

The graphic features a central orange circle with a white flower-like pattern. This is surrounded by three smaller circles (blue, green, and green) connected by curved lines. The entire graphic is set against a background of large, faint, overlapping circles in light blue, light green, and yellow, with a magnifying glass icon in the top right.

# ODECO

## Towards a sustainable Open Data ECOSystem

### D5.1

#### Models of allocating roles, tasks and responsibilities in open data ecosystems



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## Abbreviations

|            |                                                                    |
|------------|--------------------------------------------------------------------|
| D          | Deliverable                                                        |
| DoA        | ODECO Description of Actions                                       |
| ESR        | Early Stage Researcher                                             |
| ESRI       | Environmental Systems Research Institute, Inc                      |
| IAD        | Institutional Analysis and Design                                  |
| M          | Milestone                                                          |
| NGO        | Non-governmental organisations                                     |
| ODECO      | Open Data ECOsystem                                                |
| ODECO TW 5 | ODECO Training Week 5                                              |
| RACI       | Responsible, Accountable, Consulted, Informed – Hierarchy of tasks |
| T          | Task                                                               |
| WP         | Work Package                                                       |

| Nr                           | Partner                                      | Partner short name | Country                  |
|------------------------------|----------------------------------------------|--------------------|--------------------------|
| <b>Beneficiary</b>           |                                              |                    |                          |
| 1                            | Technische Universiteit Delft                | TU Delft           | Netherlands              |
| 2                            | Katholieke Universiteit Leuven               | KUL                | Belgium                  |
| 3                            | Centre National de la Recherche Scientifique | CNRS               | France                   |
| 4                            | Universidad de Zaragoza                      | UNIZAR             | Spain                    |
| 5                            | Panepistimio Aigaiou                         | UAEGEAN            | Greece                   |
| 6                            | Aalborg Universitet                          | AAU                | Denmark                  |
| 7                            | Università degli Studi di Camerino           | UNICAM             | Italy                    |
| 8                            | Farosnet S.A.                                | FAROSNET S.A.      | Greece                   |
| <b>Partner organisations</b> |                                              |                    |                          |
| 1                            | 7eData                                       | 7EDATA             | Spain                    |
| 2                            | Digitaal Vlaanderen                          | DV                 | Belgium                  |
| 3                            | City of Copenhagen                           | COP                | Denmark                  |
| 4                            | City of Rotterdam                            | RDAM               | Netherlands              |
| 5                            | CoC Playful Minds                            | CoC                | Denmark                  |
| 6                            | Derilinx                                     | DERI               | Ireland                  |
| 7                            | ESRI                                         | ESRI               | Netherlands              |
| 8                            | Maggioli S.p.A                               | MAG                | Italy                    |
| 9                            | National Centre of Geographic Information    | CNIG               | Spain                    |
| 10                           | Open Knowledge Belgium                       | OKB                | Belgium                  |
| 11                           | SWECO                                        | SWECO              | Netherlands              |
| 12                           | The government lab                           | GLAB               | United States of America |
| 13                           | Agency for Data Supply and Infrastructure    | ADSI               | Denmark                  |
| 14                           | GFOSS Open Technologies Alliance             | GFOSS              | Greece                   |
| 15                           | Inno3 Consulting                             | IC                 | France                   |
| 16                           | Regione Marche                               | RM                 | Italy                    |
| 17                           | Open Data Institute                          | ODI                | United Kingdom           |
| 18                           | Swedish National Archives                    | SwNA               | Sweden                   |

## 1 Executive summary

This Task 5.1 is focussed on the potential impact of different forms of collaborations (including public-private partnerships) to sustainably arrange the distribution of roles, tasks and resources in open data ecosystems. Building on previous ODECO research on governance of open data ecosystems and drawing from a participative workshop conducted during ODECO Training Week 5 held at Samos, Greece, this report summarises the distribution of roles, tasks and resources in four open data case-studies – the Breakthrough Open Data Project, beamm.brussels, CityLAB Berlin trees project, and Femicides in Europe. Each case-study serve as an illustrative model of collaboration between a public administration and one or more open data actor group. By applying the Institutional Analysis and Design Framework (a preferred tool for policy analysis) to each case-study, this report summarises a set of institutional factors that could be relevant for sustaining and replicating models of collaboration in other open data ecosystems. These institutional factors are:

- There should be continued focus on publication of open government datasets by public administration.
- Coordinating functions should be discharged by public administrations to bring together open data providers and open data users to openly discuss their needs. In some cases, such coordinating functions can be discharged by other non-governmental stakeholders as well.
- Partnerships should be formed between public administrations / international organisations and other civic open data user groups to co-develop open data initiatives, which can prompt contributions from other actors.
- Shared open infrastructures for publishing and use of data and information are important, including for non-governmental data holders.
- A strong interorganisational culture oriented towards effecting social and economic impact of open data in a participative manner is also useful.

## 2 Introduction

This Task 5.1 is focussed on the potential impact of different forms of collaborations (including public-private partnerships) to sustainably arrange the distribution of roles, tasks and resources in open data ecosystems.

According to the DoA, this task "will design and review different models of allocating roles, tasks and resources in open data ecosystems. ESR1 will identify different roles for actors to participate in the open data ecosystem and explore practices of participatory design to allow actors to actively participate in and contribute to the open data ecosystem. The design will build on the perspective of the eight actor groups: non-specialist data users (ESR1), local government (ESR6), journalists (ESR9), students (ESR10), NGOs (ESR11), central/regional government (ESR12), companies (ESR13), and data intermediaries (ESR15) as presented in the results of T2.1, T2.3, T3.3 and T4.3. CNRS (ESR4: forms of public-private partnerships), AAU (ESR6: local government perspective), KULEUVEN (ESR12: central government perspective) and UNICAM (ESR13: companies' perspective) will explore the potential and impact of different forms of public-private partnerships as a means to sustainably arrange for the distribution of roles and tasks in the ecosystem."

This report builds on previous ODECO research relating to open data governance – specifically reports prepared for Task 2.1 (Open Data User Needs: Seven Flavours), Task 2.3 (User needs from a governance perspective), Task 3.3 (Closing the cycle: Promoting open data users' contribution from a governance perspective) and Task 4.3 (An approach to steer the behaviour of non-government data holders towards open data from a governance perspective). Further, this report is focussed on eight actor groups: non-specialist data users, local government, journalists, students, NGOs, central/regional government, local government, and open data intermediaries.

In order to identify the different roles for actors to participate, we undertook a review of these previous ODECO outputs on open data governance that identified some roles, tasks and resources in open data ecosystems. We synthesised findings on the roles discharged by the identified open data actor groups in an open data ecosystem, and the types of value contributions made by these actor groups.

Then, using practices of participatory design, we designed and conducted a workshop at ODECO TW 5, in Samos (Greece). This workshop produced real-life examples of collaboration between open data actors' groups to create value from open data that serve as case-studies for this report. For each case-study, workshop participants identified specific tasks performed by each actor group, ranked these tasks in accordance with the degree of responsibility borne by each actor group, and identified governance instruments that facilitated the distribution of these tasks. This allowed us to identify the connections between the roles, tasks and resources, to find out if the knowledge had to be updated since the previous reports, to identify the various ways in which the actors group collaborate, and in which the resources are obtained and managed by those groups.

Finally, we used the Institutional Analysis and Design framework, a theoretical framework suitable to represent the relations between resources and communities' attributes, rules and patterns of interactions, in a version adapted to knowledge resources (Frischmann, Madison, & Strandburg, 2014). The choice of this analytical framework was discussed and validated during the kick-off meeting for this Task 5.1 (held on June 20, 2024), as allowing to both represent the dynamics, analyse and evaluate the case-studies contributed during the ODECO TW 5 at Samos as well as



identify the potential and impact of the different types of collaborations (including public-private partnerships). The Institutional Analysis and Design framework is suitable for policy analysis. It has been used for analysing and evaluating collaborations for sustainable resource management in the context of shared information resources.

We present some suggestions on institutional factors relevant for collaborations in open data ecosystems, which can aid in sustainable distribution of roles and tasks, as well as enable replicability of existing models of collaboration. In particular, we suggest five institutional factors to sustain collaborations and successfully govern open data ecosystems:

- There should be continued focus on publication of open government datasets by public administration.
- Coordinating functions should be discharged by public administrations to bring together open data providers and open data users to openly discuss their needs. In some cases, such coordinating functions can be discharged by other non-governmental stakeholders as well.
- Partnerships should be formed between public administrations / international organisations and other civic open data user groups to co-develop open data initiatives, which can prompt contributions from other actors.
- Shared open infrastructures for publishing and use of data and information are important, including for non-governmental data holders.
- A strong interorganisational culture oriented towards effecting social and economic impact of open data in a participative manner is also useful.

This report is part of Work Package 5 (Towards a Sustainable Open Data Ecosystem) that seeks to integrate all ODECO research until date towards design, policy and governance recommendations for sustainable open data ecosystems. This report for Task 5.1 outlines actor roles, tasks and responsibilities in open data ecosystems, and proposes a set of institutional factors that could aid in sustainable arrangement of these roles, tasks and responsibilities. These findings are grounded in the previous reports which had identified tasks, actors, resources and roles allocation, and have been updated with the contribution of the ESRs. This report, therefore, constitutes a gateway and an input designed to further feed into Task 5.2 on balancing and redistributing value in a sustainable open data ecosystem, and into Task 5.3 on the design of an open data ecosystem.

### 3 Methodology

We use the 'Institutional Analysis and Design Framework' as the analytical framework to assess and recommend models of collaboration in an open data ecosystem. This framework was originally developed to analyse factors of success and sustainability for the collaborative governance and production of shared resources (Ostrom, 1991), and a version adapted it to knowledge resources (Frischman, Strandburg and Madison 2014). It was selected because it is very versatile, and because it allows to represent attributes of communities, actors, resources, rules and actions, and to extract patterns of interaction and evaluative criteria. It also allows to distinguish open data as resources from open data ecosystems as situated actions involving actors. To apply this analytical framework to an open data ecosystem, we followed a three-part methodology: (1) literature review, (2) workshop, and (3) post-workshop data collection.

#### 3.1 Literature review

We conducted a literature review of previous ODECO deliverables on governance of open data ecosystems – specifically D2.1, D2.3, D3.3 and D4.3. The objective of this limited review was to synthesise and present an overview of contextual factors that influence collaborations between actors in open data ecosystems, in the view of extracting possible factors of success and sustainability.

Based on the DoA, this literature review focussed on 8 actors in open data ecosystems – local government, regional/national government, NGOs, companies, students, journalists, non-specialised users, and open data intermediaries.

This literature review yielded 7 general roles that are generally discharged by these actors in open data ecosystems – open data user, open data contributor, open data intermediary, regulator, community builder, open data advocacy/lobbying, and advisor/consultant to government.

Finally, the literature review also yielded a set of objectives or 'value contributions' made by these 8 actors. These are – generation of open data, improving quality of open data, creating technological innovations for the use of open data, create businesses through open data, create visualisations or knowledge from open data, identify social issues of concern, hold governments accountable, create products through open data, become informed citizens, seek transparency from public administrations, and provide fundings for open data initiatives.

#### 3.2 Workshop

We also conducted a workshop on August 30, 2024, during ODECO Training Week 5 in Samos, Greece. The workshop was designed to elicit real world cases of multistakeholder collaboration around open datasets. Two priorities were followed in designing the workshop: (1) eliciting the contribution of issue-experts, and (2) systematically listing the contributions and responsibilities of open data ecosystem actors. The objective of the workshop was to apply participative design approaches to the development of models of collaboration in open data ecosystems.



Figure 1: Collage of pictures from workshop conducted at ODECO TW 5, Samos

The workshop format is partly based on the “Open Data Game Jam” (Di Staso, 2024). The workshop started with an icebreaker meant for participants to get to know each other and move around the room. Then, participants were introduced to the ODECO task description (“design and review different models of allocating roles, tasks and resources in open data ecosystems”). In this regard, participants were presented with three sets of variables (actors, roles and types of value-contributions) developed from a review of previous ODECO deliverables that constituted the boundaries of brainstorming by the participants.

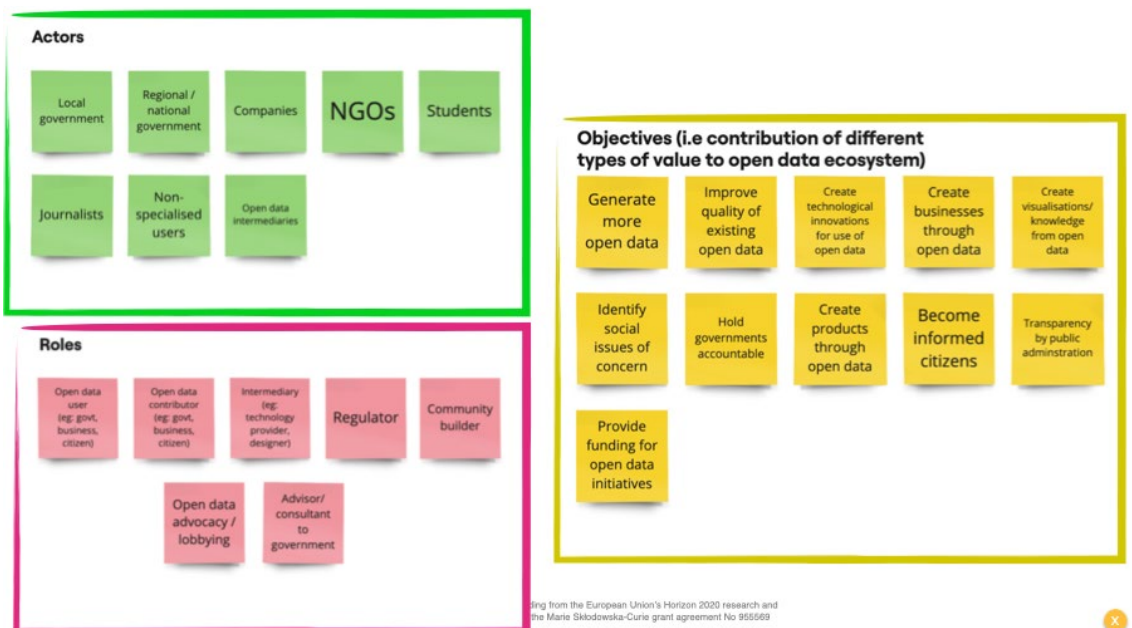


Figure 2: Screenshot of presentation at the workshop conducted at ODECO TW 5, Samos, showing the variables that participants had to work with

The participants were asked to combine these three variables to describe a real-life example of collaboration. Their example had to include: (i) at least 2 or more actors, (ii) at least 2 or more roles discharged by the actors, and (iii) at least one type of value contribution.

Participants were then introduced to a “pitch sheet”, to be filled individually or in a group, which combined these variables and guided the brainstorming of a real cases of open data collaboration. Participants filled out a brief description of their real-life example of collaboration in each pitch sheet.

We received the following five pitches shown in the table 1 below.

*Table 1: Pitches produced by participants at the workshop (see also Annex 1)*

| 1                                         | 2                                                                               | 3              | 4                     | 5                                           |
|-------------------------------------------|---------------------------------------------------------------------------------|----------------|-----------------------|---------------------------------------------|
| Geospatial NE<br>BREAKTHROUG<br>H PROJECT | Open Access Tax<br>Benefit Micro<br>Simulation<br>Model<br>(beamm.brussels<br>) | CityLAB Berlin | Femicides<br>EUROSTAT | Different b/w<br>refugees and<br>immigrants |
|                                           |                                                                                 |                |                       |                                             |

For this report, we selected the first 4 pitches and analyse them in more detail. We did not receive significant usable information from the workshop participants for pitch 5, nor did we receive any information during the post-workshop data collection.

After completing the “pitch sheets”, participants were asked to pick and choose any of the ideas presented, form a team, and then fill a responsibility assignment matrix (“RACI Table”) for each case-study. Filling the template for the RACI table involved listing the actors involved in the case-study, the tasks performed by each actor, and their level of involvement in each task. Participants had to rank the level of involvement across four categories:

- responsible (i.e. the actor who actually executes the task),
- accountable (i.e. the actor reviews/supervises the task),
- consulted (i.e. the actor provides input on the task), and/or
- informed (i.e. the actor who is kept in loop about the progress of the task).

Finally, participants were asked to fill a post-event survey.

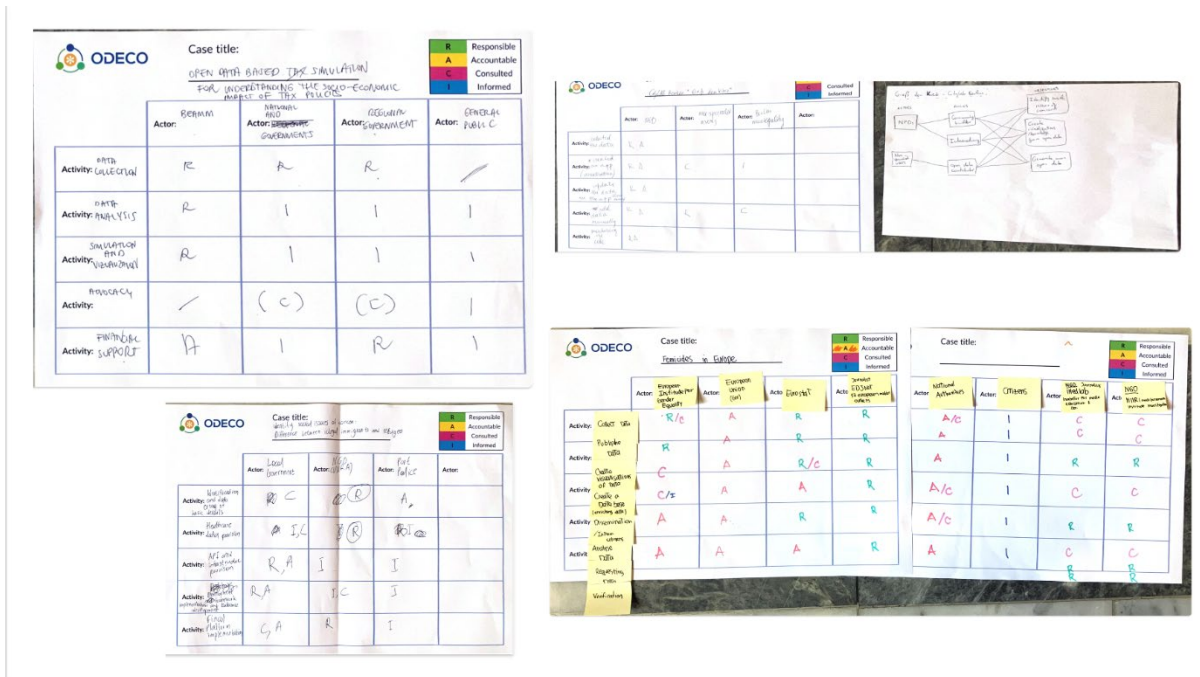


Figure 3: RACI sheets produced by participants during the workshop at ODECO TW 5, Samos

### 3.3 Post-workshop data collection

After the completion of TW5, the ESRs collaborated virtually to iterate the RACI Tables. In this round of iteration, two additional aspects were contributed by ESRs – (i) the governance instruments facilitating distribution of tasks in each case-study, based on the classification of governance instruments identified by Cropvoets et al. (2019) (which was relied on for ODECO Task 4.3), and (ii) the institutional factors contributing to collaboration between actors in each case-study.

In this regard, the definition of an “institution” from Polski and Ostrom (1999, p. 14) is relied on. Per this definition, an “institution” is “a widely understood rule, norm, or strategy that creates incentives for behaviour in repetitive situations. Institutions may be formally described in the form of a law, policy, or procedure, or they may emerge informally as norms, standard operating practices, or habits.”

These RACI Tables were then analysed using a conceptual framework known as the Institutional Analysis and Design Framework, described in more details in Chapter 4 below.

### 3.4 Limitations of the methodology

With regard to the literature review, one limitation is that the literature review is not exhaustive and does not cover all literature on governance of open data. The literature review is limited to previous deliverables of the ODECO consortium, as the objective of Work Package 5 is to combine all existing ODECO research to create governance and design insights for a sustainable open data ecosystem.

With regard to the participatory methodology – partly based on the Open Data Game Jam – participants involved were mostly ODECO researchers, not directly involved in the case studies that were analysed. Participants were asked to propose a case study of their choosing and present it to others, who could then join the team. As a result, case selection was not systematic and the cases analysed may not be representative of other open data ecosystems.

## 4 The Institutional Analysis and Design Framework

### 4.1 What is the Institutional Analysis and Design Framework

The Institutional Analysis and Design Framework (IAD Framework) was originally designed by Elinor Ostrom, to study institutional arrangements for collective action problems in natural resource systems, such as farming lands, fisheries and forests (Ostrom, 1991). These resources have been addressed as Common Pool Resources, a hybrid between public and private good, as they can be consumed by all, and, making it particularly relevant for open data ecosystems' governance characteristics.

Since Ostrom's conceptualization of the IAD Framework, it has been iterated and applied to study shared governance of data, information and knowledge resources (Hess and Ostrom, 2006; Frischmann, Strandburg and Madison, 2014; Filgueiras and Silva, 2022). For instance, the IAD Framework has been applied to study collaboration between heterogenous actors in the context of shared informational resources such as open-source software (Schweik and English, 2012; Schweik, 2014) and genomic data repositories (Contreras, 2014; Overwalle, 2014).

Frischmann, Strandburg and Madison (2014) have visualized the different components of the IAD Framework, set out in Figure 4 below as a specification of the model to intangible, knowledge and information resources. We apply this framework to open data. Through our analysis, we will synthesise findings on the distribution of roles, tasks and other resources within an open data ecosystem<sup>1</sup> in a sustainable manner.

The IAD Framework is applied to an open data ecosystem through three steps. *First*, contextual analysis about the resource ecosystem in question is undertaken. In this stage, the technical characteristics of the resource, the attributes of the community generating and using the resource, and the rules-in-use, the governance models that structure interactions between and among the community is described. *Second*, the action arena is studied. The 'Action Arena' denotes the space where interactions occur, i.e. where actors collaborate based on the rules-in-use to engage in collective action with regards to the resource in question (Cole, 2014a, pp 59-60; Cole, 2014b). Here, real-life examples of collaboration in the open data ecosystem (derived from the workshop conducted at ODECO TW 5, Samos) are considered as action situations. *Finally*, by analysing different action situations within this action arena, it is possible to synthesis and extract general observations, in the form of patterns of interaction (Id.). Evaluating these patterns of interactions can yield policy design observations and recommendations, which can then be applied in the form of institutional change back into the action arena, to yield new patterns of interaction (Id.)

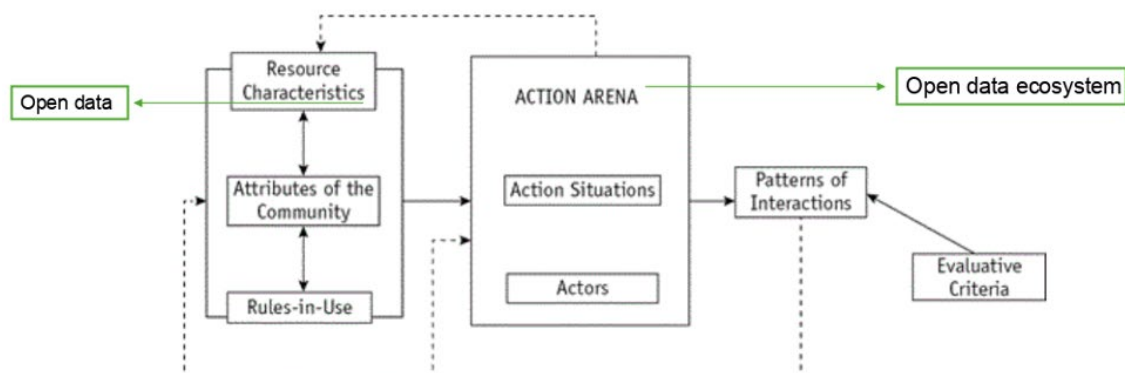


Figure 4: IAD Framework. Source: Frischmann, Strandburg and Madison, 2014, pp 26. Green boxes are authors' own additions.

<sup>1</sup> For more information on how we understand 'open data ecosystem', see ODECO Deliverable 2.3.

#### **4.2 Benefits of the IAD Framework**

Unlike resources in the natural environment, informational resources in the cultural environment are 'constructed' resources, meaning that their modes of production and modes of use/maintenance are interrelated. Similarly, there are also complex relationships between the actors who produce these informational resources, and actors who use them. Further, the non-rivalrous and non-excludable nature of informational resources like open data implies that they are not "naturally defined by boundaries that permit exclusion of users" (Frischmann, Strandburg and Madison, 2014, pp 25). Rather, excludability of users of open data is 'built' by design or infrastructure, through the choices of data formats, restrictions on interoperability, and access controls for informational infrastructures/platforms by which open data is made available to users. At the same time, while open data itself is a non-rivalrous resource, its production depends on rivalrous resources, like time, skills and money. And finally, the value(s) of open data depends significantly on cultural narratives that differ across geopolitical regions and professional groups. And as a result, while it is possible to identify some 'original' objectives or values of open data, for instance at the start of the open government data movement, these objectives and values are not static and change with time. For these reasons, the IAD Framework for the empirical study of informational resources is a "circular" framework – it recognises the iterative relationship between the attributes of a 'constructed' informational resource; actors involved in the production, use and maintenance of this resource; and the patterns of interaction (which depend on cultural narratives) of open data collectively as an ecosystem.

Further, the IAD Framework is a useful method for conducting policy analysis in the context of resource management, given the centrality of institutions in this framework (Sabatier, 2007). For the IAD Framework, institutions are formal and informal norms that express rules, shared understandings, and strategies that structure human behaviour and social choices. These shared rules, understandings, and strategies are collectively created, enforced, adapted, and monitored to ensure sustainable use of an informational resource. As a result, discrete actions of collaboration from the 'action arena' can be synthesised into actionable institutional insights for possibly replicating these collaborations in other contexts.

#### **4.3 How to apply the IAD Framework**

Frischmann, Strandburg and Madison (2014, pp 20) have elucidated a reference questionnaire to guide researchers seeking to apply the IAD Framework. This reference questionnaire (contained in Figure 5 below), sets out different thematic buckets that allow researchers to qualitatively study forms of collaboration in the management of shared informational resources. Not all items have to be used, but they are useful guides to question informational and knowledge ecosystems.

| KNOWLEDGE COMMONS FRAMEWORK AND REPRESENTATIVE RESEARCH QUESTIONS                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Background Environment</b></p> <ul style="list-style-type: none"> <li>• What is the background context (legal, cultural, etc.) of this particular commons?</li> <li>• What is the "default" status of the resources involved in the commons (patented, copyrighted, open, or other)?</li> </ul>                                                                                                                     | <p><b>Governance</b></p> <ul style="list-style-type: none"> <li>• What are the relevant action arenas and how do they relate to the goals and objective of the commons and the relationships among various types of participants and with the general public?</li> <li>• What are the governance mechanisms (e.g., membership rules, resource contribution or extraction standards and requirements, conflict resolution mechanisms, sanctions for rule violation)?</li> <li>• Who are the decision makers and how are they selected?</li> <li>• What are the institutions and technological infrastructures that structure and govern decision making?</li> <li>• What informal norms govern the commons?</li> <li>• How do nonmembers interact with the commons? What institutions govern those interactions?</li> <li>• What legal structures (e.g., intellectual property, subsidies, contract, licensing, tax, antitrust) apply?</li> </ul> |
| <p><b>Attributes</b></p> <p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• What resources are pooled and how are they created or obtained?</li> <li>• What are the characteristics of the resources? Are they rival or nonrival, tangible or intangible? Is there shared infrastructure?</li> <li>• What technologies and skills are needed to create, obtain, maintain, and use the resources?</li> </ul> | <p><b>Patterns and Outcomes</b></p> <ul style="list-style-type: none"> <li>• What benefits are delivered to members and to others (e.g., innovations and creative output, production, sharing, and dissemination to a broader audience, and social interactions that emerge from the commons)?</li> <li>• What costs and risks are associated with the commons, including any negative externalities?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Community Members</b></p> <ul style="list-style-type: none"> <li>• Who are the community members and what are their roles?</li> <li>• What are the degree and nature of openness with respect to each type of community member and the general public?</li> </ul>                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Goals and Objectives</b></p> <ul style="list-style-type: none"> <li>• What are the goals and objectives of the commons and its members, including obstacles or dilemmas to be overcome?</li> <li>• What are the history and narrative of the commons?</li> </ul>                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Source: "Governing Knowledge Commons," in <i>Governing Knowledge Commons</i> (Frischmann, Madison, &amp; Strandburg eds., Oxford University Press 2014) at 20, 21.</p>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

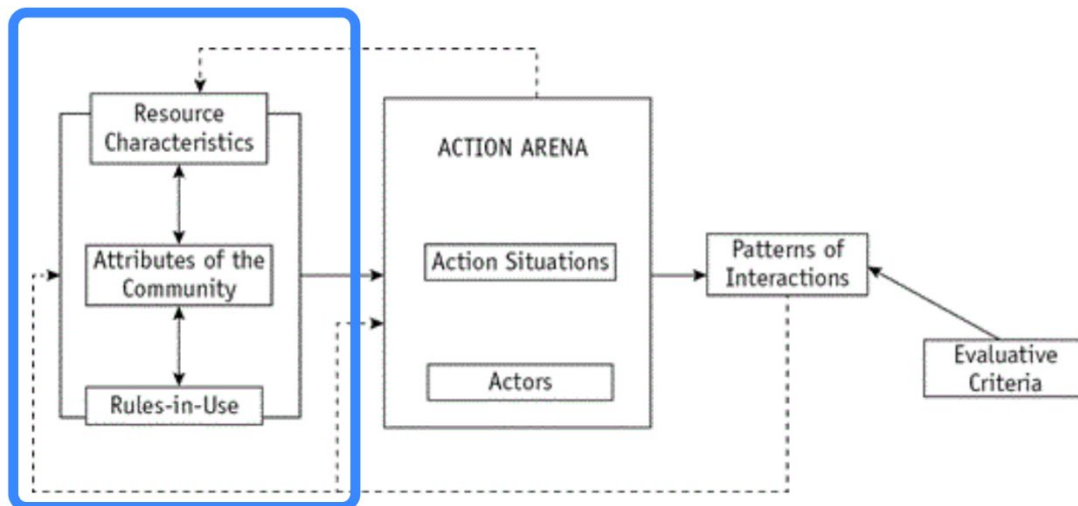
**Figure 5: Questionnaire for using the IAD Framework**

In this report, information relating to the background context, resource (technical) attributes, actors/community members, rules-in-use / governance practices, and goals and objectives are synthesised from a review of previous ODECO deliverables – specifically T2.1, T2.3, T3.3 and T4.3. Information relating to patterns of interaction were synthesised collaboratively by all ESRs, through a workshop conducted at TW5 and through post-workshop data collection. All this information is then cohesively analysed, to arrive at institutional recommendations for sustainable distribution of roles, tasks and resources within the selected open data ecosystem, to meet the objectives of T5.1.



## 5 Applying the IAD Framework to an open data ecosystem – Contextual information

In this section we describe certain features of an open data ecosystem (highlighted in blue in Figure 6 below), based on a literature review of previous ODECO deliverables. This serves to contextualise interactions within this ecosystem, and aids in evaluating whether collaborative interactions within this ecosystem can be replicated.



*Figure 6: IAD Framework, with emphasis on Resource Characteristic, Attributes of the Community and Rules-in-Use.*

### 5.1 Background environment

Frischmann, Strandburg and Madison (2014, pp 21) identify two types of cultural environments in the context of informational resource – the ‘natural’ cultural environment where informational resources are excluded from proprietary intellectual property regimes, and the ‘proprietary’ environment where informational resources (like code, datasets or databases) are subject to proprietary regimes like copyright that regulate and/or control access, sharing and use of these resources.

For open data, the background cultural environment is the latter – the proprietary environment. In the European Union, both software code and databases are protected by copyright (EU Directive 2001/29/EC, Article 1). Further, databases are also protected under a sui generis framework, where substantial investment in “obtaining, verification or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part of the contents of a database” (EU Directive 96/9/EC, Article 7). Open data become shared informational resources, i.e. resources without legal access or use restrictions, through the use of open data licenses where the resource owner/creator provides pre-facto authorisations or waives copyright/sui generis claims (Giannopoulou, 2018). In the context of open government data, legal regulations require that public sector bodies exercise their intellectual property rights over databases in a manner that enables re-use (see for e.g., EU Directive 2019/1024 Open Data Directive, Recital 54; EU Regulation 2022/868 Data Governance Act, Recitals 17 and 18). However, as De Filippi and Maurel (2015) note, there are underlying conflicts between legal regulations that encourage re-use of public sector information and the legal system of intellectual property that allow public sector bodies to assert a de-facto exclusive rights on public sector information.

## 5.2 Resource (socio-technical) attributes

Open data is digital data that is capable of free and unrestricted usage, sharing, and access to data in any available format (ODECO 2023b; Open Definition 2.1). From a technical perspective, open data comprises of multiple components such as individual data elements, datasets that constitute aggregated data elements, databases which contain multiple datasets, platforms that house and/or provide access to databases, metadata, and open data standards. From a functional perspective, open data is not merely data that is 'obtainable' by anyone. Rather, it is data that is: (i) available as a whole in a convenient and modifiable form, (ii) provided under terms that permit its reuse and redistribution, including 'remixing' with other data, and (iii) subject to universal participation in its use, reuse and redistribution (Dove 2015, pp 158).

Further, unlike natural resources, open data is not naturally occurring but is brought into existence. As a result, the attributed of open data also include the human labour and choices involved in its production and maintenance as well as the material artefacts necessary for its production and use such as sensors, data centres, cables, computers, etc. And finally, as scholars of critical data studies and STS note, data is not only an object/economic resource but also a process of power. Socio-political decisions about what data to generate (and what not to) as well as what to do with data are inherently linked to the technical attributes of open data (Gurstein, 2011; Kitchin and Lauriault, 2014; Fisher and Streinz, 2022).

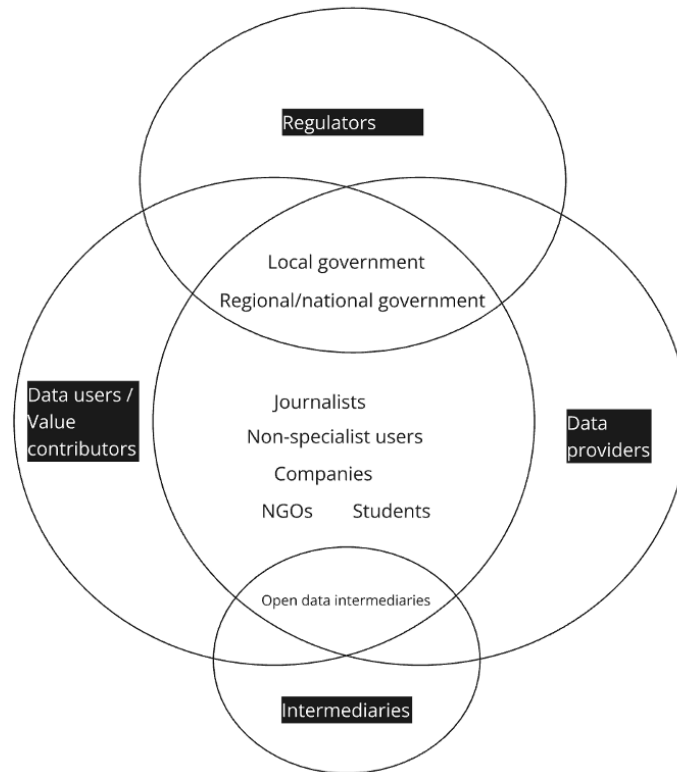
Beyond open data, ODECO (2024b) identifies certain other value contributions made to an open data ecosystem. These include outputs generated from open data (such as data analysis, visualisations, data stories), insights generated from open data (such as local knowledge and social issues of concern) and technological innovations to enable the use of open data (such as websites, platforms, applications, tools).

## 5.3 Actors

Pursuant to the ODECO DoA, this report incorporates the perspectives of 8 open data actor groups:

- Non-specialist data users
- Local government
- Journalists
- Students
- NGOs
- Central/regional government
- Companies
- Open data intermediaries

From existing ODECO reports (2023a, 2024b, 2024c), it is also possible to deduce the different roles that these actors perform in an open data ecosystem:



*Figure 7: Authors' visualisation of roles discharged by open data user groups, based on previous ODECO reports*

#### 5.4 Rules-in-use and general governance structure

Frischmann, Strandburg and Madison (2014, pp 28) recommend an analysis of rules-in-use at three levels – the degree of openness of the resource and of the community, the general governance structure, and the specific rules and norms that apply to specific action arenas.

##### 5.4.1 Rules-in-use with regard to openness of the resource and of the community

ODECO (2023a; 2024a) identified certain rules-in-use that serve as barriers to use open data. Definitionally, open data is meant to be available for unrestricted re-use. In practice, there are different legal modalities by which data is made available as open data – through the voluntary use of open data licenses, or by virtue of legal mandates such as the EU Open Data Directive to publish public sector information in machine-readable formats (ODECO 2024a, pp 34). There are also sectoral legal regulations for release of certain datasets to the public, such as Article 11(1) of the EU INSPIRE Directive which requires public bodies to make spatial datasets available to the public, and the US's Equitable Data Collection and Disclosure on COVID-19 Act which required the US federal government to collect and publicly release racial and other demographic data on COVID-19 (Id.) To obtain data from the private sector, public administrations sometimes do rely on data-for-data agreements. For example, one of the respondents to a questionnaire circulated for Task 2.3 referred to data-for-data arrangements between the Netherlands Transport Department and Vodafone, to obtain data on traffic intensity from Vodafone, combined with other data held by the Transport Department, and to release all such data as open data by the Transport Department. Even within licenses, there is a lack of standardization (ODECO 2023a, 2024a). Further, there are technical barriers to the use of open data, owing to challenges in translating the FAIR (Findable, Accessible, Interoperable, Reusable) principles into practice (ODECO 2023b). For

instance, open data portals often have only one input method for search and should include alternative inputs methods to search the repository. Open data portals are also often not optimised for use via smartphones.

ODECO (2024a) also identified certain rules-in-use with regard to open data actors. For instance, in some cases, certain open data actors come together to form either as communities of purpose (as in the case of OSM, where humanitarian actors come together with open source coders and mappers, to map conflict/disaster affected areas) or as communities of practice (as in the case of certain scientific data) (ODECO 2024a, pp 30-31). In each of these communities, membership rules are differently defined – through informal rules as in the case of communities of purpose as opposed to more formal membership criteria as in the case of communities of practice.

#### **5.4.2 General governance structure(s)**

An ecosystemic perspective to open data moves beyond a linear understanding of open data as mere data disclosures by public bodies, and instead probes the different forces of competition and collaboration that sustain the generation and re-use of open data. From this perspective, ODECO has made significant contributions in three aspects:

- ODECO (2024b; 2024c) has investigated what actors contribute as value. This includes contribution of open data by both government and non-government actors, but also other value contributions in form of knowledge outputs, technological innovations, advocacy, etc.
- ODECO (2024a; 2024b; 2024c) has also investigated why certain actors contribute such value, by investigating their intrinsic and extrinsic motivations as well as existing governance instruments.
- ODECO (2024c) has investigated how certain actors can contribute (more) open data, by investigating governance instruments necessary for such open data contributions.

Drawing from Cromptoets et al (2019), ODECO (2024c) identified three broad *mechanisms* underpinning governance in an open data ecosystem – hierarchies, markets, networks. From this broad categorization, it is possible to identify the *processes* that underpin these three governance mechanisms, such as authority, price and competition or trust and solidarity. These processes, in turn, rely on specific governance instruments. ODECO (2024c) classifies these governance instruments into two types – structural and managerial. The analysis undertaken in ODECO (2024c) revealed that a mix of hierarchical measures, such as legal frameworks as well as grassroots network initiatives in the form of collaborative partnerships, can effectively stimulate open data sharing. However, market-oriented instruments, such as financial incentives, are currently underutilized, likely due to the non-commercial nature of many non-governmental actors we analysed in this study. These findings can be applied not only to the sharing of more open data, but also to the facilitation of other forms of participation from non-governmental actors.

#### **5.4.3 Specific rules and norms**

Through the workshop conducted at TW5, ESRs identified certain case-studies of collaboration between open data actors. Upon further iteration, ESRs identified governance instruments that facilitate the distribution of tasks among the actors in each case-study. These governance instruments are examples of specific rules and norms and are described in more detail in Section 6 below.

#### **5.5 Goals and objectives**

The benefits of open data include enhancing the effectiveness and efficiency of public services, increasing institutional accountability, boosting citizen participation, accelerating scientific progress, and fostering the creation of other economic and social values (ODECO 2023a, Hossain et al., 2016; Janssen et al., 2012; Zhu et al., 2019).

A review of existing ODECO reports on governance using interpretive analysis also reveals what kinds of value realised are by and/or contributed by the open data user groups through participation in an open data ecosystem. We refer to these collectively as ‘value types’, and they comprise of the following:

- The generation of more open data
- Improving the quality of existing open datasets
- Create technological innovations (platforms/apps) for the use of open data
- Create businesses through open data
- Create visualisations and knowledge from open data
- Identify social issues of concern
- Hold governments accountable
- Create products from open data
- Become informed citizens
- Ensure transparency of public administrations
- Provide funding for open data initiatives

Some challenges to the realisation of these value types have also been identified in previous ODECO reports. One set of challenges relate to the incorporation of user needs into policy design for open data ecosystems. ODECO (2023a) identified some common user needs across 9 user group types – local government, regional/central government, companies, open data intermediaries, artificial users, non-specialist data users, journalists, students, and non-governmental organisations. The identified user needs can be grouped in three levels – user needs relating to resource attributes, user needs relating to actors’ competencies, and user needs relating to the broader open data ecosystem.

*Table 2: Synthesis of open data user needs, from previous ODECO reports*

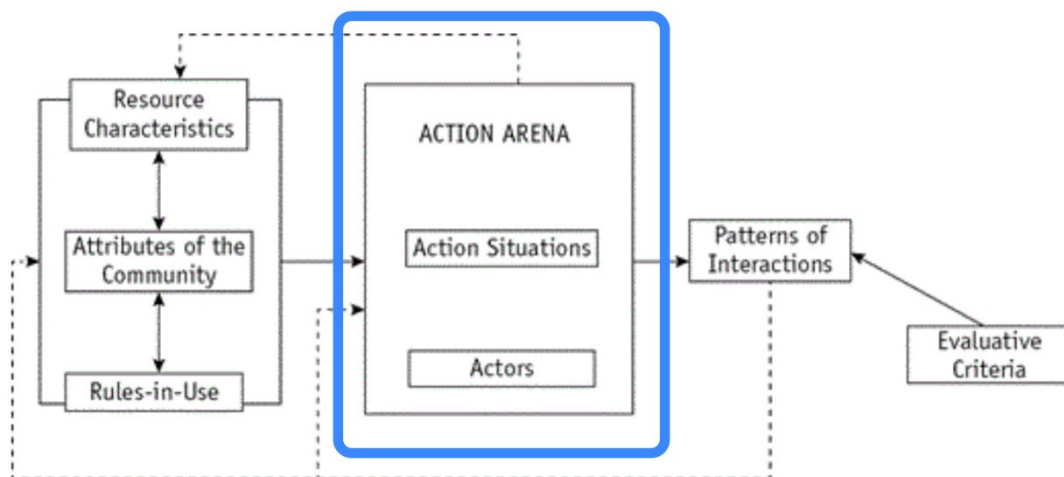
| User needs relating to resource attributes                                                                                                                                                                                                                                                                                           | User needs relating to actors’ competencies                                                                                                                                                                                | User needs relating to the broader open data ecosystem                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Access to data, availability and findability</u><br/>Findability and metadata extraction of open data is a challenge, including adherence to the 5-Star Principles for Linked Open Data. Data availability is also not uniform across territories, nor equally representative of the concerns of different citizen groups.</p> | <p><u>Literacy</u><br/>All 9 user groups require a broad range of skills to interact and participate in an open data ecosystem. These include data and digital literacy, critical and scientific thinking, and ethics.</p> | <p><u>Funding</u><br/>The participation of users in an open data ecosystem depends on the amount of funding/economic capital made available for such participation.</p>                                                                                         |
| <p><u>Data Quality</u><br/>This includes both technical quality of open datasets (i.e. their completeness, accuracy, findability and metadata quality) as well as the social quality (i.e. the manner in which datasets accurately reflect social realities)</p>                                                                     | <p><u>Data ethics</u><br/>Users must be aware of data ethics and privacy issues when making use of open data</p>                                                                                                           | <p><u>Regulation</u><br/>There is a need for greater regulatory clarity in terms of standard licensing for open data, enabling easy re-use. Further, regulation is also required to ensure equitable data access to facilitate the participation of diverse</p> |

| User needs relating to resource attributes                                                                                         | User needs relating to actors' competencies                                                                                                                                                                                                                                                         | User needs relating to the broader open data ecosystem                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                    |                                                                                                                                                                                                                                                                                                     | groups and satisfy societal needs.                                                                                                                                   |
| <p><u>Data infrastructure</u><br/>Digital open data require well-designed and well-maintained IT and technical infrastructure.</p> | <p><u>Communication</u><br/>Different user-groups have different communication needs. For example, local governments need to communicate with public bodies and private companies for the generation of open data, while NGOs need to communication with a range of partners to find open data.</p> | <p><u>Governance and coordination</u><br/>There is a need for both organisational governance as well as data governance, to ensure inclusive data use practices.</p> |

## 6 Applying the IAD Framework to an open data ecosystem - Action arena

As mentioned in Chapter 3.2 above, we conducted a workshop at TW 5, Samos, where we used participative design principles to identify real-life examples of collaboration between actors in an open data ecosystem to realise different types of value. This section summarises each real-life example of collaboration as a 'case-study' (see Table 3).

In terms of the IAD Framework, these case-studies represent the action situations within the open data ecosystem (highlighted in blue in Figure 8 below):



*Figure 8: IAD Framework, with emphasis on Action Arena.*

These case-studies illustrate: (i) different types of collaborations between actors in an open data ecosystem, and (ii) different types of value realised from such collaborations - either in the form of generation of more or new open datasets, or in the form of other social and/or economic benefits.

Three specific insights emerge from these case-studies, which serve as the basis for evaluating whether they present sustainable forms of collaboration in the open data ecosystem:

- (i) how tasks are divided among actors involved in the ecosystem,
- (ii) what governance instruments facilitate the distribution of these tasks, and
- (iii) whether any institutional factors are relevant for the distribution of these tasks, replicability of the collaborations, and sustainability of the collaborations.

*Table 3: Case-studies of collaborations in the open data ecosystem*

| # | Title                                                                    |
|---|--------------------------------------------------------------------------|
| 1 | Breakthrough Open Data Project, Netherlands                              |
| 2 | Open Access Tax Benefit Micro Simulation Model (beamm.brussels), Belgium |
| 3 | Gieß den Kiez project, CityLAB Berlin, Germany                           |
| 4 | Collaborative investigation on femicides in Europe, European Union       |

Each case-study also contains the RACI Table prepared by ESRs during ODECO TW 5 at Samos and subsequently iterated by the ESRs. Each RACI Table identifies the actors involved in a case-study, the tasks performed by each actor, and their level of involvement each task. This was done by identifying four degrees of involvement:

- R as in 'responsible' - the actor who actually executes the task,
- A as in 'accountable' - the actor reviews/supervises the task,
- C as in 'consulted' - the actor provides input on the task,
- I as in 'informed' - the actor who is kept in loop about the progress of the task.

### 6.1 Case-study #1: Breakthrough Open Data Project, Netherlands

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description of case-study</b>    | <p>This case study is about the geospatial data sector in the Netherlands. The Dutch government initiated a project called 'Breakthrough Open Geodata Project' that ran from 2013 to 2017. The initiative was led by the CEO of Esri.</p> <p>The project comprised of representatives from businesses, public sector, and academia: GeoBusiness Nederland (trade association for companies that work with geoinformation), Esri Nederland, Ministry of Economic Affairs, Ministry of Infrastructure and the Environment, Ministry of Interior and Kingdom Relations, and Delft University of Technology.</p> <p>The project aimed to bring together societal demand, entrepreneurs who develop applications, and holders of open data through two pillars. The first pillar is to shift the supply-oriented approach of open data provision towards demand-driven approach. The second pillar is to ensure continuous provision of high-quality open data in order to provide certainty to market actors and facilitate solid business models based on open data.</p> |
| <b>URL</b>                          | <ul style="list-style-type: none"> <li>• <a href="https://adoc.pub/doorbraakproject-open-geodata-als-grondstof-voor-groei-en-inc207c91981124eda8cc49d9e21c39fbc80957.html">https://adoc.pub/doorbraakproject-open-geodata-als-grondstof-voor-groei-en-inc207c91981124eda8cc49d9e21c39fbc80957.html</a></li> <li>• <a href="https://ibestuur.nl/artikel/doorbraakproject-open-geodata-kan-zonder-doorbraak/">https://ibestuur.nl/artikel/doorbraakproject-open-geodata-kan-zonder-doorbraak/</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Actors involved</b>              | <ul style="list-style-type: none"> <li>• GeoBusiness Nederland (representing interests of private sector users of open geodata)</li> <li>• Esri as an open data intermediary (that is also part of GeoBusiness Nederland)</li> <li>• Dutch national government</li> <li>• Delft University of Technology (TU Delft) (representing the academic community)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Types of value contributions</b> | Tangible outcomes from the project include the release of actual elevation data (AHN) and data from the Dutch space office (NSO) as open data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



| Distribution of tasks among actors                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Actor: Dutch government | Actor: GeoBusiness Nederland | Actor: Esri | Actor: TU Delft | Actor: Other users of open geodata |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------|-------------|-----------------|------------------------------------|
|                                                              | Task: Communicate interests                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | I                       | R                            | R           | R               | C                                  |
|                                                              | Task: Provide recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | I                       | R                            | R           | R               | C                                  |
|                                                              | Task: Publish open data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | R                       | C                            | C           | C               | I                                  |
|                                                              | Task: Use open data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I                       | R                            | R           | R               | R                                  |
|                                                              | <ul style="list-style-type: none"> <li>• GeoBusiness Nederland and Esri communicate the interests of private sector open geodata users to the government</li> <li>• TU Delft provides recommendations for open geodata strategies</li> <li>• Government agencies release actual elevation map (AHN) and satellite data from the Dutch Space Office as open data</li> <li>• Other open geodata users benefit from the initiative: e.g., researchers from Wageningen University reported that solar panels can be installed more efficiently by using AHN in combination the Basic Registration of Addresses and Buildings (BAG) (that is also open data), and archaeologists use AHN data to locate ancient settlements that are not noticeable to the naked eye</li> </ul> |                         |                              |             |                 |                                    |
| Governance instruments facilitating distribution of tasks    | Structural instrument: <ul style="list-style-type: none"> <li>• Establishment of coordinating functions or entities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                              |             |                 |                                    |
| Observations on institutional factors enabling collaboration | <ul style="list-style-type: none"> <li>• The collaboration was initiated by the government but was led by a major player in the geoinformation industry, namely Esri.</li> <li>• While this project exemplifies the potential form of coordination that could take place to improve the provision of open government data (i.e., user-driven), it had limited impacts in making the non-public sector share open data (i.e., inclusivity) and in improving the distribution of costs and benefits within the open data ecosystem (i.e., circularity).</li> </ul>                                                                                                                                                                                                           |                         |                              |             |                 |                                    |

## 6.2 Case-study #2: Open Access Tax Benefit Micro Simulation Model (beamm.brussels), Belgium

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                             |                    |                             |                             |                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|-----------------------------|------------------------------|
| <b>Description of case-study</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | This case study is about a data visualization and simulation model called beamm.brussels (developed by a team of researchers at the Centre for Applied Public Economics, UCLouvain) to help policymakers at regional and national levels assess fiscal policies from various perspectives. It is an example of user groups trying to achieve social equity in policymaking. |                    |                             |                             |                              |
| <b>URL</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <a href="https://beamm.brussels/">https://beamm.brussels/</a>                                                                                                                                                                                                                                                                                                               |                    |                             |                             |                              |
| <b>Actors involved</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Centre for Applied Public Economics, UCLouvain (CAPE) as an open data intermediary</li> <li>Belgian national government</li> <li>Belgian regional government (Brussels-Capital Region)</li> <li>General public</li> </ul>                                                                                                            |                    |                             |                             |                              |
| <b>Types of value contributions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Creation of visualisations and knowledge from existing open data</li> <li>Identification of social issues of concern</li> </ul>                                                                                                                                                                                                      |                    |                             |                             |                              |
| <b>Distribution of tasks among actors</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                             | <b>Actor: CAPE</b> | <b>Actor: National govt</b> | <b>Actor: Regional govt</b> | <b>Actor: General public</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Task: Data collection                                                                                                                                                                                                                                                                                                                                                       | R                  | R                           | R                           |                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Task: Data analysis                                                                                                                                                                                                                                                                                                                                                         | R                  | I                           | I                           | I                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Task: Simulation and verification                                                                                                                                                                                                                                                                                                                                           | R                  | I                           | I                           | I                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Task: Advocacy                                                                                                                                                                                                                                                                                                                                                              |                    | C                           | C                           | I                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Task: Financial support                                                                                                                                                                                                                                                                                                                                                     | A                  | I                           | R                           | I                            |
| <p>Developing and maintaining the beamm.brussels tools involved the following actions:</p> <ul style="list-style-type: none"> <li>First, data was collected to create the tax simulation tool. CAPE created a synthetic dataset, by anonymizing and combining open census datasets released by the Brussels administration with socio-economic datasets containing key tax and socio-economic data about Brussels Region such as the Survey on Income and Living Conditions (EU-SILC), the Household Finance and Consumption Survey (HFCS), the Household Budget Survey (HBS), the Labour Force Survey (LFS), BELDAM, MONITOR, the time use survey (HETUS) which were made available to the CAPE researchers upon request. CAPE was responsible for identifying and merging existing tax and census datasets to create the synthetic dataset used to build the simulation model. Regional and national governments in Brussels are responsible for creating and maintaining these tax and census datasets.</li> <li>Then this synthetic data was analysed to create the simulation model. The model was created by CAPE. Once created, the regional and national governments as well as the general public were informed of the creation of the tool.</li> <li>The simulation model was also trained to create visualisations based on input data. These visualisations were created by CAPE. Regional and national governments, and the general public, use and are informed of potential impacts of fiscal policies through these visualisations.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                             |                    |                             |                             |                              |

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                             | <ul style="list-style-type: none"> <li>• Advocacy was also undertaken by CAPE, to generate support for the simulation tool and to increase its uptake. In these advocacy efforts, regional and local governments were consulted and involved.</li> <li>• Finally, CAPE required financial support to develop and maintain the simulation tool. Regional government is the responsible actor for providing such financial support. CAPE as the recipient of funding is accountable for how these funds are spent. National government and the general public are informed of this use of public funds.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Governance instruments facilitating distribution of tasks</b>            | <p>Structural instruments:</p> <ul style="list-style-type: none"> <li>• Establishment of a coordination function. The beamm.brussels project is part of the European Development fund program (2021-2027). The main goal of beamm.brussels was to leverage the research of CAPE through the creation of an online, open-access micro-simulation platform. As such, beamm.brussels plays a central role in coordinating efforts to digitize public services and promote the implementation of evidence-based public policies. With a particular focus on tax justice.</li> <li>• Systems for information exchange and sharing through the creation of a tax micro-simulation platform providing both the results and “easy-readable” visualizations.</li> <li>• Partnership with The European Regional Development Fund – ERDF, as well as other academic institutions such as the Tax Institute of U.Liège and the Department of Economics of KU Leuven.</li> </ul> <p>Managerial instruments:</p> <ul style="list-style-type: none"> <li>• Strategic planning through the support (financial and planning) of the use of the open-access simulation putting them at the service of the Region (Brussels-Capital).</li> <li>• Along the same lines, we can identify a financial management fostering joined-up cooperation. Indeed, the main goal of the funding is to create a lasting cooperation among institutions that culminates in the sharing and use of the open-access simulation.</li> </ul> |
| <b>Observations on institutional factors enabling collaboration, if any</b> | <p>Institutional factors enabling the collaboration are financing through Innoviris.Brussels (at the regional level – Brussels Capital) and at the European level (through the ERDF). Additionally, horizontal collaboration among different universities (i.e., network), such as UCLouvain, U.Liège, and KU Leuven.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 6.3 Case-study #3: Gieß den Kiez project, CityLAB Berlin, Germany

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                              |                          |                                      |                        |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------|--------------------------------------|------------------------|
| <b>Description of case-study</b>          | This case study is about bringing together a community of people who want to water trees together in Berlin and facilitate the transfer of knowledge between all tree lovers. CityLAB Berlin used three sets of open data – the Municipal tree register (with data as of 2024) which contains information about the location and type of each tree in public spaces in Berlin, daily precipitation data from the German Weather Service, and data from Open Street Maps about the location of water pumps in Berlin. Using this data, CityLAB Berlin created a website/platform called Gieß den Kiez. Through this website, users are presented with a visual map of the trees in Berlin and their watering needs. CityLAB calculates the amount of rainwater received by each tree, which is visible to all users through the interactive map. Users can also input data about when they last watered a tree, how much, and the condition/health of the tree. |                              |                          |                                      |                        |
| <b>URL</b>                                | <a href="https://citylab-berlin.org/en/projects/giessdenkiez/">https://citylab-berlin.org/en/projects/giessdenkiez/</a><br><a href="http://www.giessdenkiez.de">www.giessdenkiez.de</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |                          |                                      |                        |
| <b>Actors involved</b>                    | <ul style="list-style-type: none"> <li>• CityLAB Berlin as an NGO and as an open data intermediary</li> <li>• Local government</li> <li>• Regional/national government</li> <li>• Citizens as non-specialised users</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                              |                          |                                      |                        |
| <b>Types of value contributions</b>       | <ul style="list-style-type: none"> <li>• Contribution of more open data about trees in Berlin</li> <li>• Creation of visualization and knowledge from open data</li> <li>• Identification of social issues of concern</li> <li>• Creation of a civic community</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |                          |                                      |                        |
| <b>Distribution of tasks among actors</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Actor: CityLAB Berlin</b> | <b>Actor: Local govt</b> | <b>Actor: Regional/national govt</b> | <b>Actor: Citizens</b> |
|                                           | Task: Data collection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | R, A                         | R                        | R                                    |                        |
|                                           | Task: Creation of the website                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | R, A                         | I                        |                                      | C                      |
|                                           | Task: Updating data + manually add data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | R, A                         | C                        |                                      | R                      |
|                                           | Task: Maintaining the code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | R, A                         |                          |                                      |                        |
|                                           | <p>Developing and maintaining the website involved the following actions:</p> <ul style="list-style-type: none"> <li>• First, the data necessary to build the interactive map on the website was collected. CityLAB Berlin was the actor responsible for collecting this data and is accountable for this data. The local and national government is responsible for creating and maintaining open government datasets on the tree registry in Berlin and daily updates on precipitation in Berlin. Volunteers on OpenStreetMap are responsible for creating and maintaining the dataset on location of the water pumps in Berlin.</li> </ul>                                                                                                                                                                                                                                                                                                                  |                              |                          |                                      |                        |

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                    | <ul style="list-style-type: none"> <li>• Then the website was created by CityLAB Berlin, with interactive map visualisations. After the first roll out of this website, citizens were consulted through a Slack channel, and based on their feedback the website was improved. As the website gained popularity, the regional government gained interest and was informed about the existence of the project through media channels.</li> <li>• The website needs to be updated regularly, to ensure the accuracy of the datasets used to create the map-based visualisations of the app. CityLAB Berlin is responsible for these updates. Most of this data is sourced from open government data sources, but the regional government is also consulted by CityLAB Berlin, and it provides some of the data that is usually not published as open.</li> <li>• Regular updates are also necessary to record actions by citizens – such as when a tree was last watered, and its condition/health. CityLAB Berlin, together with citizens who are users of the website, are responsible for this set of updates.</li> <li>• Finally, the source code of the website needs to be maintained. This is the responsibility of CityLAB Berlin as the developer.</li> </ul> |
| <p><b>Governance instruments facilitating distribution of tasks</b></p>            | <p>Structural instruments:</p> <ul style="list-style-type: none"> <li>• Systems for information exchange and sharing – this project involves the creation of open datasets and an open-source app by the NGO, which is thus shared with other actors freely.</li> <li>• Partnerships – for this project to be realised it requires the NGO to work together with both local government for data provision and citizens for new data input into the app and feedback.</li> </ul> <p>Managerial instruments:</p> <ul style="list-style-type: none"> <li>• Inter-organisational culture and knowledge management – as other similar NGOs, CityLAB Berlin aims to create a social impact as part of the cultivated and shared organisational culture of open data/open source, which they do with this project. Moreover, as many other projects, this one was proposed by the employees to tackle the climate change effects in their city.</li> <li>• Capacity building – by involving non-specialist citizens in this project, the NGO raises their awareness on open data and climate change effects and improves their skills as they learn how to use the app and input data.</li> </ul>                                                                           |
| <p><b>Observations on institutional factors enabling collaboration, if any</b></p> | <p>Open data community standards contribute to the way this project is both open source and provides open data. For NGO to be able to collect open government data for the app, it relies on the regulations about data provision by government organisations. The collaboration with the local government came about after the project's implementation and impact, and so was prompted on the NGO's side.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 6.4 Case-study #4: Collaborative investigation on femicides in Europe, European Union

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                        |                                  |                                                      |                        |                         |                              |                                         |                        |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------|------------------------------------------------------|------------------------|-------------------------|------------------------------|-----------------------------------------|------------------------|
| <b>Description of case-study</b>          | This case study is a cross-border investigation of femicides in Europe. 6,593 women were intentionally killed in Europe, between 2011 and 2021. 64% of them were killed by their partner, and 36% by a relative. The actors in this case-study collaborated to create the most up-to-date statistical map of violence against women in Europe, since no official data on this issue has been published at the European Union level since 2018. The specific output was a public database which contains important findings on gender-based violence in European countries, focusing on the years of the Covid-19 pandemic. |                        |                                  |                                                      |                        |                         |                              |                                         |                        |
| <b>URL</b>                                | <ul style="list-style-type: none"> <li>• <a href="https://www.europeandatajournalism.eu/femicides-in-europe/">https://www.europeandatajournalism.eu/femicides-in-europe/</a></li> <li>• <a href="https://www.balcanicaucaso.org/eng/Areas/Greece/Femicides-the-undeclared-war-on-women-in-Europe-223895">https://www.balcanicaucaso.org/eng/Areas/Greece/Femicides-the-undeclared-war-on-women-in-Europe-223895</a></li> </ul>                                                                                                                                                                                             |                        |                                  |                                                      |                        |                         |                              |                                         |                        |
| <b>Actors involved</b>                    | <ul style="list-style-type: none"> <li>• Eurostat, as an open data contributor</li> <li>• National and regional governments, as open data contributors</li> <li>• European Institute for Gender Equality</li> <li>• iMED Lab, an NGO</li> <li>• Mediterranean Institute for Investigative Reporting (MIIR), an NGO</li> <li>• Journalists forming part of the European Data Journalists Network</li> <li>• Citizens as non-specialised users</li> </ul>                                                                                                                                                                    |                        |                                  |                                                      |                        |                         |                              |                                         |                        |
| <b>Types of value contributions</b>       | <ul style="list-style-type: none"> <li>• Improving quality of existing open data on violence against women in Europe</li> <li>• Identification of social issues of concern</li> <li>• Creation of a civic community</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |                        |                                  |                                                      |                        |                         |                              |                                         |                        |
| <b>Distribution of tasks among actors</b> | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Actor: Eurostat</b> | <b>Actor: EDJNet journalists</b> | <b>Actor: European Institute for Gender Equality</b> | <b>Actor: iMED Lab</b> | <b>Actor: MIIR, NGO</b> | <b>Actor: European Union</b> | <b>Actor: Regional / national govts</b> | <b>Actor: Citizens</b> |
|                                           | Task: Data collection:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | R                      | R                                | R/C                                                  | C                      | C                       | A                            | A/C                                     | I                      |
|                                           | Task: Data publication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | R                      | R                                | R                                                    | C                      | C                       | A                            | A                                       | I                      |
|                                           | Task: Create visualisations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | R/C                    | R                                | C                                                    | R                      | R                       | A                            | A                                       | I                      |
|                                           | Task: Enrich the database                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A                      | R                                | C/I                                                  | C                      | C                       | A                            | A/C                                     | I                      |
|                                           | Task: Dissemination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | R                      | R                                | A                                                    | R                      | R                       | A                            | A/C                                     | I                      |
|                                           | Task: Data analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A                      | R                                | A                                                    | C                      | C                       | A                            | A                                       | I                      |
|                                           | Task: Request additional data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        | R                                |                                                      | R                      | R                       |                              |                                         | I                      |

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |  |   |   |   |   |   |  |   |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|---|---|---|---|---|--|---|
|                                                                             | <table border="1"> <tr> <td>Task: Data verification</td> <td></td> <td>R</td> <td></td> <td>R</td> <td>R</td> <td></td> <td></td> <td>I</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Task: Data verification |  | R |   | R | R |   |  | I |
| Task: Data verification                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | R                       |  | R | R |   |   | I |  |   |
| <b>Governance instruments facilitating distribution of tasks</b>            | <p>Various tasks were involved in the creation of a database of the status of violence against women in Europe, during the Covid-19 years.</p> <ul style="list-style-type: none"> <li>• First, statistical data on violence against women had to be created and published. The actors responsible for sourcing, creating and publishing this statistical data were the journalists' part of the EDJNet, the European Institute for Gender Equality and Eurostat. The EU and regional/national government were accountable for the statistical data collection. The two NGOs – iMEDLab and MIIR – were consulted for insights on data collection. Citizens were informed of the data collection.</li> <li>• Then visualisations were created and disseminated to the public using this data. The journalists, the NGOs and Eurostat were collaboratively responsible for creating these visualisations. The European Institute for Gender Equality was consulted. The European Union and the regional/national governments were accountable. And citizens were informed of the social issue of violence against women through these visualisations.</li> <li>• Finally, to keep the statistical database updated, data has to be continuously requested from contributors, verified and analysed. The journalists, the NGOs and Eurostat are collaboratively responsible for this task. The European Institute for Gender Equality, the European Union and the regional/national governments are accountable for this task. Citizens are subsequently informed of updates to the status of violence against women.</li> </ul> <p>Structural instruments:</p> <ul style="list-style-type: none"> <li>• Systems for information exchange and sharing. Collaborative infrastructure makes it possible for EDJNet members to jointly collect data about and analyse major issues affecting European citizens and countries.</li> <li>• Partnerships. 33 members of the EDJNet work as a collaborative community.</li> </ul> <p>Managerial instruments:</p> <ul style="list-style-type: none"> <li>• Financial management: joined up working and cooperation. EDJNet's activities are partly funded by the network's members, and mostly co-financed by the European Commission and other smaller public or private grants.</li> <li>• Interorganizational culture and knowledge management. Original <a href="#">datasets, tools, and other resources</a> are freely provided to journalists, enabling any newsroom to take advantage of the opportunities offered by data journalism.</li> </ul> |                         |  |   |   |   |   |   |  |   |
| <b>Observations on institutional factors enabling collaboration, if any</b> | <ul style="list-style-type: none"> <li>• Members of the EDJNet joined efforts to address a gap in the open data published about the issue.</li> <li>• The strategy of the EDJNet was to request data from the national authorities and by assembling it, trying to fill as many gaps as possible.</li> <li>• The EDJNet published the results of the investigation on their channels, website and podcast. Other partners and network members wrote articles.</li> <li>• Produced content is made available for free in several languages, always including English. It can be syndicated or reused by anyone within and outside the network under a few simple conditions, specifically the requirement to attribute EDJNet for any use of these data.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                         |  |   |   |   |   |   |  |   |

## 6.5 Summary of all case-studies

In Table 3 below, we summarise the distribution of tasks from the 4 case-studies. Specifically, we highlight the division of tasks between governmental and non-governmental actors.

*Table 3: Summary of division of tasks between governmental and non-governmental actors, derived from 4 case-studies*

| Name of case-study             | Tasks performed by governmental actors                                                                                                                                                                                                                                             |                  | Tasks performed by non-governmental actors                                                                                                                                                                                                                        |                                                                                                                                                         |             |     |                                                                                                                       |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----|-----------------------------------------------------------------------------------------------------------------------|
|                                | Regional and national government                                                                                                                                                                                                                                                   | Local government | Academic institution                                                                                                                                                                                                                                              | Industry                                                                                                                                                | Journalists | NGO | Citizens as Non-specialised users                                                                                     |
| Breakthrough Open Data Project | <ul style="list-style-type: none"> <li>Responsible for publishing open geospatial data</li> <li>Informed about and acted on needs of open data users, and informed about use of open data</li> </ul>                                                                               | N/A              | <ul style="list-style-type: none"> <li>Advised the regional government on open data strategies</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>Communicated needs and interests of private sector actors regarding availability and use of open data</li> </ul> | N/A         | N/A | N/A                                                                                                                   |
| beamm.brussels                 | <ul style="list-style-type: none"> <li>Both governments are responsible for publishing statistical data</li> <li>Regional government is responsible for providing funding for the initiative</li> <li>Both governments are informed of data analysis and the simulation</li> </ul> | N/A              | <ul style="list-style-type: none"> <li>Responsible for creation of synthetic datasets from existing data (including statistical data), developing the tax similar model, and verifying the model</li> <li>Academic institution must remain accountable</li> </ul> | N/A                                                                                                                                                     | N/A         | N/A | <ul style="list-style-type: none"> <li>Informed of the tax simulation tool as potential users of the tool.</li> </ul> |



|                     |                                                                                                                                                                                             |                                                                                                                       |                                                 |     |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | and verification of the tax simulation model                                                                                                                                                |                                                                                                                       | e for funding received from regional government |     |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                  |
| CityLAB Berlin      | <ul style="list-style-type: none"> <li>Responsible for publishing open datasets on tree registry in Berlin</li> </ul>                                                                       | <ul style="list-style-type: none"> <li>Responsible for publishing open datasets on tree registry in Berlin</li> </ul> | N/A                                             | N/A | N/A                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Responsible for collecting data from citizens and combining with open data</li> <li>Also responsible for creating and maintain the <u>Gieß den Kiez</u> website</li> </ul>                                                           | <ul style="list-style-type: none"> <li>Responsible for providing crowd-sourced data on tree health</li> <li>Consulted on creation of the <u>Gieß den Kiez</u> website</li> </ul> |
| Femicides in Europe | <ul style="list-style-type: none"> <li>Regional/national governments (together with the European Union) were accountable for creating statistical data on violence against women</li> </ul> | N/A                                                                                                                   | N/A                                             | N/A | <ul style="list-style-type: none"> <li>Responsible for collecting and combining data on violence against women</li> <li>Responsible for creating visualisations</li> <li>Responsible for collecting additional data, maintaining the datasets, and verifying obtained data</li> </ul> | <ul style="list-style-type: none"> <li>Consulted by journalists when collecting and preparing datasets on violence against women</li> <li>Responsible for creating visualisations</li> <li>Responsible for obtaining additional data and verifying obtained data</li> </ul> | <ul style="list-style-type: none"> <li>Informed of the database and visualisations</li> </ul>                                                                                    |

## 7 Applying the IAD Framework to an open data ecosystem – Evaluating patterns of interaction

In this section, we combine the contextual information on open data ecosystems (derived through literature review of existing ODECO reports) with the real-life examples of collaborations in an open data ecosystem (derived through a participative design-based workshop). From the perspective of the IAD Framework, we combine these aspects to unearth insights on patterns of interactions (highlighted in Figure 9 below), to analyse whether the collaborations we studied can be replicated. We also extract and synthesise some observations on institutional factors that influence the distribution of roles, tasks and resources in open data ecosystems in a sustainable manner.

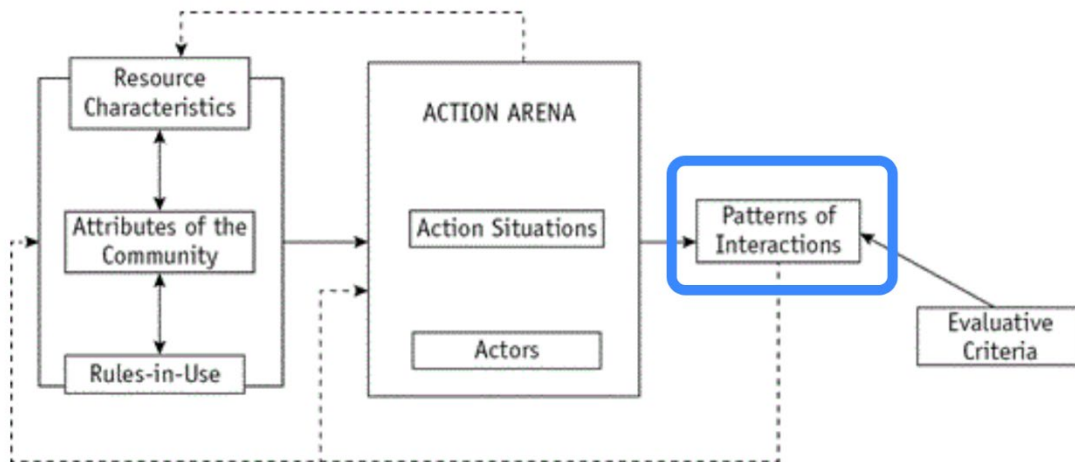


Figure 9: IAD Framework, with emphasis on Patterns of Interactions.

### 7.1 Findings from case-studies

Per the IAD framework as applied to shared informational resources, the purpose of evaluating different action situations in accordance with certain pre-defined metrics is to “extract generalizable knowledge that will be useful for policy makers” (Frischmann, Madison and Strandburg, 2014, pp 36).

In this report, we analysed the four case-studies described in Section 6 above as the action situations within an open data ecosystem. While these case-studies are not representative of all types of collaborative interactions between open data actor groups to realise value from open data nor are they representative of all types of open data ecosystems, they nonetheless constitute empirical data from which insights on the success and replicability of these interactions can be gleaned.

The IAD Framework requires that patterns and outcomes stemming from the action arena be evaluated in terms of: (i) the solutions and benefits they offer for a particular collective action problem, and (ii) the associated costs and risks (Frischmann, Madison and Strandburg, 2014, pp 37). Accordingly, we evaluate the four case-studies summarised in Chapter 6 above to assess: (i) what goals and objectives they valorise, and (ii) what challenges and benefits they bring to the realisation of social and economic value from open data.

### 7.1.1 Summary of findings

All four case-studies are examples of collaborations between public administrations (either at local, regional or national level) and one or more open data user-groups. In one case-study (Breakthrough Open Data Project), a non- government collaborators comprised of industry and academia. In one case-study (beamm.brussels), the primary non- government collaborator was an academic institution. In one case-study (CityLAB Berlin), the non- government collaborators were an NGO and citizens. In another case-study (Femicides in Europe), the non- government collaborators were NGOs and journalists.

Three of the case-studies (beamm.brussels, CityLAB Berlin and Femicides in Europe) involved citizens as non-specialised users.

All 4 case-studies serve as examples of open data initiatives being jointly designed and implemented by public administrations with the primary collaborators. In this regard, these case-studies constitute examples of collaboration within an open data ecosystem – i.e. an ecosystem consisting of the 8 actor groups mentioned in the DoA, where these actors not only make use of open data for their own purposes, but also contribute value back in different ways.

In terms of value-contributions, one of the case-studies (Breakthrough Open Data Project) resulted in the release of existing datasets as open data. One of the case-studies (CityLAB Berlin) resulted in the production of new open datasets. One case-study (Femicides in Europe) sought to improve the quality of existing open datasets. Two case-studies (beamm.brussels and CityLAB Berlin) contributed new visualisations, to create knowledge from open data. Three case-studies (beamm.brussels, CityLAB Berlin and Femicides in Europe) identified social issues of concern from the open data generated/analysed. And finally, two case-studies (CityLAB Berlin and Femicides in Europe) sought to create a civic community around the social issue identified.

In terms of distribution of tasks, two of the case-studies (Breakthrough Open Data Project and beamm.brussels) relied on public administration (either at regional or national levels) to release open datasets. In Breakthrough Open Data Project, the focus was two-fold: (i) to shift the supply-oriented approach of open data provision towards demand-driven approach, and (ii) to ensure continuous provision of high-quality open data in order to provide certainty to market actors and facilitate solid business models based on open data. In beamm.brussels, existing open datasets (such as census data) were relied on to create the synthetic dataset from which visualisations of fiscal policies were created. In one case-study (beamm.brussels), the academic collaborator was also identified as a responsible party to generate and release open datasets. In two case-studies (CityLAB Berlin and Femicides in Europe), the collection and publication of open datasets was the responsibility of NGOs (in both cases) and journalists (in the case of Femicides in Europe). But in both these as well case-studies, the NGOs relied on and combined existing open datasets with other generated data.

In three case-studies, certain actors were consulted in the generation and release of open datasets. In the Breakthrough Open Data Project, Esri and GeoBusiness Netherlands provided recommendations to the Dutch national government on what datasets should be provided as open data. In CityLAB Berlin, since the data on the watering of the trees was crowdsourced, the local Berlin government was consulted to update these data with available information on city watering schedule. In Femicides in Europe, other NGOs as well as the regional governments of the countries surveyed were consulted in the data generation, publication and visualisation processes.

In terms of structural governance instruments, three case-studies (beamm.brussels, CityLAB Berlin and Femicides in Europe) identified the same structural instruments relevant for the distribution

of tasks – the creation of systems for sharing of information, and the existence of partnerships between different actors. Two case-studies (beamm.brussels and Breakthrough Open Data Project) flagged another strategic instrument – the establishment of coordinating functions or entities.

In terms of managerial governance instruments, one case-study (beamm.brussels) identified strategic planning as a relevant instrument. In this case, the collaboration between CAPE and the Brussels regional government was under a framework which specified clear objectives and targets for the actors. Two case-studies (CityLAB Berlin and Femicides in Europe) flagged the importance of a vibrant interorganizational culture and knowledge management towards the creation of open data and knowledge and towards the creation of civic communities centred on social issues of concern. One case-study (CityLAB Berlin) flagged the importance of capacity building as a managerial governance instrument, to involve non-specialised users. Two case-studies (beamm.brussels and Femicides in Europe) flagged the importance of financial management for the sustained collaboration between a university and regional government (in the case of beamm.brussels) and between journalists, NGOs and regional governments (in case of Femicides in Europe).

### **7.1.2 Specific findings on roles and resources for non-government data holders**

All 4 case-studies involve participation of at least one non-governmental actor.

In the Breakthrough Open Data Project, the non-government actors were GeoBusiness – an association of geo companies, Esri, and Delft University of Technology representing the academic community. These actors, together with the public sector, collectively advised on the need for more open geodatasets. In beamm.brussels, the non-governmental actor was CAPE – an academic research centre. This research centre created the synthetic datasets used to build the tax simulation model – by combining open datasets on statistics with other data on socio-economic indicators. CAPE shares these synthetic datasets upon request. Here, the non-governmental actor played the role of ‘open data user’ as well as ‘data creator’, albeit the datasets created by CAPE are not released as openly licensed datasets.

In both CityLAB Berlin and Femicides in Europe, NGOs were responsible for data collection and for release of this data as open datasets. In Femicides in Europe, journalists contributed to this objective as well. As a result, these two case-studies reveal the roles discharged by NGOs and journalists as creators and holders of non-government open data.

Three case-studies – beamm.brussels, CityLAB Berlin and Femicides in Europe – reveal the importance of shared systems for information exchange as a resource for these non-governmental actors to contribute open data as well as create value from open data. Two case-studies – beamm.brussels and Femicides in Europe – also reveal the importance of financial instruments in the form of funding, to enable the non-government actors to participate in these collaborations.

### **7.1.3 Observations on goals and objectives of open data initiatives**

All case-studies reveal that the creation of economic and social value can be achieved through collaborations between public administrations and more than one open data user group (such as academic institutions, journalists, open data intermediaries, NGOs and/or non-specialised users). One case-study (CityLAB Berlin) also reveal how environmental value can be realised from collaborations – in this case, the watering of trees in the city of Berlin.

Two case-studies (Breakthrough Open Data Project and beamm.brussels) reveal the impact of the collaborations on enhancing effectiveness and efficacy of public services – in the former, enabling

the release of existing datasets as open data, and the in latter in improving the ability of policymakers to assess proposed fiscal policies.

Three case-studies (beamm.brussels, CityLAB Berlin and Femicides in Europe) also reflect the ways in which collaboration with non-specialised users boosted citizen participation – by co-identifying social issues of concern as well as creating civic communities around these social issues.

One of the case-studies (CityLAB Berlin) also serves as an example of open data collaboration enhancing scientific progress, by tracking tree watering in Berlin.

### **7.1.4 Observations on benefits and challenges of collaboration**

Frischmann, Madison and Strandburg (2014, pp 37-38) write that under the IAD framework, the costs and benefits of producing open data and other outputs/outcomes from open data based on the case-studies in the action arena should be compared against the production of similar resources/outputs/outcomes under “IP-based market transactions, government subsidy, or some alternative system.”

In the Breakthrough Open Data Project, Esri and TU Delft provide recommendations on what types of geodata are necessary for users of such open data. These recommendations help improve the quality and quantity of open datasets published by the Dutch government. Legal frameworks like the Open Data Directive impose certain obligations on public administrations to release high-quality geographical datasets. But in the absence of a channel of communication between the data provider (i.e. Dutch government) and data users (such as Esri, TU Delft and other geodata users), the legal framework requiring publication of open geodatasets by government bodies does not in-and-of-itself allow for a shift from a supplier-driven open data ecosystem to a user-driven open data ecosystem. On the other hand, in terms of costs, the Breakthrough Open Data Project was initiated by the Dutch government to improve provision of open *government* datasets, identifying and resolving barriers towards the use of open data, and recommending ways to improve the interaction between providers and users. It had limited impacts in making the non-public sector share open data (i.e., inclusivity) and in improving the distribution of costs and benefits within the open data ecosystem (i.e., circularity).

In beamm.brussels, the collaboration between public administration and an academic institution to develop a simulation tool to assess fiscal policies illustrates how social equity can be achieved in policymaking. This enables policymakers to ‘see’ the potential impacts of fiscal policies before they are introduced, as opposed to after. Further, the existence of open datasets on tax and socio-economic data about Brussels Region enabled the creation of this tool. As a result, it is important to ensure quality, accuracy and representativeness of these datasets. But the beamm.brussels project is not focused on this type of feedback loop between the data providers (i.e. Belgian regional governments) and the data user (i.e. UCLouvain as the creator of the simulation tool).

In the CityLAB Berlin project, the collaboration between an NGO (CityLAB), citizens and local government enabled the creation of a civic community around the preservation of trees and green cover in the city of Berlin. This project integrates citizen-contributed data on tree watering with existing open datasets on tree cover, to improve the quality of existing open datasets. It also enables the creation of a civic culture around citizen contribution and use of open data. Further, the NGO plays an important role as a facilitator of citizen participation. Citizens could have created this project on their own, using existing open datasets, but this does not account for technical skill

gaps among citizens in locating open data and building technical tools like apps using open data. The NGO is an important actor in addressing these skill gaps.

Finally, in the Femicides in Europe project, a multi-actor collaboration between journalists, NGOs, the European Institute for Gender Equality, regional governments, the European Union and citizens as non-specialised users, was crucial in drawing attention to the social issue of femicide in Europe. Funding provided by the European Union was crucial in sustaining this collaboration. Further, the presence of a shared interorganisational culture on the realisation of social value from open data also helped sustain the collaboration between diverse actors. In the absence of these factors, a collaboration of this scale could be possible in theory but would be difficult to execute in practice.

### **7.2 Findings on institutional factors for sustainable collaborations in the open data ecosystem**

The case-studies reveal the importance of institutions, for two purposes: (i) sustaining the collaborations identified in these case-studies, and (ii) replicating the types of collaborations and task distributions in these case-studies to other open data ecosystems.

As mentioned above, for the IAD Framework, institutions encompass both formal and informal norms that define rules, shared understandings, and strategies guiding human behaviour and social decision-making. These shared rules and strategies are collectively developed, enforced, adjusted, and monitored to promote the sustainable use of information resources like open data. Consequently, collaborative actions within the 'action arena' can be distilled into practical institutional insights, potentially allowing for the replication of successful collaborations in different settings. First, the continued release of open datasets by public administrations is important, given that each case-study relied on open government data. These datasets can be released under legal regulations like the Open Data Directive. The scope of open datasets can also be increased voluntarily by public administrations, where additional datasets are made open as in the Breakthrough Open Data Project. Based on the importance of open government datasets for the collaborations studied in this report, legal regulations for the release of open data could be an important institutional factor. Continued implementation of laws such as the Open Data Directive together with the Implementing Regulation on High-Value Datasets combined with regular consultations with open data user and provider groups should be ensured. Further, provide new avenues by which public administrations can acquire data from non-government data holders and make them available to other users for certain types of re-use. There should be continued focus on strong implementation of such legal instruments as well. The combination of open datasets with other partially-open datasets can result in more value contributions, as evident in the beamm.brussels case-study.

Second, the creation of coordinating entities in different sectors could boost collaboration. In the Breakthrough Open Data Project for instance, the Dutch government served as the coordinating entity that brought together public and private sector users of geodata and Dutch public administrations who are providers of open data and enabled the users to share their open data needs. Public administrations at local, regional, national and European level could proactively adopt such coordinating roles, to bring together open data providers and open data users in different domains to openly discuss and address the users' needs. Going one step further, such an approach could also be adopted for the EU Implementing Act on High-value Datasets. A coordinating function could also be performed by public administrations, by providing funding to collaborative open data initiatives, as undertaken by the Brussels regional government in the beamm.brussels case-study.

Third, the creation of partnerships between public administrations and NGOs could also boost collaboration to realise social value from open data. In the CityLAB Berlin case-study and in the Femicides in Europe case-study, there was a clear and formal partnership between the local government (in the former case) and the regional and European government (in the latter case) with NGOs, to work with communities and use open data to identify social issues of concern. In both case-studies, the projects received funding from the respective government bodies and therefore took the form of formal partnerships between the NGOs and the government bodies. These partnerships enable other actors, like non-specialised users, to contribute to open data initiatives. In many cases however, NGOs initiate projects and build partnerships with government bodies on their own, which could take the form of more informal partnerships. In such cases, there should be greater willingness on the part of government bodies to engage in such partnerships with NGOs. The partnership (whether formal or informal) should also include a feedback loop, where citizen-contributed data (as in the case of CityLAB Berlin) and NGO-created data (as in the case of Femicides in Europe) are integrated into open government data initiatives.

Fourth, systems for data and information sharing serve as important infrastructures for collaboration. In three case studies (beamm.brussels CityLAB Berlin and Femicides in Europe), such systems were developed by an academic institution (in beamm.brussels), an NGO (in the CityLab Berlin case-study) and by coordinated action between journalists, NGOs and Eurostat (in the Femicides in Europe case-study). In terms of replicability, not all actors may have the necessary resources and skills necessary to build such infrastructures from scratch. As a result, within the European Union, shared infrastructures like the European Open Science Cloud, could also enable various actors to come together and use this infrastructure to analyse open datasets and generate knowledge from such analysis.

Fifth and finally, a strong inter-organisational culture on the importance of realising economic as well as social value from open data in a collective manner is also important. For example, in the CityLAB Berlin case-study, CityLAB Berlin has a strong internal culture to create social impact. This motivated employees of CityLAB to propose, design and implement the project discussed in this report. Similarly, in the Femicides in Europe case-study, the project was led by journalists, who have a strong culture of using open data for data journalism. These types of inter-organisational cultures can be cultivated using formal institutions like legal frameworks, together with informal approaches to creating shared understandings among the various open data actors.

## 8 Conclusions

### 8.1 Objective of Task 5.1

Per the ODECO DoA, the objective of this Task 5.1 was to “design and review different models of allocating roles, tasks and resources in open data ecosystems.” In this report, we summarise 4 case-studies of collaboration between public administration and one other open data actor group for realising value out of open data. These case-studies serve as illustrative models for the allocation of roles, tasks and resources in an open data ecosystem. From these case-studies and by applying the theoretical concept of the ‘Institutional Analysis and Design Framework’, we propose some institutional factors enabling collaborations between open data actor groups, which could enable replication of these types of collaborations in other open data ecosystems.

### 8.2 Detailed conclusions

An ecosystemic approach to open data recognises both the plurality of actors and plurality of motivations underpinning the generation and use of open data. Previous ODECO reports have identified different open data user needs. Previous ODECO reports have also proposed governance instruments to enable the generation of open data by non-government actors, as well as governance of open data in a manner that enables the realisation of both economic and social value from open data in a participative manner.

In order to identify the different roles for actors to participate, we undertook a review of previous ODECO outputs on open data governance that identified roles, tasks and resources in open data ecosystems. We synthesised findings on the roles discharged by the identified open data actor groups in an open data ecosystem, and the types of value contributions made by these actor groups.

Using a participative design approach, we developed and conducted a workshop at ODECO TW 5, Samos, to identify real-life examples of collaboration between open data actors’ groups to create value from open data. This workshop resulted in four case-studies. In each case-study, ESRs identified the actors involved, the tasks performed by these actors, the level of responsibility accepted by each actor, and the governance instruments that facilitated the distribution of tasks.

From these case-studies and from a review of existing ODECO reports, we studied the different ways in which public administrations collaborate with other open data user groups (including companies, open data intermediaries, journalists, NGOs and citizens as non-specialised users), to realise social and economic value (and in one case, environmental value) out of open data in an open data ecosystem. These collaborations resulted in the release of more open data, improvement of the quality of existing open datasets, creation of visualisation and knowledge from open data, identification of social issues of concern, and the creation of civic communities. Finally, we synthesised some findings on institutional factors that enable sustainable collaborations in our selected open data ecosystem, which could allow our case-studies to become models of collaboration that could be replicated. Drawing from the Institutional Analysis and Design (IAD) framework, we defined ‘institutions’ as “widely understood rules, norms, or strategies that create incentives for behaviour in repetitive situations.” Institutions may be formally described in the form of a law, policy, or procedure, or they may emerge informally as norms, standard operating practices, or habits. The IAD theoretical framework has proved suitable to represent the relations between resources and communities’ attributes, rules and patterns of interactions, particularly in the context of informational and knowledge resources (Frischmann, Madison, & Strandburg, 2014).



We extracted five institutional factors that we suggested could serve as starting points for the sustainable arrangement of actor roles, tasks and responsibilities in other open data ecosystems:

1. There should be continued focus on publication of open government datasets by public administration.

To realise value out of open data, it is important that high-quality open datasets are easily available. Accordingly, public administrations should continue to release open datasets, based on legal mandates as well as on a voluntary basis. For instance, the Italian Military Geographic Institute represents one example of public administrations adopting a pro-active approach to release of open data. This public body creates and maintains a comprehensive geographic database for all of Italy called 'Database di Sintesi Nazionale (DBSN).<sup>2</sup> This database integrates open government data from multiple public bodies, together with other open data such as data from OpenStreetMap and satellite data. As a result, the database contains data on a variety of parameters, such as public amenities, green areas, as well as data on types of property ownership. This database is machine-readable and released under an OdBL License. The database is used by the Italian Civil Protection Department during rescue operations, as it contains high-quality and updated geographic data. (DCPC 2024, pp 23; Santoro 2017). However, to ensure that public administrations prioritise release of open data, it may be important to evaluate different enforcement as well as incentive structures.

2. Coordinating functions should be discharged by public administrations to bring together open data providers and open data users to openly discuss their needs.

Public administrations should routinely consult with open data users and providers from the citizenry, the private sector and the public sector to understand evolving needs of these stakeholders and undertake open data initiatives that respond to these needs. Public administrations should also provide funding to collaborative open data initiatives, which can then serve a coordinating function. For instance, the Glasgow Centre for Population Health coordinates civic projects involving public administrations, academic universities and civil society organisations. This enabled the Glasgow Centre for Population Health to create 'Understanding Glasgow'<sup>3</sup>- a website that hosts visualisations on health and life circumstances, encompassing visualisations on poverty, transport services, population and culture to name a few. (DCPC 2024, pp 31-32).

At the same time, coordinating functions can also lead to open data ecosystems in unexpected ways. For instance, the UK mapping agency – Ordnance Survey – did create large geographic datasets, but many open data users were dissatisfied that these datasets were not freely distributed. This led to the birth of OpenStreetMap (see [https://wiki.openstreetmap.org/wiki/History\\_of\\_OpenStreetMap](https://wiki.openstreetmap.org/wiki/History_of_OpenStreetMap)) – an open platform for crowd-source geospatial data, which could be considered an example of a sustainable open data ecosystem. Future research can explore mechanisms for non-governmental actors to discharge coordinating functions.

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<sup>2</sup> <https://igmi.org/en/dbsn-database-di-sintesi-nazionale/dbsn-database-di-sintesi-nazionale>

<sup>3</sup> <https://www.understandingglasgow.com/>

3. Partnerships should be formed between public administrations / international organisations and other civic open data user groups to co-develop open data initiatives, which can prompt contributions from other actors.

This is another tool for collaborations between public bodies and other civic actor groups. For instance, the Seabed 2020 Project is the product of a partnership between the Nippon Foundation and the General Bathymetric Chart of the Ocean (operated under the auspices of two international organisations - the International Hydrographic Organization and the Intergovernmental Oceanographic Commission of UNESCO). Under this partnership, the two organisations have committed to building the necessary technical, scientific, and management framework to compile all available seabed mapping information into a seamless digital map of the world's ocean floor by 2030. As part of this partnership, private companies like Fugro (a Dutch multinational company) have contributed bathymetry data collected by vessels engaged in routine maritime operations (Papadimitriou, 2023).

4. Shared open infrastructures for publishing and use of data and information are important, including for non-governmental data holders

Shared open infrastructures for accessing, publishing and using open data are important, as not all actors may have the resources necessary to develop such infrastructures from scratch. Within the European Union, shared infrastructures like the European Open Science Cloud<sup>4</sup>, could enable various actors to come together and use this infrastructure to analyse open datasets and generate knowledge from such analysis (Mendez et al., 2020).

5. A strong interorganisational culture oriented towards effecting social and economic impact of open data in a participative manner is also useful.

Organisations should have a strong internal culture of contributing to as well as realising value from open data ecosystems. This can then enable inter-organisational cultures, as well as potentially foster partnerships. These organisational cultures can also serve as motivations for actor groups to engage in open data initiatives. Such cultures can be cultivated using formal institutions like legal frameworks, together with informal approaches to creating shared understandings among the various open data actors.

### 8.3 Future work

While the five institutional factors discussed above do hold insights for future research and policy on open data, this report also contains some limitations. First, this report relies on four case-studies as the empirical data for our findings on institutional factors affecting collaboration. The IAD framework could be applied to more case-studies in future research, to maybe arrive at more holistic findings. For instance, our findings suggest that coordinating functions should be discharged by public administrations. But, in some cases, such functions can be discharged by non-governmental actors as well – as illustrated by the example of OpenStreetMaps. Future research could explore incentives and other enabling factors to enable more non-governmental actors to discharge such coordinating functions. Second, this report focusses on 8 pre-identified open data actor groups and a set of value contributions derived from existing ODECO reports and a pre-identified set of value contributions by these actor groups distilled from a review of previous ODECO reports. Future research could expand on both the actors involved in other open data ecosystems sought to be studied/designed as well as the different types of value realised from

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<sup>4</sup> [https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science/european-open-science-cloud-eosc\\_en](https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science/european-open-science-cloud-eosc_en)

such open data ecosystems. ODECO reports for Task 5.2 and Task 5.3 provide some answers and next steps in this regard.

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Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (Open Data Directive)

Commission Implementing Regulation (EU) 2023/138 of 21 December 2022 laying down a list of specific high-value datasets and the arrangements for their publication and re-use

Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724 (Data Governance Act)

Regulation (EU) 2023/2854 of the European Parliament and of the Council of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act)

## Annex 1: Copies of Pitch Sheets and RACI Tables prepared during the workshop conducted at TW 5, Samos

Actors - 2    Roles - 2  
Objectives - 1

# Pitch

|                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                                                                                                                                                                                                                                                                                                                              |
| <b>Describe the context</b><br>In the geospatial data sector in the Netherlands.<br>In 2018, the Dutch government initiated a project called Breakthrough Open Data Project, and the initiative was led by the CEO of Esri Netherlands.                                                                                                   |
| <b>Describe the actors involved</b><br>Open data intermediaries (Esri Netherlands) played the role of open data advocacy/lobbying to encourage national/regional government (open data contributor) to generate more open data.<br>The results is the release of actual elevation data and data from the Dutch Space office as open data. |





# Pitch


**Title** Open access tax-benefit  
microsimulation model

**Describe the context** → taxation  
In this case I am presenting we  
see a data viz and simulation  
model ~~that~~ (made by a team of  
researchers) to help policymakers  
(at reg. and national level) to  
analyze fiscal policies from  
various perspectives.  
Via this tool we see two actors  
(open data intermediaries + reg. (not govts))  
trying to achieve social equity through

**Describe the actors involved**

Open data intermediaries  
Regional and national government

→ Create visualization and  
knowledge from data  
and identify social issues  
of concern


 Case title: OPEN DATA BASED TAX SIMULATION  
FOR UNDERSTANDING THE SOCIO-ECONOMIC IMPACT OF TAX POLICIES

|                                        | Actor: BEAMM | Actor: <del>REGIONAL</del> NATIONAL AND LOCAL GOVERNMENTS | Actor: REGIONAL GOVERNMENT | Actor: GENERAL PUBLIC |
|----------------------------------------|--------------|-----------------------------------------------------------|----------------------------|-----------------------|
| Activity: DATA COLLECTION              | R            | R                                                         | R                          | /                     |
| Activity: DATA ANALYSIS                | R            | I                                                         | I                          | I                     |
| Activity: SIMULATION AND VISUALIZATION | R            | I                                                         | I                          | I                     |
| Activity: ADVOCACY                     | /            | (C)                                                       | (C)                        | I                     |
| Activity: FINANCIAL SUPPORT            | A            | I                                                         | R                          | I                     |

R Responsible  
A Accountable  
C Consulted  
I Informed

# Pitch

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title                        | Identify social issues of concern: <sup>Difference between illegal</sup>                                                                                                                                                                                                                                                                                                                                                              |
| Describe the context         | <p><del>Local Govern</del> <sup>in</sup> <sup>immigrants and refugees</sup> <sup>for identify</sup> <sup>UN RA</sup> <sup>refugee</sup></p> <p>Local Government in cooperation with UN RA is going to develop a database that will contain all basic personal information. The database will be linked through API with Police Databases in order to know who is a "legit" refugee and who is considered as an illegal immigrant.</p> |
| Describe the actors involved | <p>Actors } Local Government<br/>NGO. (United Nations Refugee Agency)</p> <p>Roles : Regulator , Consultant</p> <p>→ <del>Become informed citizens</del><br/>Identify social issues of concern</p>                                                                                                                                                                                                                                    |

 **ODECO**

**Case title:**  
 identify social issues of concern:  
Difference between illegal immigrants and refugees

|   |             |
|---|-------------|
| R | Responsible |
| A | Accountable |
| C | Consulted   |
| I | Informed    |

|                                                                                    | Actor: Local Government | Actor: NGO (UNRA) | Actor: Port Police | Actor: |
|------------------------------------------------------------------------------------|-------------------------|-------------------|--------------------|--------|
| Activity: Identification and data entry of basic details                           | C                       | R                 | A                  |        |
| Activity: Healthcare data provision                                                | I, C                    | R                 | I                  |        |
| Activity: API and infrastructure provision                                         | R, A                    | I                 | I                  |        |
| Activity: <del>Platform</del> Development, implementation and database development | R, A                    | I, C              | I                  |        |
| Activity: Final platform implementation                                            | C, A                    | R                 | I                  |        |

# Pitch

Title CityLab Berlin / The Gieß den Kiez Project

## Describe the context

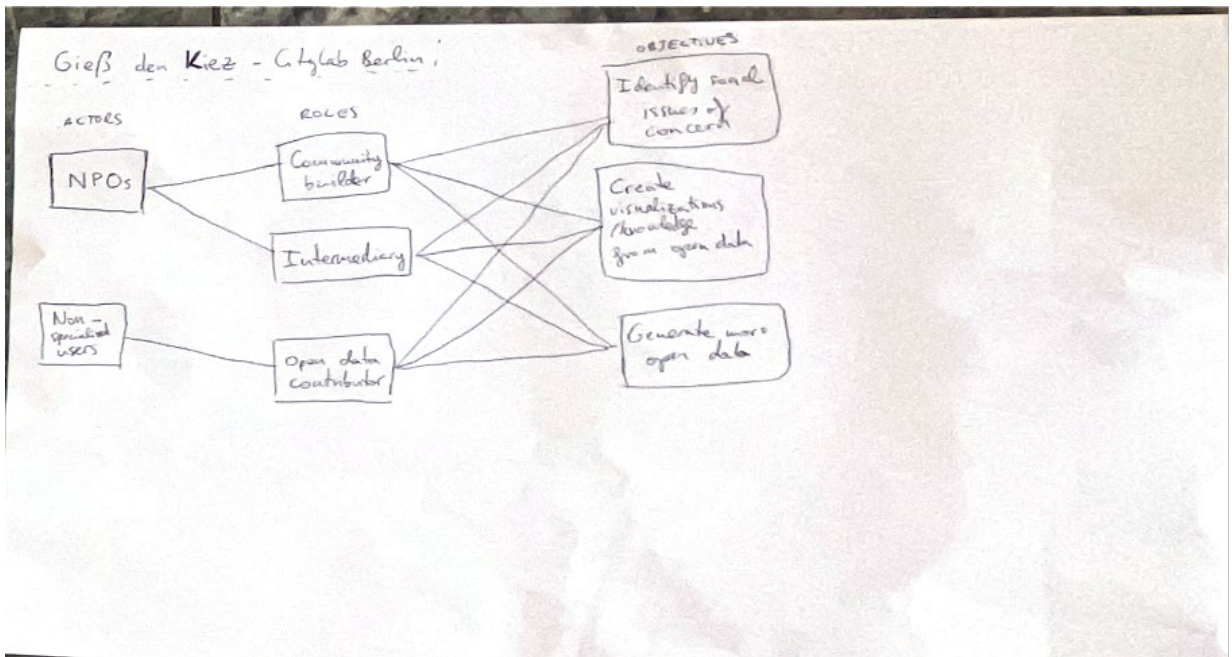
- Gieß den Kiez / bring together community / people who want to cater for watering trees in the city.
- They use open data for weather / national meteorological data (OpenStreetMap for maps)
- Log in info on trees watering through an app / website


Roles: open data contribution (non-specialised users)  
- intermediaries and community building (NGOs)

## Describe the actors involved


- Non-specialist (citizens)  
users
- NGOs

Objective → Hector



 Citylab Berlin "Gieß den Kiez"

|                                                                    | Actor: NPO | Actor: non-specialist users | Actor: Berlin municipality | Actor: |
|--------------------------------------------------------------------|------------|-----------------------------|----------------------------|--------|
| Activity: collected the data                                       | R A        |                             |                            |        |
| Activity: created an app (visualisation)                           | R A        | C                           | I                          |        |
| Activity: update the data on the app <small>(from sources)</small> | R A        |                             |                            |        |
| Activity: add data manually                                        | R A        | R                           | C                          |        |
| Activity: maintaining the code                                     | R A        |                             |                            |        |



# Pitch

**Title** Femicides the undeclared war on women in EU

**Describe the context**

6,593 women were intentionally killed in Europe between 2011 and 2021. 64% of them were killed by their partner, 36% by a relative, according to Eurostat.

**Describe the actors involved**

Eurostat  
National Governments  
Journalist - (European Data Journalists Network)  
Citizens.

Objective.

Identify social issues of concern

Become informed citizens.

Improve quality of existing OD.

Actors.

NGOs

Journalists.

Non specialised users.

Regional / National government.

Roles.

open data contributor

community builder

open data user



D5.1 Models of allocating roles, tasks and responsibilities in open data ecosystems

**ODECO** Case title: Femicides in Europe

|                                               | Actor: European Institute for Gender Equality | Actor: European Union (EU) | Actor: Eurostat | Actor: Journalist EDJNET 12 european media outlets |
|-----------------------------------------------|-----------------------------------------------|----------------------------|-----------------|----------------------------------------------------|
| Activity: Collect Data                        | R/C                                           | A                          | R               | R                                                  |
| Activity: Publish Data                        | R                                             | A                          | R               | R                                                  |
| Activity: Create visualisations of data       | C                                             | A                          | R/C             | R                                                  |
| Activity: Create a Data base (enriching data) | C/I                                           | A                          | A               | R                                                  |
| Activity: Dissemination / Inform citizens     | A                                             | A                          | R               | R                                                  |
| Activity: Analyse Data                        | A                                             | A                          | A               | R                                                  |

Requesting rnr  
Verification

Case title: \_\_\_\_\_

| Actor | National Authorities | Actor: Citizens | Actor: NGO, Journalism IHedlab (Institute for media education & research) | Actor: NGO NIIR (netherlands institute for international reporting) |
|-------|----------------------|-----------------|---------------------------------------------------------------------------|---------------------------------------------------------------------|
|       | A/C                  | I               | C                                                                         | C                                                                   |
|       | A                    | I               | C                                                                         | C                                                                   |
|       | A                    | I               | R                                                                         | R                                                                   |
|       | A/C                  | I               | C                                                                         | C                                                                   |
|       | A/C                  | I               | R                                                                         | R                                                                   |
|       | A                    | I               | C                                                                         | C                                                                   |