Using a serious game to engage a multi-stakeholder commitment at the large scale of a whole value-chain. Results from an experiment in Lao PDR.

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Abstract

Nowadays, it is increasingly recognized that development is characterized by multilevel and dynamic processes, involving diverse stakeholders and multiple local and extra-local relations (Clark et al. 2019). Such changes, however, are only likely to succeed in cases where it is endorsed locally and cultivated through endogenous processes. This means that the local—or territorial—level should be regarded as the appropriate place for pursuing sustainable human development (Biggeri and Ferrannini 2014). It also means that development must be conceived of, and facilitated through, genuinely participatory processes. Within this perspective, setting the conditions of endogenous processes has to be the priority goal of participatory approaches. These conditions cover required abilities from the stakeholders who have to be active in these endogenous processes, but also a context enough open to let these stakeholders develop their capacities and actions. The key issue is then about how a participatory process can make a whole environment moving. This paper presents how a framework of innovation context (Agriculture Innovation System concept) and a specific participatory approach that is built upon a serious game and focus on endogenous processes have been combined to make a whole institutional and socioeconomic environment move in a way that allow endogenous processes to be achieved at a whole value-chain scale.

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Rationale

Agriculture Innovation System (AIS), a theoretical framework to reach an enabling environment

Agricultural Innovation System (AIS) concept considers innovation system as a network of organizations, individuals, and supporting institutions and policies in the agricultural and related sectors. Within this framework, these actors interact, generate, share and use knowledge, as well as jointly learn (FAO 2016). AIS thinking recognizes the contribution (knowledge and skills) of all these different actors. The conventional actors in agricultural development (research and extension) are no longer seen as the sole drivers or initiators of the process of agricultural innovation but a part of the relevant actors. AIS considers conditions to such change as a multi-level and multi-stakeholders process which is identifying by itself challenges and solutions.

Therefore, the purpose is to pursue multi-stakeholder' commitments within this multi-level process of innovation, by developing the specific capacities that all the required stakeholders need to reach in order to make the whole system moves. AIS framework emphasizes on knowledge management, reflection and learning reflects, with all actors becoming potential sources of knowledge and change, namely a Capacity Development (CD) for AIS (CDAIS). Here the idea of facilitation goes beyond conventional facilitation tasks – such as communication and information sharing, listening, convening actors and managing logistics – to include the fostering of synergy by managing systemic interactions that link people and resources, and enhancing their ability to make collective decision and implementation. Actually, CDAIS implies a shift from (Toillier et al. 2020):

- Considering knowledge generation as a final objective, to using it as a means to achieve change;
- Understanding of the parts to systemic understanding of the relationships between the parts;
- Using mainly 'hard systems analysis' (improving the mechanics of the system) to including 'soft systems analysis' (negotiating the meaning of the system and desirable transformations);
- Seeing participation as a question of consulting beneficiaries to realizing it is about facilitating engagement for interactive learning between stakeholders, resulting in joint analysis, planning, and collective action;
- Working individually to working with others, in constantly changing ad-hox teams and partnerships;
- Teaching to learning; from being taught, to learning how to learn; from individual learning to social learning.

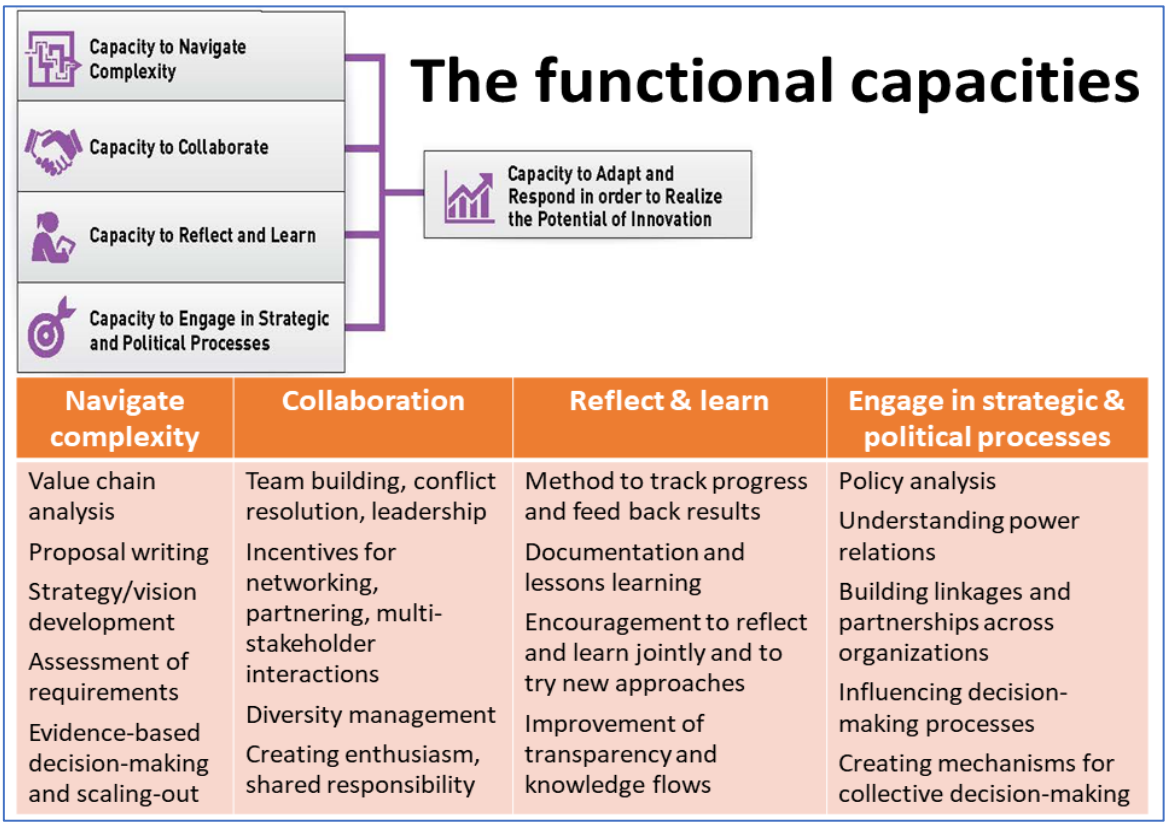
Capacities to reach these deep changes have been seen as 'emerging' over time, driven by multiple factors. No single element such as incentives, leadership, financial support, trained staff, knowledge or structure can alone leads to the development of capacities. Capacity is understood as involving collective learning and adaptation to numerous opportunities and challenges. Accepting this fact calls for a fundamental change in our perception of CD – not just as a vehicle for results but a way of facilitating processes enabling stakeholders to seize opportunities, build trust and take joint action. AIS concept stresses the crucial importance of partnerships and networks in creating that interconnectedness, and in bringing them together to create new knowledge, as a way strengthening 'system-wide' capacity.

More precisely, four key capacities are formalized by AIS framework, to be progressively developed through a learning-by-doing process (FAO 2016):

- Capacity to navigate complexity. This involves a shift in mindsets, attitudes and behaviour to comprehend the larger system and to create an understanding of the whole system, as well

as a shift from a mainly reductionist understanding of the parts to a systemic understanding of the relationships among the parts; viewing change as an emerging property that cannot be predicted or planned for in a linear fashion.

- Capacity to collaborate. This involves enabling actors to understand each other's perspectives and managing conflicts, managing diversity in order to combine individual skills and knowledge, and creating an awareness of their complementarity. It is also about building synergetic partnerships and networks to enhance collaboration, and about communication skills and strategies, both internally and externally.
- Capacity to reflect and learn. This capacity covers bringing stakeholders together, designing and leading processes of critical reflection and following a double-loop learning process leading to action and change. It requires respect for different opinions and an atmosphere of trust for those opinions to be voiced. It also requires a systematic tracking of processes and progress to enable reflection to take place. Interventions need to be sufficiently flexible and adaptable to changing conditions, and analysis should be undertaken in an iterative fashion so as to promote experimentation and adaptive capacities as new opportunities for learning emerge.
- Capacity to engage in strategic and political processes. CD for transformational change is inherently political, and involves questioning the status quo. Power relations need to be understood at various levels, including economic interests, the balance of power among elites and civil society-state relations. Understanding and influencing the political and power relations between individuals, within organizations and in society as a whole, is crucial for bringing about new forms of interaction among stakeholders. This capacity is also about the conscious empowerment of vulnerable and often marginalized groups.
- Lastly, these four capacities are the core of an overarching capacity to adapt and respond in order to realize the potential of innovation, shifting focus from reactive problem solving to co-creating the future.



Navigate complexity	Collaboration	Reflect & learn	Engage in strategic & political processes
Value chain analysis	Team building, conflict resolution, leadership	Method to track progress and feed back results	Policy analysis
Proposal writing	Incentives for networking, partnering, multi-stakeholder interactions	Documentation and lessons learning	Understanding power relations
Strategy/vision development	Diversity management	Encouragement to reflect and learn jointly and to try new approaches	Building linkages and partnerships across organizations
Assessment of requirements	Creating enthusiasm, shared responsibility	Improvement of transparency and knowledge flows	Influencing decision-making processes
Evidence-based decision-making and scaling-out			Creating mechanisms for collective decision-making

Figure 1 The functional capacities of CDAIS framework (FAO 2016)

However, developing these capacities through a collective learning-by-doing process constitutes a huge challenge, especially to reach not only local stakeholders' improvement but the progresses that are required for the whole institutional and socioeconomic environment. Yet, this is the express purpose of a specific participatory approach, built upon using a special serious game, TerriStories®.

TerriStories®, a specific approach with a serious game, focus on bottom-up social changes

The TerriStories® approach comes up from a first serious game experiment in late nineties, named Self-Cormas (D'aquino et al. 2003, Barreteau et al. 2003). Self-Cormas experiment has demonstrated that local stakeholders are able to design then used by themselves a simulation game to progressively shape, by 'playing' their serious game, their own ways to deal with an issue (D'aquino and Bah 2013). Furthermore, they have succeeded to lead by themselves, after the game session, the implementation of the solutions they have shaped during the game (D'aquino and Papazian 2014). From this first experiment, a whole methodology has been developed and transferred to development practitioners in 2014, under the TerriStories® name[3].

TerriStories® is designed to be used by participants who have an issue in common. That does not mean they have the same view of the issue, and they even may be in conflict about the issue, but this is an issue which all of them are impacted. And all of them are experiencing it, even if not acknowledging or knowing the whole parts of the issue. TerriStories® support then seeks to be as simple as possible, as participants will always master the issue more than a game support: the goal of TerriStories® is not to provide to participants an expert analysis of their use, but to help them to progress in the way to mobilize existing knowledge, and to take enough into account the diversity of stakeholders, their needs and points of view, in order to make a collective commitment to emerge, and strongly moves into action.

Furthermore, TerriStories® support attempts to be simple because the objective is not to a game, but to half a game, half an improvised play by participants: as the principle of TerriStories® is to let participants building collective action upon their own points of view and design, a too framed game would too closely bind their collective and progressive shaping of the ways to deal with the issue in question.

TerriStories® design is thus based on a strategic hypothesis of endogeneity: in order to obtain lasting impacts up to inclusive levels of decision making, stakeholders must be empowered to implement the process as independently as possible from external support, both in their local level and, more broadly, up to these inclusive levels of decision making. TerriStories® combines two elements. A participatory simulation tool, specific but easy to use (a basic boardgame, and a diversity of tokens, pawns, and stickers…), is provided to participants in order to let them shape then use their own simulation support during the TerriStories® sessions. A specific strategic approach, the "commitment strategy", is supported by the team before, during, and after TerriStories game sessions, in order to ensure the emergence, or consolidation, of an autonomous collective momentum which is able to reach by itself, after the TerriStories sessions, the aimed progresses of the whole required environment.

TerriStories® participatory simulation begins by letting participants built their own game support, the one they think that best suits their specific concerns. They pick from the provided game elements to design a participatory simulation support that acknowledge their different points of view and knowledge on the issue in question, ensuring a constructive but respectful dialogue between the diversity of stakeholders. Then, participants ensure the different game roles, which represent the different key stakeholders of the issue, and play, for the most part in a improvised manner, as proposed rules are not only simple but not too much forced to be respected: the priority goal of the support is to make participants simulate the issue by mobilizing and putting in the play all they know about the issue and its backstage. Once the play of participants is launched, facilitators introduce

[3] www.terristories.org.

environmental, economic and social uncertainties they are priorly identified, and participants are let to co-develop and test solutions (by 'playing'), leading them progressively to improve their first ideas.

The last phase of this participatory simulations session is largely an improvised one, and nevertheless crucial to achieve lasting outputs: as participants spontaneously mention, through the game, the dialogue, negotiations and partnerships they should set to achieve the solutions they shape, facilitators then ask them to continue the simulation by playing these social required actions they talk about…and they spontaneously play constraints, bad behaviours and other difficulties they know, from their knowledge of the issue context, that may jeopardize the collective action they have designed during the former simulation phase. Through this last and very improvised phase of participatory simulation, they are launched to enrich their prior design of collective action with a collective strategy to deal with expected hurdles, that completes a comprehensive and operational action plan, and results in a strong commitment between them for future actions.

The approach has succeeded, in all of the countries in which it has been deployed, in driving collective endogenous proposals that the actors themselves then deliver and implement according to their own requirements. First applied to land used and tenure local complex issues, often with multi-used of natural resources, its scope has been then extended to all development issues that requires multi-stakeholder commitments to change a whole institutional and socioeconomic environment, and in particular value-chain issues.

In 2018, a TerriStories® approach has been implemented in the province of Savannakhet, in Laos, in order to help the actors of an emerging Lao organic value chain to improve their practices, partnerships, and structure, from farmers to traders, extension and research bodies, bankers, and policy makers.

Context

The challenge of organic value-chain issue in Savannakhet province lies on keeping organic quality from seeds to packaged rice, as it faces to many steps that are different in nature (intrants provided, farming practices, collecting organization, processing, quality control...) and that involved a diversity of actors (farmers, extension services, processors, traders, bankers, policy-makers, consumers…). The Lao government wants to strengthen the CDAIS capacities of the rice producers' association of Savannakhet Province, and beyond to make a multi-stakeholder network emerges for a quality rice value-chain. Low quantity of quality rice for domestic and export market is common issue in Savannakhet province, which involves various actors: farmers have strong difficulties to access credit for the required inputs; extension services need more human resources to provide an accurate technical advice; quality seed production supplied by government agencies as well private sector fails to meet demand; final quality rice not enough valued for private suppliers and millers. Thus, as all actors are both involved and impacted, the National Agriculture and Forestry Research Institute (NAFRI), which is involved in a TerriStories® experimentation in different parts of the country[4], has proposed in 2018 to bring them together un a shared refection on improving the situation.

Methodology

An adapted version of TerriStories® game to grasp the organic rice value chain in Savanakhet Province, Lao PDR

Involving in a same simulation session, through a serious game, the considerable diversity of a value chain stakeholders (which ranges from producers to traders, to policy makers, to extension and research bodies…) is a huge challenge.

[4] Multi-countries project FAO-Agrinatura on Capacity development for Agriculture Innovation SyStems (CDAIS), https://cdais.net; https://blog.gfar.net/2016/07/27/when-innovation-is-farmers-play-a-skill-building-simulation-for-farmers-in-laos/.

However, the TerriStories® approach is not simply a serious game, but rests on the specific design of a commitment strategy, before, along, and after the game session, that focus on giving to the participants the abilities to move by themselves the whole institutional and socioeconomic environment.

Before the game design, setting a fine-tuned strategy to cover the whole value-chain actors and issues

Practically, the first phase of the strategy design, before the game session, is to finely identify all the key stakeholders have to be involved in, and the ways to reach their involvement: which part will they play into the game session? As a role in the game, as a target for the players (whose behaviour or act has to be changed by players' strategy), as a contextual element that cannot be moved but may be dealt with, as a step into the game or…?

Moreover, in a value chain issue not only stakeholders but also desired progresses are very different nature, ranging from individual to policy, from technical innovation to institutional mechanisms, from financial support to collective organization, from changing practices to setting partnerships… Which part will they play into the game session? As a step of the game, as an indicator into the boardgame, as a part of a scenario that will be tested ("played") by participants or…?

The first strategic analysis involved the key partners that are able to feed the team with fine-tuned and relevant knowledge. The figure 2 presents the team strategy to integrate the different key stakeholders and targeted progresses into the TerriStories® framework.

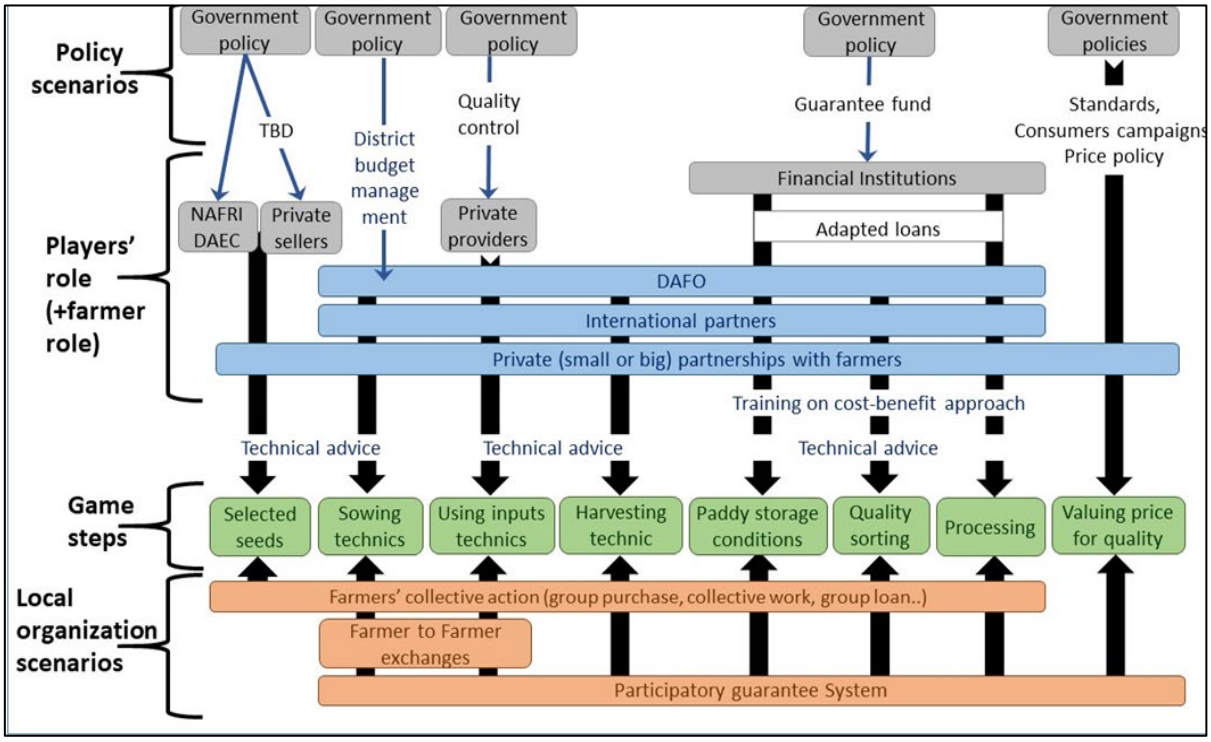


Figure 2 The strategic approach to grasp the diversity of stakeholders and issues into the game session [NAFRI: National agriculture research institute; DAEC: department agriculture extension services; DAFO: district agriculture office]

First of all, the different milestones to ultimately reach the required quality of organic rice are identified, and saved as steps for the forthcoming game (see green boxes inf the figure 2). Then, from all the key stakeholders that have been identified (grey boxes for upper-level actors and blue boxes the local ones), the team distinguishes those that could be easily introduced as roles into the game, and the remained ones, that should be introduced by another way, like simulation scenarios. Lastly, the last elements that have to be introduced are drawn up into a last kind of scenarios (see orange boxes).

Then, defining the number of participants is a strategic step, as the purpose of TerriStories® is to succeed in launching an autonomous collective momentum: how many participants are needed from the different key stakeholder groups to obtain the critical mass that can drive a collective commitment? And of course, who from each of these groups? And how set the relevant strategy to obtain the attendance of these targets? Four boardgames and six facilitators (see in annex the detailed proceedings of the game) have been planned, in order to bring together forty to fifty people, and supports from local partners are asked to implement relevant ways to select and convince them to come in.

Once this strategic frame is finalized, the terms of references of the game design and the profile of required participants thus are clarified.

Then designing the very open game

The key principle of TerriStories® design is to let the supports as much simple as possible; no need complex and strict rules and too precise or quantitative indicators to make participants acknowledge see the key elements of an issue they have already experienced. The function of TerriStories elements is just to put in the table, and the simulation, all the key elements of the issue, through simple and qualitative materials which participants are able to link in their mind, and discussions, to the 'backstage complexity' of each of these features.

Precise rules or indicators are designed only for the very few specific features which playing with their details will provide an essential step of the collective analysis. In the case of organic value-chain in Savannakhet province, the key indicator is rice quality, and more pointedly the effect of each step of the process on the product quality. Consequently, two sole elements are well defined in the simulation session:

- Distinguishing in the game the different value chain milestones for quality (see green boxes in figure 2), but not their complex content (as participants master it), to highlight each of them impact on final quality;
- Introducing a quality indicator that monitors in a crude but explicit manner (see figure 3) how quality may evolve along the rice processing.

For their part, the other elements of game structure are in a large part left to the participants' interplay:

a. As always with TerriStories®, facilitators start by presenting the boardgame, an interchangeable checkerboard, and asking participants to rebuilt it from their own points of view (see figure 5). This is a key inception step of TerriStories® approach, as it leads participants to grasp that they are really the leaders of the simulation session.
b. The different proposed roles are presented, in their crude definition (only their status - farmers, traders, bankers…-, without guided rules or ways of playing, except to reach what they supposed to be the needs, objectives, and ways to act, of the role they will ensure).
c. Facilitators develop the issue of quality process, and explain the rice quality indicator they will be used (see figure 3), and the other defined pieces and tokens (bank notes, coloured stickers they may use to identify the different kind of intrants they would like to put into the game (see in annex details of the game proceedings).
d. Then, in order to help participants to deal with the huge diversity of roles in a so large audience (4 boardgames, plus the other game spaces -see below-, and more than 80 participants), coloured caps are distributed to better identify roles (white for companies, red for local authorities, black for bankers, light green for researchers, dark green for extension staff, and no cap for farmers).

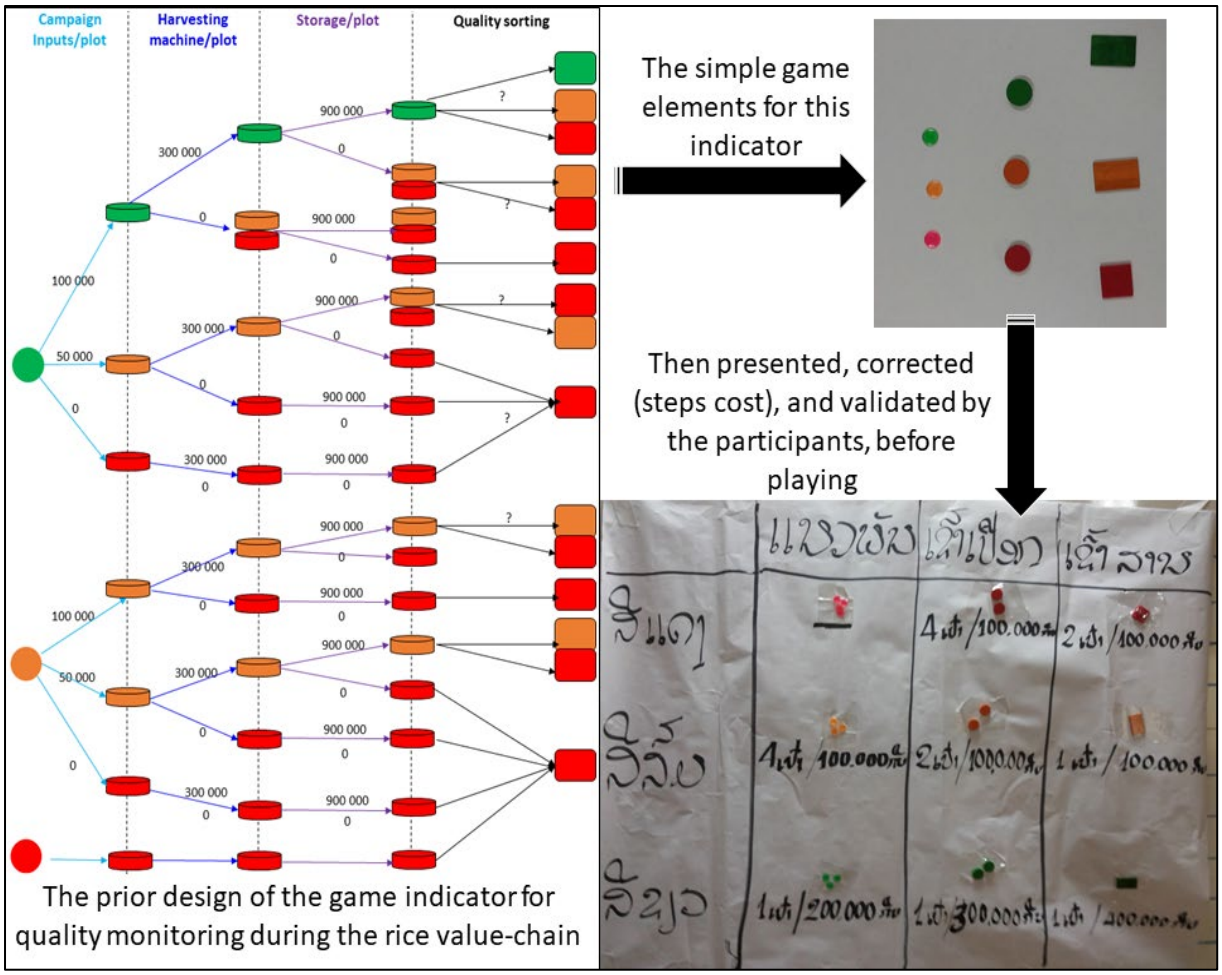


Figure 3 The game rule to save, or spoil, rice quality, from seeds to ultimate sorting [in green, adequate intrant or process, in orange usual ones, in red substandard ones; figures identify the cost of the step in the game]

e. Then, facilitators start to frame and punctuate the open simulation process by announcing beginnings and ends of each playing step (see green boxes in figure 2). Apart from this timing role, facilitators monitor participants dialogues, recall the few game rules if necessary, and most of all push participants to spontaneously act like they will do in the reality. As already described, TerriStories® support is half a game, and half an improvising support for participants that lets them putting spontaneously into action the ways they act to deal with issues that emerge into the game. Facilitators' skills are very useful to create funny and friendly participants' exchanges.

f. Once the collective playing is running fine, facilitators start to insert what is named "events" in TerriStories® game. The constraints and hurdles of the issue that are identified during the prior analysis before the game session (see above) are introduced into the play. As much as possible, these events are converted into added roles (an unfair trader who won't buy the rate he agreed, an international input seller, who sells bad quality but lower price, an international trader who wants only high quality and high quantity, etc.), that can be play by a facilitator or, better, by asking one of the participants to assume this incoming role (as he knows more than the TerriStories® team how it can actually occur). If not possible, an "event card", or a dice, is drawn (for example, the probability to not get intrants in time). It can be drawn by a participant, in order to support the casual and funny atmosphere that helps to create an open-minded collective analysis and simulation.

g. All these game elements lead to a noisy and lively environment, with a very little coaching from facilitators (see figures 5 & 6). At the end of the first crop cycle (once the last green box of the figure 3 has been played), facilitators ask participants to take stock about the money the rice quality they reach, and explain the reasons. Participants naturally use their own experience of real events to underpin what is happened in the simulation (cf. the 'backstage complexity').

h. These debriefings lead to a broad and rich exchange of views and experiences, that ends up to different proposals aiming to reach a better rice quality. Facilitators then help to combine and structure them in few improvement scenarios, attempting to respect the diversity of positions….and propose to participants to analyse the relevance of these scenarios by playing them.

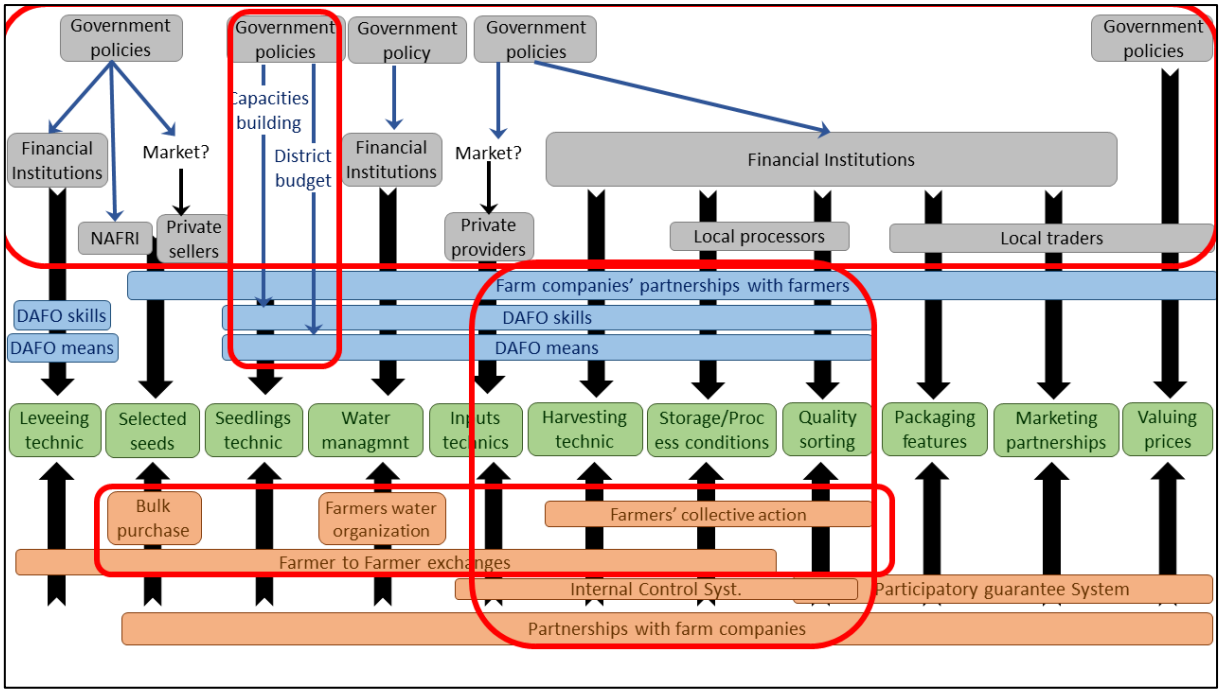


Figure 4 The four emerging scenarios to be played

i. As the participants' codesigned scenarios always presuppose contributions, partnerships and agreements from diverse actors and institutions (i.e. constructive results from negotiations, banker's acceptance for loan request, right behaviour from authorities…), this is the good time to push participants to enrich their codesign with a strategic dimension (cf. above the commitment strategy). Facilitators ask participants to simulate not only the ideas they have formalized but also this part they still not unpack: how succeed in moving institutional and socioeconomic context to what they need? The need for new game spaces beyond the landscapes boardgames, like offices (trader, banker, local council, ministry…), then emerges. Some separated spots are then distinguished into the meeting place, in order to simulate the comprehensive value chain stakes, from local to country level.

j. This last simulation phase ends up to very operational proposals, as including ways to deal with institutional hurdles and contextualized socioeconomic constraints. This process results to a strong and collective participants commitment. As they consider they have identified all the key elements for an operational result, and they feel this agreement brings together all the key stakeholders to succeed in, they get excited and motivated to lead by themselves, after the session, the changes they have planned.

Of course, outputs of simulations are not seen as a totally concrete action plan but as an explicit collective strategy to pursue the required changes. Its operationality is not in a fixed character of an action plan but in a comprehensive one of the strategy designed. Contextualized action plans will be developed, and regularly modified, by participants when they deal with the issue after the Territories® session, within the framework of the collective strategy they have codesigned.

Figure 5 Some game elements and the boardgame play space

Figure 6 Lively and improvised simulations in the different playing spaces of the game session

Last but not the least, even this comprehensive and very explicit collective strategy is not seen in TerriStories® framework as a finalized one: the goal is to develop participants abilities to engage together in dealing with an issue, meaning not find a fixed solution that is wrongly considered to resolve forever a problem, but develop a collective capacity to take on a complex issue and its future uncertain developments (Funtowicz et Ravetz 1993 and 1994, Gunderson et Holling 2000, Armitage et al. 2009, Scoones 2009…).

This kind of simulation game of a whole value-chain issue may need a two-day or a three-day workshop, depending on the available time.

Results

First of all, simulations have clearly highlighted how the actors in the value chain depend on each other and how they may improve their objectives by interacting and better coordinating their actions. Thanks to participants' experience, the game session also clarifies the common and individual constraints of each of them, at a very precise level if required: unbalance between credit interest figures and cost-benefit realities of rice value chain, mismatch between loan repayment plans and agricultural calendar; farmers' low knowledge on accurate fertilization and post-harvesting practices, unavailability of accurate inputs for farmers even when quality seeds are supplied by private millers, weakness of the communication system between banks and farmers about the proper procedure to access credit and obtain guarantee from government bodies, etc.

The ended output of the session is the self-action plan participants have co-designed, including the collective strategy they have shaped to get involvement and constructive participation of each key actor, from local to institutional levels. This institutional strategy included how dealing with negative impacts of climate changes, as a disaster event has been added during game session. Contract templates between millers, traders, and farmers have been also co-designed, including detailed terms as warranty price, quantity and quality technical features, validation process and validity period of contracts (one cropping season), storage and transportation facilities….

These workshop outputs have blossomed into a deep momentum. In 2020, a network is raised among the rice value chain stakeholders to support the rice production groups on the quality and quantity requirements to strengthen the value-chain. Milling companies help them to produce by themselves organic seeds, while district extension services develop a plan to improve their knowledge as regard loan processes as well quality rice post-harvesting. Complementary, government bodies endorse farmers in accessing financial supports allowing them to meet market demand, set a legislation for control and management of inputs suppliers, and ensure agreements between farmers, private sector and bankers. Responding to the proposals for this collective engagement, in 2022 government set a provincial rice quality control board to monitor and certificate quality rice, which values its price. Building on these advances, in 2023 farmer groups set a marketing cooperative exporting now organic rice so far India. As the Director of the provincial research enter of NAFRI said in 2023 "IDP (international milling company), DAFOs (district agriculture service), and farmers in Savannakhet respect their knowledge on rice quality seed production and have connected after the game, and until now we are well working together and always exchange each other".

Conclusions and perspectives

Companion Modelling serious games have long ago demonstrated their benefit impacts on collective interactions for land and environmental management (www.commod.org), while some of these approaches have already shown their operationality beyond research experiments, to support capacity in operational large operational projects (www.terristories.org). Here this kind of methods probes it can be useful, even for a large and complex development issue as a whole and comprehensive value chain issue. Of course, in this case of operational focus, a serious game tool cannot be considered without a complementary fine engagement strategy before its implementation, that requires a specific investment. This way of combining a socio-institutional investment and a serious game process could be a route which would be deeper followed, in order to insert participatory modelling into operational projects (D'aquino et al, 2024). However, this leads to consider the scope of the accompanying process outside the usual scope if impact of a research experiment or even an operational development project: few years after the participatory workshop (see above and D'aquino et al. 2017), or more (D'aquino and Papazian 2014).

ANNEX: the game session proceedings

1) Settings

- 4 boardgames (each one can be easily used by around 15-20 people around, but can bring together more) with 1 facilitator per game, plus 1 supervising TerriStories® expert.
- While boardgame facilitators are in charge of a continuous reminding of rules and moderating of discussions, the TerriStories® expert is in charge of:
    - Introducing the workshop:
        - ✓ Presenting the issues that are proposed to discussion and analysis;
        - ✓ Explaining the participatory position of the workshop (building upon participants knowledge and experience, while task of facilitators and supports is only to provide them means to support their self-analysis);
        - ✓ A first (boardgame facilitators will re-explain as much as necessary along the game sessions) detailing explanation of the game, its contents, rules, roles…
    - Punctuating the different steps of the game (value chain milestones for quality) by lead facilitator), by announcing their beginnings and end;
    - Facilitating the other (not boardgames) emerging play spaces
    - Encouraging players to assume roles and get over their uneasiness if useful, and furthermore helping to inject fun in proceedings.
- As this specific TerriStories® session contains a particular no-boardgame play space that will run along the whole session (the play space where farmers have to decide the quality of intrants they would like to purchase), a sixth facilitator has been added, to assume the role of Shop seller, to sell the different quality of inputs (seed, chemicals, dryer-storage equipment…), each of them represented by a different game element (tokens, marble, sticker…), and distribute additional money (for loans) to govt and banker roles.
- The different proposed roles for the game:
    - 3 Govt
    - 3 Bankers
    - 3 Local traders
    - 3 local advisory staffs
    - 3 central advisory staffs (national agriculture research institute)
    - 3 Farm Companies
    - Remained players: Farmers
- Players are dispatched in the room:
    - Players not at the boardgames: Govt, Banker, local and national staffs (sit on disconnected chairs, like the real communication distance between them);
    - Players at each boardgame: 1 Farm Company player, who has his own field plots (like farmer players); 1 Local trader player, who also has his own field plots, because he's also a farmer; and, of course, farmers.

2) First year-crop cycle.

- Before starting the simulations session, a participatory validation step is organized. Usually, this step is implemented through a round-table asking each participant to correct, improve then validate the issue as presented by the facilitators team, but as the specific issue of value-chain is quite complex with many potential different points of view, a specific participatory step is added: before launching game session, participants are first dispatched in four focus groups to complete if necessary then acknowledge the description of issue.
- Then, the real game session is launched. Boardgame facilitators give to Farmers 2 red marbles (local seed), and suggests them to get better seeds from seller, if they wish and have enough money, then sow their fields with one marble seed per plot. Then TerriStories expert asks Companies to attempt

setting agreements with farmers and/or local traders, in order to get high quality paddy for their milling needs. Boardgames facilitators ask Farmers to get inputs for their fields (from shop seller)

- Then, while boardgame facilitators are starting to run boardgame year-crop simulations (redesigning the landscape; locating different crops, seeking inputs, get dryer and storage equipment, then sell their paddy to local traders and/or Companies…) after the TerriStories expert's inception step, this expert set specific inception meeting at the no-boardgame spaces:
  - asking Bankers to reflect then design a frame for adapted loans to storage and processing investments (provide them a business plan frame for an adapted reimbursement schedule, taking account the incomes schedule of farming activity). Then once they have a business plan, says that Bankers may ask Govt for a guarantee fund, or other ideas of supports from them;
  - asking Govt, DAFO and farmer representatives (participants that have been selected by each boardgame group of farmers) to reflect on improving the ways DAFO supports farmers for quality.
  - N.B.: Rate of seeds, inputs, paddy, etc. are free (selling not only by shop seller but trader, company…), figures in the chart are just to note the medium price…in order to let playing bargaining and competition between sellers;
  - In order to push to exchanges, ask Government to contact DAFO and NAFRI to come for a field visit checking how the rice season has worked;
  - If farmers get bad results, TerriStories expert s expert suggests to farmers to complain to Govt, Bankers, DAFO and NFRI (lack of quality seeds, control of input quality, DAFO inefficiency even with budget…).

3) Reflecting cycle.

- After this first game cycle, participants are dispatched to play (keeping their roles) into reflection groups (as a played meeting), and are asked to set up an action plan about:
  - Govt & Nafri groups: how better provide selected seeds and to control quality of inputs; how to improve DAFO efficiency; How to improve partnerships between stakeholders and bankers
  - Companies & Dafo groups: agreements/contracts between farmers, local traders and private sector asking; How to set an efficient Participatory Guarantee System and quality sorting.
- TerriStories expert helps participants to render the action plans they have codesigned, and to deepen them:
  - Setting the list of stakeholders from who *"something new"* is needed from them
  - Then, for each of them, ask to detail what "new" means.
  - Then, for each 'new' thing, ask to find out how to get it.
  - Then, ask to identify the key person that help these changes to succeed.
  - Then, set ask a tentative schedule to implement action.

4) New year-crop cycle, with endogenous action plans.

Same organization as the first one.

5) Reflecting cycle, to assess the tested improvements.

- Participants are re-dispatched into reflection groups, and asked to assess their attempted action plan and refine it
- TerriStories expert helps participants to render and deeper their conclusions:
  - Setting the list of stakeholders from who *"something new"* is needed from them
  - Then, for each of them, ask to detail what "new" means.
  - Then, for each 'new' thing, ask to find out how to get it.
  - Then, ask to identify the key person that help these changes to succeed.
  - Then, set ask a tentative schedule to implement action.

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