SEI Tool Factsheet: Serious Game Application for Watershed Management

Basic information

Tool name	Serious Game for Watershed Management
Tool pitch	Serious Game for Watershed Management, applied in Campoalegre River Bain in Colombia, supports strategic decision-making that seeks the solution to the complex problems faced by decision-makers (public and private) when they are required to define and evaluate alternative management plans of the natural resources. The serious game participants represent different sectors (e.g., farmers, local authorities, communities) with different spatial influence of their often contradictory and conflicting decisions and goals. This tool has an approach to resolving these conflicts through an interaction between scenarios, problems and solutions that allows the multiple stakeholders to be made aware of socio-techno and / or economic factors related to the management of complex hydraulic systems.
Tool objectives	1. Integrate information and expert knowledge on the different components such as risk, water supply and quality, biodiversity, productive sectors and governance in the same decision platform. 2. Bringing stakeholders together in a space that allows for discussion, learning, extracting the meaning of traditional resource allocation models, and connecting stakeholders with practical and easy-to-understand tools. 3. Formulation of planning instruments such as POMCA (planning instrument in Colombia) in a planning framework and shared vision. 4. Communicate complex ideas through a game that allow discussion between people who might otherwise have difficulty finding common goals.
Year Tool launched	2021.
Tool Lead(s) / Contact(s)	Angélica Moncada angelica.moncada@sei.org Camilo González camilo.gonzalez@sei.org Javier Ariza javier.ariza@sei.org Tania Santos tania.santos@sei.org
Tool team	Angelica Moncada, Camilo González, Javier Ariza, Tania Santos.
Tool users in SEI	Angelica Moncada, Camilo González, Javier Ariza, Tania Santos.
Tool website(s)	https://latinoamericasei.shinyapps.io/Juego_Serio_POMCA_Campoalegre/
Tool type	R Shiny App

Tool purpose	• Decision-support (planning and policy) • Research/Analytical
Relevant sector(s)	• Climate • Water • Land • Energy • Governance • Economy • Biodiversity and Ecosystems • Tourism
Level(s)/scale(s) of focus	• Local • Urban • National • Regional • Global
Target users:	Professionals working with land use, planning and water management, decision-makers and community members interested in reach common goals and solutions in sectors in conflict.
Focus regions	Can be customised to be applied globally. First application includes Campoalegre river basin in Colombia.
Tool access	• Open access to the website for anyone who wants to explore the serious game. • Closed/internal use only for R Shiny app: Restricted to SEI users only within the scope of the POMCA Campoalegre project. SEI staff who are not part of either of those projects may request access to the app by contacting the tool leads.
Computer requirements	• Have R and R Studio with their respective libraries for operators. • Any web browser for players or participants.
Tool training materials	There are no training materials.
Level of training needed before the tool can be used appropriately	High
How the tool meets its objectives | Theory of Change	The processes of participation with the community in the planning workshops by decision makers turn out to be complex since in many cases the audience does not have a general knowledge of the situation of the basin and there are conflicts over the use of resources. Serious games provide a stimulating and collaborative environment in which stakeholders participate in the decision-making process and consensus is reached on some of the strategies that should be included in resource planning by allowing the user an understanding. adequate of the positions of other sectors different from the one it represents. Through this tool, communication between researcher or decision maker and user is facilitated.

How the Tool works

Does the Tool use or provide projected, modelled or simulated data?	Serious game is not using any modelled data. Based on the experience of specialists in different sectors, packages of strategies were proposed to improve the development of the region and scores were proposed that could be positive or negative depending on the strategies chosen in other sectors. Finally, the user is proposed to assign weights to each analysis sector according to their priorities or importance consideration in the region.
Does the Tool use or provide empirical data?	Not applicable.
Do users need to create a profile and log in? If so, why?	Operators must create an user on https://www.shinyapps.io/ to publish the serious game R shiny app on a website.
How often is the tool updated? Are the updates new data, new functionality, or both?	Serious game must be updated each time a new scenario, sector or alternative is analysed or that any the information to build the R Shiny app has changed. Similarly, a new serious game must be performed each time a new case study, basin or region is investigated as decisions, sectors and problems are different.

Funding

Approximate annual budget	$400
Funding model	No ongoing funding required
Main donors	Tool development currently funded as part of SEI's LA POMCA Campoalegre Project.

Key challenges faced and any lessons about tool development

Serious game consists of an internet page developed from Shiny app using the programming language R which provides useful information for planning processes, evaluating possible future scenarios from decisions made in different sectors that influence the use of the hydric resource. When developing the serious game, it is important to keep in mind the scale and the region or watershed of analysis, work with experts who have an optimal knowledge of the current situation of the sector to be analyzed and who can evaluate the existing relationships between the different sectors to propose strategies that influence the development of each sector and the region. The result of the serious game is subject to what the developers want to show and obtain, which is why not all games are developed in the same way or show the same results.

Activities, Proposals & Next Steps	
Current/ongoing activities	As of Q4 2021, Serious Game was applied on the Campoalegre River Basin.
Planned activities	Paper about the Serious Game application can be found at https://www.mdpi.com/2073-4441/16/11/1581
Activities wanting to fund | Sought collaborations | New areas of work/application	Serious game can be used to improve participation and decision-making processes by encouraging debate of different stakeholders in conflict. An ongoing collaboration includes the Memorandum of Understanding between SEI-LA and Colombia's Ministry of Environment and Sustainable Development to applicate a serious game in the Chinchina River Basin.