the Task 2.3 *Community involvement and awareness raising* and to the Risk Management table, Risk No 3. • Information on Associated Partners and their contact added in the Participant Information Annex. • *Added new member of the key staff of Participant 4 PSK, Mrs. Anna Husovská, in the Participant Information Annex.* • *Added text to the Task 4.3 and 5.3 Testing and optimization in cooperation with end users concerning actions to be realised by Associated Partners within the project.* • *Added new Milestone 11 and Milestone 13 Report on Associated Partners activities.* • *In the Detailed Budget Table, Staff effort allocation section, added staff effort for all Associated Partners.* • The KPI *% of reduction of flood damage and disaster relief costs due to improved flood emergency preparedness* was removed from the Table XV KPIs. • *Expanded the Deliverable 5.5 to also include confirmation of the adoption of the expert module in the territories of the whole Prešov self-governing region and Malopolska region. Deliverable 5.5 was therefore renamed to Validation and adoption report.* • *Participant 1 ESPRIT added new item Audit report in the cost category Other goods, works and services within the Detailed Budget Table.* • Participant 1 ESPRIT, in the Detailed Budget Table, moved the service cost for the support in replication and exploitation activities to identify the commercial potential and enhance project sustainability, related to Work Package 6 (total expected cost of 50 000 EUR), from cost category *Other goods, works and services* to *Subcontracting.* • *Added subcontract specification and justification in the Detailed Budget Table* • Moved item ArcGIS Enterprise 11.0 (50 530 EUR without VAT) to the *Equipment* cost category. Added more detailed item description and explanation in the Detailed Budget Table. • Item *ArcGIS PRO 3.0 + extensions* (6 830 EUR per year without VAT) was moved to the *Equipment* cost category. • Added more detailed ArcGIS PRO 3.0 description and explanation in the Detailed Budget Table.

		• More detailed description and explanation of *ArcGIS Enterprise maintenance* was added in the Detailed Budget Table.
		• *ArcGIS Enterprise maintenance* cost will be incurred only in 2 years and not 3.
		• Participant 3 METEO specified in the Detailed Budget Table costs associated with external data and HPC.
		• *Added specification of communication costs (promotional materials) (row 80).*
		• *Participant PSK made the following changes to the budget:*
		  ○ Travel expenses increased from 6 000 to 6 900€.
		  ○ Added specification of communication costs (promotional materials). The cost of promotional materials decreased from 10 000 to 3 100€.
		  ○ The cost of one workshop increased from 5 000 to 7 000€ per workshop.
		  ○ These changes result in Other goods, works and services cost category total decrease from 30 000 to 29 100€.
		• *Added specification of the communication activities of Participant 5 MARR in the Detailed Budget Table.*
		• Supporting letters of Associated Partners added as an Annex.

Detailed Budget Table

FLOPRES

Important:
You may add rows but no additional tabs. This may result in your proposal being considered inadmissible.
Please ensure that the file can be printed on a format of 1 page wide (number of pages depending on the number of participants).
Please make sure that the figures in this table are consistent with the total budget provided in part A section 3 of the application.
In case of inconsistencies, part A will prevail.

Staff effort allocation

Fill in the effort per work package and Beneficiary/Affiliated Entity.
Please indicate the number of person-months over the whole duration of the planned work.
Adapt the columns to the number of work packages in your proposal.
Identify the work-package leader for each work package by showing the relevant person-month figure in bold.

Participant Number/Short Name	WP1	WP2	WP3	WP4	WP5	WP6	Total
1. ESPRIT	72	14		83	229	5	**403**
2. GOSPACE			107				**107**
3. METEO				93			**93**
4. PSK		84				36	**120**
5. MARR SA		108				36	**144**
6. Malopolska				0,6	0,6		**1,2**
7. City of Košice				0,6	0,6		**1,2**
8. City of Prešov				0,6	0,6		**1,2**
9. ICKK				0,6	0,6		**1,2**
Total person-months	**72**	**206**	**107**	**178,4**	**231,4**	**77**	**871,8**

Personnel costs

Present your estimated "Personnel costs" split into 3 categories as per the table below. If you do not have any personnel costs falling under "A.4 SME owners and natural person beneficiaries" or "A.5 Volunteers", all personnel costs should be budgeted under "A1. Employees (or equivalent); A2. Natural persons under direct contract and A3. Seconded Persons".

For A.4 SME owners and natural person beneficiaries: please note that as per Annex 2a of the LIFE General Model Grant Agreement (MGA), a unit cost is applied to this cost category. The units are the days spent working on the action (rounded up to the nearest half-day) and the amount per unit (daily rate) is calculated according to the following formula:
{EUR 5 080 / 18 days = EUR 282,22 per day} multiplied by {country-specific correction coefficient of the country where the beneficiary is established}
Note that the country specific correction coefficient to use is the one applied for the Marie Sklodoska-Curie Actions (MSCA). Yearly rates are published in the Horizon Europe Work Programme – Marie Sklodowksa-Curie Actions under the funding and tender portal Reference Documents (work programme and call documents section), available at https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON.

For A.5 Volunteer Costs: a unit cost is also applied to this cost category. The units are the days spent working on the action (rounded up to the nearest half-day) and the amount per unit (daily rate) is a country specific rate of the country where the beneficiary is established. Country specific rates to apply can be found in the LIFE MGA on pages 83 & 84.

Participant Number/Short Name	Country	Number of person months (staff effort per beneficiary)	Average monthly salary rate	A1. Employees (or equivalent); A2. Natural persons under direct contract and A3. Seconded Persons (costs)	A.4 SME owners and natural person (sole trader) beneficiaries (Unit costs in €)	Subtotal personnel costs without volunteers (A1+A2+A3+A4) - must be the same as in part A section 3	A.5 Volunteers (Unit costs) must be the same as in part A section 3	Total Personnel costs
1. ESPRIT	SK	403	2 710 €	1 092 130 €		1 092 130 €		**1 092 130 €**
2. GOSPACE	SK	107	4 449 €	476 000 €		476 000 €		**476 000 €**
3. METEO	PL	93	2 790 €	259 500 €		259 500 €		**259 500 €**
4. PSK	SK	120	2 400 €	288 000 €		288 000 €		**288 000 €**
5. MARR	PL	144	2 150 €	309 600 €		309 600 €		**309 600 €**
Total		**0**		**2 425 230 €**	**0 €**	**2 425 230 €**	**0 €**	**2 425 230 €**

Subcontracting

Give details on subcontracted action tasks (if any) and explain the reasons why (as opposed to direct implementation by the participants).
Subcontracting — Subcontracting means the implementation of action tasks, i.e. specific tasks which are part of the action and are described in Annex 1 of the Grant Agreement.
Note: Subcontracting concerns the outsourcing of a part of the action to a party outside the Consortium. It is not simply about purchasing goods or services. We normally expect the participants to have sufficient operational capacity to implement the project activities themselves. Sub-contracting should therefore be exceptional.
Include only subcontracts that comply with the rules (i.e. best value for money and no conflict of interest; coordinator tasks can normally not be subcontracted).

Participant Number/Short Name	Subcontract Description	Cost (€)	WP	Justification (Why is subcontracting necessary?)
ESPRIT	Support in replication and exploitation activities to identify the commercial potential and enhance project sustainability	50 000 €	WP6	- The main goal of the subcontracted task is to identify the commercial potential of the project and enhance project sustainability, which will enable the replication opportunities and successful exploitation of the outcomes of the project. Subcontractor will develop a comprehensive exploitation strategy for the developed software solutions, and the roadmap for future development and market approach. - To achieve this, subcontractor will focus on three primary exploitation pathways: strategic, sectoral, and direct. The strategic pathway will target the European Commission and national government level, while the sectoral pathway will focus on industry associations. The direct pathway will target consultancy companies and suppliers. - The first step will focus on the consortium's home markets and identify routes for exploitation, utilizing partner connections, networks, and local market knowledge. Subcontractor will identify industry barriers, shortcomings, and possibilities for further development of the complete exploitation and commercialization plan. - Second task of the subcontractor will focus on creating an actionable plan and timeline for the activities defined in the exploitation strategy - roadmap for future development and market approach. This includes the implementation of the exploitation plan and monitoring and evaluation of the effectiveness of the exploitation activities. - Project promoters lack the capacities, knowledge and experience to cover above defined tasks. Therefore, to implement Task 6.3 in time- and cost-efficient manner, project promoters decided to utilise subcontractor for delivery of relevant tasks.
	Total estimated costs	**50 000 €**		
If subcontracting for the entire project goes beyond 30% of the total eligible costs, give specific reasons.	Insert text			

Other direct costs

Please complete the table below for each participant. If required add further tables at the end of this work sheet (one per participant).
Please ensure that sufficient details are provided in part B. For major cost items add lines below, in order to provide a detailed breakdown within one cost category.
For major items listed in the justification column, indicate the work package to which they belong.
For equipment and infrastructure, please explain if the cost represents the full cost or the depreciation.

1. ESPRIT	Cost (€)	Justification
Travel & subsistence	6 000 €	Local travel between Poland and Slovakia is needed to attend necessary meetings (project kick-off, final conference), project activities (workshops), and training events.

Equipment (incl. infrastructure)	71 020 €	ArcGIS Enterprise 11.0 – **50 530 EUR** without VAT. The solution will be developed in the ArcGIS Enterprise environment (version 11.0) as a foundational software for geographic information system technology-mapping and visualization analytics. It includes options for comprehensive mapping, image exploitation, real-time data processing, big data analysis, and using data science tools. Due to the spatial character of the input data necessary for solving the planned activities a geographic information system (GIS) will be used. Since the scope and amount of processed spatial information created within WP 4 and WP 5 will significantly exceed the size of the spatial databases of standard GIS solutions, the geospatial platform ArcGIS Enterprise will be used in the current version 11.0. It is this platform that creates an essential component for ensuring the analysis, processing, and display of a large amount of spatial data in a desktop and web environment. ArcGIS Enterprise includes the software component ArcGIS Server, which will be used in the proposed solution for the publication of web maps and geoprocessing services, that will serve for the purpose of sharing the spatial data among project solvers, who will be able to display, process, edit, and further share the outputs. The final output, which is a Prototype of a complex system based on web GIS technologies (D.5.1), which will allow sharing map outputs with the general public through created web map applications available to the public in web browsers, will be developed and deployed in a cloud environment using this framework. Another component of ArcGIS Enterprise called Portal for ArcGIS will enable the management of published spatial data through ArcGIS Server (setting access rights, changing the symbology of map layers, creating interactive map applications with tools that allow displaying spatial data, and analyzing the created project outputs). It is essential that ArcGIS Enterprise is purchased at the Advanced level to ensure the use of already existing tools (tools for image processing, interpolation and geostatistical data processing, network analysis, and others) without the need for their development in order to streamline work on planned activities. Currently, ESPRIT does not possess the neccessary level of licenses required for this development and publicity framework. As can be concluded from the arguments above, obtaining the ArcGIS Enterprise solution is prerequisite for the successful project implementation. Without ArcGIS Enterprise, ESPRIT will not be able to complete its tasks within WP 4 and WP 5, what would consequently endanger the scope and quality of delivered results and thus hindering the potential of benefits to be generated by the project. ArcGIS PRO 3.0 + extensions – 6 830 EUR per year without VAT (3 years). The ArcGIS PRO geographic information system will be used for the spatial data processing and visualization. It is a Desktop GIS solution intended for spatial data editing, advanced spatial analysis, creation of cartographic outputs that are not provided in the capabilities of the Portal for ArcGIS and ArcGIS Server components, and it is planned to be used by workers participating in tasks within WP5, especially when building spatial database of data needed for the expert system, derivation and parameters of hydrological models and visualization and cartography of outputs (T5.1). It will also be used in the validation of the Expert module (T5.4). The SW will be used to set the parameters of the publication of web map and geoprocessing services made available in the ArcGIS Enterprise platform (metadata, image tiling scheme, map service manipulation method, raster functions, input and output parameters of the geoprocessing service, and others), which will be part of the Prototype of a complex system based on on web GIS technologies (D.5.1). Currently, ESPRIT does not have a sufficient number of licenses for employees who will participate in the project. The system will be used exclusively by workers solving individual tasks within the project. ArcGIS PRO 3.0 and its extensions are essential for successful project implementation. Without the system ESPRIT will not be able to fully implement relevant activities (primarily in WP5), what will negatively influence the overall quality and scope of the project and its deliverables. Declared costs are for purchasing of annual licenses that provide a right to use the ArcGIS PRO 3.0 + required extensions, i.e. ESPRIT will not buy SW, but a license allowing the use of SW (license will be renewed annually during the project implementation - 3 times).
Other goods, works and services	108 420 €	ArcGIS Enterprise maintenance – 12 640 EUR per year without VAT (2 years). Considering the current version of ArcGIS Enterprise (11.0), which has been available for only a few months and in which the author of this platform has made available extensive changes in all offered functionalities, it is recommended to have ArcGIS Enterprise maintenance available. Maintenance will ensure the elimination of deficiencies and errors associated with the processing of spatial data and provide the current options offered within this platform. More precisely, the deficiencies identified by the project solver are significant for the planning of project activities associated with spatial data processing that is to be resolved in subsequent updates. The solution will be located on the cloud. Expenses for the cloud environment are 18 000 EUR, counted as 500 EUR per month without VAT (36 months). Historical hydrological data for calibration and validation of models in the model watersheds provided by the Slovak Hydrometeorological Institute with the estimated value of 37 500 EUR. Estimated data includes 5 water measuring stations, 30 years and 250 hourly flows per year. Hourly data on flows at water measuring stations are essential for calibrating the hydrological model for model basins. Additional data of water levels at selected stations (at least 2 stations) are needed for specific precipitation events with estimated value of 15 000 EUR. All of these expenses are related to the activities in the Work Package 4 together with Work Package 5. Based on internal analysis of the project promoter, the audit report to certify declared expenses is expected to cost around 12 640 EUR.
Financial support to third parties	- €	
Land purchase	- €	
Total	**185 440 €**	

2. GOSPACE	**Cost (€)**	**Justification**
Travel & subsistence	6 000 €	Local travel between Poland and Slovakia is needed to attend necessary meetings (project kick-off, final conference), project activities (workshops), and training events.
Equipment (incl. Infrastructure)	- €	
Other goods, works and services	209 040 €	Production and assembling costs: - core IoT sensors (Meratch) estimate of **8 000 EUR** (60 sensors) - soil moisture IoT sensors estimate of **20 000 EUR** (100 sensors) - precipitation IoT sensors estimate of **50 000 EUR** (100 sensors) IoT sensor connectivity is counted as a cost of connectivity per sensor per year, to be multiplied by number of IoT devices (260 sensors) and 10 years of connectivity. There is an assumption that 20 percent of these sensors will require a satellite connection (180 EUR per year per sensor) and 80 percent will require conventional connection (18 EUR per year per sensor). The total estimated cost of **131 040 EUR**. These expenses are related to the activities in Work Package 3.
Financial support to third parties	- €	
Land purchase	- €	
Total	**215 040 €**	

3. METEO	**Cost (€)**	**Justification**
Travel & subsistence	6 000 €	Local travel between Poland and Slovakia is needed to attend necessary meetings (project kick-off, final conference), project activities (workshops), and training events.
Equipment (incl. infrastructure)	- €	
Other goods, works and services	38 000 €	**30 000 EUR** represent external data costs required in the Work Package 4 and **8 000 EUR** are estimated for HPC expenses needed to prepare the data. According to scope of work regarding hydrological and meteorological data modelling, scope of using HPC infrastructure is divided into three groups: 1) CPU usage for data preparation and model computation. Single position cost: 100 EUR / 1 CPU core / yr Cores requirement: 25 Time: 24 months Total cost: 3000 EUR 2) RAM usage for data computation. Single position cost: 65 EUR / 1 GB RAM / yr Amount requirement: 32 Time: 24 months Total cost: 4000 EUR 3) Storage usage Single position cost: 20 EUR / 100GB / yr GB requirement: 40 Time: 24 months Total cost: 1000 EUR
Financial support to third parties	- €	
Land purchase	- €	
Total	**44 000 €**	

4. PSK	**Cost (€)**	**Justification**
Travel & subsistence	9 900 €	Local travel between Poland and Slovakia is needed to attend necessary meetings (project kick-off, final conference), project activities (workshops), and training events, including travel and remuneration for workshop trainers or lecturers.
Equipment (incl. infrastructure)	- €	

Other goods, works and services	26 100 €	**6 000 EUR** estimated for the organization of the workshop for approximately 50 people, which will be held every year (3 times during the duration of the project). The cost includes: -rent of premises; -refreshments (consumption unit approx. 20 euros/person - the amount of the consumption unit suggested as an estimate from the latest events organized by PSK); -promotional materials – information about the project specifically for the target group of workshops, including presentation materials according to the target group of workshops. **5 000 EUR** for eventual compensation of private landowners, for securing the rights to use the land and installing the necessary sensors. The project will focus primarily on land owned by the public administration in order to minimize the cost of land use while ensuring the project's goals. **3 100 EUR** is the estimated amount of promotional materials and needs for project communication. The costs will cover expenses during presentation days (presentation of the project as part of events organized by PSK, e.g., Earth Day, Water Day, and other different forms of meetings of the PSK Office with municipalities). Implementation will take place in the form of a stand with promotional materials (such as pens, notebooks, and other promotional materials of this kind) which will be distributed to participants during the presentation days.
Financial support to third parties	- €	
Land purchase	- €	
Total	**36 000 €**	

5. MARR	**Cost (€)**	**Justification**
Travel & subsistence	6 000 €	Local travel between Poland and Slovakia is needed to attend necessary meetings (project kick-off, final conference), project activities (workshops), and training events.
Equipment (incl. infrastructure)	- €	
Other goods, works and services	30 000 €	**5 000 EUR** estimated for the organization of the workshop, which will be held every year (3 times during the duration of the project). **5 000 EUR** for eventual compensation of private landowners, for securing the rights to use the land and installing the necessary sensors. The project will focus primarily on land owned by the public administration in order to minimize the cost of land use while ensuring the project's goals. **10 000 EUR** is the estimated amount of promotional materials and needs for project communication. The costs will cover promotional and informational actions, the content of which and the choice of information channels and distribution paths will allow to reach the target group most effectively, using low-cost tools: mailing, website, social media, direct contacts, face-to-face informational meetings as well as online meetings. Ongoing information about the project through the whole project implementation will be provided by a website (a sub-site of www.marr.pl), which will publish articles with photo reports of events, actions, workshops, as well as ebooks, studies. The sub-site will meet the requirements of WCAG 2.0, with easy navigation, responsiveness, a search engine for content only from the viewed portal. Communication on the Internet will also take place through social media (Facebook, LinkedIn) and thematic portals. For participants of the events promotional gadgets will be provided.
Financial support to third parties	- €	
Land purchase	- €	
Total	**36 000 €**	

Proposal ID	Call for Proposal	Topic	Type of Action
101113988	LIFE-2022-SAP-CLIMA	LIFE-2022-SAP-CLIMA-CCA	LIFE-AG

LIFE Programme – Application Forms (Part C – KPI)

Horizontal KPIs for all LIFE applicants (Mandatory to report on all the KPIs of this section).

Innovation

Is your project proposal developing, demonstrating and promoting innovative techniques and approaches?

(●) Yes
( ) No

Governance

Is your project proposal improving governance through enhancing capacities of public and private actors and the involvement of civil society?

(●) Yes
( ) No

Plans & strategies

Is you project proposal implementing key plans or strategies?

(●) Yes
( ) No

Catalytic effect - Financial

Will your project trigger additional investments?

(●) Yes
( ) No

Catalytic effect - Spatial

Will the results of your project be replicated beyond its intended geographical scope?

(●) Yes
( ) No

Catalytic effect - Thematic

Will the results of your project be replicated (transferred) beyond its intended thematic scope?

(●) Yes
( ) No

Catalytic effect - Societal

Will your project :

a) Contribute to the development of new or existing national legislation, policies, regulations, incentives and voluntary commitments?

b) Achieve a step-change in more effective compliance with and enforcement of Union environmental and climate legislation and/or in policy implementation?

c) Achieve a step-change in awareness and support of environmental and climate matters?

d) Establish a new macroregional or national model of cooperation (networking)?

(●) Yes
( ) No

Rio markers for climate, biodiversity and air quality

Please indicate if your proposal:

• Has climate change/ biodiversity/ air quality as their primary objective

• Has climate change/ biodiversity/ air quality as their secondary objective and provide substantial contributions to these objectives

• Does not contribute significantly to climate change/ biodiversity/ air quality

Climate change

Primary Objective

Biodiversity

Secondary Objective

Air quality

Not contributing

LIFE Programme - Context selection

Please select the EU Member State(s) or/and Associated Countries (if any) or/and potential Associated Countries (if any) that best describe the geographical context of your project proposal, i.e. the area(s) of work or/and area(s) of impact.

Please select the type of country you wish to add

(●) EU Member States
( ) Associated Countries

○ To Be Associated Countries

Slovakia(SK)

Please select the EU Member State(s) or/and Associated Countries (if any) or/and potential Associated Countries (if any) that best describe the geographical context of your project proposal, i.e. the area(s) of work or/and area(s) of impact.

Please select the type of country you wish to add

◉ EU Member States
○ Associated Countries
○ To Be Associated Countries

Poland(PL)

LIFE Programme - Annex II - Section 2 - Specific KPIs - (Please report on KPIs you consider relevant).

Please select the relevant indicators for your project. For each selected indicator please provide any required values and comments. Please note that if you deselect an indicator, all values entered will be lost.

☐ Air quality	☐ Biodiversity (Invasive Alien Species)	☐ Biodiversity (habitats)
☐ Biodiversity (number of Species)	☑ C2M projects	☐ Chemicals (environment)
☐ Chemicals (humans)	☐ Climate area vulnerability reduction	☐ Climate vulnerability (humans)
☑ Employment	☐ Energy savings	☐ GHG emissions
☐ GHG sequestration	☐ Investments and Financing	☐ Noise
☑ Other project specific KPIs	☐ Renewable energy	☐ Resource efficiency
☐ Soil quality	☐ Waste management	☐ Water efficiency
☐ Water quality		

Employment

Number of jobs created in FTE

The start-value is pre-set to 0. In the end-value please provide your estimated number of new jobs created due to your project, at project-end. The end-value is expected to be higher than the start-value, demonstrating an increase in the number of jobs created, due to the project actions. Please also provide the estimated number, 3/5 years after the project-end, to demonstrate if further jobs would be created. Please also provide relevant comments.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	2	4	FTE

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

We list the direct jobs that will be created within the project and will be maintained even after the end of the project. The implementation of the NBS will result in an increase in employment, but this indicator cannot be adequately quantified, but we present it in the application.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	1	1	number of tools

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of climate responsive tools developed and tested (expert module).

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	24081	98070	km2

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of km2 covered by the expert module.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	130	200	number of sensors

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of installed sensors in Slovakia.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	130	200	number of sensors

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of installed sensors in Poland.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	30	40	%

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

% of reduction of flood damage and disaster relief costs due to improved flood emergency preparedness

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	30	50	number of stakeholders

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of stakeholders involved

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	150	300	number of participants

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of workshop participants including marginalised communities

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	1	1	number of workshops

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of realised workshops involving end-users (expert module).

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	20000	100000	number of people

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of people less vulnerable to the adverse effects of climate change due to climate adaptation measures of the LIFE project.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	100	500	m2

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of km2 moduled by expert module by new users.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	1		number of workshops

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of realised workshops involving end-users (early-warning module).

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	1	1	number of tools

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of climate responsive tools developed and tested (early-warning module).

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	8000	24000	number of inhabitants

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of inhabitants protected by the early-warning system in Slovakia.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	5	5	number of participants

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of workshops and roundtables organised.

Other project specific KPIs

Please enter your project's specific KPI title and provide clarifications in the comment box.

Please specify any other KPIs you wish to present that you consider relevant and not included in the existing KPI list.

Project-Start Value (Baseline)	Project-End Value	3/5 years beyond Project-End Value	Unit
0	400	1000	number of users

Please provide stand-alone information to further clarify your input and briefly explain any assumptions/calculations. Please also ensure alignment with the main proposal text.

Number of lifelong course users.

C2M projects

Do you consider that your proposal is a "Close-to-market" (C2M) proposal?

For example:

(1) does your proposed project intend to have a product / license / service ready at the end of the project duration (or earlier);

(2) do you intend to produce a prototype;

(3) is there a private commercial entity in the project partnership? If you could answer positively to at least two of the three above questions then your proposal is a good candidate for C2M project. If this is not the case, but you still consider your proposal as a potential C2M candidate, then again indicate your proposal as a C2M proposal. Please provide relevant explanations in your main application text.

- (●) Yes
- ( ) No

ANNEX 2

ESTIMATED BUDGET FOR THE ACTION

	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	A.5 Volunteers	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.1 Financial support to third parties	D.2 Land purchase	E. Indirect costs					
Forms of funding	Actual costs	Unit costs[7]	Unit costs[7]	Actual costs	Actual costs	Actual costs	Actual costs	Actual costs	Actual costs	Flat-rate costs[8]					
	a1	a3	a4	b	c1	c2	c3	d1a	d2	e = flat-rate * (a1 + a3 + b + c1 + c2 + c3 + d1a)	f = a + b + c + d + e	U	g = f * U%	h	m
1 - ESPRIT	1 092 130.00	0.00	0.00	50 000.00	6 000.00	71 020.00	108 420.00	0.00	0.00	92 929.90	1 420 499.90	60	852 299.94	852 299.00	852 299.00
2 - GOSPACE	476 000.00	0.00	0.00	0.00	6 000.00	0.00	209 040.00	0.00	0.00	48 372.80	739 412.80	60	443 647.68	443 647.00	443 647.00
3 - Meteo	259 500.00	0.00	0.00	0.00	6 000.00	0.00	38 000.00	0.00	0.00	21 245.00	324 745.00	60	194 847.00	194 847.00	194 847.00
4 - PSK	288 000.00	0.00	0.00	0.00	9 900.00	0.00	26 100.00	0.00	0.00	22 680.00	346 680.00	60	208 008.00	208 008.00	208 008.00
5 - MARR SA	309 600.00	0.00	0.00	0.00	6 000.00	0.00	30 000.00	0.00	0.00	24 192.00	369 792.00	60	221 875.20	221 875.00	221 875.00
6 - Malopolska															
7 - City of Košice															
8 - City of Prešov															
9 - ICKK															
Σ consortium	2 425 230.00	0.00	0.00	50 000.00	33 900.00	71 020.00	411 560.00	0.00	0.00	209 419.70	3 201 129.70		1 920 677.82	1 920 676.00	1 920 676.00

[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

See Additional information on unit costs and contributions (Annex 2a and 2b)

Volunteers

See Additional information on unit costs and contributions (Annex 2a and 2b)

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

GOSPACE LABS SRO (GOSPACE), PIC 914627163, established in ILKOVICOVA 8, BRATISLAVA 841 04, Slovakia,

hereby agrees

to become beneficiary

in Agreement No 101113988 — LIFE22-CCA-SK-FLOPRES ('the Agreement')

between ESPRIT SPOL. SRO (ESPRIT) **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

Pavol TURČINA with ECAS id ntupavol signed in the Participant Portal on 19/06/2023 at 16:02:41 (transaction id SigId-28693-noc0VdlsCQlorTD1cOr89zGDlk2EziLBocgPpzUAolSiiCzhHJtP4zh8T5sMWj7AC8cBZG88MsJteUYB4sy9uTh-jpJZscgsw0K4epxy2XYw0y-zfJhEFLy83eyHR2nwtDNYjEMqAGOyzJbLXH9kzhiqvZnCM5ymogUS069wHzUqrpASRJvf1LnCzskjss11hpkHlO). Timestamp by third party at 2023.06.19 16:02:47 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

METEO SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA (Meteo), PIC 890655456, established in UL TYNIECKA 15/17/1, WARSZAWA 02-630, Poland,

hereby agrees

to become beneficiary

in Agreement No 101113988 — LIFE22-CCA-SK-FLOPRES ('the Agreement')

between ESPRIT SPOL. SRO (ESPRIT) **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

Maciej Wrona with ECAS id n007182w signed in the Participant Portal on 26/06/2023 at 11:26:51 (transaction id SigId-91899-g3cDW vcUPG1sNwTzf2GtYwkKqShxUGMc5FTZ5s8aHUKRlLK8XiXSOl62bk5 u3PXBIq8zvvF6faTdKwCG3lgHLo-jpJZscgsw0K4epxy2XYw0y-Ubv46 W7zPVOw39aazv13queW6yNWMCUSX0f1kXghLbtKvrzmhUkctsLgpz RFZ6IghVhske0rsXKvqd9zIYMDnGS). Timestamp by third party at 2023.06.26 11:27:00 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

PRESOVSKY SAMOSPRAVNY KRAJ (PSK), PIC 882306569, established in NAMESTIE MIERU 2, PRESOV 08001, Slovakia,

hereby agrees

to become beneficiary

in Agreement No 101113988 — LIFE22-CCA-SK-FLOPRES ('the Agreement')

between ESPRIT SPOL. SRO (ESPRIT) **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

Milan Majerský with ECAS id n00crduf signed in the Participant Portal on 20/06/2023 at 12:58:58 (transaction id SigId-39277-3aKO7s GHvI3vhDVMDU8xOseavOK7yp74MywG1cOftBb3ENkn109I8V2ryAf5 SmxhzYzXpcL8VuRZdzTWhCj7zOy-jpJZscgsw0K4epxy2XYw0y-SiVdmD Hw1mzTA0hYnj0C2ad7Xx3OFEBAhufLQONcZ2U8qg2ViuKzTsGFrwW MTy9GsUxF1fCteuUAzf3vQ3aY63G). Timestamp by third party at 2023.06.20 12:59:03 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

MALOPOLSKA AGENCJA ROZWOJU REGIONALNEGO SA (MARR SA), PIC 900122462, established in UL. KORDYLEWSKIEGO 11, KRAKOW 31-542, Poland,

hereby agrees

to become beneficiary

in Agreement No 101113988 — LIFE22-CCA-SK-FLOPRES ('the Agreement')

between ESPRIT SPOL. SRO (ESPRIT) **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

Szymon Strzelichowski with ECAS id n00cqc0y signed in the Participant Portal on 19/06/2023 at 13:31:22 (transaction id SigId-25439-R8G5zrIpMefSCFPqgMmOFR7VATVpHO6DajAefwyKwKnURv2HXZzZJWby8OzPplqbnaFiahFp2Dy2ddOiwnZDGM0-jpJZscgsw0K4epxy2XYw0y-ROKCLUjvRsL79rMDzdwXbHo417GcGaVepCVCcHaQzXnbZ69BM8O3YL0mwFA5rXBkaMF5jtzKhmuP024w0JtJjHW). Timestamp by third party at 2023.06.19 13:31:28 CEST

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		
	A.1 Employees (or equivalent) A.2 Natural persons under direct contract A.3 Seconded persons	A.4 SME owners and natural person beneficiaries	A.5 Volunteers	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.X Financial support to third parties	D.2 Land purchase	E. Indirect costs						
Forms of funding	Actual costs	Unit costs[5]	Unit costs[5]	Actual costs	Actual costs	Actual costs	Actual costs	Actual costs	Actual costs	Flat-rate costs[6]						
	a1	a3	a4	b	c1	c2	c3	d1a	d2	e = flat-rate * (a1 + a3 + b + c1 + c2 + c3 + d1a)	f = a+b+c+d+e	U	g = f*U%	h	m	n
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).

ⓘ 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 lateron, in order to replace costs/contributions that are found to be ineligible.

[1] See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

[2] 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.

[3] See Data Sheet for the reimbursement rate(s).

[4] 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.

[5] See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

[6] See Data Sheet for the flat-rate.

ANNEX 5

SPECIFIC RULES

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

Rights of use of the granting authority on results for information, communication, dissemination and publicity purposes

The granting authority also has the right to exploit non-sensitive results of the action for information, communication, dissemination and publicity purposes, using any of the following modes:

- **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)

- **distribution to the public** in hard copies, in electronic or digital format, on the internet including social networks, as a downloadable or non-downloadable file

- **editing** or **redrafting** (including shortening, summarising, changing, correcting, cutting, inserting elements (e.g. meta-data, legends or other graphic, visual, audio or text elements extracting parts (e.g. audio or video files), dividing into parts or use in a compilation

- **translation** (including inserting subtitles/dubbing) in all official languages of EU

- **storage** in paper, electronic or other form

- **archiving** in line with applicable document-management rules

- the right to authorise **third parties** to act on its behalf or sub-license to third parties, including if there is licensed background, any of the rights or modes of exploitation set out in this provision

- **processing**, analysing, aggregating the results and **producing derivative works**

- **disseminating** the results in widely accessible databases or indexes (such as through ‘open access’ or ‘open data’ portals or similar repositories, whether free of charge or not.

The beneficiaries must ensure these rights of use for the whole duration they are protected by industrial or intellectual property rights.

If results 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).

COMMUNICATION, DISSEMINATION AND VISIBILITY (— ARTICLE 17)

Communication and dissemination plan

The beneficiaries must provide a detailed communication and dissemination plan, setting out the objectives, key messaging, target audiences, communication channels, social media plan, planned budget and relevant indicators for monitoring and evaluation.

Additional communication and dissemination activities

The beneficiaries must engage in the following additional communication and dissemination activities:

- **present the project** (including project summary, coordinator contact details, list of participants, European flag and funding statement and special logo and project results) on the beneficiaries' **websites** or **social media accounts**

- for actions involving equipment, infrastructure or works, display as soon as the work on the action starts a **printed or electronic sign** of appropriate size, with European flag and funding statement and special logo

- upload the public **project results** to the LIFE Project Results platform, available through the Funding & Tenders Portal .

Special logos

Communication activities and infrastructure, equipment or major results funded by the grant must moreover display the following logo:

- the LIFE Programme logo

and

- for projects in Natura 2000 sites or contributing to the integrity of Natura 2020 network: the Natura 2000 logo

SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)

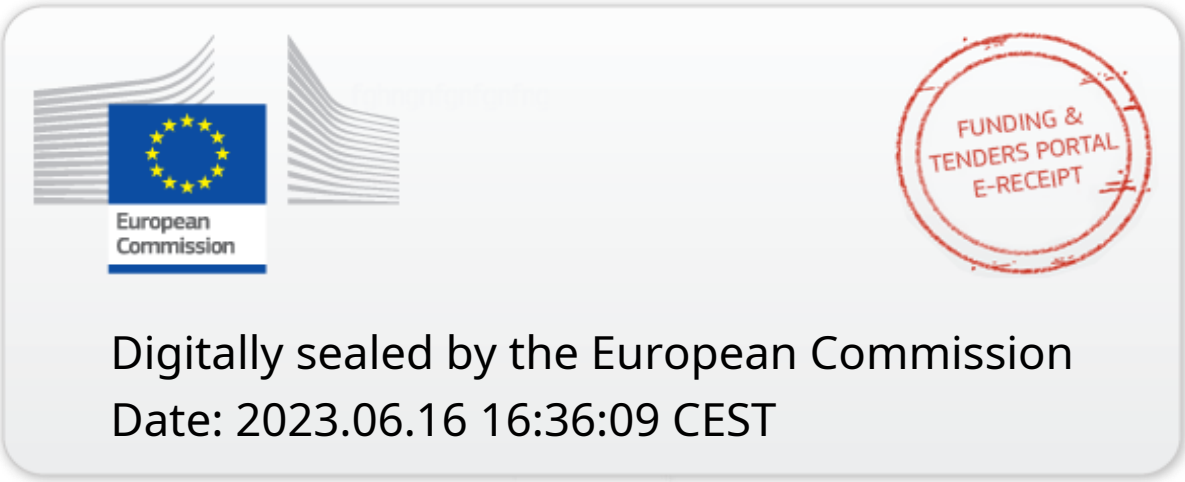
Durability

Unless exempted by the granting authority, beneficiaries of Standard Action Projects, Strategic Nature Projects and Strategic Integrated Projects must commit to continue to use and maintain after the end of the action equipment bought and eligible at full costs, for activities pursuing the action's objectives. Such equipment must be used for these purposes — for at least five years after the end of the action (see Data Sheet, Point 1) or until the end of its economic lifespan (i.e. until it has been fully depreciated) — whichever is earlier.

Specific rules for blending operations

When implementing blending operations, the beneficiaries acknowledge and accept that:

- the grant depends on the approved financing from the Implementing Partner and/or public or private investors for the project
- they must inform the granting authority both about the approval for financing and the financial close — within 15 days
- the payment deadline for the first prefinancing is automatically suspended until the granting authority is informed about the approval for financing
- both actions will be managed and monitored in parallel and in close coordination with the Implementing Partner, in particular:
    - all information, data and documents (including the due diligence by the Implementing Partner and the signed agreement) may be exchanged and may be relied on for the management of the other action (if needed)
    - issues in one action may impact the other (e.g. suspension or termination in one action may lead to suspension also of the other action; termination of the grant will normally suspend and exit from further financing and vice versa, etc.)
- the granting authority may disclose confidential information also to the Implementing Partner.



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