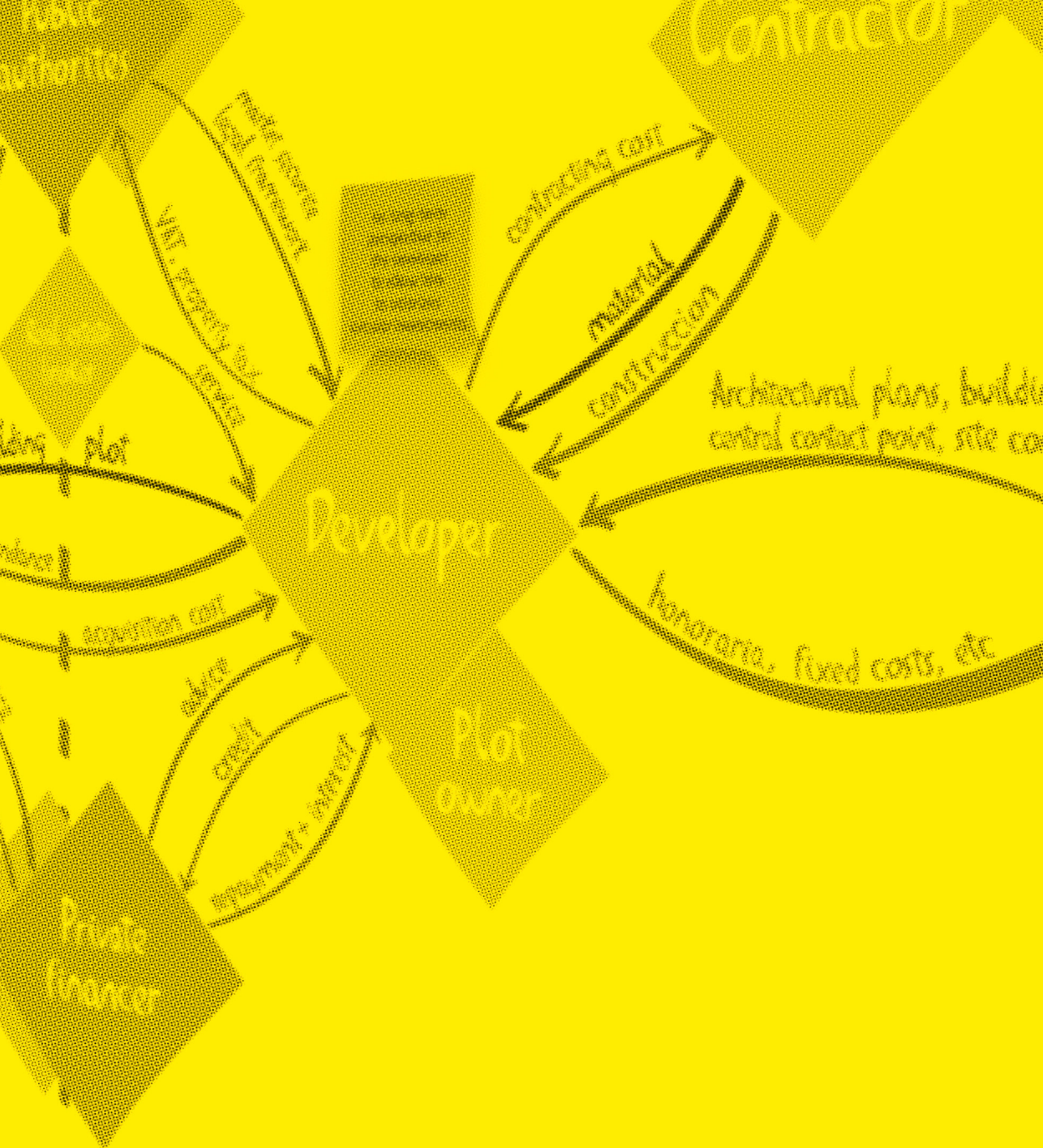




# Value Network Mapping

*A method for unravelling system relations*

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This material is part of a collaboration between VITO Nexus and EIT Climate-KIC Transitions Hub aimed to produce practice-based knowledge on sustainability transitions.

VITO Nexus reconnects the Flemish Institute for Technological Research VITO with its partners to accelerate sustainability transitions together. Getting a grip on the most crucial challenges and defining subsequent actions are key tasks to this end.

EIT Climate-KIC Transitions Hub is a policy-oriented, in-house lab unit aimed at enabling interactions with key EU organisations and external experts in fields such as systems innovation, the circular economy and EU policy.

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## Also in this series

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Matti C., Rissola G., Martinez P., Bontoux L., Joval J., Spalazzi, A. Fernandez, D. (2022), *Co-creation for policy: Participatory methodologies to structure multi-stakeholder policymaking processes*, Matti, C. and Rissola, G. (editors), European Commission, Joint Research Centre

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### Summary

Translating global sustainable development goals into concrete actions for systemic change remains one of the greatest challenges of our times. Such systemic change can be explored through the lenses of 'sustainability transitions': deep transformations of the structure and the dynamics of the sub-systems of our society, such as energy, food, mobility, housing, health care and finance.

Sustainability transitions require changes in the structures of the sociotechnical systems that define our world. Some practices need to change into completely new roles and relations, and others may even disappear. Value Network Mapping helps in getting a grip on the structure of these sub-systems and enabling us to identify together intervention points that make sustainability transitions happen.

With the use of Value Network Mapping it is possible to co-create such changes, while balancing individual needs with wider ambitions. These maps take into account social, environmental and economic conditions for implementing and scaling up such changes, allowing global sustainable development goals to evolve from a shared vision to a common practice.

## 01 INTRODUCTION: GETTING A GRIP ON HOW SYSTEMS CONNECT

Sustainability transitions are deep, systemic changes of the structures, tangible and intangible, that define our society. Think of sociotechnical systems such as global trade and its dependence on fossil fuel provision, or the housing market and how it is intertwined with spatial planning rules created for various reasons.

### What is Value Network Mapping?

Value Network Mapping is a visual method that helps in getting a grip on systems by mapping how values connect. From that mapping, one can identify intervention points that make sustainability transitions happen. It supports the iterative analysis and redesign of the structures around us by:

- ▶ establishing a common understanding about how values are connected within a specific system, a place or a sector, and making that insight comprehensible as a visual network of roles and relations;
- ▶ identifying intervention points in the system's structure while balancing the concrete sustainability ambitions of all stakeholders with practical limitations and their greater consequences (cf. example p.16);
- ▶ co-creating alternative system configurations wherein all stakeholders, each from their perspective, see to it that their divergent sustainability ambitions are fulfilled (see example p.17);
- ▶ validating the relevance and feasibility of sustainability interventions that aim to reorganise a system by collecting well-structured input from all stakeholders in relation to the system's organisation;
- ▶ raising awareness about, coming to agreements about and planning envisioned interventions to a system's structure by making explicit the stakeholders' roles in the proposed interventions while identifying together the required resources.

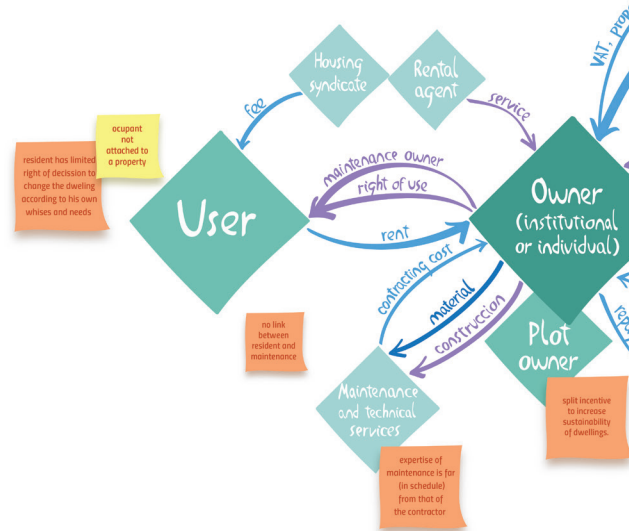
This visual method can support a transition programme, project or experiment at any time. However, its application from the first stages onwards allows one to establish a canvas for sensemaking, learning and reflection throughout a transition process.

### Why using Value Network Mapping?

Value Network Maps are particularly useful in settings where conventional structures can no longer be relied on. By making explicit the current roles and relations within a system, they allow one to question both the system's components and its organisation, and so help people reorganise themselves sustainably. Three mechanisms are particularly important in this regard.

First, Value Network Maps provide a fresh perspective with regard to the value creating activities and relations upon which an organisation, its partners and stakeholders, as well as the larger system de-

### Housing market : project development





pend. After all, some actors might not be aware of the different roles they play or of the value transactions that exist amongst other actors of the system of interest.

Second, Value Network Maps offer a dynamic view of how both financial and non-financial assets are or can be converted into negotiable forms of value with a positive impact on all actors. Community capitals such as local knowledge or cultural habits might have been unknown and therefore undervalued while they could be the key to sustainable development.

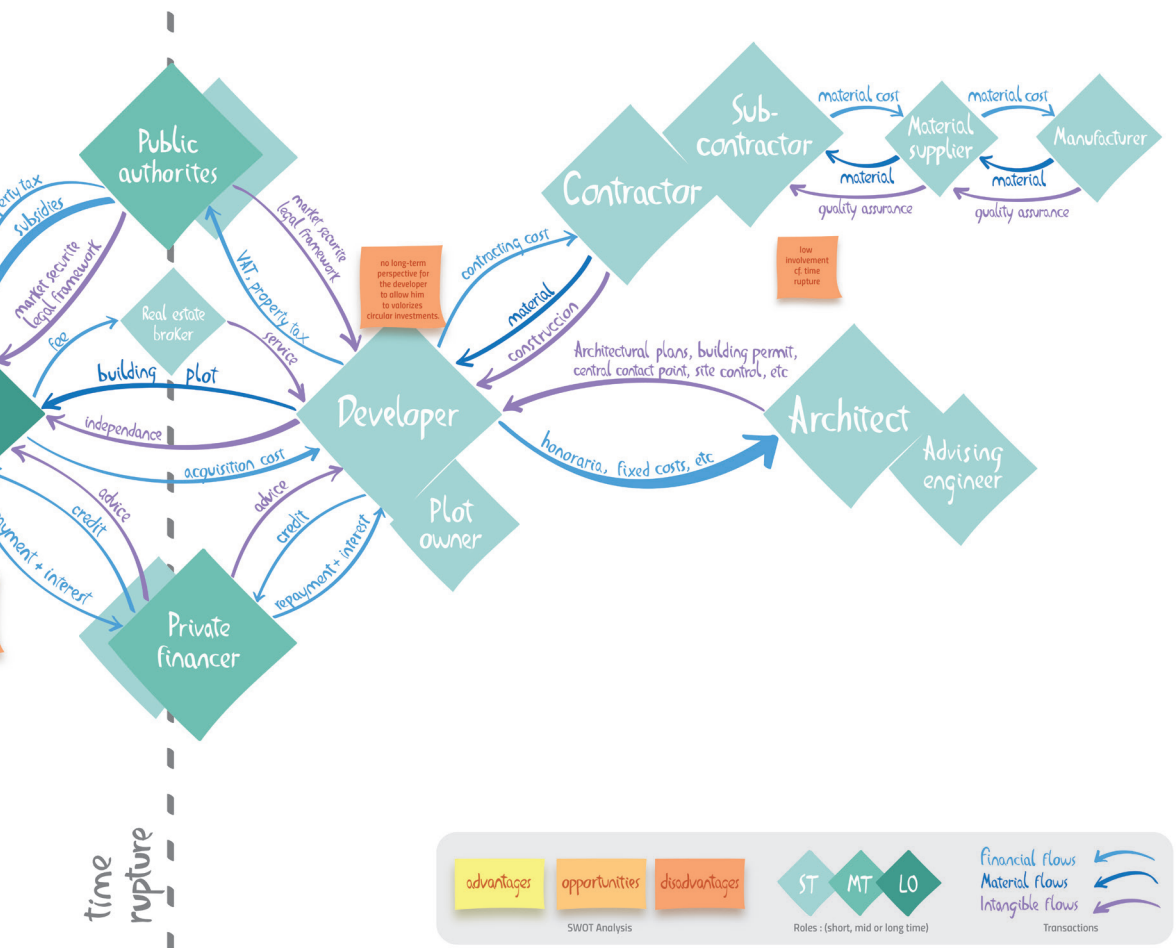
Third, Value Network Maps allow one to imagine how to utilise tangible and intangible assets for

maximal value creation in the whole system. Sharing in a different way the gains and losses of activities and relations among the actors of the system, might unlock a sustainable niche activity and accelerate envisioned sustainability transitions.

An emergent network property, and therefore an important premise for these three mechanisms, is the idea that value acceptance is always contextual and dependent upon the functioning of the whole system of interest (Allee, 2008, p. 12). Understanding the network as a whole, itself embedded in a larger system, is therefore essential to guarantee enduring value for each actor.

Ready, set ... map the building blocks!

nt for rent



## 02 THE BUILDING BLOCKS OF VALUE NETWORK MAPPING

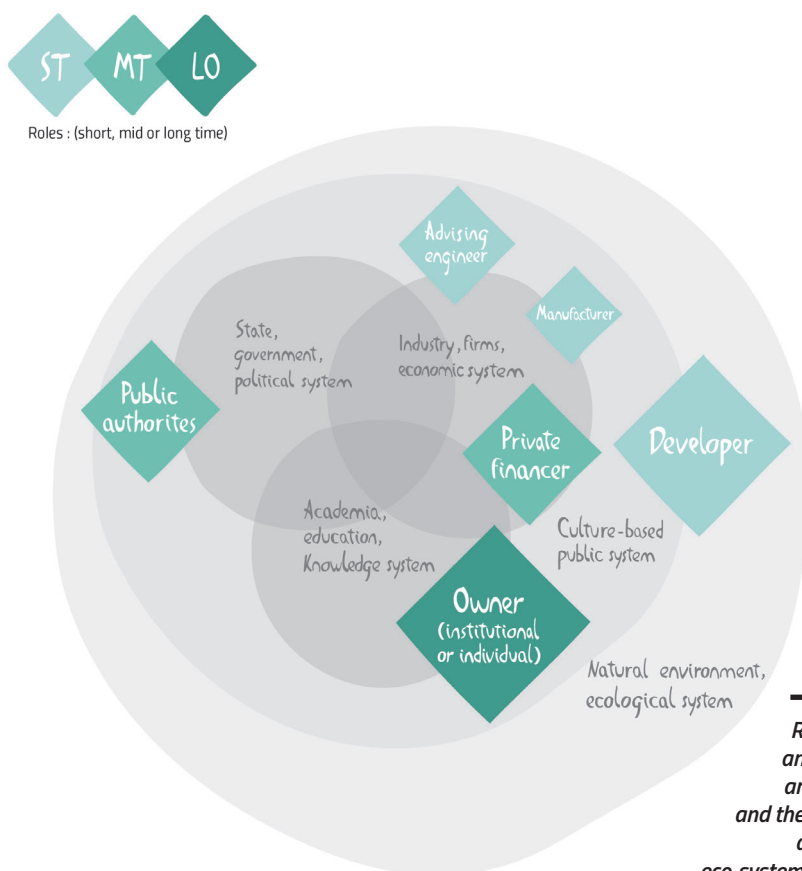
Value Network Mapping is a simple, hands-on soft systems modelling method. It makes tangible the two building blocks of every system: roles and relations. By creating insight into how these elements connect – assuming they are the foundation of any collaboration – it is possible to question current systems and co-create more sustainable ones.

### Building block 1: the roles

Tian et al. (2008) define, model and qualify a role as “an aggregation of common functions, including activities, decisions, and metrics”. These roles can include, but are not limited to, all kinds of providers of goods and services, numerous users and stakeholders of all kinds, the various functions of public

authorities, as well as natural eco-systems such as woods and rivers (see scheme below, p6).

Allee explains from a business perspective: “Roles are played by real people or participants in the network who provide contributions and carry out functions. Participants have the power to initiate action, engage in interactions, add value, and make decisions. They can be individuals; small groups or teams; business units, whole organizations; collectives, such as business webs or industry groups; communities; or even nation states” (Allee, 2008, p. 14). “Each [...] plays multiple roles according to the business-model specifications and makes decisions based on its goals, information sets, and constraints by sensing environmental changes,” Tian et al. explain. Focusing however on the role, rather than on the actor who plays it, provides a safe space to question its added value and function.



***Roles are providers of goods and services, numerous users and stakeholders of all kinds, and the various functions of public authorities. But also natural eco-systems such as woods and rivers are value-adding roles (cf. quintuple helix).***

## Building block 2: the relations

Relationships between roles are described by their value transactions. “Transactions, or activities, originate with one participant and end with another. The arrow is a directional link that represents movement and denotes the direction of what passes between two roles,” explains Allee (2008). She describes different types of transactions including tangible and intangible ones (see diagram, p7).

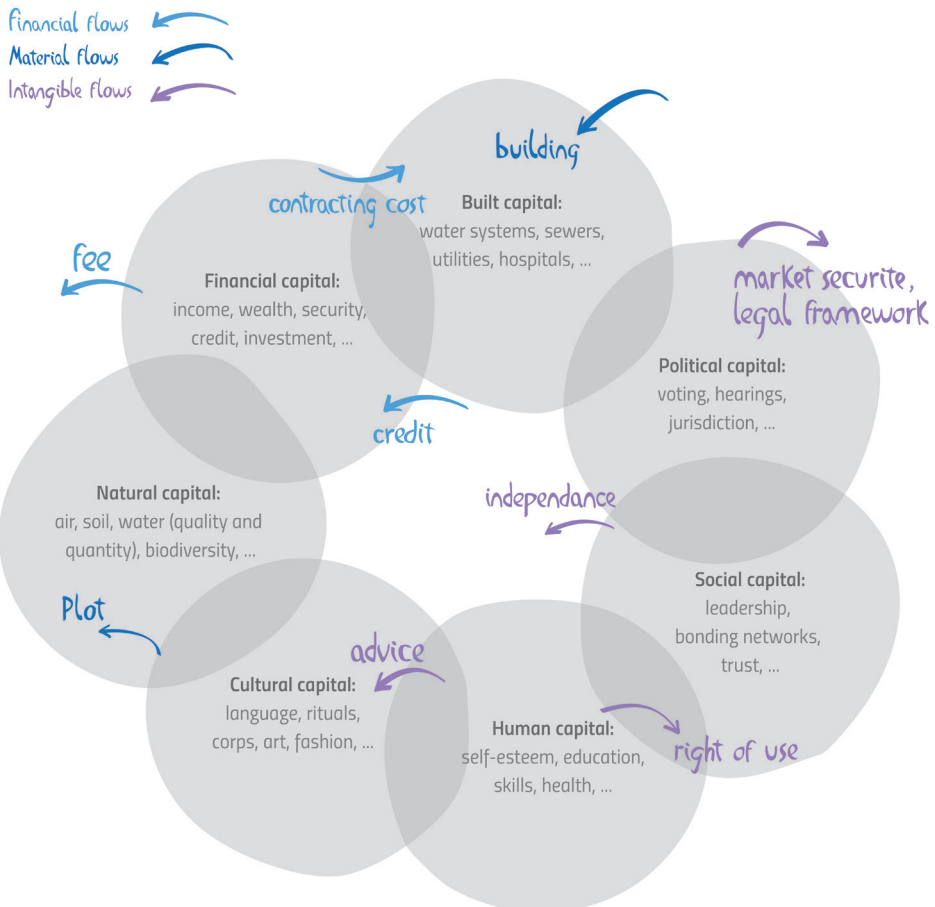
Tangible value transactions are goods, services. These are flows that are relatively easy to measure and valorise. Less tangible value transactions might include money, market share, know-how or trust. These flows are much harder to quantify and valorise. Think of political or emotional support, prestige or affiliation. The value of these flows might differ significantly from situation to situation. They can be approached from a business perspective, but

more interesting in relation to sustainable development is to consider value transactions according to the seven categories of Community Capitals by Flora et al. (2005). They include natural, cultural, human, social, political, financial and built resources, some of which don't have a physical appearance and are thus intangible.

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*Transactions of community capitals can include natural, cultural, human, social, political, financial and built resources (7 categories of Community Capitals by Flora et al. 2005). Tangible transactions are easy to measure and value, and intangible ones are harder to measure and value.*

Transactions (tangible and intangible)



## A canvas for today's most crucial challenges

Value Network Mapping is particularly useful for unravelling systems of which the patterns of behaviour and the supporting structures have been called into question. This might be the case when the whole system or parts of it are in the midst of a crisis, or when they face unprecedented challenges such as resource depletion or climate change.

Before starting with Value Network Mapping, consider the larger transition you are involved in, and your exact needs for the biggest impact. Find or create the following three strategic conditions before you start:

- ▶ take a challenge-led approach and define the specific place-based or sectoral mission of interest before you start mapping;
- ▶ be aware of the earlier evolutions and broader dynamics that apply to the defined challenge, both from a policy and practitioner perspective;
- ▶ embed this mapping in an action-oriented project or portfolio linked to the defined challenge to warrant next steps.

## A way to (inter)act together

Value Network Mapping allows for different levels of stakeholder participation. It can be used during desk research, but is more powerful when adopted in a multi-actor setting. It offers a valuable instrument, for jointly exploring the current structure of a system and possible intervention points.

By bridging social and economic value, and encouraging discussion of technical as well as organisational concerns of participants, Value Network Maps also facilitate systems thinking. Their use, however, is highly dependent on one's perspective and may differ from person to person, group to group.

Practically, Value Network Maps provide a blank canvas; a soft systems model. Roles and relations rendered in maps make the existing or envisioned system tangible. The maps are thus the instrument; the method must be tailored around them. During subsequent sessions, maps are sketched, assessed and adapted iteratively.

## A way to co-create actionable knowledge

Value Network Maps might be simple, or indeed very complicated. There is no right or wrong way to put them into action, only better ways to use them in building further on what stakeholders know and can do.

With the adoption of Value Network Maps, actionable knowledge can be created in various situations, knowledge that is not only useful to the involved actors, but is also appropriate and meaningful to them (Dewulf et al. 2020). Under these conditions the iterative analysis, design and dialogue that is supported by Value Network Maps allows participants to make different decisions and act sustainably.

Practically, there are at least five ways in which Value Network Maps allow for the creation of actionable knowledge:

- ▶ Value Network Maps are easily adopted by participants and actively support analysis and discussions on both system and organisational level.
- ▶ They allow one to imagine new roles and envision the redistribution of values and responsibilities, pinpoint opportunities and risks.
- ▶ Comparing maps allows one to identify gains and losses for all stakeholders when switching from one system structure to another.
- ▶ Sketching variants of network maps allows for the testing of concrete business models, possibly with business partners mind.
- ▶ Finally, they facilitate the management and monitoring of a project. Who is missing? Did something structurally change?

Generally, co-creating actionable knowledge "requires skills in discerning what matters to whom, to what extent, in what manner, in particular problematic situations", as Dewulf et al. (2000) state. These skills go beyond the conventional system analysis but require the users of Value Network Maps to take the perspective of the other actors involved.

Ready, set ... map!

## 03 IMPLEMENTATION AND WORKSHOP STRUCTURE

Value Network Mapping can be used as part of a short or longer process including co-creation workshops and desk research. For all field applications, the workshop logic can be divided into three main phases, each comprising multiple steps:

- ▶ Phase A: Mapping
- ▶ Phase B: Designing
- ▶ Phase C: Planning

Depending on the larger project logic and knowledge service interactions (see p.4) these phases can be tackled during in a single workshop or be divided over multiple interactions with the involved actors.

### Preparation

The first task in the organisation of co-creation workshops is getting prepared. Four elements are prerequisites for a successful implementation of Value Network Mapping.

- ▶ Set the objectives and expected outcomes of each workshop based on the various areas of application (p. 4) and the different sorts of actionable knowledge that Value Network Mapping can trigger (p.8).
- ▶ Define and engage the target audience for each Value Network Mapping workshop. The participation of the same representatives in subsequent workshops, increases the necessary trust.
- ▶ Review the available resources (including technical support and canvasses) and planning in relation to your goal and expected outcomes. Multiple events of a shorter duration facilitate an iterative learning process.
- ▶ Come to a shared vision with the participants about the tackled challenge and make explicit the challenge owner's vision for the near and long-term future. This defines the scope of the mapping exercise.

### Blended format

If the project is well known by participants, the first maps can be made in advance and populated with existing information through desk research. The co-creation session can then start with a facilitated discussion around mapped elements, missing blocks, and an analysis of commonalities.

## Phase A — Mapping

During the first phase the two basic building blocks of every system are brought into the picture: roles and relations. These are the elements that make up the structure of any system.

### STEP 1

#### MAP CURRENT ROLES

Identify distinct roles as 'common functions' played by the workshop participants as well as by other stakeholders of the system of your scope. One can distinguish various sorts of roles, such as those with a short-term involvement (e.g. the one-off selling of goods) or those with a long-term engagement (e.g. financing).

In practice, ask participants to... identify what (or who) plays a valuable role in the current system of interest, name it by its function, and add it to the canvas.

To speed up the process, the canvas can be prepared in advance and prepopulated with some roles if a stakeholder analysis or relation mapping has been completed.

In practice, ask participants to... recognise the mapped roles, confirm they play a valuable role in the current system, and add any roles to the canvas that are still missing.

### STEP 2

#### DETAIL CURRENT RELATIONS

Draw relations as transactions: directional links from one role to another of both tangible and intangible value. According to a categorisation of your choice, different colour schemes or line types can be used to visually distinguish different sorts of transactions, their perceived importance, recurrence, etc.

In practice, ask participants to... identify tangible and intangible transactions between the roles that are mapped, name each flow, and add it as an arrow to the canvas.



**STEP 3****PIN DOWN STRENGTHS AND WEAKNESSES WITH A SWOT ANALYSIS**

The current system has its advantages and disadvantages. Those strengths and weaknesses might apply to the network as a whole (e.g. resource depletion or waste production) or be relevant only for one or more roles on the map (e.g. access to qualitative housing for every citizen). By adding strengths and weaknesses as text or sticky notes close the role to which they apply, a comprehensive analysis of the current value network can be made.

In practice, ask participants to... identify the strengths and weaknesses of the current system, relate them to one or more roles, and add them to the canvas next to the role of concern.

The advantages and disadvantages of the current system might be perceived very differently depending on the role one is used to playing.

To trigger a reflection, invite participants to...

- assume roles they are not used to playing, and re-evaluate the map from that new perspective;
- discuss in smaller groups the identified pros and cons and complete the canvas with additional evaluations.

In addition to the advantages and disadvantages of the mapped system elements, i.e. the role and relations, one can evaluate any pending opportunities and threats.

In practice, ask participants to... identify any opportunities and threats of the current system, relate them to one or more roles or transactions, and add them to the canvas.

Finally, change might already be on its way. Experiments or niche activities that relate to some roles or relations could be inspiring signals of change.

In practice, ask participants to... collect signals of change to the current system, relate them to one or more roles or transactions, and add them to the canvas.

Throughout the exercise, roles and transactions can be added.

**Phase B — Designing**

In practice, when a separate workshop is organised for this phase...

- provide a recap of the collected building blocks, advantages and disadvantages, opportunities and threats;
- invite participants to share their evaluation of the signals of change; do they see them as a threat or an opportunity?

**STEP 4****IDENTIFY INTERVENTION POINTS**

Starting from the identified challenge or envisioned future, finding the right levers to change the system's structure is the key objective. This is based on the individual knowledge of every participant collected during phase A, or can be informed by complementary system dynamic studies such as causal loop analysis.

In practice, ask participants to ... share the concrete improvements one would want to make, which roles and transactions must be altered, removed or added, and mark them on the map.

Typical levers are for example new intermediary roles, the redistribution of value, the reconnection of roles, etc. They all rely on cooperation.

To trigger a reflection, invite participants to...

- discuss in smaller groups the proposed improvements and update the canvas with additional suggestions;
- find consent about a common set of intervention points (building blocks that must be changed) by listening to each other's preferences and priorities.

To speed up the process, or validate desk research, the canvas can be prepopulated with possible interventions in the value network map.

In practice, ask participants to...

- recognise the proposed interventions, evaluate their relevance and feasibility; dot-vote or score, and comment on the canvas.
- propose alternative interventions to the value network map, e.g. add new roles and relations, remove existing ones or change their properties.

## STEP 5 REDESIGN THE MAP

After finding consent about a common set of interventions (this might require several iterations between participatory workshops and desk research) the current value network map can be redesigned by detailing future roles and relations.

In practice, ask participants to ...

- identify what or who plays a valuable role in the restructured system, put a new name on that role, and add it to the canvas. If necessary remove others;
- identify tangible and intangible transactions between the roles, name new relations, and add them to the canvas. If necessary remove others.

To make sustainable system innovation possible, it is not necessary that all stakeholders achieve an identical value acceptance, but they should agree on the structure.

To trigger a reflection, invite participants to... review, each from their perspective, how their divergent sustainability ambitions are fulfilled.

## STEP 6 EVALUATE THE TRANSITION

To validate the relevance and feasibility of the new map and corresponding system structure, a qualitative evaluation can be done by the participants. Complementary to this, quantitative evaluations of the envisioned changes are possible. They might inform the redesign (step 5) as well as its implementation (step 7).

In practice, ask participants to ...

- identify for each role the gains and losses when switching from one map to the other one, and add them to the canvas next to the related role;
- evaluate if these gains and losses are fair and sustainable, or if the network must be adapted further.

At the same time, it is possible to monitor the effectiveness and profoundness in relation to the system innovation of the current exercise.

To trigger a reflection, invite participants to... review how the map has changed. How many elements are altered? Did properties of the roles and relations change? Is the network rewired?

## Phase C — Making decisions and planning

In practice, when a separate workshop is organised for this phase...

- provide a recap of the identified intervention points, the redesign of the value network and the evaluation of its possible implementation;
- invite participants to share their thoughts, outlooks and expectations about the transition, or – if any – those they collected in their environment.

## STEP 7 IMAGINE THE TRANSITION

To move from concept to plan, decisions must be made. The redesigned Value Network Map can be fleshed out with a view to creating awareness about, reaching agreements on and bringing together the necessary resources, as well as in planning subsequent related actions.

In practice, ask participants to ...

- identify which role(s) they can or would want to play by adding their name or their organisation's name to the canvas;
- make explicit and add to the canvas the conditions under which they would want to play in that role.

From here, a concrete plan to implement the new system configuration can be established, adopted and put to practice. Identified interventions can for example be the starting point for prototyping specific actions by combining sustainable business models, innovative material management, etc.

## Systems thinking

One of the strengths of Value Network Mapping is its combination of overview and detail. To challenge participants, invite them to relate their statements to both levels. What is the exact role or relation? But also, how does it relate to the larger whole? And what are the repercussions for the structure of the system?

## Suggested workshop programmes

Co-creation sessions can be implemented according to the different phases (A to C) and steps (1 to 7). If one phase is not completed after one session of 50 minutes, it might be necessary to go through the same steps again until consent is reached.

In a project context with capacity for desk research in addition to facilitation, maps can be prepopulated to speed up the process. By doing so, focus can be placed on conversations to review the current system and co-design interventions.

### TEMPLATE



| Phase       | Time | Without desk research | With desk research    |
|-------------|------|-----------------------|-----------------------|
| Prepare     |      |                       | 0. Desk research      |
| A. Mapping  | 15'  | 1. Identify roles     | 1. Validate roles     |
|             | 15'  | 2. Identify relations | 2. Validate relations |
|             | 20'  | 3. Make SWOT          | 3. Make SWOT          |
| B. Design   | 15'  | 4. Identify levers    | 4. Validate levers    |
|             | 20'  | 5. Redesign           | 5. Redesign           |
|             | 15'  | 6. Evaluate           | 6. Desk research      |
| C. Planning | 30'  | 7. Devise actions     | 7. Devise actions     |
| Follow-up   |      |                       |                       |



*Ready-made items can be moved or copied, including predefined or dummy roles (with colour one can distinguish short- and long-term involvements), predefined or dummy transactions (with arrow types one can distinguish tangible and intangible flows) and predefined cards or sticky notes to label opportunities, risks and strengths. Other mappable data includes already-planned actions, signals of change, knowledge sources, and much more.*



## Tips & tricks for facilitators

Emphasise that network maps show roles: these are impersonal functions and not business units, organisations or individuals.

Start from roles and general relations, and detail iteratively the exact transactions.

Use both simple and detailed representations of the networks during co-creation sessions, and switch between both.

Document the mapping with photos or digital exports, certainly when participants switch from the current to desired map during the redesign phase.

## Team and resources

Consider that for the facilitation of a co-creation session one might need to cover at least three roles in each phase:

- ▶ The expert focusing on supporting participants to better understand the system of interest.
- ▶ The facilitator focusing on guiding participants through the workshop by using facilitation methods and taking into consideration group dynamics.
- ▶ The reporter focusing on the value network maps' completion, spotting overall trends and blank spots.

The materials in the following table are recommended as part of the preparation for an in-person or digital co-creation session (bracketed items are optional):

| Phase       | in person                                      | digital                    |
|-------------|------------------------------------------------|----------------------------|
| Prepare     | (Prepopulated maps)                            | (Prepopulated maps)        |
| A. Mapping  | Paper canvas                                   | Digital canvas             |
|             | Sticky notes for roles & SWOT                  | Digital objects per step   |
|             | Pens for drawing relations                     |                            |
| B. Design   | Completed and new canvas                       | Copy of the digital canvas |
|             | Sticky notes for levers and new elements       | Digital objects per step   |
| C. Planning | Sticky notes for names, conditions and actions | Digital objects per step   |

## 04 PROJECT LOGIC AND KNOWLEDGE SERVICE INTERACTIONS

It was possible to develop this soft systems mapping approach in a real life, challenge-led policy setting thanks to the use of Value Network Maps utilised in various projects, such as those of EIT Climate-KIC, VITO Nexus and Cleantech Bulgaria in the Circular Deep Demonstrator Bulgaria project (see p. 17).

From these experiences, we noted some lessons about implementing Value Network Mapping as a way to create actionable knowledge for sustainability transitions before, during and after the co-creation sessions.

### Establishing the mapping process (before)

In the case of a place-based or sectoral challenge (see strategic conditions p.8) the concrete mapping process and design framework must be established by the service providing facilitators. It relies on basic principles, including 'directionality', 'level of participation', 'monitoring' and 'prototyping' (Matti et al. 2020).

Through practice, we learned that the challenge owner and service partner must have insight in the project context and the transformative direction that aspired to. Here, dialogue between the service provider and challenge owner is key in increasing the level of participation for Value Network Mapping.

Since the Challenge-led System Mapping and Knowledge Management approach and its implementation – such as through Value Network Mapping – are not widely known, the service provider has an important role in proposing a mapping process. Nevertheless, the experience of all involved proved to be very valuable in optimising the process.

### Workshop implementation (during)

The participatory implementation of methods such as Value Network Mapping is the backbone of the challenge-led approach to system mapping. At this point, all stakeholders gain a collective understanding of the system they are part of. The core activities are workshops, but the process includes preparation and follow-up.

All actors, including the challenge owner, can be involved in the preparing, implementing and follow-

ing-up of the co-creation sessions. For example, the development of (pre)populated Value Network Maps together with the challenge owner can be an essential step-up towards analysing and redesigning system structures.

During the workshop(s), the service provider has the important role of technically assisting and facilitating the discussion; Value Network Mapping is not self-explanatory. Preparing guiding questions as well as some reflexive creativity based on domain-specific insights is important in triggering design interventions.

The result of the mapping exercises is a common understanding of the components and relations of the socio-technical system of interest. During the discussions this understanding is created and simultaneously documented on the canvasses. The quality of the collected data is strongly dependent on the time a workshop can last. The more concrete (what, from whom, to whom) and detailed (how much, when, how long) the mapped roles and relations are, the more valuable.

### Follow-up and knowledge curation (after)

Finally, the larger project logic involves the curation of the workshop output. Guided by the defined challenge, proper data management facilitates the transformation of input into information and knowledge that is actionable by the involved stakeholders. This synthesis is then followed by a visualisation and dissemination.

Therefore, the service-providing facilitator must have a deep understanding of the – such as through Value Network Mapping – system of interest or be supported by experts. Insight into what is 'actionable' from the challenge owner's perspective is important, in regard to the utility, appropriateness and meaningfulness of the synthesised insights.

Challenge owners and participants are key for providing feedback and validating the generated knowledge, both in relation to its content and actionable format. This might require an extra workshop, or might be demonstrated by their willingness and commitment to turn for example interventions in the value network into practice.

Proper data management is indispensable in curating the workshop output and transforming that



data into information and knowledge that is actionable by the involved stakeholders. The following advice will help in this regard:

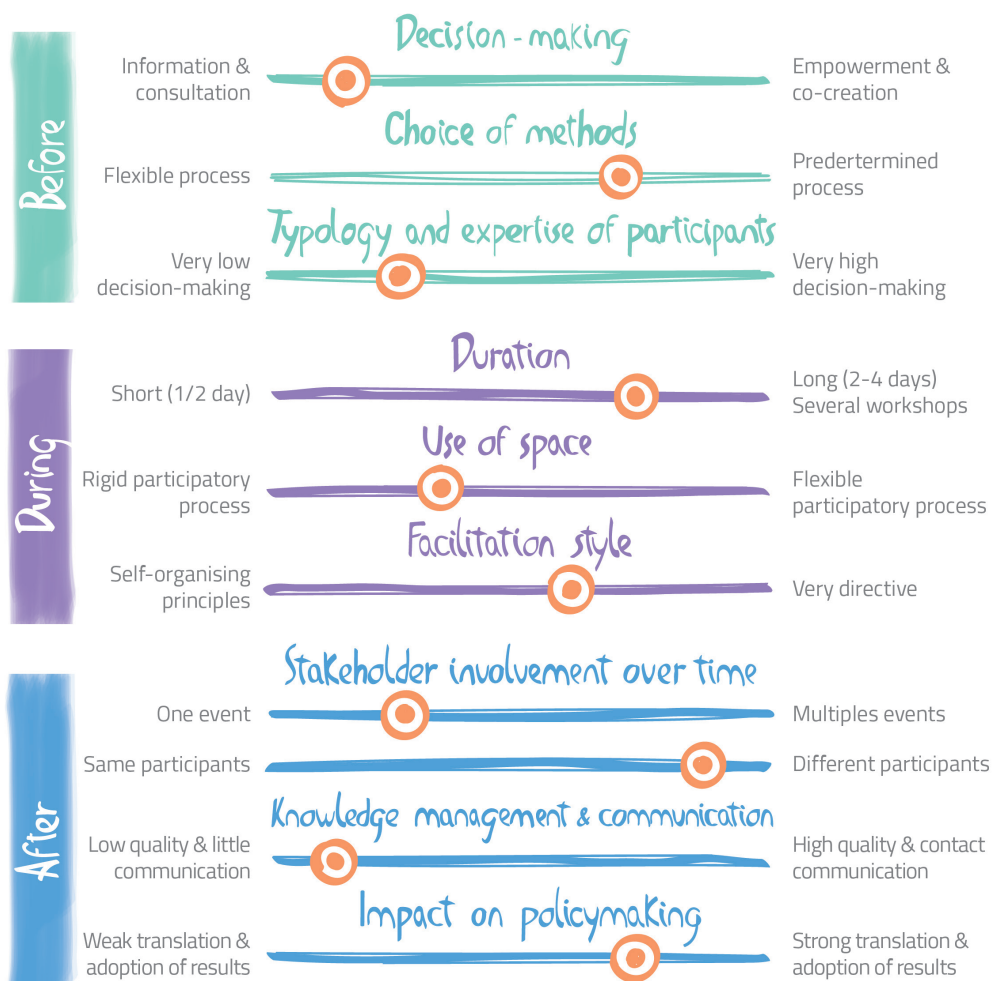
- ▶ Adopt a data categorisation and labelling system relevant to the defined challenge and coherent with the project logic.
- ▶ Look for categories that allow one to apply multiple filters to the map, supporting the discussions. For example a focus on sectors (e.g. 'tourism', 'food production' or 'agricultural landscapes') could pinpoint gains or losses. Or a focus on sub-systems (water, energy, material, etc.) could temporarily simplify a discussion.

▶ Keep track of who (or which stakeholder type) contributes what, to verify if some concerns are more present in one group compared to another.

▶ Check possibilities for digital mapping, to avoid an extra step for digitising outcomes and facilitate the categorisation of data.

▶ Take advantage of the comprehensiveness of a value network map to find opportunities where you don't expect them.

The curated data can then be visualised and disseminated further during the implementation of the planned workshops or during subsequent stages of the transition project this mapping is part of.



*Traits of Value Network Mapping in the context of a knowledge service #co-creation #Policy #TheTuner*

## 05 EXAMPLES IN PRACTICE

### Circular Housing in Flanders

*Can reuse and recycling make housing affordable again?*

**What:** co-creation as part of a transition experiment

**How:** a series of in-person workshops

**Who:** 14 participants, diverse roles

**Topic:** creating an affordable housing system

#### Why Value Network Mapping?

Value Network Mapping was adopted for co-creating a circular product-service system for affordable housing during a Flemish transition experiment (Galle et al. 2019). This experiment brought together a group of voluntary representatives of companies, governmental agencies, civil society organisations and research institutions. Together they gave shape to the idea of 'housing-as-service'.

The steering group was able to reach an extensive network of construction stakeholders to co-create the idea during several face-to-face meetings and workshops. For example, in February 2018 there was a workshop with investors including credit banks and property managers. In April potential service providers joined including contractors and developers.

During these meetings the steering group and its network defined and redefined the potential value and practical application of product-service systems in housing by discussing and redesigning prepopu-

lated Value Network Maps. In this setting, the maps allowed them to identify which roles were missing, and which systemic relations would have to be established for the envisioned circularity.

#### Exemplary outcomes

During the workshops and face-to-face meetings with the organisations within the group's network, participants were invited to complete the network maps and discuss in smaller groups the identified pros and cons of each. Subsequently they were asked to situate their own organisation on the maps and explain which role(s) they would be willing to play, and under which conditions they would do so. This way, the drafted maps were refined and validated and concrete opportunities and hurdles for product-service systems in the housing market were identified.

In preparation of the workshops, the steering group drafted seven value network maps: conventional as well as 'circular' ones. These maps are based on the Horizon 2020 research project 'Buildings as Material Banks' (Debacker & Manshoven, 2016) including conventional construction 'ecosystems', as well as emerging niches "that might pave the way to circular building practices" (Ibid.).

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*During multiple workshops the steering group and its network defined and redefined the potential value and practical application of product-service systems in housing by discussing and redesigning prepopulated Value Network Maps.*



## Circular Economy in Bulgaria

*How can regional policy makers enable a circular ecosystem?*

**What:** co-creation as part of a transition policy programming

**How:** a series of digital workshops

**Who:** three focus groups of 10 to 20 participants

**Topic:** establishing a regional circular economy

### Why Value Network Mapping?

Value Network Maps were also adopted by EIT Climate-KIC and Cleantech Bulgaria in the Circular Deep Demonstrator Bulgaria; by applying a system innovation approach and collaborating with six Bulgarian ministries, this 'deep demonstration' aims to co-create a vision of how the circular economy will be realised across all policy domains in an integrated manner.

During three focus group workshops, preceded by various stakeholder mapping exercises and system analyses that proposed various relevant policy strategies and actions, these measures were proposed for feedback and additional actions to various stakeholders. The focus groups were organised thematically by audience, including the (recycling) industry, small-and-medium sized companies and start-ups.

In the context of this multi-ministerial innovation policy development for the regional transition toward a sustainable circular economy, Value Network Maps allowed stakeholders to add suggestions for

actions or improvements to update a prepopulated map and provide feedback for a more effective implementation of the proposed actions.

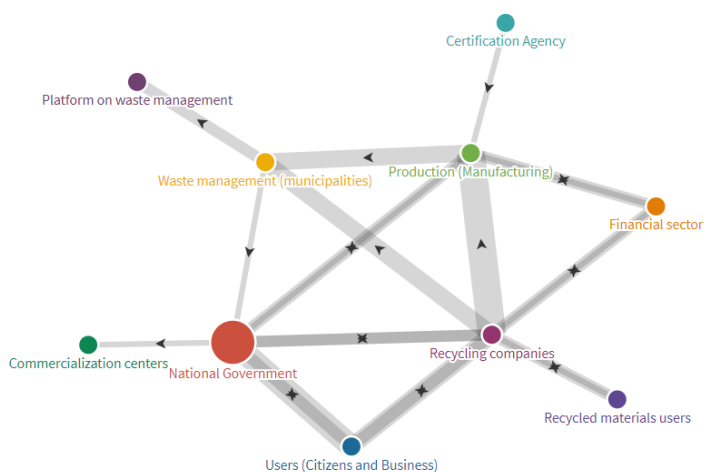
This adoption of Value Network Maps made it possible to bring into perspective the importance of the mutual understanding of each other's needs with regard to value creation. Not only in terms of the relation between entrepreneurs and governments, but also in terms of the roles of all other stakeholders, such as users, financiers and waste managers. To this end, the roles in the prepopulated Value Network Maps relate not to specific functions but to complete sectors.

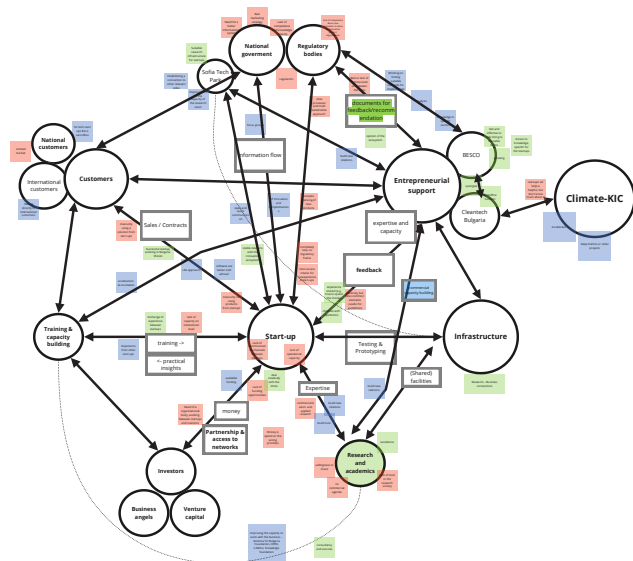
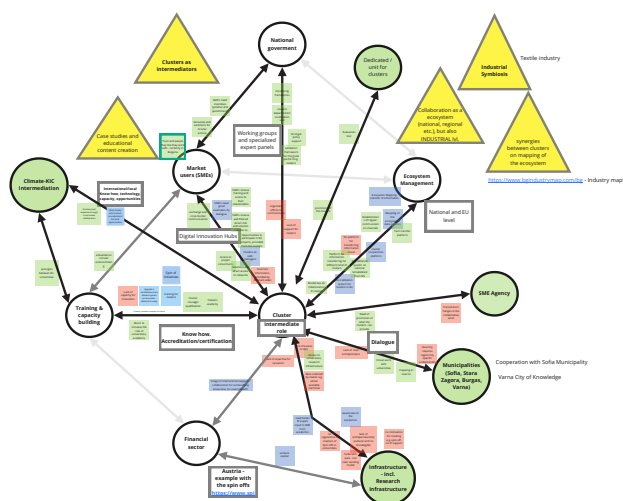
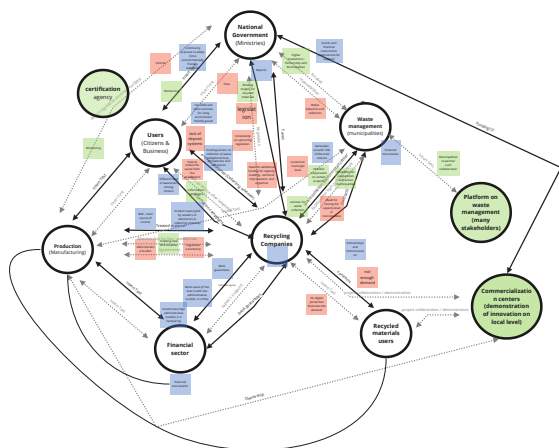
### Exemplary outcomes

The network for circularity co-created during the Bulgarian workshop with the first focus group of recycling companies yielded the following insights:

- ▶ National government has an important role, certainly in relation to the end-users.
- ▶ There can be a strong multi-directional bond between the national government, end-users and recycling companies.
- ▶ The transaction to which most attention was drawn was that between recycling companies and production companies.
- ▶ In that transaction the financial sector can play an enabling role, since it is mutually connected to both parties.

*Synthesis map of the co-created network for circularity in Bulgaria during the workshop with the first focus group of recycling companies.*





*During three Value Network Mapping workshops with different focus groups, a rich view on the demands and expectations, as well as propositions and opportunities, was mapped. In total, over 230 entries were collected.*

## 06 FIND OUT MORE ABOUT ...

### Value Network Mapping

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- ▶ Allee V. (2008). Value network analysis and value conversion of tangible and intangible assets. *Journal of Intellectual Capital*, 9(1), 5–24.
- ▶ Galle, W., Debacker, W., De Weerd, Y., & De Temmerman, N. (2019, June 24). Housing in the circular economy, lessons from value network mapping as a transition experimentation tool. *Proc. of the Int. Sustainability Transitions Conference 2019*.
- ▶ Tian C. H., Ray B. K., Lee J., ... Ding W. (2008). BEAM: A framework for business ecosystem analysis and modeling. *IBM Systems Journal*, 47(1), 101–114.

### Knowledge services

- ▶ Matti, C., Martin Corvillo, J. M., Vivas Lalinde, I., Juan Agulló, B., Stamate, E., Avella, G., & Bauer, A. (2020). Challenge-led System Mapping. A knowledge management approach. ISBN 978-2-9601874-3-4, EIT Climate-KIC.
- ▶ Galle, W., Debacker, W., De Weerd, Y., & De Temmerman, N. (2020, August). Successful Collaborations in Transition Experiments, 14 guidelines from a value network perspective. 11th International Sustainability Transition conference, Vienna.
- ▶ Dewulf, A., et al. (2020) Usable environmental knowledge from the perspective of decision-making: The logics of consequentiality, appropriateness, and meaningfulness. *Current Opinion in Environmental Sustainability*, 42, 1–6.

### Case studies

- ▶ Debacker W. and Manshoven S. (2016). State of the art, Key barriers and opportunities for Materials Passports and Reversible Building Design in the current system (Synthesis report No. D1).
- ▶ Galle, W., Debacker, W., Weerd, Y., Poppe, J., & Temmerman, N. (2020, September 9). Can circularity make housing affordable again? Preliminary lessons about a construction experiment in Flanders taking a systems perspective.



Entrepreneur?

## Owner

- Entrepreneurial vision and mission
- Business plan and strategic approach
- Business model development and validation
- Management team and financial control as founding owner
- Long-term responsibilities, financial independence
- Financial market and current stock

[ OWNER ]

**CESCO**

Investment, cooperation,  
partnership...)

**Investor**

credit institution,  
fund, bank, bank...)



