cities2030

D7.4 Innovation and Intellectual Property Management Plan and Reporting

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Executive Summary

The management of innovation and intellectual property is a matter of great concern in the EU socioeconomics and it is thus thoroughly regulated and monitored, both at a national level and within the European Union. At the same time, innovation and intellectual property rights are regulated and monitored by economic entities, organizations, and institutions that operate in the European Union. This whole process of regulation and monitoring aims at ensuring responsible innovation and intellectual property for all players involved in the European socioeconomic systems.

D7.4 Innovation and Intellectual Property Management Plan and Reporting represents a comprehensive collection of instruments to assist in the effective protection of the innovation frameworks developed by the project (Cities2030, Grant Agreement 101000640). The purpose of *D7.4 Innovation and Intellectual Property Management Plan and Reporting* lies in introducing the principles, values, and objectives of the Cities2030 project to encourage, assess, and monitor innovation and intellectual property management as well. Concurrently, the Innovation and Intellectual Management Plan aims at ensuring the wide accessibility and availability of all outcomes produced by the project.

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Abbreviations

Cities2030	Project Cities2030
CRFS	Cities and Regions Food Systems
D7.4	Deliverable 7.4
ID	Innovation Dissemination
IE	Innovation Exploitation
IIPM	Innovation and Intellectual Property Management
IP	Intellectual property
IPRs	Intellectual Property Rights
WP	Work Package

1. Introduction

1.1 The Cities2030 project

Cities2030 aims to future-proof an effective cities and regions food system (CRFS) via a connected structure centred on the citizen, built on trust, with partners and actors from the entire CRFS ecosystem, from farm to fork. The project refers to the Milan Urban Food Policy Pact (MUFPP) for good practices, framework indicators, policies, and innovation pathways, and it further proposes a larger monitoring indicator framework that includes practices of many more key experts' bodies. For 4 years, the consortium has been and will be committed to working towards the transformation and restructuring of the way systems produce, transport and supply, recycle and reuse food in the 21st century. Through its innovative approach, Cities2030 has the opportunity to engage researchers, entrepreneurs, experts, civil society leaders, cities and regions, and many more actors in the CRFS arena.
Cities2030 develops a lasting digital platform for data driven CRFS management that is based on blockchain technology and a series of proactive instruments, such as Policy and Living Labs, assisting cities and regions with developing integrated, sustainable, and safe urban food system policies and strategies. It also engages the CRFS community in the development of solutions for removing barriers and holdups in the adoption of digital technologies. Moreover, Cities2030 aims at designing a proactive roadmap to support the transformation of CRFS, and at establishing Policy and Living Labs across pan-European countries. Overall, Cities2030 proposes a novel food system management that enables the dynamic coordination of complex interconnected sub-systems and connects CRFS actors across the food supply chain. It contributes to the UN's Food Systems Dialogues (FSD), fosters cross-sectoral synergies to transform CRFS, and uptakes a set of key learnings and evidence-based practices generated by the FSD.

1.2 Main objectives and goals of the *D7.4 Innovation and Intellectual Property Management Plan and Reporting*

According to the Cities2030 Grant Agreement, *D7.4 Innovation and Intellectual Management Plan and Reporting* represents a comprehensive collection of instruments to assist in the effective protection of the innovation frameworks developed by the project.
This deliverable defines and analyses the concept of innovation, together with co-creation and co-innovation, focusing on innovation in the context of the Cities2030 project and elaborating on Cities2030 innovation management; it explains the notion of intellectual property and provides a thorough description of the main international, European and Cities2030 framework for the protection of original works and the legal rights of the authors of such works; it approaches innovation and intellectual property management in the context of Cities2030; it clarifies a series of concepts relevant to IPR management and reporting within the project.

2. Innovation and Intellectual Property

2.1 Innovation

2.1.1 What is Innovation

Definitions and Analyses

Innovation is a process through which concepts, ideas, methods, and technologies are put into effect for developing novel and value-add ideas, methods, and technologies within a system. It is based on heuristic actions largely related to creativity and discovery, collaborative actions (co-creation for identifying issues within a system), and strategic actions (for implementing the innovation results). Innovation is one of the fundamental concepts on which our contemporary society rests. The Cities2030 project is considering the co-creation and co-innovation functions of innovation, without disregarding the efficient and responsible management of the innovation process and its results.

Co-creation and co-innovation

Co-innovation is the combination of collaborative, complementary, and coordinated innovation (Bitzer 2015), and, in view of the Cities2030 philosophy, we believe it is important to underline the 3 Cs of Co-innovation. "*Collaborative* refers to the multi-actor character of the innovation process, where each actor brings in specific knowledge and resources. *Complementary* indicates the smart combination of technological, organizational, and institutional innovation. *Coordinated* draws attention to the importance of chain-wide adjustments and changes to make innovation in one stage of the chain a success." (Bitzer 2015)

On the other side, we cannot disregard that one of the most interesting debates on the matter of innovation impact is related to the question of whether there are risks or no risks associated with innovation. In other words, each innovation has to take into account the positive effects and possible negative effects, since "there is always the probability that innovations have unforeseen consequences" (Lubberink 2017). Accordingly, innovation potential relates to the benefits brought by innovation within a socioeconomic system. Thus, on the other side, innovation capacity refers to enhancing innovation capacity for encouraging and favouring other innovations.

Innovation impact in Cities2030 project

To maximize impact, an exploitation campaign would be more appropriate where the dissemination of innovation could be made according to a well-designed plan in line with the particular nature of innovation and the necessities of direct or indirect beneficiaries. Most models of good practice suggest integrated campaigns of exploitation and dissemination within a Communication, Exploitation, and Dissemination Plan.

Innovation Dissemination (ID) implies the dissemination of innovation in academic, economic, or administrative communities and the general public as well. Innovation Dissemination is commonly achieved through the following: publications in academic issues or volumes as well as of popular science

articles or books; reports made available to the administration, governance, and business community; white papers, strategies, policies, or models of good practices.

Innovation Dissemination can also use social media apps as popularisation tools. LinkedIn, Research Gate, and Acad.edu are among the widely used applications for Innovation Dissemination. Nevertheless, more popular apps such as Facebook, Twitter, YouTube, and Instagram can be also used. Certain social apps are usually avoided due to their low credibility (for instance, Tik Tok). Moreover, a creative approach to dissemination campaigns could bring great benefits and make resourceful use of less serious social media apps, yet of high potential, especially for the general public up to 25 years old.

2.1.2 Technology readiness levels (TRL)

Technology readiness levels (TRL) is a key conceptual tool of innovation developed by NASA in 1970 (Heder, 2017) that depicts the stages and maturity degree of a process in terms of innovation. It has grown into a standard instrument since, although it involves certain modifications depending on the system or culture where it is applied. In the Cities2030 project, we will use the following codes for defining different degrees of TRL, as agreed by the European Commission for the HORIZON 2020 projects:

TRL 1 – Basic principles observed
TRL 2 – Technology concept formulated
TRL 3 – Experimental proof of concept
TRL 4 – Technology validated in lab
TRL 5 – Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 6 – Technology demonstrated in a relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 7 – System prototype demonstration in operational environment
TRL 8 – System complete and qualified
TRL 9 – Actual system proven in an operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

2.1.3 Drivers and Catalysts for Innovation

In the Cities2030 project, the key drivers are stakeholders coming from the business, administrative environment, academia, and civil society as well (detailed definitions are in 4.Annex - Concepts). The main catalysts for innovation are living and policy labs, identified as co-creation and innovation hubs in food systems (detailed definitions are 4.Annex - Concepts).

Types of Stakeholders in the Cities2030 project

According to the Grant Agreement, the Cities2030 project engages agents and stakeholders in the food system arena. Stakeholders, depending on their type of enterprise in the food systems, are actors, agents, and brokers. Cities2030 project designs and implements engagement activities to gather insight

provided by agents from the food system arena, including the unorganized public (consumers) to better understand the related landscape and initiate the project's synergies action plan. Active participants are distributed in 19 partner countries. Engagement activities included field events in each selected partner's country and meetings, interviews with questionnaires, small-scale dynamic workshops for awareness-raising, multiple stakeholder technical workshops, and SME/Industry site visits to train and prepare participants for CRFS developments (Cities2030 Grant Agreement).

Innovation actors in the food system are those stakeholders who maintain the stability of the system, and thus embody the resilience of the system against the change risks of the system's particular nature.

Innovation agents in the food system are identified as those stakeholders who, through their actions, change the systems by either innovation or dissent from certain rules or patterns of the system.

Innovation brokers in the food system are defined as those stakeholders who facilitate the transfer of knowledge and innovation in the civil society, business environment, or administration. They participate in the innovation transformation process for added social and economic value.

The main catalysts within the Cities2030 project

According to the Grant Agreement, Cities2030 acknowledges the definition of the anticipated policy and living labs as "orchestrators of open innovation processes focusing on co-creation of innovations in real-world contexts by involving multiple stakeholders with the objective to generate sustainable value for all stakeholders focusing in particular on the end-users". (Malmberg 2017) At the same time, policy and living labs develop in synergy together with back-to-back examination processes and life cycle assessments.

The European Network of Living Labs (ENoLL) defines Living Labs (LL) as user-centred, open innovation ecosystems based on a systematic user co-creation approach, integrating research and innovation processes in real-life communities and settings. (De Marchi 2021)

According to De Marchi et al. Policy labs (PL) is a less used concept, however similar to living labs are designed to build a coalition through engaging diverse communities, "to tackle complex societal problems, using network-centred governance that focuses more on promoting, enabling and partnering and is characterized by a shared vision, cooperation, flexibility, and continuous learning" (FIT4FOOD2030 2020).

2.1.4 What is innovation in the philosophy of the Cities2030 project

As mentioned above, the innovation hubs in the Cities2030 project are Living and Policy Labs. According to the "CRFS lab Prototyping", "CRFS Labs provide a co-innovative, user-centred, open and collaborative innovation ecosystem. Within the Cities2030 project, the innovation is used in the most comprehensive way applying to any innovative or already existing product, service, approach, policy, process, mechanism, or system that is currently implemented with successful results to enhance and contribute to the sustainability of urban food systems." (De Marchi 2021)

2.1.5 How can the Cities2030 project encourage innovation in urban food systems

Innovation, in terms of

- Encouraging the methodologies of identification of the issues inside food systems, based on the Problem-Based Learning and Systems Thinking approach as detailed in the report D3.3 System Thinking Methodology (Löytty 2021).
- Encouraging innovation through co-creation processes and raising the degree of stakeholder involvement in the urban food system.
- Stimulating innovation through wide-scale analysis of the models of good practices. This approach is facilitated by a large number of participants within the Cities2030 project, the sociocultural diversity of the urban food systems involved in the project, and the high degree of interdisciplinarity of the project activities.

2.1.6 Methods, drivers, and catalysts in Cities2030 innovation management

In the Cities2030 project, at the core of the philosophy of innovation management, lie the principles of a systemic approach to innovation and knowledge sharing. The reason behind this approach rests with the fact that the Cities2030 project places a strong emphasis on the co-creation and co-innovation processes, as well as on the active and collaborative involvement of all stakeholders from CRFS. At the same time, the Cities2030 project focuses on increasing the resilience of the players from the urban food systems (in their capacity as agents contributing to the resilience of CRFS) and encouraging the agents from the same systems (in their capacity as agents of change necessary for the sustainable development of CRFS).
To achieve the above-mentioned objectives, the Cities2030 project aims to:

- Try to acquire knowledge and understanding of partners' urban food systems (WP3)
- Run activities to build capacity on urban food system issues at the local level: T4.1 and T5.1
- Engage local policymakers to open avenues and enable transformation (WP4)
- Design a structure and roadmap to co-create data-driven innovations, best practices, and improvement (T5.2 and Extended Innovation Pattern)
- Use experimental procedure (Ideate- Build-Monitor and Learn) that maximizes the potential to deliver innovations for capitalization (Task 5.3 and Lean Startup)

Among the methods employed by Policy and Living Labs, the following stand out: Digital solutions that change the working procedures, Impact assessment, Exploitation planning, Problem-Based Learning, Systems Thinking.

2.1.7 Innovation and Knowledge Sharing Management

Innovation and knowledge sharing management in the Cities2030 project is defined within the GA, which provides guidelines for project beneficiaries to access information and results, securing, at the same time, the protection of intellectual property.

Accordingly, in article 29.2 in the Cities2030 Project Grant Agreement, it is specified the following: **Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results** (insights on 4.Annex – Concepts)**.**
In particular, it must:

A. as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications; Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.
B. ensure open access to the deposited publication — via the repository — at the latest:
    a. on publication, if an electronic version is available for free via the publisher or
    b. within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.
C. ensure open access — via the repository — to the bibliographic metadata that identifies the deposited publication. The bibliographic metadata must be in a standard format and must include all of the following:
    a. the terms "European Union (EU)" and "Horizon 2020";
    b. the name of the action, acronym, and grant number;
    c. the publication date, and length of embargo period if applicable, and
    d. a persistent identifier.

At the same time, in article 29.3 of the same Grant Agreement, it is stated that regarding the digital research data generated in the action ('data'), the beneficiaries must **deposit it in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user** — the following:

a. the data, including associated metadata, needed to validate the results presented in scientific publications, as soon as possible;
b. not applicable;
c. other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan';
d. provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves)

2.2 Intellectual Property (IP)

2.2.1 What is Intellectual Property

According to the Stanford Encyclopaedia of Philosophy, "Intellectual property is generally characterized as non-physical property that is the product of original thought. Typically, rights do not surround the abstract non-physical entity; rather, intellectual property rights surround the control of physical manifestations or expressions of ideas. Intellectual property law protects a content-creator interest in its ideas by assigning and enforcing legal rights to produce and control physical instantiations of those ideas."

Intellectual Property refers to:

- Products of the mind
- Products of research, experimentation, and creativity

Intellectual Property, just like Physical Property, can be a valuable asset. Similarly, to physical property, intellectual property is an asset that can be traded.

Intellectual Property Rights are rights of the persons or institutions that produce the following:

- Patents (technical inventions)
- Copyright (Software, Written works, Engineering drawings, etc)
- Design Rights (appearance)
- Database Rights (creation and arrangement of data)
- Trademarks
- Plant Breeders Rights
- Utility Models

Detailed definitions are 4.Annex - Concepts

The protection of original works and the legal rights of the authors of such works have been a major field of concern both at the international and at the European Union level.

Overview of the relevant international legislation

At the international level, the most relevant and covering regulations in this field are to be found in the Berne Convention for the Protection of Literary and Artistic Works (September 9, 1886, completed and revised several times, and amended on September 28, 1979), the Universal Copyright Convention (1952), The Treaty on Intellectual Property in Respect of Integrated Circuits (1989), the World Intellectual Property Organization Copyright Treaty – WIPO Copyright Treaty or WCT (1996), as well as in WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), signed in 1994 and in force since 1995.

The Berne Convention, currently ratified by more than 180 states of the world, aims to protect, according to its Preamble, "in as effective and uniform a manner as possible", the rights of authors in their literary and artistic works. The expression "literary and artistic works", in the text of the Convention, includes "every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expressions, such as books, pamphlets, and other writings; lectures, addresses, sermons and other works of the same nature; (…) works of drawing, painting, architecture, sculpture (…); photographic works to which are assimilated works expressed by a process analogous to photography; works of applied art; illustrations, maps, plans, sketches and three-dimensional works relative to geography, topography, architecture or science" (Article 1). It remains, however, to be specified in the domestic legislation of the states that have ratified the Convention whether works in general or any specified categories of works will not benefit from protection unless they have been fixed in some material form (Article 2).

The protection provided by the Berne Convention, according to Article 3, applies to authors who are nationals of one of the ratifying countries, for their works, whether published or not, and also to authors who are not nationals of one of these countries, if their works are first published in one of these countries, or simultaneously in a country that did not and one that did ratify the Convention. Moreover, protection is granted to authors who are not nationals of one of the ratifying countries, but who have their habitual residence in one of them. The Convention also clarifies what is required for a work to be considered "published", namely that it has been published with the consent of its authors, regardless of the means of manufacture of the copies, "provided that the availability of such copies has been such as to satisfy the reasonable requirements of the public, having regard to the nature of the work". The Convention doesn't consider certain acts as constituting "publication", among which the communication by wire or the broadcasting of literary or artistic works (Article 3).

Certain fundamental elements of the Berne Convention's system of protection are to be found in Article 5, regarding rights guaranteed. According to par. (1), "authors shall enjoy, in respect of works for which they are protected under this Convention, in countries (…) other than the country of origin, the rights which their respective laws do now or may hereafter grant to their nationals, as well as the rights specially granted by this Convention" (principle of national treatment). Also, as stated in par. (2), the enjoyment and the exercise of these rights are not to be not be subjected to any formality (the principle that a work is protected purely by virtue of its creation). Such enjoyment and such exercise are to be independent of the existence of protection in the country of origin of the work – consequently, apart from the provisions of the Convention, the extent of protection, as well as the means of redress afforded to the author to protect his rights, are to be governed exclusively by the laws of the country where protection is claimed. In the country of origin, according to par. (3), protection is governed by domestic law. When the author is not, however, a national of the country of origin of the work for which he is protected, he is to enjoy in that country the same rights as national authors.

The Convention also stipulates what are the moral rights of authors, namely, to claim authorship, as well as to object to certain modifications and other derogatory actions. In this sense, independently of

the author's economic rights, and even after the transfer of the said rights, the author is to have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honour or reputation. These rights are to be maintained after the death of the author, at least until the expiry of the economic rights (Article 6bis).

The term of protection granted by this Convention is represented by the life of the author and fifty years after his/her death. In the case of joint authorship, the same term applies, and it is to be calculated from the death of the last surviving author (Articles 7 and 7bis). The authors are to enjoy, within the term of protection, the exclusive right of making and of authorizing the translation of their works (Article 8). They also have the exclusive right of authorizing the reproduction of these works, in any manner or form (Article 9). The authors also enjoy the exclusive right of authorizing the broadcasting of their works or the communication thereof to the public by any other means of wireless diffusion of signs, sounds, or images (Article 11bis), as well as the exclusive right of authorizing adaptations, arrangements and other alterations of their works (Article 12).

According to the Berne Convention, there are also certain free uses of works that are allowed. For instance, it is permissible to make quotations from a work that has already been lawfully made available to the public, provided that their making is compatible with fair practice, and their extent does not exceed that justified by the purpose, including quotations from newspaper articles and periodicals in the form of press summaries. In such a case, mention is to be made of the source, and of the name of the author (if it appears thereon) (Article 10).

In what concerns the right to enforce the protected rights, the Convention states that for the author to be regarded as such, and consequently be entitled to institute infringement proceedings in the countries that have ratified the Convention, it is sufficient for his name to appear on the work in the usual manner – even if this name is a pseudonym, where the pseudonym adopted by the author leaves no doubt as to his identity (Article 15). The states parties to the Berne Convention have an obligation to adopt, in accordance with their constitutions, the measures necessary to ensure the application of this Convention. According to Article 36, it is understood that, at the time a country becomes bound by this Convention, it will be in a position under its domestic law to give effect to its provisions.

International protection of the rights of authors or creators of intellectual work is also granted by the Universal Copyright Convention (UCC), developed within the UNESCO framework and adopted in 1952. The Convention undertakes to provide for the adequate and effective protection of the rights of authors and other copyright proprietors in literary, scientific, and artistic works (Article I) and also functions on the principle of national treatment (Article II). Copyright, according to Article V, includes the exclusive right of the author to make, publish, and authorize the making and publication of translations of works protected under the Convention. Essentially, the UCC took notice of the fact that certain countries (notably, the USA) did not accept at the time the protection of authors without the fulfilment of certain formalities (registration), as the Berne Convention provides (Kéréver, n.d.). Accordingly, its rules state

that the formalities required by the national law of a contracting state as a condition of copyright (deposit, registration, notice, notarial certificates, payment of fees, or manufacture or publication in that contracting state) are to be considered satisfied if all the copies of a work originating in another contracting state bear the symbol ©, accompanied by the name of the copyright proprietor and the year of first publication placed in such manner and location as to give reasonable notice of claim of copyright (Article III.1, Paris 1971 revised edition).

Within the United Nations framework was also established in 1967, the World International Property Organization (WIPO), which currently has 193 member states. WIPO adopted a series of treaties, such as the Treaty on Intellectual Property in Respect of Integrated Circuits (1989), the WIPO Copyright Treaty - WCT (1996), and the WIPO Performances and Phonograms Treaty –WPPT (1996) – the latter two being known as the 'Internet treaties', with an aim to respond to the advances in information technology noticeable since the adoption of the previous conventions.

Treaty on Intellectual Property in Respect of Integrated Circuits (1989) aims to provide intellectual property protection in respect of layout-designs (topographies), as stated in Article 3(1)(a), and defines such "layout-design (topography)" as "the three-dimensional disposition, however, expressed, of the elements, at least one of which is an active element, and of some or all of the interconnections of an integrated circuit, or such a three-dimensional disposition prepared for an integrated circuit intended for manufacture" (Article 2ii) . By "integrated circuit", the treaty means "a product, in its final form or an intermediate form, in which the elements, at least one of which is an active element, and some or all of the interconnections are integrally formed in and/or on a piece of material and which is intended to perform an electronic function" (Article 2i). The right of the holder of the right in respect of an integrated circuit applies whether or not the integrated circuit is incorporated in an article, as provided in Article 3(1)(b). The treaty introduces in this field a requirement of originality, stating that the obligation to secure intellectual property protection in respect of layout designs applies to layout designs (topographies) that are original in the sense that they are the result of their creators' own intellectual effort and are not commonplace among creators of layout-designs (topographies) and manufacturers of integrated circuits at the time of their creation. A layout design (topography) that consists of a combination of elements and interconnections that are commonplace is to be protected only if the combination, taken as a whole, fulfills the requirement of originality, according to Article 3(2). The treaty also functions on the principle of national treatment (Article 5) and shows which acts are considered unlawful if performed without the authorization of the holder of the right, as stated in Article 6(1). These are: (i) the act of reproducing, whether by incorporation in an integrated circuit or otherwise, a protected layout-design (topography) in its entirety or any part thereof, except the act of reproducing any part that does not comply with the requirement of originality referred to in Article 3(2); and (ii) the act of importing, selling or otherwise distributing for commercial purposes a protected layout-design (topography) or an integrated circuit in which a protected layout-design (topography) is incorporated. The duration of the protection provided is at least eight years (Article 8).

The WIPO Copyright Treaty (WCT) has over 100 contracting parties and it regards the protection of works and the rights of their authors in the digital field. The WCT is a special agreement under the Berne Convention, and it is clearly stated that no obligations under this treaty are to derogate from the existing obligations that the contracting parties have to each other under the Berne Convention (Article 1). The WCT clarifies that copyright protection extends to expressions, and not to ideas, procedures, methods of operation, or mathematical concepts as such (Article 2). It also stipulates the protection of computer programs and compilations of data (databases). In this sense, it states that computer programs are protected as literary works within the meaning of Article 2 of the Berne Convention. Such protection applies to computer programs, whatever may be the mode or form of their expression (Article 4). Also, it provides that "compilations of data or other material, in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation" (Article 5).

According to the WCT, in addition to the rights recognized by the Berne Convention, all authors of literary and artistic works are to enjoy the right of distribution, namely the exclusive right of authorizing the making available to the public of the original and copies of their works through sale or other transfer of ownership (Article 6). They also enjoy the right of communication to the public, namely the exclusive right of authorizing any communication to the public of their works, by wire or wireless means, including the making available to the public their works in such a way that members of the public may access these works from a place and at a time individually chosen by them (Article 8). Authors of certain types of work, among which authors of computer programs, also have the exclusive right of authorizing commercial rental to the public of the originals or copies of their works (Article 7).

International protection of intellectual property rights is also granted within the World Trade Organization, most notably through the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), signed in 1994 and in force since 1995. According to the World Trade Organization ("Overview: the TRIPS Agreement"), the TRIPS Agreement is, to date, the most comprehensive multilateral agreement on intellectual property. TRIPS covers copyright and related rights, trademarks, including service marks, geographical indications, including appellations of origin, industrial designs, patents, including the protection of new varieties of plants, the layout-designs of integrated circuits, as well as undisclosed information including trade secrets and test data. It provides the minimum standards of protection to be granted by each member country in these fields and also states that nothing in Parts I to IV of the TRIPS Agreement is to derogate from existing obligations that members may have to each other under other conventions, including expressly the Berne Convention (1971) and the Treaty on Intellectual Property in Respect of Integrated Circuits (1989). The TRIPS Agreement also functions on the principle of national treatment (Article 3), in the sense that each member is to accord to the nationals of other members treatment that is no less favourable than that it accords to its own nationals with regard to the protection of intellectual property, subject to the exceptions already provided in the other aforementioned conventions.

The TRIPS Agreement specifies the standards concerning the availability, scope, and use of intellectual property rights, and in this sense deals specifically, in the first section of its Part II, with copyright and related rights. In this field, the TRIPS Agreement clearly states that its members are to comply with Articles 1 through 21 of the Berne Convention (1971) and the Appendix thereto, except for the moral rights conferred under Article 6bis of the Berne Convention or the rights derived therefrom. It also states that copyright protection is to extend to expressions and not to ideas, procedures, methods of operation, or mathematical concepts as such (Article 9). The Agreement also states that computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971), and that compilations of data or other material, whether in machine-readable or another form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are to be protected as such. Such protection, which does not extend to the data or material itself, is to be without prejudice to any copyright subsisting in the data or material itself (Article 10). Regarding rental rights, the Agreement states that, in respect of at least computer programs and cinematographic works, a member shall provide authors and their successors in title the right to authorize or to prohibit the commercial rental to the public of originals or copies of their copyright works. In respect of computer programs, this obligation does not apply to rentals where the program itself is not the essential object of the rental (Article 11).

In what concerns the term of protection, it is provided that, whenever the term of protection of a work, other than a photographic work or a work of applied art, is calculated on a basis other than the life of a natural person, such term is to be no less than 50 years from the end of the calendar year of authorized publication, or, failing such authorized publication within 50 years from the making of the work, 50 years from the end of the calendar year of making (Article 12). As far as limitations and exceptions to these standards are concerned, the TRIPS Agreement states that members shall confine such limitations or exceptions to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder (Article 13).

The European Union and Cities2030 framework

In the European Union framework, both international and specific provisions apply in this field. On the one hand, the provisions of international agreements in the area of copyright and related rights concluded by the Union, most notably the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and the WIPO Copyright Treaty, form an integral part of the Union legal order. European Union law should, insofar as possible, be interpreted in a manner that is consistent with international law. Regulation (EU) 2017/1128 on cross-border portability of online content services in the internal market, in its Preamble (7), expressly highlights this fact. On the other hand, within the EU various pieces of legislation have been adopted in this field in order to set certain harmonized standards and reduce national discrepancies. According to the European Commission, the overall goal of the EU harmonisation efforts is to enable copyright-protected goods and services to move freely within the internal market.

To this effect**, the rights in works protected by copyright and in subject-matter protected by related rights,** of high relevance for this project, have been harmonised, among others, by:

- Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, also known as the '**Database Directive'**, amended by Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC;
- Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, also known as the '**InfoSoc Directive'**;
- Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights, also known as '**IPRED**';
- Directive 2006/115/EC of the European Parliament and of the Council of 12 December 2006 on rental right and lending right and on certain rights related to copyright in the field of intellectual property, also known as the '**Rental and Lending Directive'**;
- Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, also known as the '**Software Directive'**, replacing the previous Council Directive 91/250/EEC on the legal protection of computer programs;
- Directive 2011/77/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 2006/116/EC on the term of protection of copyright and certain related rights, also known as the '**Term Directive'**;
- Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC, also known as the **'DSM Directive'**.

In Article 27.1 of the Cities2030 Project Grant Agreement, it is stipulated that: **Each beneficiary must examine the possibility of protecting its results and must adequately protect them — for an appropriate period and with appropriate territorial coverage — if**:

(a) the results can reasonably be expected to be commercially or industrially exploited and
(b) protecting them is possible, reasonable and justified (given the circumstances).

In the philosophy of the European Commission related to ownership and transfer of ownership, results belong to the partner who generated them. Yet, given the nature of collaborative projects, it is likely that several partners are involved in fostering project results. In this case "**joint ownership**" of results may arise for which you may want to determine certain provisions including those for a potential transfer of ownership in the Consortium Agreement (CA) or in a separate joint ownership agreement (detailed definitions are 4.Annex - Concepts).

2.3 Innovation and Intellectual Property Management (IIPM)

2.3.1 What is Innovation and Intellectual Property Management

As stated in the Grant Agreement, Innovation Management (IM) is a matter of great focus in Cities2030. The project generates IM processes, which offer participants the opportunity to co-create and cooperate with a common understanding of the market and technical challenges, goals, and processes. It aims to implement novel and creative ideas without disruption, and introduce new services, processes, mechanisms, or products and is therefore pivotal to Cities2030. The consortium acknowledges that participative cooperation is a paramount source of innovation and, as such, the project structure is designed to secure that all partners are actively and inclusively engaged in IM developments and that the knowledge obtained through participation in Cities2030 has an impact far beyond the project scope.

Task 7.5 in the Cities2030 Project refers to Innovation and Intellectual Property management. According to the Grant Agreement, Task 7.5 aims at structuring a framework for innovation and **Intellectual Property (IP) Management**; reporting, recording, and management of the innovations and related IP resulting from the project activities to ensure optimized use of results from innovation actions, with exploitation potential, during the project, and beyond its scope; effective monitoring and recording of all publications ensuring compliance with the terms of the project management and communication management, and ensuring appropriate measures are implemented for the protection of IP. The resulting IP will inform the formulation and update of the project exploitation plans.

To this end, *D7.5 Exploitable results and exploitation plans*, edition 1/3 outlines a procedure for collating, analyzing, and managing results, and planning the exploitation of results. The proposed procedure contains elements such as: the result owner's foreseen exploitation plan, the result owner's assessment of IPR, describing and profiling of results, partners' precise and informative exploitation plans that reflect the partner's profile, and partners' assessment of IPR. The project results and partners' exploitation plans are to be issued in three waves at deliverable D7.5 on project months M28, M38, and M47. The first wave covers the results achieved in months M1-M27, the second wave covers the results in months M1-M37, and the third wave covers the months M1-M47.

2.3.2 Innovation and Intellectual Property Management Plan

The Innovation and Intellectual Property Management Plan is considering the following key issues and components.

Key Issues

- Innovation Management
- IPR Management (including ownership)
- Exploitation Management

- Addressing Barriers/Obstacles (i.e. freedom to use)
- Standards/regulations
- Enhancing Innovation Capacity

Components

- Innovation management
- IPR Management
- Innovation potential
- Enhancing Innovation Capacity
- Integration of new knowledge
- Draft exploitation strategies and plans
- Contributions to the expected impacts of the call
- Barriers/Obstacles (i.e. patent/IPR search, standards)

The innovation and intellectual property management procedures aim to ensure the adequate protection of results, as defined in Article 26.1 of the Grant Agreement, namely, any output of the action, such as data, knowledge or information (detailed definitions are 4.Annex - Concepts), whatever its form or nature, whether it can be protected or not, that is generated in the action, as well as any rights attached to it.

The management of intellectual property in the Cities2030 Grant Agreement implies an obligation for beneficiaries that are universities or other public research organisations to take measures to implement the principles set out in Points 1 and 2 of the Code of Practice annexed to the *Commission Recommendation on the management of intellectual property in knowledge transfer activities*. The beneficiaries must ensure that researchers and third parties involved in the action are aware of them.

The beneficiaries must identify and agree on the background for the action, and they may exercise their access rights to such background under the conditions stipulated in Article 25 of the General Agreement.

When a result is obtained in the project, ownership must be clearly established, since results are owned by the beneficiary that generates them.

Also, the beneficiary that generates the result should recognize what type of work they have created, as well as whether it can be protected or not. The beneficiary is to decide on whether protection is due and recognize the applicable legal framework (national, international, and European legislation). The most appropriate means for IP protection (patenting, copyright, trademark protection, etc.) should be identified and applied, meaning that the beneficiary is to ensure that the products, scientific innovations, scientific works, and so on, generated within Cities2030, are legally protected.

According to Article 27.1 of the Grant Agreement, each beneficiary must examine the possibility of protecting its results and must adequately protect them — for an appropriate period and with appropriate territorial coverage — if:

(a) the results can reasonably be expected to be commercially or industrially exploited and

(b) protecting them is possible, reasonable and justified (given the circumstances).

When deciding on protection, the beneficiary must consider its own legitimate interests and the legitimate interests (especially commercial) of the other beneficiaries. If a beneficiary intends not to protect its results, to stop protecting them, or not seek an extension of protection, the Agency may — under certain conditions (see Article 26.4) — assume ownership to ensure their (continued) protection (Article 27.2).

According to Article 26.4.1 of the Grant Agreement, the Agency may — with the consent of the beneficiary concerned — assume ownership of results to protect them, if a beneficiary intends — up to four years after the period set out in Article 3 — to disseminate its results without protecting them, except in any of the following cases:

(a) the lack of protection is because protecting the results is not possible, reasonable or justified (given the circumstances)

(b) the lack of protection is because there is a lack of potential for commercial or industrial exploitation or

(c) the beneficiary intends to transfer the results to another beneficiary or third party established in an EU Member State or associated country, which will protect them.

Before the results are disseminated and unless any of the cases above under Points (a), (b) or (c) applies, the beneficiary must formally notify the Agency and at the same time inform it of any reasons for refusing consent. The beneficiary may refuse consent only if it can show that its legitimate interests would suffer significant harm.

Also, according to Article 26.4.2, The Agency may — with the consent of the beneficiary concerned — assume ownership of results to protect them, if a beneficiary intends — up to four years after the period set out in Article 3 — to stop protecting them or not to seek an extension of protection, except in any of the following cases:

(a) the protection is stopped because of a lack of potential for commercial or industrial exploitation;

(b) an extension would not be justified given the circumstances.

If a beneficiary intends not to protect its results, to stop protecting them, or not seek an extension of protection, the Agency may — under certain conditions (see Article 26.4) — assume ownership to ensure their (continued) protection (Article 27.2).

Attention needs to be paid, also, to the dissemination of results, since the Grant Agreement states that, unless it goes against their legitimate interests, each beneficiary must — as soon as possible — 'disseminate' its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium), which does not change the obligation to protect results in Article 27 (see, also, 2.1.7 in this deliverable).

2.3.3 Innovation and Intellectual Property Management Reporting

When beneficiaries report the results generated within the Cities2030 project, it is for them to include a brief description of the work accomplished/type of work that they produced. They also need to clearly specify the owner(s) of the result. Also, they need to specify whether the work needs to be legally

protected, and in what manner (applying for patents, copyright, trademarks, etc.), and should provide a brief description of the IPR strategy to be applied. *D7.5 Exploitable results and exploitation plans* includes the following possible options: Open, Industrial Secret, Patent, Copyright, Software license, Open Source, Creative Commons Licence, lesser General Public Licence, and B2B Agreement.

If applicable, the beneficiaries should also include in the results reporting a brief description of the steps they have already taken (or the time frame needed in case they haven't yet taken any steps) in the process of complying with the relevant legislation in order to achieve the protection of project results, as well as anticipated difficulties in the process (if any) and possible need of assistance.

3. Conclusions

On the matter of innovation, in terms of encouraging innovation within urban food systems, the Cities2030 project brings together representatives from all categories of stakeholders within these systems and makes available the latest tools for identifying problems and finding solutions, as well as a large database on models of good practices and collaborative solutions.

D7.4 Innovation and Intellectual Property Management Plan and Reporting does not have a normative or regulatory character within the Cities2030 project. The purpose of this deliverable is exclusively informative as a guiding support for the actions of innovations and intellectual property management.

4. Annex - Concepts

4.1 Types of knowledge

Background Knowledge: information, data, know-how, intellectual property, and any other type of knowledge (in either material or immaterial form) that are at the heart of the collaborative actions of innovation and knowledge sharing. Background knowledge is usually made available to the beneficiaries of the project and it is absolutely necessary for the implementation activities of the project.

Foreground Knowledge: information, data, know-how, and any other type of knowledge (in either material or immaterial form) that has been produced through the project implementation by one or more partners. The foreground knowledge rights are owned by the partner or partners that contributed to the making of it.

4.2 Access rights

Access rights: They represent the licenses and user rights for accessing the background and foreground knowledge. Access rights can vary when they are related to background or foreground knowledge: Background knowledge is usually made available to the beneficiaries of the project and it is absolutely necessary for the implementation activities of the project, while the foreground knowledge rights are owned by the partner or partners that contributed to the making of it.

Confidential information: In-house information in the project that cannot go public for various reasons related to either GDPR concerns or issues such as the protection of data on project management/ activities.

Public information: Open-access information addressing both the general public and all categories of project beneficiaries.

Open access: According to the European Commission, open access is the practice of providing online access to scientific information that is free of charge to the user and is reusable. The European Commission supports open access, specifically in its funding programs. Open access to scientific information in research and innovation refers to 2 main categories: (1) peer-reviewed scientific publications (primarily research articles published in academic journals) and (2) scientific research data: data underlying publications and/or other data (such as curated but unpublished datasets or raw data).

4.3 Ownership

Results ownership:

As stated in the Cities2030 Grant Agreement Article 26.1, results are owned by the beneficiary that generates them. 'Results' means any (tangible or intangible) output of the action such as data, knowledge, or information — whatever its form or nature, whether it can be protected or not — that is generated in the action, as well as any rights attached to it, including intellectual property rights.

Joint ownership:
As stated in the Cities2030 Grant Agreement Article 26.2, two or more beneficiaries own results jointly if they have jointly generated them and it is not possible to establish the respective contribution of each beneficiary or separate them for the purpose of applying for, obtaining, or maintaining their protection. The joint owners must agree (in writing) on the allocation and terms of the exercise of their joint ownership ('joint ownership agreement'), to ensure compliance with their obligations under the Grant Agreement. Unless otherwise agreed in the joint ownership agreement, each joint owner may grant non-exclusive licenses to third parties to exploit jointly-owned results (without any right to sub-license), if the other joint owners are given at least 45 days advance notice and fair and reasonable compensation. Once the results have been generated, joint owners may agree (in writing) to apply another regime than joint ownership (such as, for instance, transfer to a single owner with access rights for the others).

4.4 Instruments for protecting results

Copyright: According to the World International Property Organization, copyright (or author's right) is a legal term used to describe the rights that creators have over their literary and artistic works. The expression "literary and artistic works", according to the Berne Convention for the Protection of Literary and Artistic Works, includes every production in the literary, scientific, and artistic domain, whatever may be the mode or form of its expression, among which books and other writings, lectures, addresses and so on. In broad terms, copyright includes both moral rights, such as the right to claim authorship of a work and the right to oppose changes to a work that could harm the creator's reputation, and economic rights, such as the right to authorize or prevent certain uses in relation to a work or to receive remuneration for the use of its work (WIPO, "Copyright"). According to Article 2 of the WIPO Copyright Treaty, copyright protection extends to expressions and not to ideas, procedures, methods of operation, or mathematical concepts as such.

Patents: A patent is the granting of a property right by a sovereign authority to an inventor. This grant provides the inventor exclusive rights to the patented process, design, or invention for a designated period in exchange for a comprehensive disclosure of the invention. (Investopia.com)

Trademark: According to the European Union Intellectual Property Office, trademarks are signs used in trade to identify products (EUIPO, "Trademark definition"). An EU trademark may consist of any signs, in particular words, including personal names, designs, letters, numerals, colours, the shape of goods or of the packaging of goods, or sounds, provided that such signs are capable of: (a) distinguishing the

goods or services of one undertaking from those of other undertakings; and (b) being represented on the Register of European Union trade marks ('the Register'), in a manner which enables the competent authorities and the public to determine the clear and precise subject matter of the protection afforded to its proprietor (Regulation (EU) 2017/1001 on the European Union trade mark, Article 4). Any natural or legal person, including authorities established under public law, may be the proprietor of an EU trademark (Regulation (EU) 2017/1001 on the European Union trademark, Article 5).

Trade secrets: According to the European Commission, trade secrets can include a vast amount of information and know-how that is not protectable or cannot be protected properly through patents such as

- early-stage inventions
- manufacturing processes
- lists of suppliers and clients.

4.5 Knowledge transfer

Direct beneficiaries: The direct beneficiaries of a project, also known as primary beneficiaries, are those beneficiaries directly targeted by the activities and impact of the project results. They are the core of the target group in the project (1), and they are encouraged to get actively involved in the project activities (2). They are the end line of the short information and dissemination chain for the project results.

Indirect beneficiaries: The indirect beneficiaries are the end line of a long information and dissemination chain for the project results. Also known as secondary beneficiaries, they represent persons or institutions that are not directly related to the project activities, yet they can be indirectly influenced by the activities run in the project. Most projects are not planned around indirect beneficiaries, yet the activities of a project also take into account the impact on indirect beneficiaries.

Dissemination of results: According to the Horizon 2020 Online Manual, dissemination means sharing research results with potential users - peers in the research field, industry, other commercial players, and policymakers). By sharing your research results with the rest of the scientific community, you are contributing to the progress of science in general.

Exploitation of results: Exploitation is the use of results for commercial purposes or in public policymaking (Horizon 2020 Online Manual).

Scientific publication: According to Wikipedia, in academic publishing, a scientific journal is a periodical publication intended to further the progress of science, usually by reporting new research.

4.6 Innovation drivers

Stakeholders: The Stakeholder in a social system is any interested active part in that system whether it is a natural person, a legal person, or a group. Stakeholders come from the business environment, administration, governance, civil society, and academia. They play a key role through their actions with impact upon the system, and their tacit knowledge within the system. This knowledge can be reactivated, structured, and modelled in the shape of support information, models, and strategies for innovation and intervention inside the system, which, in turn, can bring a significant contribution to the development of the system. Stakeholders, depending on their actions inside the system, can assume the role of actors, agents, or brokers.

System Actors: The Actor of a system is that type of stakeholder who is engaged in activities supporting the rules and structures of the system concerned. They participate in activities that grow or maintain the system's resilience.

System Agents: The agent of a system is that type of stakeholder who is engaged in activities that change the system. They exert pressure on the system's resilience to change, and they are also the main promoters of the system's innovation and transformation.

System Brokers: The brokers of a system are those stakeholders taking part in the knowledge transfer within the system. The knowledge transfer can be related to data, ideas, models of good practices, or any other type of knowledge produced by someone inside the system and passed on for application or implementation purposes by another entity of the system.

4.7 Innovation catalysts

Living Lab: Living Lab is a hub designed for running co-creation and innovation activities, developed with the stakeholders from a system. Living lab runs particular activities for identifying, analysing, debating, and coming up with solutions that provide real support for answering certain issues from a system. The activities in a Living lab mainly aim at facilitating knowledge transfer, encouraging good practices, and developing tools for raising collaboration, co-participation, and trust degree among the actors from the system concerned.

Policy Lab: Similar to the Living Lab, the Policy Lab is also a hub created for supporting co-creation and innovation activities, run with the stakeholders from a certain system. The only difference is that all activities aim at developing supporting instruments for public strategies and policies. The activities in a are mainly focused on developing concepts, ideas, methodologies, and technologies for creating data-driven policies and strategies that answer the issues of the system and contribute to the added-value processes.

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