Anticipate Future Jobs on Alpine Remote Areas

Report on WP 3

Identification of future job profiles and contexts

Authors: Rocco Scolozzi*, Gian Antonio Battistel**, Alessandro Gretter**

*-skopìa S.r.l. *Anticipation Services®, ** Fondazione Edmund Mach*

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Summary

1. Introduction

WP3 aims at defining the viable local systems that will sustain the new jobs. Where "local systems" consists of processes and dynamics locally able to self-sustain the demand and the supply of jobs by "virtuous cycles" (i.e. beneficial feedback loops) that should emerge from synergies among local actors. Such viable systems can be identified and designed by using the systems thinking approach, by considering the interdependencies among variables, and the direct and undirect effects of local policies or strategies.

The expected outputs from WP3 are report describing suitable and specific processes for the new jobs, definition of skill profiles for young adults, appropriate for the creation and maintenance of future jobs.

The target group aimed to include young people and local stakeholders of the selected remote areas such as agencies and labour organizations, educational institutions, professional associations, local administrations, single actors of the local value chains.

FEM coordinated WP 3 activities, supporting the partners in their carrying the WPs 3.2 and 3.3, and elaborate the WP report (action 3.4). Each PP carried out WPs 3.2 and 3.3 according to regional and local situation, supported by FEM.

The coordination (WP3.1) started with a specific meeting organized in FEM region, including a training workshop about systems thinking and participatory model building. The WP3.2 consisted in local replication a participatory modelling session at each PPs' region with local stakeholders. By the WP3.3 PPs identified on desk promising local values and skills at each territory.

2. The viable territorial system (WP3.1): workshop and guidelines

The training, at Pieve Tesino (Trento-Italy), September 6th – 7th, 2018, included the following topics:

- systems thinking key concepts: definition of "systems", causal relationship with polarity, feedback loops, systems archetypes;
- introduction to participatory model building through the experimentation of the "icerberg model";
- introduction to the desk research about the promising local values and skills at each territory or "local treasures" (WP3.3).

The training day consisted of oral presentations and group activities in which the methodologies just presented were experimented by project partners (PPs).

At Castello Tesino (Trento-Italy), September 6th, 2018, FEM also organized a public event to present the ALPJOBS project to local community, in which PPs and the local youth group of Tesino presented themselves and territory.

The following documents supported the PPs in performing the tasks:

- Guidelines to conduct a session on participatory modelling of viable local systems;
- Guidelines for operative session with stakeholders;
- Guidelines for reporting on promising local capitals, values and competences (Local treasures);
- Report templates.

2.1. Training on systems thinking and participatory design of "viable territorial system"

Systems thinking is about thinking about relationships, exploring causal circularities and processes embedded in dynamics and changes. Understanding these processes makes it possible to tackle complex and chronic problems, such as social and environmental ones, and to better anticipate the possible consequences of interventions.

Systems thinking is also a discipline offering a framework for defining problems, asking better questions, and for making effective decisions. Because systems thinking relies on the use of a powerful set of tools and often counterintuitive perspectives, it requires lots of practice.

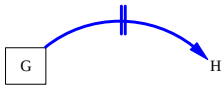
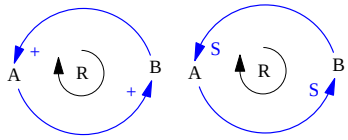
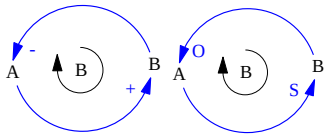
PPs practiced and lived the key concepts of systems thinking within group exercises[1], such as: emergent properties of a system (within the exercise "Triangles), feedback loops (within "Living loops").

[1] Sweeney, Linda Booth, and Dennis Meadows. 2001. «The systems thinking playbook». Pegasus Communication, Durham.

Figure 1. Two moments in "Living loops" group exercise: experimenting a causal linear relationship and a circular one.

PPs were then introduced to diagramming conventions of causal relationships and the tool named Causal Loop Diagrams (CLD, or Causal Map).

Table 1. Diagramming conventions used in the system mapping.

Graphical representation	Translation in words (or meaning)
	a change in «A» causes a change in «B»
	A change in «C» causes a change in «D» in the **S**ame direction (also termed with "+" as *positive* polarity)
	A change in «E» causes a change in «F» in the **O**pposite direction (also termed with "-" as *negative* polarity)
	Causal link with delay: a change in «G» will cause a change in «H» after some time
	Reinforcing feedback loop
	Balancing feedback loop

By using the causal loop diagrams PPs were taught to develop a more realistic understanding of complex processes rather than with statistics approach; that is moving from an exogenous and static model to an endogenous and dynamic model. Thus, systems thinking not only offers a framework for defining problems but also for solving them.

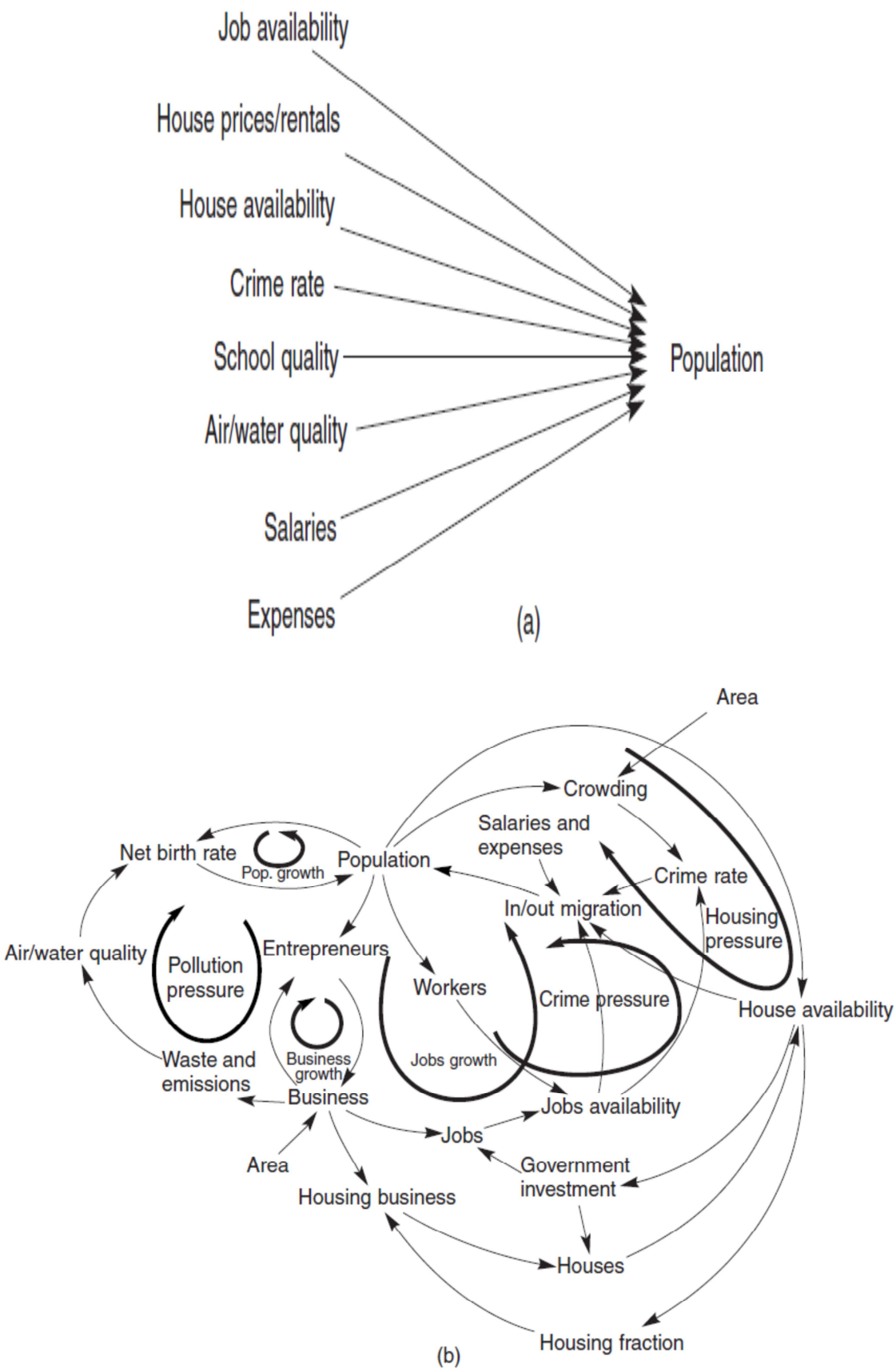


Figure 2. An exogenous, static model[2] of city population (left); an endogenous, dynamic model (right).

[2] Yaman Barlas, 2002. Systemic Feedback Modeling For Policy Analysis. UNESCO - Encyclopedia of Life Support Systems

To introduce the participatory modelling exercise with "iceberg model", PPs were involved in the "avalanche" exercise (from the Systems Thinking playbook) to understanding (by experience) the following lessons:

- *good intentions are not enough (often even misleading)*
- *we can react to events, we can anticipate them, depending on our deep comprehension of their complex causes*
- *to change the dynamics of a system we have to intervene on its structure (usually invisible).*

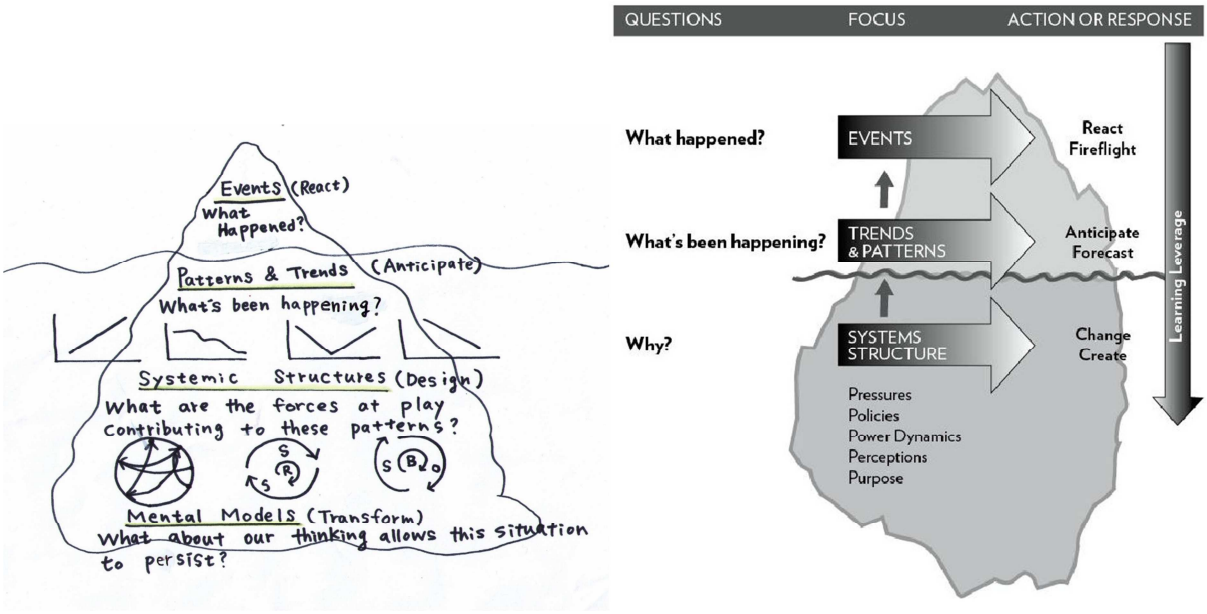


Figure 3. Iceberg model, illustrating the layers of a complex reality, and the different type of intervention.

The basic idea of iceberg model is that reality is multi-layered and only a small part of it is visible (Figure 3).

A tailored and original facilitation procedure was presented to the PPs to apply in the local replication with local stakeholders. Such procedure uses the framework of iceberg model (originally proposed by Donnella Meadows) and consists of the following steps:

1. <u>definitions of desirable local futures (2030)</u> about the "local system" supporting and offering job opportunity to young people, selecting one and specific dimension (e.g. availability of local public services for young families),
2. <u>specification of "critical" events and patterns</u>: identifying a real (or plausible) event related to the desirable future (e.g. motivation, premises) and specifying its current, desirable and undesirable dynamic or behavior over time (e.g. event - a local company has closed or moved others, patterns – decreasing/stable/increasing number of local businesses),
3. <u>Elicitation of related variables</u>: identifying variables related to the selected critical event and its pattern (thinking about its causes or consequences),
4. <u>Elicitation of system structure (causal links)</u>: drawing causal links (with polarity) between the variables,
5. <u>Elicitation of mental models</u>: explaining the assumptions under the key causal links, using the phrase "I think that…",

6. Specification of policy proposals through system map: using short sentences, identifying potential policies to be considered by specific stakeholders and addressing specific variables, explaining its chain of causal effects, from the first variable concerned to the expected final result (i.e. change in the variable of step 2).

In the simulated application of such procedure, the PPs identified the "number of places in local school" as one key variable related to the desirable future phrased as following: "in 2030 local young people can choose from the best educational offer and profit from it" locally. The related "critical event" is "in 20xx the town of XX offer new places at the new school for young people[3]".

Figure 4. PPs share and define the structure of the "local system" (left), the group and the final result (right).

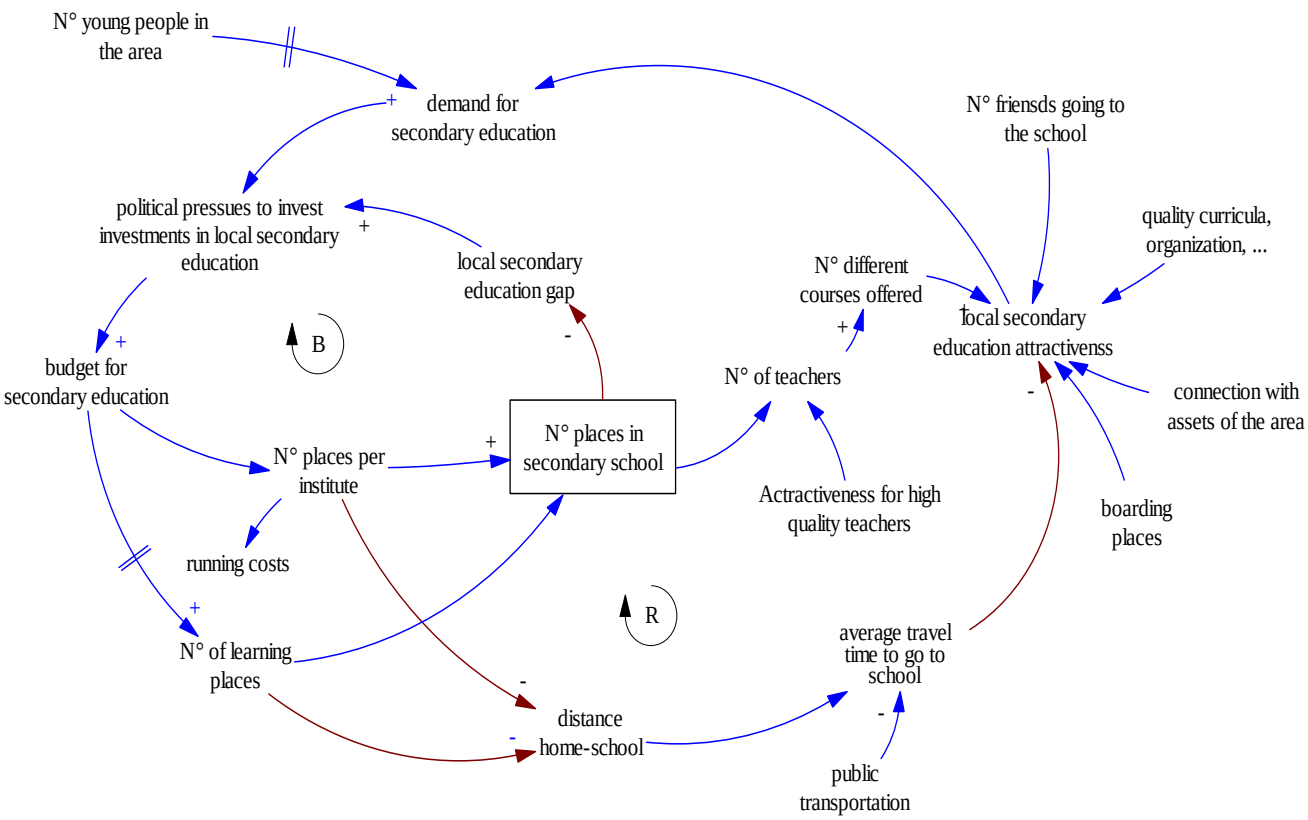


Figure 5. Causal loop diagram derived from the iceberg model (above).

[3] Respect to the written post-it at the workshop, here it was slightly modified to be of general interest.

Some emerged aspects are worth to note: the balancing loop (compensating the local *pressure to invest* in local education through the increase of *number of places for students*), the reinforcing loop, sustaining and connecting the *attractiveness* of local education to the *investments* through *number of places per institute* and *number of learning places*. The idea of "learning places" beyond those within conventional educational institutions (and buildings) paves the way for a wide variety of innovations, not obvious.

2.2. Training on "Promising local values and skills"

The local capitals, values and skills are the bases for any long-term strategy or plan for local development; recognising them, identifying their characteristic and the people involved in their maintenance or support provides strategic information and may suggest partners for further innovative partnerships and projects.

Considering all collected materials in the previous tasks (WP2), the task WP3.3 consists of describing the most relevant elements of local "treasures" that (can) contribute to identity of selected area and that can be capitalized in the future. In other words, local "treasures" are considered the resources and the processes that might ground the evolution of the local territorial system towards desirable futures while maintaining its own identity. Without local treasures, innovation could be at risk of losing identity or copying practices from others, becoming a local copy of the other systems elsewhere.

These may provide the bases for:

- original innovation (e.g. re-inventing or updating the identity),
- durable local development through lasting and benefiting of local traditions, suitable for or adapted to present and future conditions,
- creation and support for local jobs (original and perhaps unique).

Such local treasures can be distinguished in terms of **tangible** capitals and **intangible** capitals related to different kind of assets[4].

Tangible assets are physical and measurable assets that are used in a company or organization's operations. Assets like property, plant, and equipment, are tangible assets, other examples are:

- land uses/covers (outstanding forest, outstanding landscape, etc.),
- buildings/sites/areas attracting activities/tourism/production/etc.,
- natural resources (row materials, timber, water, particular crops, etc.).

Intangible assets are nonphysical assets[5] typically used over the long-term; these include:

- intellectual assets (practices, knowledge e.g. local medicinal herbs),
- reputation (territorial brand – consumers are willing to pay more for a product with a recognizable brand name than they would pay for it from others),
- events and living traditions.

For each local treasure PPs gathered information for a short description covering the following points:

[4] https://www.investopedia.com/ask/answers/012815/what-difference-between-tangible-and-intangible-assets.asp
[5] See also: https://en.wikipedia.org/wiki/Intangible_cultural_heritage

- rough estimation of N° People actively involved (supporting, building, developing it),
- rough estimation of N° People interested (beneficiaries, e.g. clients, users, buyers, …),
- type of resources on which it depends (natural, organizational, economic),
- possible links with critical events, patterns, structures, mental models drawn in the iceberg exercise.

3. Outputs of local exercise: Participatory modelling sessions (WP 3.2)

In the experimental session of participatory modelling PPs involved a total of 30 local stakeholders, 13 women and 17 men, with an average age of about 40.

The following are causal diagrams and annotations transcribed from the diagrams written in the sessions with the local stakeholders. In these figures, grey box represents the shared and selected definition of desirable future 2030, text boxes with coloured borders contain definition of policies as defined by local stakeholders, the variables within the box with black border are those related to “critical event”. For clarity, the polarity of causal links is expressed in colours: in red the negative, in blue the positive ones. Here the main feedback loops have been specified, i.e. reinforcing loops with (R) and balancing loops with (B).

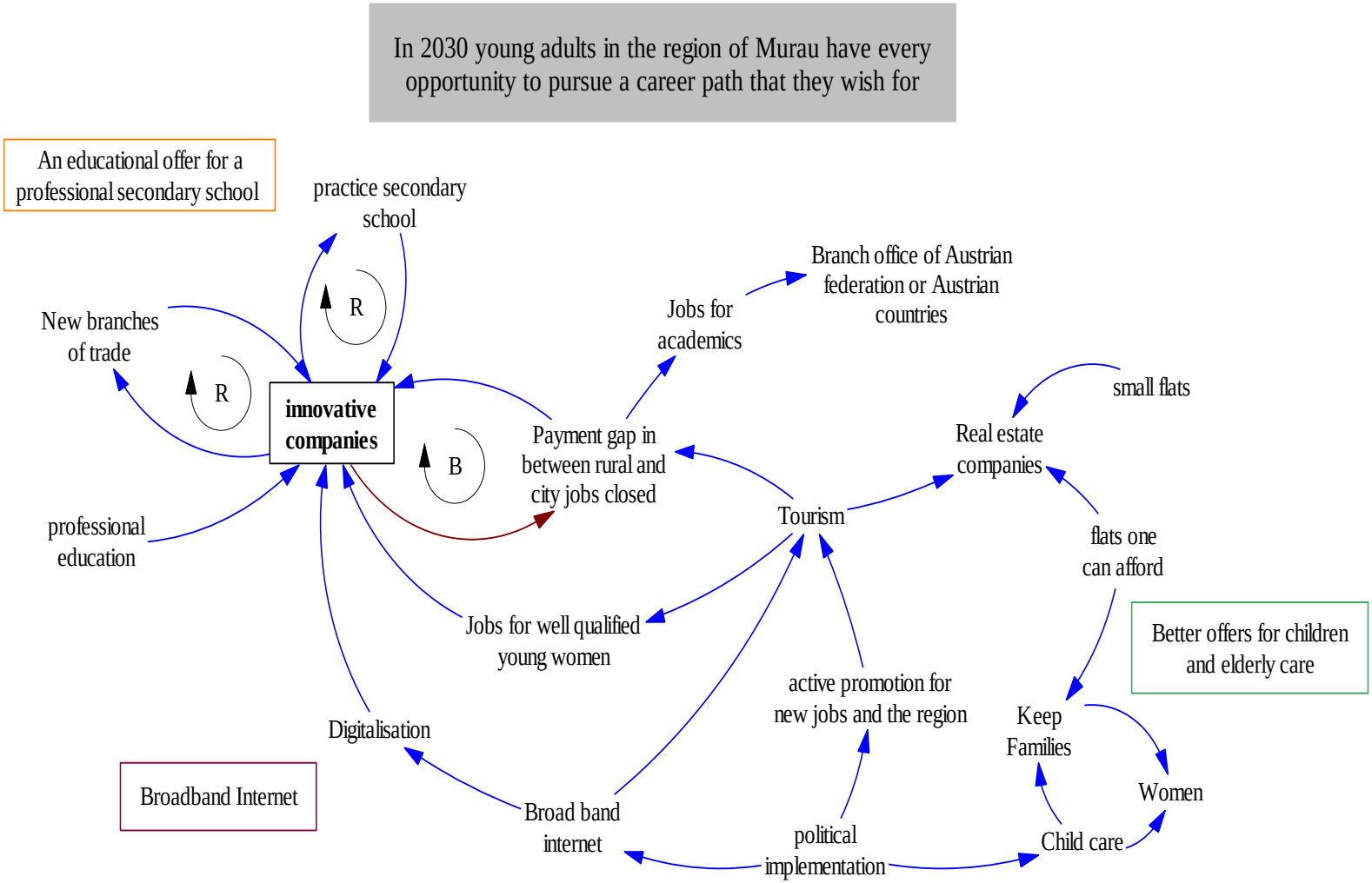


Figure 6 Causal loop diagram derived from EAA's participatory modelling.

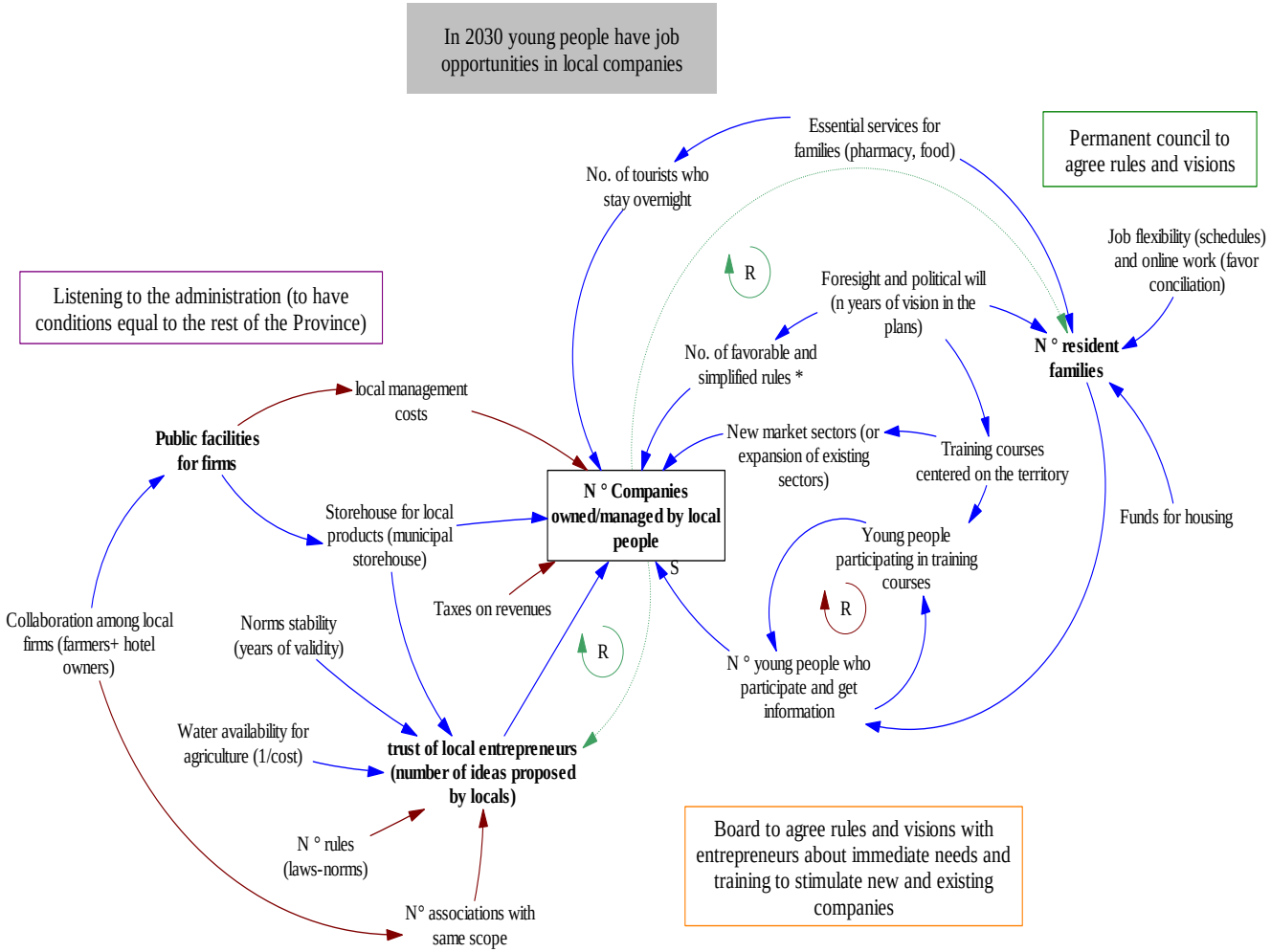


Figure 7 Causal loop diagram derived from FEM's participatory modelling.

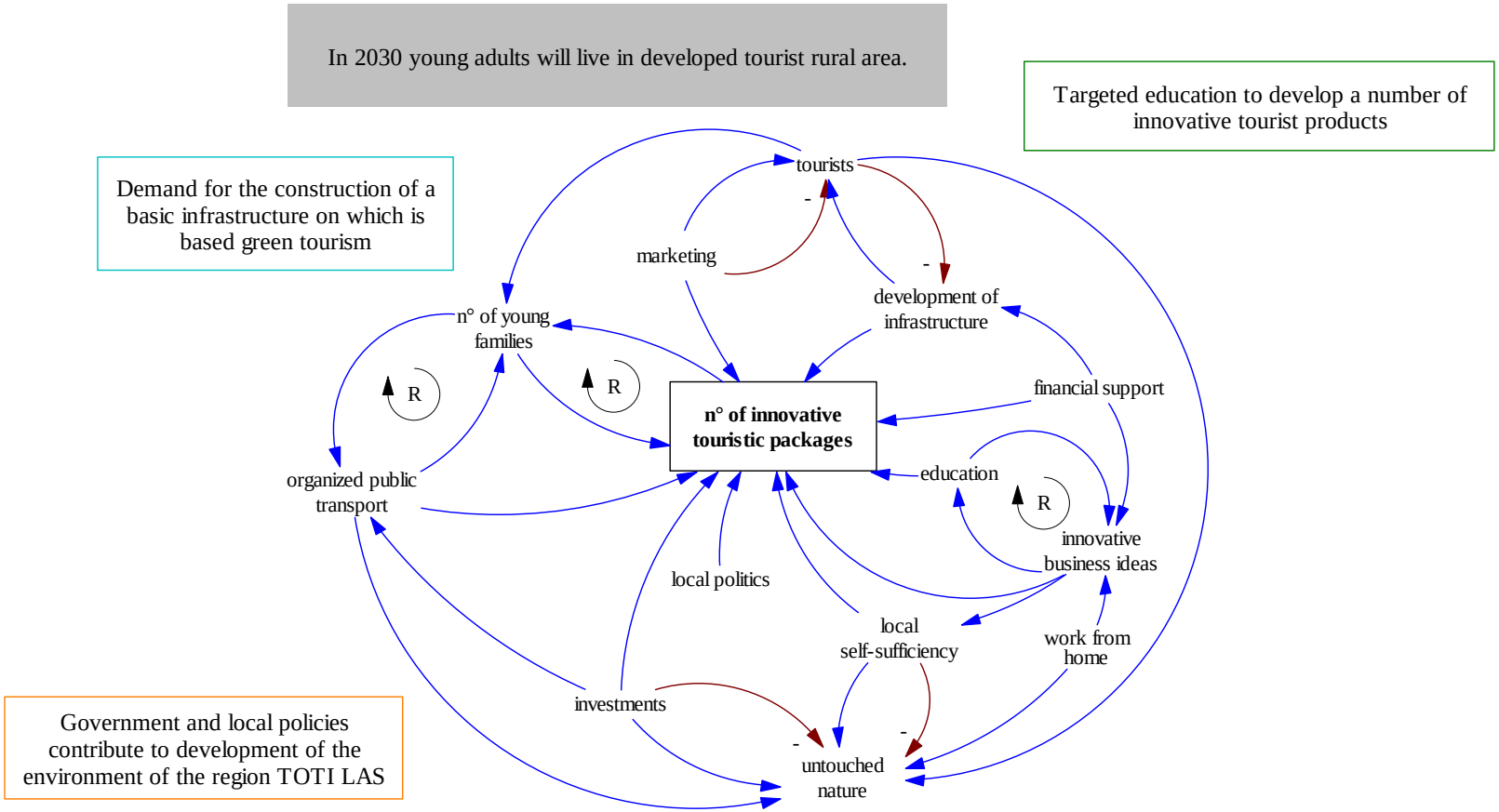


Figure 8 Causal loop diagram derived from KGZS' s participatory modelling.

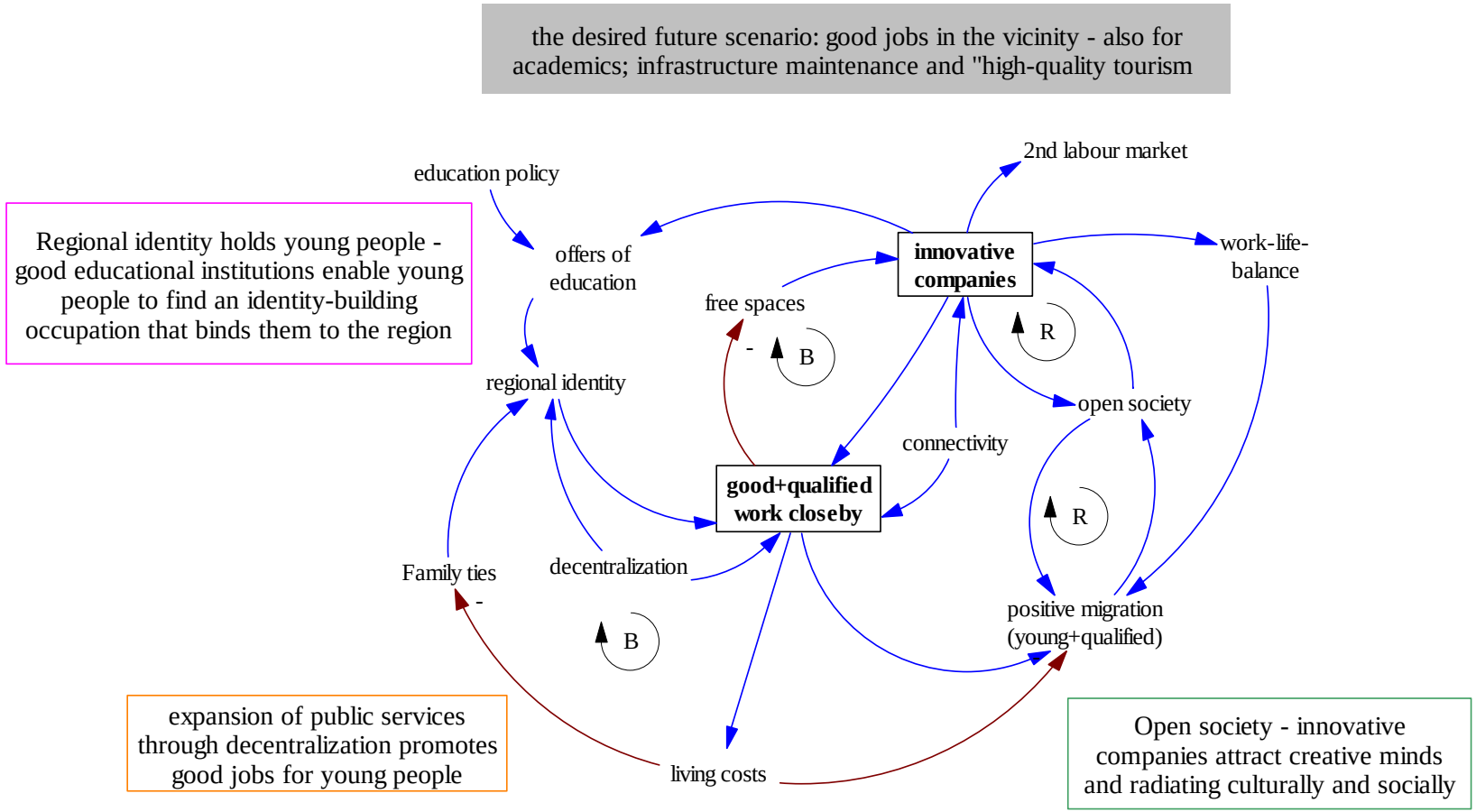


Figure 9 Causal loop diagram derived from PL's participatory modelling.

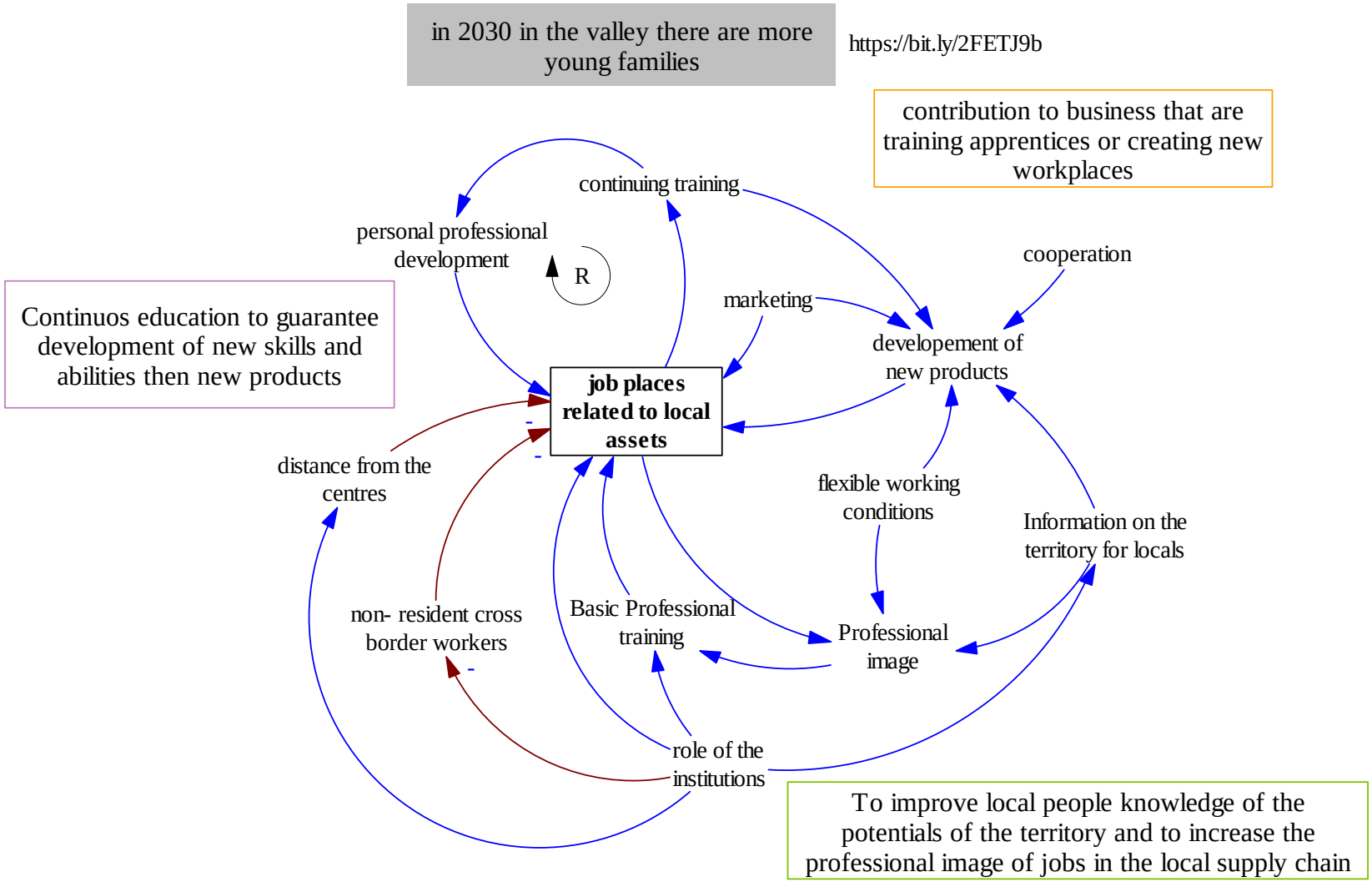


Figure 10 Causal loop diagram derived from PoP's participatory modelling PoP.

For all gathered information see the file of "Report on Participatory modelling of desired futures for local systems" elaborated by each PP in the ALPJOBS web site https://eventi.fmach.it/alpjobs.

4. Outputs of local desk research about "Promising local values and skills" (WP 3.3)

For all gathered information see the file of "Report on Promising local capitals, values and competences" elaborated by each PP in the ALPJOBS web site https://eventi.fmach.it/alpjobs.

5. Notes

5.1. On the learning process

5.1.1. During the training seminar PPs

In the workshop, regarding the systems thinking, the PPs tried all the tools used subsequently with local stakeholders. PPs in the training have developed different exercises, from the design of simple causal links between real variables, to drawing feedback cycles, to drawing the causal loop diagrams. In these exercises, PPs demonstrated that they understood the key concepts of systems thinking. Some concepts of systems thinking, "systems archetypes" or "systems traps", prepared for training, were presented quickly and partly omitted to give more time to the exercises. In the second part of the training, PPs experienced a participatory modelling session. During this, operational suggestions of management and facilitation were highlighted. At the end of the training workshop PPs were asked to review and tell all the concepts and tools seen or tested together. From their observations and descriptions, it emerged that the simplest but also interesting parts were those related to the schematization of causal relations and feedback loops, the most difficult part was about facilitation. The participatory session (likewise the local replications) lasted little more than two hours, this time allowed the group to explore only a small part of local systems (i.e. PPs focused only on one selected definition of desirable future), modelling just a few of related variables.

Seeing the results regarding the research activity on "Promising local values and skills", it can be said that too little time has been devoted, in the training workshop, to explaining the concepts of "local treasure" and the objectives of this part of research, the definition of the tasks for the PPS has also not been sufficiently clarified. In a possible replication or development of the project, the research on local treasures should be anticipated with respect to participatory modelling, so that the latter can be focused more operationally and specifically on local capitals.

5.1.2. In the local replication

In their local replicas of participatory modelling, all PPs carried out the procedure in a satisfactory manner, considering the first experience of facilitation with these frameworks, demonstrating that they understood the essential. Of course, a real strategic application of participatory model building would require about 4-5 sessions, along a couple of months, resulting in qualitative models and (possibly) simulation models by which simulate the effects on the "local system" of proposed interventions and policies. In practice, the local applications of participatory modelling were relatively different: participants varied from 3 to 7, and not all the procedure steps were performed.

Some difficulties in the facilitation of participatory modelling by PPs were expected, the main one, typical for facilitators (or "modellers") at first experience, was about the vagueness in the definition of the variables. Most of PPs named concepts or topics, such as "broad internet", "tourism", "public transportation", instead of identifying the countable variables connected to those concepts, which can be imagined increasing or declining. The corresponding well-defined variables of the mentioned examples could be: "broad internet" ➔ "surface (Km^2) or % of urban centres covered by Wi-Fi, "tourism"➔ "number of overnight stays", "public transportation" ➔"frequency or number of bus trips from home to school". What allows us to consider satisfying the level of application and understanding of participatory modelling is that all the PPs have processed CLDs with at least one or more feedback loops. In terms of systemic reading, it means that the representation of variables and causal relations (the structure of a system) is sufficiently detailed to describe self-sustaining processes. These are those that occur in reality and create its complexity; on the other hand, these are the ones to take into account for any intervention (i.e. to counter them or to support them according to whether they produce desirable or undesirable effects). Another point to strengthen in possible project replication, were the exposition of mental models and the identification of policies and their association to a specific causal-effect chain within the causal map. By a second participatory session this point could be explored in detail and widely.

Another difficulty shared by the PPs concerns the involvement of stakeholders, or the difficulty of having them in the participatory session, and of convincing them to spend time in a mixed working group on long-term strategic thinking, which is considered for some of them not enough concrete or does not result in immediate action. In reality, this is a difficulty of the whole project being experimental and based on the voluntary contribution of local stakeholders, not involved from the beginning in the project definition phase, which is therefore not considered as their own.

Further developments in participatory modelling might explicitly include the content of desk resource on local treasures, i.e. at the beginning these could presented and discussed with participants to have their valuation on the priorities and relative importance. After that, we could expect the identification of policies for local development be more detailed and operational. This suggested us to dedicate more time during the training in defining and sharing the expected content of research on "local treasures" and to better connect this to the participatory modelling.

5.2. On the results: common issues and strategic insights

From the results of the participatory modelling sessions and desk research, common aspects emerged, interesting for all the studied areas.

5.2.1. Participatory modelling of desired futures

Within the five groups common issues and processes emerged. Desirables futures concern job opportunities, interesting jobs attracting or maintaining young people in the territory (especially those highly qualified), and the availability of services that create or maintain a good quality of life for young families. These are all interdependent processes rather than fixed conditions, for that reason systems thinking provides a useful framework and operative tools.

Such desired futures were articulated differently among the territories; the successful dynamics, associated to the identified futures, appear to be measurable in terms of: number of learning places for young people, number of local firms owned by local resident, number of innovative

touristic packages, number of jobs for (young) highly qualified people, number of jobs related to local products.

The most mentioned variables related to those dynamics were about education, work conditions and contexts, innovation in products or public services and local opportunities for having and maintaining family.

It is interesting to note the main feedbacks highlighted in causal maps such as those: between innovation and training, between households and local companies, between the number of local innovative companies and immigration of qualified people, between continuous training and jobs. If these might appear rather obvious, they are not guaranteed and likely counterbalanced by other processes (highlighted by participant stakeholders) such as the possible negative impacts of crowding tourist places, the possible competition on land uses (new production sites vs. previous land use or activities), the increasing living costs (e.g. due to higher costs of decentralized services) and the possible competition on work places from non-resident workers.

The cited policies rely upon providing internet facilities for home/remote working, providing services for children and elderly care, creating local boards to cultivate local collaborations between training institutions and local companies, creating permanent forum for locally coordinated and integrated development (bridging different sectors), creating local groups to negotiate and calibrate public services and support from the government.

5.2.2. Promising local values and skills

Concerning the local tangible and intangible capitals, all the selected areas have many points in common; regrettably, none of PPs used these local capitals as reference for participatory modelling.

Natural resources play a decisive role in the local economy: forest, water, and soils allow the cultivation of local products that contribute in raw or processed form to the identity of the territory. Each territory is characterized by particular agricultural and forestry products, to which, as example, typical recipes of local cuisine[6] and handicrafts[7] are linked. In some cases, spontaneous vegetation also offers plants and herbs for medicinal and food utilization, around which cultural events are organized, attracting tourists and involving local restaurants (in FEM and PoP's selected areas). In some cases, the local products are promoted by local territorial branding (in PoP and PL's selected areas).

In addition to local products, the landscapes are the true leading role in the tourist offer and in the quality of local life. These landscapes are primarily shaped by aware farmers and foresters, following local traditions and historical practices; for this reason, landscapes could be considered as both tangible and intangible capitals. The landscape offers other valuable resources such as raw materials (marble) and conditions for hydropower plants (particularly important in EAA's selected area).

The local cultures are also represented by monuments and historic buildings, existing in all study areas; in most cases the history of these buildings covers several centuries and is often linked to the ancient transalpine roads (e.g. Via Claudia Augusta).

[6] KGZS counts about 50 local recipes.
[7] FEM reports about a Wood Museum in Tesino, EAA mentions a Platform of Woodworld Ambassadors in Murau.

In all areas, the landscape attractiveness for tourist is supported and amplified by structures and services for outdoors activities and sports; for instance, hike and cycle paths are part of the well-developed nature-based tourism, along with services for accommodation and living (often even at the farms). The activities for tourists include several events, festivals and dedicated social living spaces.

The general good level of success of the various activities in the different study areas could change in the future. Statistics show fluctuations in arrivals in in EAA's selected area , extreme weather events have seriously damaged agriculture in KGZS's selected area , water shortage for cropping is recognized as a strong limit by farmers in FEM selected area , traditional farming practices that have shaped the PL selected area's landscape may not be more attractive to young farmers, likewise the PoP's selected area landscape may be not preserved by new generations. The demographical balance in all studied areas may change in future due to aging, brain drain, migration, commuting; in general, the decline of the young population (see "local trends", WP2.2) could undermine the current virtuous processes of local development, e.g. losing the public services less and less used and/or costing more and more.

An interesting issue in all areas is the free time of locals in terms of volunteering, this seems to be essential for the added values in the landscape-based attractiveness, and related cultural-gastronomic event or outdoor activities, as well for the long-term support to local activities, therefor for their social and economic sustainability. This could be considered among the "leverage points" in the studied territorial systems: only on a voluntary basis, formal and informal groups can organize or coordinate services for tourists and could ask for or agree investments on specific supports for economic activities (e.g. water supply for local agriculture). Only on voluntary base the local culture, the traditional knowledge of herbs and other natural resources can be cultivated and inherited by next generations. New technologies and digital skills will surely help all this, but they may not be sufficient for local territorial development, in remote upland areas, more than in large urban areas, widespread creativity skills, relational proficiency and foresight are and will be necessary.

All these activities based on voluntary work, free time, and cultural traditions obviously need economic support from local administrations. Most of the involved stakeholders are aware of that and such support is taken for granted or requested, although not guaranteed.

It is worth highlighting that cultural traditions can play an ambiguous role: they can be the driving force for the local economy as attractors of tourists, visitors, with the benefit of connected service providers, as well they can create resistance to innovations, considering those as threatening for the local identity, or simply ignoring intentionally them.

5.3. On the suitable contexts and skill profiles for the local job opportunity in 2030

All the information and suggestions collected, allow us to define the following strategic points:

- The **local treasures should be the basis** or starting points for local development thus the knowledge about them should be **included in ordinary education** as well in training and **innovation projects**;
- All the local natural and cultural values require people, tools and relationships: people in terms of local and skilled residents, farmers, foresters, company owners, tourist operators; tools in

terms of public and private financial support as well as connecting and production technologies, possibly innovative; relationships in terms of collaborations between families, local public bodies, local organizations, possibly engaging and **bridging different socio-economic sectors**;

- All virtuous cycles (self-sustaining processes or feedback loops), such as those between innovation and continues training, between staying of young families or immigration of qualified people and maintenance of public services, are all **interdependent and dynamic processes** rather than fixed conditions;
- Such "interdependence of local systems" makes systems thinking and related tools a useful framework with operative tools as well a key competence for all local actors ("**thinking in systems**", mentioning Donnella Meadows);
- At the base of every innovation (e.g. to invent new tourist packages, or new services or new products) there is **creativity**, this should be a widespread competence, cultivated in the school as well as in territories through the possibility of experimenting;
- in order to **experiment at the community or territory level**, a laboratory is not enough, there is a need for coordination between actors and sectors, therefore the key competence is a "relational competence", such as the ability to mediate and **facilitate win-win processes, connecting local actors by innovation**;
- the continuing education (lifelong learning) will be increasingly necessary to capitalize on local traditions and innovate local treasures; for this, **multiplying the** "**learning places**" outside school will pave the way for a wide variety of innovations, not obvious.

Besides, participatory model building is not only a simple tool of facilitation for public debates, it provides a framework for community capacity building ("capacitation", Amartya Sen), in terms of:

- **framework for understanding**, appreciating complex realities, recognizing facts within an interdependent world
- **framework for practice**, engaging with people perspectives, making value judgments amongst multiple stakeholders.
- **framework for responsibility**, sharing the limits of responsibility given limits in understanding the "whole" and being "multiverse" or pluralists in framing the practice.

A promising set of skills (skill profile) for creating local jobs will be the one that will allow people to respond to the above points; if these skills are widespread in the community, the community itself will be able to build and sustain the best premises for local development.