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# A co-design approach for strong sustainability through a territorial framework

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**Abstract.** Regarding the actual climatic and environmental stakes, citizens need more than ever to be involved in planning and design processes. Within the perspective of sustainability as a wicked issue, this involvement might come jointly with an enlargement of individual perspectives towards collective visions, including not only humans but largely all living species, through time and space. Within a complex global problematic, we foresee that the usual problem and solution co-design process proposed is no longer adequate. Therefore, through this paper, we propose the foundations for a new co-design approach favourable to the design of a common interest through the development of a territorial ethic. As a preliminary step before gathering stakeholders in the context of complex problems, we propose a methodological approach of investigation based on multi-sited ethnography that supports a work of wicked problem identification and analysis. Finally, through a case study in the remote mountain territory of Matheysine, we present the result of our investigation and the identification of local wicked issues.

**Keywords:** sustainable design, co-design, participatory design, territory, territorial dynamics, wicked problems, ethics

## 1 Introduction

In 1972 at Design Participation conference, Cross was already highlighting the refusal from many people to pay “the price of progress” (referring to the harmful side effects of industrial developments), and the need for users’ involvement in the planning and design processes [8]. Fifty years later, “the price of progress” has increased exponentially leading to the overrun of six out of the nine biophysical limits assessed [15], and moving towards truly sustainable human activities reveals, more than ever, to be a major stake.

As a complex problematic, sustainability requires moving towards a more integrative framework able to deal with wicked problems [18]. On the contrary, public controversies or disagreements that oppose groups of people, the wicked problems are fluid and ambiguous and they may not enable the identification of opposite groups of entities.

Within a world of contradictions, valorising consumption and individualism while at the same time warning about the climatic and environmental stakes people feel torn and most of them have difficulties letting collective resilience prevail from individualistic comfort. Therefore, we can assume that the wicked problems are not only a question of divergences of visions between people but also of individual inner conflicts unresolved. Within this perspective, a traditional problem and solution co-design process may reveal insufficient to tackle those new types of conflicts.

As a way of involving citizens, the new challenges of co-design would be to deal with transitional ruptures, by handling individual contradictions and lock-ins that prevent the construction of a community of interests. Consequently, the usual scope of co-design engineering needs to be shifted to multi-dimensional [7] and localised approaches [11]. At the same time, the co-design researcher shall enable collective visions to be built through a large understanding of local stakeholders.

In this sense, territories as local ecosystems, are interesting opportunities to be explored in the perspective of increasing sustainability in the co-design process. Moreover, territories have central places within ecological transition when it comes to articulating global challenges, local adaptation, and resilience [20].

Through the evolution of participatory design approaches, several methodologies and tools such as the living labs have been used to involve communities in co-designing socio-territorial innovations with and for them [19]. Nevertheless, within the shift towards a territorial framework with a problematic of building a common interest, new approaches for local wicked problems analysis have to be developed.

This article intends to propose a methodological approach for wicked problem identification and analysis within a territorial field to develop the preliminary steps for a co-design approach towards the creation of a common territorial interest. In the first part, we analyse the state of the art to present a proposal of framework and features to increase the potential of sustainability of co-design. We analyse the realised experimentations for sustainable co-design, their results and the perspectives we can draw from them. Then, we present a proposal for a new scheme of co-design. In the second part, we expose our case study which focuses on the French Alpine territory of the Matheysine, an isolated mountain territory with an interesting mix of activities, including tourism and agriculture, but also a web of industries that is untypical for remote mountain areas. We present the multi-sited ethnographic investigation that was realised and the methodological approach for wicked problem identification and analysis.

## **2 State of the art and proposal**

Through a literature review, we develop in the following chapters a proposal for new foundations of a co-design approach within territorial frameworks. To reach such targets, we propose a preliminary step, currently missing in the co-design process, aiming at identifying the territorial wicked problems through a multi-sited ethnographic investigation.

## 2.1 New framework and expected outcome

Sustainable engineering science and design for sustainability literature propose to shift toward more integrative frameworks, capable of dealing with complexity by anticipating and adapting and by dealing with conflicting views through cooperation [6, 18]. In the following section, we will present our proposal for a new co-design scheme embedded in an integrative territorial field and aiming at the construction of a territorial ethic. This proposal is realised through literature theory but also thanks to an analysis of the experimentations realised, the results and the perspectives they draw.

**Integrative territorial field.** Through the analysis of the design evolution and its application for sustainability over the years, Ceschin and Gaziulusoy propose a classification of design for sustainability approaches into sixth levels that are ordered depending upon their capacity to increase sustainability in design [6]. We will detail hereafter the highest level that they name: the socio-technical-ecological level.

The scope of intervention at this level targets innovations that address systemic changes. By systemic we intend to describe a process that pays attention to interactions more than to entities (side effects, rebound effects for example). This vision implies the consideration of a **multi-dimensional system** including time, space, and species [6, 10].

On the other hand, the problem framing of the socio-technical-ecological level aims to contribute to the resolution of Earth problematics. This has been described also as the ‘milieu’ that relates to anchored **local interactions**, in opposition to the ‘environment’ that designates everything surrounding humans [11].

Co-design for sustainability shall then operate in a framework of the milieu, for it shall drive a practice anchored in local interactions that takes into account the multi-dimensionality of the system (space, time, species ...).

In design for sustainability approaches realised in territorial contexts, territories are only seen through the prism of corporations and as providers of resources or receivers [1, 9]. Environment or territories are surrounding entities that shall be taken into account by the corporation regarding its positive or negative externalities. The focus stays on a limited system composed of the firms and without consideration for a more global ecosystem, therefore it implies no or little anchoring in local interactions, which is not compliant with the conceptual background we introduced before.

On the other side the principles of design proposed by Escobar or Grimal do not specifically experiment within local frameworks, but they integrate a systemic reflection that takes into account local interactions and their relation with global environmental impacts [10, 11]. In Escobar's ideation workshops, she proposed a regenerative design principle that implies developing regenerative instead of less damaging relations with living systems [14]. This principle was well operationalized by participants, enabling a reflection through time and species [6]. However, in Grimal's experiments with digital artefacts, although stakeholders integrated the systemic connection between local and global, they did not operationalize it because of their limited understanding of the role of the Life Cycle Assessment tool and planetary boundaries compliance.

We, therefore, propose to orient co-design practices for strong sustainability towards **integrative territorial fields** which would enable through their historical and natural patrimony, their variety of economic activities, and their interdependencies with other territories to integrate past, present, human, multi-species, local, and global dimensions.

**Construction of a territorial ethic.** Within a wicked problem approach of sustainability, T. Seager explains that the complexity it presents cannot be handled through traditional engineering approaches. Therefore he proposes some features of sustainable engineering science such as expertise and ethics, that could support it [18].

Engineering approaches for sustainability tend to tackle complexity with an ethical analysis limited to professionals with simplification, optimisation, or risk reduction. Within a wicked problem approach, we consider that individuals shall be accountable for the global consequences resulting from the application of an innovation [18]. Consequently, ethical consideration cannot be limited to individual scales but extended to a **collective ethic**, that takes into consideration all types of life.

The cross and trans-disciplinary approach to wicked problems bring the researcher to *“learn about a field, including its collective tacit knowledge”* [18] to develop **interactional expertise**. Indeed, he will be the translator between participants coming from different backgrounds, enabling connections between them, but also understanding their postures and supporting convergence within the confrontation of opinions [11].

The methodologies proposed by [1, 9, 10] essentially experiment within organisations (firms or students). Therefore, the openness to other perspectives limits to context of shared values or objectives. On the other side groups of students had to collaborate with a professional sponsor for a life cycle assessment work, mixing two different worlds. Nevertheless, the duration of the experiment was too short to enable the development of interactional skills among students. With scepticism regarding the power of the group and the potential fear of conflicts, they restrained the number of interactions with the sponsor and therefore limited the potential for collaboration [11]. Some principles for strong sustainable engineering integrate a reflection on multi-dimensional frameworks (planetary boundaries, social foundations, ecocentrism...) bringing an ethical perspective that expands beyond the groups of participants [10, 11]. Nevertheless, in some cases although the participants preliminary state that they share a collective ethic of care [11] those wider perspectives do not necessarily lead to changes in their practices during experimentations.

Co-design for sustainability needs to integrate a variety of territorial actors to expand the ethical consideration of the group towards a **territorial ethic**. Through the confrontation of individual representations and objectives, stakeholders might develop new interactional skills enabling the creation of a common interest. At the same time, a long-term perspective shall be considered for the interactional expertise to be developed. For the researcher in co-design but also the stakeholders, a wider understanding of reality needs to be acquired through an **immersive investigation**.

Dealing with a systemic framework might induce a shift towards complex problematics. Wicked problems, also known as complex problems, might help in understanding the characteristics of complex problems and they could be highlighted.

## 2.2 Complex problematic approach

Participatory design processes for socio-territorial innovations such as living-labs generally, start either from a consensus on a problem or from an existing social community. Therefore, how can a researcher in co-design handle a situation “*where no consensus seems to be within immediate reach, where no social community exists*” [19]? The industrial-age science was defining problems in narrow ways, leading to restrained solutions. Therefore, new approaches have to be developed to enable dealing with the core issues entailing complexity, such as sustainability.

The concept of wicked problems, also called complex or ill-defined problems is often associated in the literature with complexity, and sustainability. Norton [13] defines wicked problems by five main characteristics: difficulties in problem formulation, multiple but incompatible solutions, open-ended timeframes, novelty (or uniqueness), and competing value systems or objectives.

Wicked problems are experienced as ambiguous, fluid, complex, political, and frustrating because they are socially defined, as a result of different individual constructions that predispose people “*to see the world in different ways*” [17]. Their formulation itself is the major problem to be solved. As “*every wicked problem is a symptom of another, “higher level,” problem. its formulation needs to be specific enough to enable the design of a concrete solution and broad enough not to cure symptoms*” [16].

Once wicked problems are correctly formulated, their resolution cannot be operated through traditional linear methods of problem-solving. They require to get free from the individualistic visions by putting “*the whole system in the room*” [17]. Dealing with wicked problems needs collective strategies to be considered for the real challenge is “*to build a community of interest where none existed before*” [17].

Therefore, a preliminary phase, for wicked problem analysis and formulation, needs to be realized before considering initiating a co-design process. In the following chapter, we analyse how the multi-sited ethnography could support this phase of wicked problem investigation.

## 2.3 A multi-sited investigation

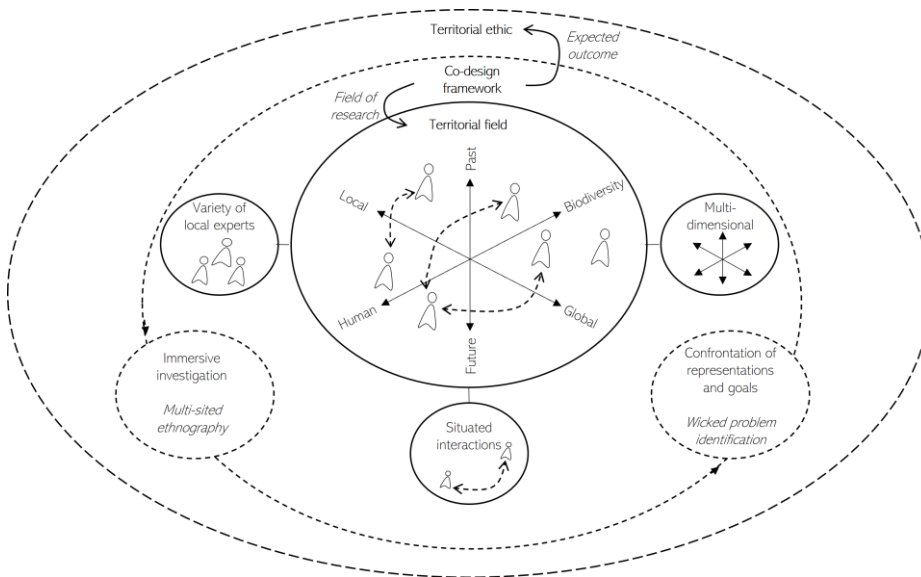
Reflecting on the inadequacy of social theories to apprehend a world marked by local and global interactions, Marcus [12] proposes to shift to a new mode of ethnography: the **multi-sited ethnography**. As an interdisciplinary adaptation of ethnography practices, this new mode could adapt to more complex object study. This mobile methodology implies multiple sites of activities and fewer distinctions between lifeworld and system by constructing connections among sites. As an exercise of mapping within the context of an unclear object of study, the multi-sited ethnography seems very relevant for our preliminary phase of field investigation. Several methodologies are proposed to fulfil the conceptual vision of multi-sited ethnography such as “follow the story”, and “follow the life or biography” but also “strategically situated ethnography” [12]. The latest proposal aims at a foreshortened multi-sited project that enables to project a local reality towards other sites by wondering what in those “worlds apart” is specific or similar.

Regarding a territorial field composed of a variety of local actors, the multi-sited ethnography could consist of an investigation open to a broad range of actors, representative of the territory.

## 2.4 Proposal of a co-design framework for sustainability

We hereby synthesize the previous chapters into an approach for a co-design framework for sustainability:

- **A co-design framework embedded in a territorial field:** which enables the integration of several dimensions (past, present, future, human, multi-species, local and global), including a variety of ‘local experts’ and situated interactions;
- **A co-design framework integrating preliminary phases:** consisting of a multi-sited investigation for wicked problem analysis;
- **A co-design framework aiming at developing a territorial ethic:** through the confrontation of individual representations, goals and knowledge and immersive investigations to learn about the expertise of other territorial actors.



**Fig. 1.** Framework of a co-design for sustainability

**Fig. 1** schematizes the previously detailed approach. The core circle named “Territorial field” corresponds to the field of research of the co-design framework, with its three associated characteristics of local experts’ variety, situated interactions and multi-dimensionality. The intermediate circle “Co-design framework” represents the preliminary activities, of multi-sited ethnography and wicked problem identification, to be

realised in the co-design process. Finally, the external circle “Territorial ethic” relates to the expected outcome of the co-design for the sustainability process.

### 3 Methodological approach and case study

The Matheysine is an isolated French Alpine territory with an interesting mix of activities, including tourism and agriculture, but also a web of industries untypical for remote mountain areas. Historical and natural heritages are highly visible through the landscapes, between the wastelands of the former mine and surrounding lakes and mountains.

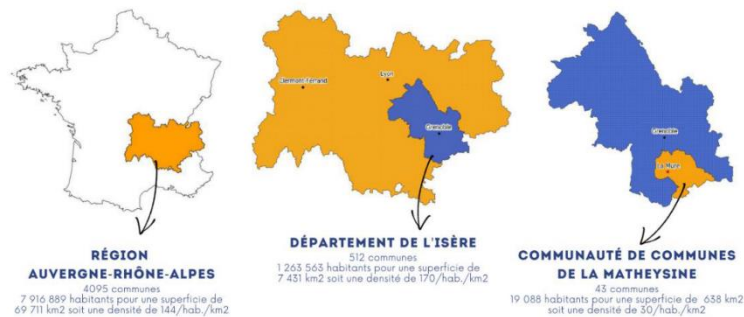


Fig. 2. Geographic location and demographic of Matheysine inter-municipality

#### 3.1 Investigation

**Methodological approach.** To lead a territorial multi-sited ethnography, we need on the first hand to develop some hypothesis regarding the territorial wicked problems, through existing documentation and informal interviews. On the other hand, those hypotheses will support the construction of an interview grid for the semi-guided interviews to be conducted. At the same time, this work of documentation will enable a preliminary characterization of the panel of territorial actors to be interviewed.

**Documentation analysis.** Through a varied documentation analysis going from research works to master’s student reports, press, institutions’ websites, or minutes of the local public councils, we discovered a territory that although isolated has been widely investigated and knowledge produced. This first phase enabled to develop the following hypothesis:

- A loss of identity after the Mine shut down;
- A fragmentation of the modern institutional territory expected to replace the disappearing Mine system;



- A paradoxical representation of an ideal autonomy of the territory under the Mine system, whereas the reality was one of substantial state subsidies through 'Charbonnages de France'<sup>1</sup>;
- A mistrust towards external actors;
- A lack of cooperation and collaboration among territorial actors.

**Interviews.** The second phase of the field investigation consisted of a series of semi-guided interviews. Twenty-nine (29) interviews were conducted regarding the representations and practices through different thematic identified thanks to the previously developed hypothesis. The thematic brought during interviews are detailed in the following **Table 1**.

**Table 1.** The main themes of the grid of interview

| <b>Main themes</b>    | <b>Sub-themes</b>                                      |
|-----------------------|--|
| Past of the territory | Local familial trajectory                              |
|                       | Image of the Mine                                      |
|                       | Territorial reaction to Mine shutdown                  |
|                       | New economical dynamics                                |
| Worker's life         | Personal trajectory                                    |
|                       | Motivations for working in the territory               |
|                       | Relations with other actors                            |
|                       | Advantages and constraints of local work               |
| Inhabitant's life     | Knowledge on local services and activities             |
|                       | Personal network and local relationship                |
|                       | Daily travels for local or non-local workers           |
| Future                | Outlook for territorial evolution                      |
|                       | Wish for future outsider's perception of the territory |

The variety of activities, roles, working localization, and arrival in the territory are described in **Table 2** below.

**Table 2.** Repartition of semi-guided interviews

| <b>Activity</b>                     | <b>Role</b>              | <b>Working area (*)</b> | <b>Arrival</b>                 |
|-------------------------------------|--------------------------|-------------------------|--------------------------------|
| Public administration               | 5 Technical public agent | 9 La Mure               | 8 Recent (<5 years) 6          |
| Industry / Services for Enterprises | 9 Elected                | 4 Plateau of La Mure    | 13 Intermediate (5-10 years) 3 |
| Agriculture                         | 4 Executive / Employee   | 7 Valbonnais            | 1 Long (10-20) 4               |
| Shops/Services                      | 2 Director               | 5 Beaumont              | 3 Very long (>20 years) 2      |
| Education                           | 1 Self-employed          | 3 Not concerned         | 4 Native 10                    |

<sup>1</sup> 'Charbonnages de France' was a national public organisation (1946-2007) managing the French mining operations with a central way of operating.

| Activity       | Role         | Working area (*) | Arrival       |
|----------------|--------------|------------------|---------------|
| Tourism        | 4 Researcher | 1                | Not concerned |
| Water / Energy | 3            |                  |               |
| Residential    | 1            |                  |               |

(\*) The territory is usually split into four main areas: The county seat of La Mure (82% of the population), the Plateau of La Mure (53% of the population), the Beaumont area (10% of the population), the Valbonnais area (9% of the population)

### 3.2 Wicked problems analysis

**Methodological approach.** Based on the coding of eight (8) interviews realized through an analytical grid of analysis, we identified the paradoxes and conflicts that appeared and tried to group them to formulate the main wicked problems. Three main wicked problems had been identified and were formulated as such: (WP1) a bad image of the territory and a reluctance to attractivity, (WP2) an ideal of self-sufficiency despite many dependencies, (WP3) a lack of cooperation between actors despite many institutional projects. Each major wicked issues were related to a set of themes of the grid of analysis, enabling to refine the analysis through a targeted extraction.

**Table 3.** Grid of themes selection for wicked problem analysis

| Themes                     | Wicked problems |      |                              |     |      |     |
|----------------------------|-----------------|------|------------------------------|-----|------|-----|
|                            | WP1             | WP 2 | WP3                          | WP1 | WP 2 | WP3 |
| Agriculture                |                 | X    | Identity                     | X   |      |     |
| Economic development       | X               | X    | Image and representation     | X   |      |     |
| Financial subsidies        |                 | X    | Local institutions           |     |      | X   |
| Planning                   |                 | X    | Relations between actors     |     |      | X   |
| Assets                     | X               | X    | Dependencies and attachments |     | X    |     |
| Attractivity               | X               |      | Tourism                      |     | X    |     |
| Other territories          |                 | X    | Transformation               |     |      | X   |
| Flow of people             | X               | X    | Valorisation                 | X   |      |     |
| History / Patrimony / Mine | X               |      |                              |     |      |     |

**Wicked problem identification.** Through the corpus extraction, we could go deeper into the analysis of the incompatibilities and paradoxes that appear between actors' points of view.

*Representation of the territory.* Territorial actors feel proud of the beauty and well-being of their territory but complain about a bad image related to the mining past that would still impregnate outsiders' perceptions. Some of them speak about "tales" spread from people living in Grenoble, the closest metropole, when they announced their moving up to the territory. Those stories relate to a dark image of the territory but also to prejudices regarding the lack of hospitality and difficulty in making connections with

local inhabitants. A recurrent proverb comes in the discourses of long-time and native inhabitants “*You would better have a mole in your garden than a matheysin*”, most of the time presented as a funny reality instead of a critic. Most people formulate the wish to have a desirable image such as Vercors (a close territory within the Regional Natural Park of Vercors) but without the drawbacks of real estate cost increase and migration flow of urban people. Although there exists a desire to show a better image, social attractiveness is sometimes criticized through the arrival of urban people post-COVID who “*need to stop invading us*” and associated new housing construction that “*denatured our nice countryside*”. From a touristic attractiveness perspective, although the president of the inter-municipality association claims in the press that “*tourism is our spearhead*”<sup>2</sup> many territorial actors complain about the over-visitation of natural sites and the resulting use conflicts during heatwaves. Finally, the contradiction between the desire to communicate a better image and the fear of social and touristic attractiveness appears simultaneously in many discourses. Nevertheless, the people interviewed never underlined those contradictions, such as it was a blind spot for them.

*Imaginary of autonomy.* Confronting representations to practices confirms the permanence of an image of autonomy versus different forms of dependencies in practice (subsidies, work, investment, skills, and market labour...). A “*fear of being swallowed by the Metropole of Grenoble*” seems to drive reluctance to collaborate with external actors, including other adjacent territories with whom “*forced weddings*” have to be realized to apply to European programs for rural development<sup>3</sup>. At the same time, up to recently, the economic development has benefited from a “*consequent capital*” thanks to the shutdown of the Mine. Indeed, an industrial transition program took place in the 80s after the announcement of the Mine shutdown, enabling the installation of a variety of industries from independent entrepreneurs up to worldwide group subsidiaries. Nevertheless, local industrial development faces recruitment issues due to a lack of local competencies or difficulties in limiting the turnover of some job positions. On the other hand, the presence of this economic web has led to the development of local services enabling inhabitants to have a local life “*at a human size*” with “*nothing to envy to the big cities*”. Agriculture is another economic area that is well developed and initiatives burgeon for direct selling, yet a fifth supermarket recently opened in the county seat. The budgets of municipalities and inter-municipalities are tight and lead to no other solution than asking for other institutional financial aids “*We cannot do on our own, we have no sufficient budget and incomes*”. Such as for the project of transition of the low altitude ski resort, with a 22 million euros project, and a 4 million contribution from the inter-municipality association. Similarly, to the desirable image wishes, the autonomy is wished in some aspects but at the same time, no one can deny the mandatory inter-dependencies with other territories, close or far.

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<sup>2</sup> <https://www.ledauphine.com/politique/2021/09/18/isere-coraline-saurat-nouvelle-presidente-de-la-comcom-le-tourisme-est-le-fer-de-lance-de-la-matheysine>

<sup>3</sup> [https://ec.europa.eu/enrd/leader-clld\\_en.html](https://ec.europa.eu/enrd/leader-clld_en.html)

*Lack of inner energies convergence.* Analysing the everyday practices of the different actors on the territory highlights the lack of inner energy convergence. Connections between people, and economic or cultural activities do not seem to come naturally. For instance, native and newcomer inhabitants are described by a newcomer, installed for twenty years as difficult because “*they do not mix much [...] due to a big cultural gap*”. A cultural event such as a street art festival seems to gather a very large majority of non-native volunteers and participants. Regarding professional actors, it seems that despite a territorial identity that values solidarity and mutual aid, cooperation towards common territorial goals is difficult. Within the economic sector, several groupings exist for private actors of industry or enterprises, but also for shoppers, as well as associative and institutional structures supporting local growers and farmers. However, people do not see any common stakes that would motivate collaboration between those entities, and at the same time inside those entities people in charge of the animation face difficulties in creating collaborative dynamics. On the side of civil society, cooperation with associative or institutional actors is also said to be difficult to put in place in the county seat of La Mure. Institutional projects such as the *Petit Train de La Mure* (a reactivation of the old mine train dedicated to tourist tours) are criticized because of the substantial budget they used regarding the poor contribution to local stakes. Another project such as a third-place called *Techno-Temps*, emerged thanks to European subsidies, but without any implication for civil society. The president of the inter-municipality, who was elected after this project was launched, stated that for her “*this project was unclear since the beginning*”. On this aspect of local energies, we see many actions from local institutions to collect financial aid to support projects, but no democratic instance to support dialogue with the civil society and professional actors to give sense to those projects and create common goals.

Finally, this analysis shows somehow a shared vision of the territorial wishes and associated fears. Indeed, most contradictions did not appear between actors but within actor’s discourses.

## 4 Discussions

As we can foresee throughout those descriptions of local wicked problems, they all seem connected in some ways, as Buchanan [3] would mention “*Every wicked problem is a symptom of another, "higher level," problem.*”. Therefore, we need now to analyse which of those three wicked problems seems the most relevant to enable gathering stakeholders and what other steps shall follow.

**Wicked problem analysis and selection.** This ethnographic study aimed to investigate the field to identify wicked problems before gathering actors in a participatory process for socio-territorial innovation. The inner conflicts identified previously could be interpreted as an expression of the contradiction between what is desirable, and what would be preferable. The desirable aspect could refer to a wish of conforming by resembling to other territories, whereas the preferable aspect would be to expect something more

tailored to the territorial specificities. But how to “*constructively deal with disagreements*” [19] when those divergences are mostly between what is desirable and what is preferable? Within an approach aiming to construct a common territorial interest, we need to point out one of the identified wicked problems that can either integrate a democratic aspect to include as many human actors as possible, but can also integrate the multi-species dimension. Therefore, the wicked problem “Imaginary of autonomy” seems the most relevant to enable a collective action that would take into account all species. Indeed the “Representation of the territory” might be too strongly connected with institutional policy, such as territorial marketing, and “Lack of inner energies convergence” is by itself integrated into our objective of creating collective action through co-design processes.

To pursue our deductive work of developing a new co-design scheme for sustainability within the territorial framework, the wicked problem selection might be followed by some other steps before envisaging gathering stakeholders.

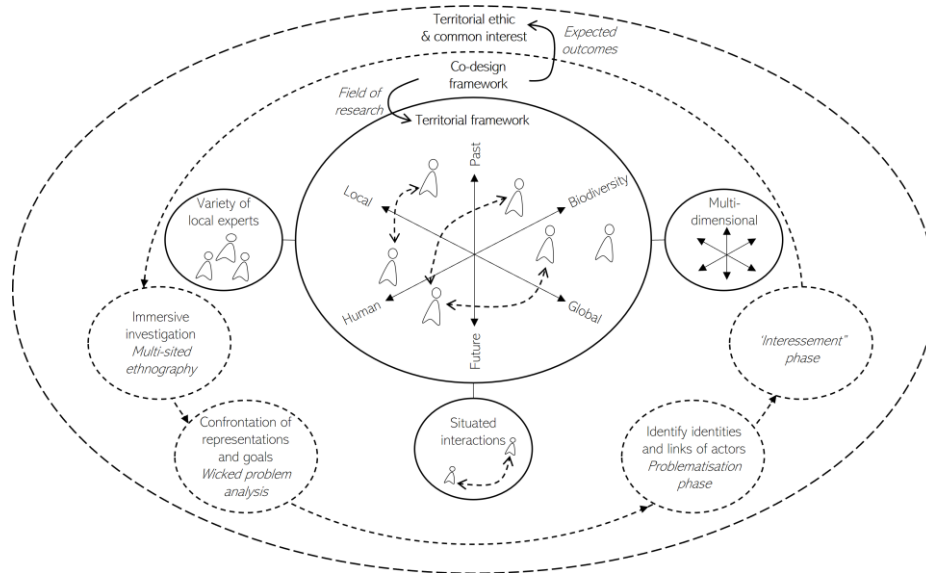
**Problematisation phase.** The result of this investigation phase led us to understand that the territorial situation is wicked. Indeed, this complex situation reveals the need for a preliminary phase of problematisation. As described by Callon [5], problematisation is not about resuming investigation to a simple formulation but about establishing the identities and links of actors (social and natural entities) through a simple question that can be in our case: can we abandon our dependencies and attachments? In itself, the analysis of one’s dependencies and attachments are a source of inner tensions that may enable to work on the alignments of inner conflicts of participants.

**‘Interessement’ phase.** The phase of ‘interessement’<sup>4</sup> proposed by Callon [5], which follows problematisation, targets an attempt to impose and stabilise the diverse identities of actors in presence, from social and natural world. Although territorial problematisation may have been realised, entities can either choose to be integrated into the plan or deny it. Other questions of availability and social barriers may be questioned to engage different groups and provide a fertile environment for co-design.

For the continuation of our work in defining a new approach of co-design towards the creation of territorial common interest, we foresee that the usual problem and solution co-design process needs to be adapted. Indeed, this new approach might enable varied actors to share and confront their individual territories of livelihood for them to be capable, in a second phase, of building a community of interests. As mentioned by Roberts “*Once people saw the value of getting “the whole system” together, they figured out a way to keep it going*” [17]. But main issue for this approach, in the co-design framework proposed, may reveal in enabling natural world to also have a voice in order to have a representative holistic system.

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<sup>4</sup> Not translated in [5]. The French meaning of ‘interessement’ relates to the process of capturing the interest of people.



**Fig. 3.** Framework of a co-design for sustainability and preliminary phases toward the design of a common territory interest

In **Fig. 3** the additional steps of problematisation and ‘interessement’ have been added in the intermediate circle of the “co-design framework”. At the same time a “common interest” has been added to the expected outcomes.

## 5 Conclusion

With a proposal to shift co-design within paradigms of strong sustainability, this work proposes foundations for a new approach of co-design that develops a design of common interest based on complex problematic identification. The novelty lies in the early positioning of this approach in comparison to usual participatory design processes. Indeed, this approach does not aim at formulating a problem to find solutions, but at establishing a common ground for territorial action. Through this, we foresee that this work could contribute to future work of research-action and largely to the predominant stake of supporting the emergence of strongly sustainable collective actions. Indeed, inner conflicts may also be present in each and every individual as a result of the antagonism between scientific reports from IPCC<sup>5</sup> (Intergovernmental Panel on Climate Change) and the institutional denegation of climatic stakes.

As a perspective, Brunet [2] proposes the notion of “concernment” to analyse the conversion of private difficulties or silent discomforts into public problems. This conversion includes a concrete individual engagement aiming at reducing tensions between the social individual and its milieu. This analysis of how people may shift from passive

<sup>5</sup> <https://www.ipcc.ch/>

“concernment” to active engagement may be of help in our work of ‘interessement’ in order to enable the inner tensions identified to be translated into shared problems. As an insight of this research, the analysis of territorial problematisation could support the development of co-design tools and methods enabling local stakeholders to share their own tensions, and largely to reflect on the territorial tensions that may exist. Through the principle, developed in paragraph 2.1, of integration of variety of local ‘experts’ and projection in multiple dimensions (such as present and future, local and global, human and nature) we make the hypothesis that the stakeholders will be brought to to formulate problems with a systemic reflexion, bringing therefore to a problem formulation oriented toward strong sustainability.

Nevertheless, the question of non-human contribution within the co-design process, and especially for our work in the phase of ‘interessement’, may reveal difficult. For years we have lived with an anthropocentric perspective that excluded those entities from our direct concerns, and although we are trying to help translation between different human entities, we also need to develop ways of translating worlds of other dimensions (species, time and space). Therefore, one perspective of our work will be in enabling the contribution of natural entities within the work of shifting from individual to collective “concernments”.

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