Apr. 2024

Gaming the Political Economy of Conflict

A Practical Guide

By Gelila Enbaye, Jakob Hensing, Philipp Rotmann

GPPi
GLOBAL PUBLIC POLICY INSTITUTE

stabilization lab

Table of Contents

Executive Summary

Policymakers face significant challenges as they consider externally intervening in the political economy of a crisis setting. From implementing sanctions regimes to fostering peace-positive investments, they have a range of interventions at their disposal. But the complexity of conflicts makes it imperative to try and anticipate any intervention's potential impact. This means policymakers must carefully think through not only their intervention's intended outcomes and effectiveness but also its possible unintended consequences, such as conflict actors capturing new economic opportunities or changes to the balance of power on the ground exacerbating violence.

This guide discusses how simulation games can become a valuable tool for conducting forward-looking analysis in such contexts. It positions such simulation games at the intersection of political economy analysis and serious games methodologies. At its core, this guide offers a practical toolbox for developing simulation games tailored to analyze political economy interventions in stabilization settings, including a step-by-step process and a menu of potential design choices. While these apply to a broad range of settings and themes, the discussion draws on our own experiences in designing a game on conflict dynamics in the eastern Democratic Republic of Congo.

Simulation games offer an interactive and immersive platform through which players can examine conflict dynamics from the perspectives of the various actors involved. They provide the following opportunities:

- Games elucidate the incentives, motivations and constraints influencing conflict actors in the face of external policy interventions;
- They can provide policymakers with valuable insights into the complex interplay of factors and potential developments that may unfold in crisis settings;
- They create a "safe-to-fail" environment wherein stakeholders can experiment with different intervention strategies without risking real-world consequences;
- They foster exploration and analytical insights, enabling policymakers to refine their approaches and make more informed decisions.

In conclusion, this guide offers concrete choices for designing games on political economy dynamics and can support policymakers in leveraging the untapped potential of this analytical method.

How to Read This Guide

This guide is primarily written for practitioners of stabilization policy, specifically those who are interested in exploring simulation games as an innovative approach to understanding the likely impact and risks of possible interventions addressing the intersection of politics, the economy and violence. It therefore takes for granted neither deep knowledge of political economy analysis in conflict settings, nor prior experience with simulation games. Readers who are already knowledgeable on either of these aspects may choose to skim or skip the respective chapters.

Introduction

In violent conflict, political and economic dynamics are deeply intertwined. Conflict actors require financial resources and access to physical supplies to launch and sustain their fighting; economic motives may also be an important driver of violence in the first place. While issues such as "blood diamonds" in Angola and Sierra Leone, "conflict minerals" in the Democratic Republic of the Congo (DRC), or armed groups' involvement in drug trafficking from Colombia to Afghanistan have captured the public imagination, more subtle questions around the economic incentive and opportunity structures facing different actors are often salient in conflict settings across the globe. The flipside of growing attention to these matters: external actors have also increasingly sought to influence political economy dynamics as part of their efforts to help manage crises and engender peace, using instruments from targeted sanctions to promoting "peace-positive" investment.

Experience so far, however, shows that political economy interventions in crisis settings are very hard to "get right." Well-intentioned efforts may prove ineffective or, worse, generate major unexpected consequences as other actors adjust their behavior in unforeseen ways. For example, ostensibly targeted sanctions may end up affecting much larger swathes of the civilian population than anticipated; new opportunities arising from investments may be captured by entrenched warlords; and efforts to combat the illicit trade of a particular type of good may drive actors to take up other, even more harmful activities.[1] The difficulty of understanding each individual actors' options and motivations is compounded by the complex strategic interactions of manifold players that mark most contemporary conflict settings, one particularly stark example being the proliferation of armed groups in the eastern DRC.

There is no lack of academic research on this theme and on relevant cases, nor of practice-oriented frameworks for political economy analysis to help practitioners grasp key dynamics in a given country.[2] However, the step between better contextual understanding and thinking through the concrete consequences of a potential external intervention remains very large. This practical guide proposes that simulation games – structured interactive exercises exploring possible developments in a synthetic environment – can make an important contribution in this space. It mainly draws on experiences from an 18-month project applying successive iterations of a table-top, in-person workshop exercise to the conflict in the eastern DRC. To our knowledge, this was one of the first systematic attempts to use such a simulation game for practice-oriented, forward-looking analysis of a potential policy option in an intra-state conflict, despite the venerable tradition of "wargaming" in military strategy and successful applications in other areas such as psychology, behavioral economics and business.

The following chapter discusses challenges of well-informed interventions into the political economy of conflict. The next lays out why games are distinctively well-positioned to address these challenges. Finally, the core of this guide is a structured review of design choices that we have found critical in developing our exercise. In addition to our own experience, we also refer to observations from comparable think tank-led games on other topics, as well as to literature emanating mainly from the wargaming community. Despite the conscious double-entendre in this publication's title, it should be stressed that it is written from a position of humility – clearly, games are not a silver bullet that will magically enable actors to manipulate political economies toward more peaceful outcomes with ease. Rather, they are an underused analytical tool that can help practitioners of stabilization policy grapple with an extraordinarily challenging task, and hopefully to avoid some costly mistakes.

Understanding Political Economy Dynamics in Conflict

Why Focus on Political Economy Issues?

The eastern provinces of the Democratic Republic of the Congo (DRC) have faced numerous and often interlocking episodes of conflict over the past decades. Various non-state armed groups, the DRC government and several external actors have all been involved in violence of varying intensity. This has caused a high number of deaths, mass displacement and profound obstacles to longer-term development especially in North and South Kivu and Ituri. There is abundant evidence that this quasi-permanent crisis has an important economic dimension, from farmer-herder disputes motivating armed activity in Ituri to the widespread involvement of both armed groups and the government army in roadblocks, illegal taxation and illicit resource exploitation. Despite numerous attempts at peace negotiations – alongside military efforts and a longstanding multilateral peace operation – different actors have time and again opted to take up arms and pursue violent action.

The eastern DRC exemplifies a fact common to all conflict settings: political and economic factors are closely intertwined. Focusing on this two-way relationship enables a better understanding of incentives, motivations, relationships, and power contestation among various actors. This, in turn, is critical for developing informed ideas about how a conflict could be addressed in practice.[3] The language of "peace deals" and "political bargains" is often not merely metaphorical – managing issues of resource distribution, access to economic benefits, and material capacity to fight is part and parcel of containing acute violence and building more peaceful social orders.

These issues – often gathered together as the "political economy of conflict" – are the subject of an extensive academic literature.[4] In the 1990s and 2000s, the growing prevalence of conflict within rather than between states, together with particularly extreme examples of armed groups' economic activity, inspired the (much disputed) thesis that the world was facing a distinct type of "new wars,"[5] as well as a debate on the relative importance of "greed" and "grievances" as drivers of violence.[6] Paul Collier and Anke Hoeffler are most prominently associated with a perspective emphasizing the role of "greed" – that is, individual-level interest in economic gain combined with contexts that also present opportunities for enrichment – while questioning the role of more "political" grievances in driving actors' behavior. Besides controversies about how this largely quantitative strand of work operationalized key variables and interpreted statistical results, others have also argued that even ostensibly enrichment-seeking individual behavior must be understood as shaped by changes in material conditions and social relationships, notably in the context of capitalist development or democratization.[7] Meanwhile, an array of often empirically rich accounts have focused more on the economic enablers of violence and detailed the manifold ways in which conflict actors have been able to sustain their fighting, ranging from domestic and external financial support to informal taxation, smuggling, roadblocks, and other illicit activities.[8]

Some of the arguably most sophisticated political economy analyses have highlighted the distinctive benefits that sustained wars can offer to various actors.[9] Looking at conflict as a "breakdown" or "dysfunctional disruption to normal social, economic, and political

interactions within a society,"[10] and assuming that conflict actors are necessarily interested in "winning," can therefore fundamentally miss the point. Rather, conflict may become an end in itself, with economic factors constituting both rational motivations for violence as well as enablers that sustain conflict actors' activities.[11]

External Interventions Into the Political Economy of Conflict

Political economy dynamics in violent conflict almost always exceed the immediate level of local participants; they cannot be understood in terms of a self-contained system. Rather, conflict-affected contexts are arenas involving a multitude of actors – through transnational economic links,[12] but also through deliberate external interventions, many of which explicitly target the economic aspects of conflict. The project on which this guide is based focused specifically on "stabilization" efforts, in the sense of interventions "in an acute crisis to support local partners in restoring a legitimate and effective political order as part of the long-term promotion of peace and development."[13]

External political economy interventions applied toward this end can, at a most basic level, follow two impact logics. On the one hand, they can seek to alter conflict actors' incentive structures, for instance by making peaceful conduct more attractive or by addressing the grievances motivating their resort to violence.[14] On the other, they can try to employ coercive "sticks," e.g., by disrupting resource flows to conflict actors or punishing them for violent actions through sanctions.[15] In both cases, policy interventions look to change conflict actors' behavior by addressing their strategic calculus.[16] A "spectrum of interventions" into political economies of conflict is presented in Figure 1.[17]

Designing and implementing interventions of this kind that actually achieve their desired impact has, however, frequently proven extremely challenging. Political economy interventions are not implemented in a vacuum, but rather interact with the conflict context as well as with other policy interventions – even more so in an increasingly multipolar world in which various external actors seek to influence crisis dynamics from different vantage points, and where coherent action and coordination even between fundamentally like-minded external actors continues to pose major challenges. Indeed, all policy interventions face recurring obstacles, making it difficult to achieve their desired impact. At worst, the "incalculability of strategic interactions" may lead to significant unintended consequences that even aggravate rather than alleviate conflict dynamics.[18]

A Spectrum of Interventions Into the Political Economy of Conflict

Source: Adapted from Griffiths and Barnes (2008)

Targeted sanctions

Targeted sanctions are among the most coercive options in the toolbox of interventions into political economies of conflict. They intend to disincentivize conflict actors from violence by inflicting economic punishment, as well as to undermine their financial capabilities. As so-called "comprehensive sanctions regimes " – like those notably imposed on Iraq after 1990 – were found to have major negative humanitarian consequences, efforts in recent years have sought to narrowly target conflict actors without imposing undue hardship on civilian populations. Current targeted sanctions addressing conflict in the eastern DRC, for example, impose asset freezes and travel bans on designated conflict actors. In addition to multilateral sanctions imposed through UN Security Council resolutions, the EU as well as the United States have adopted additional measures, targeting non-state armed groups, high-level national military personnel and international actors involved in the illicit gold trade.[19] As the DRC sanctions regime illustrates, this instrument's effectiveness is highly contingent on the actors to which it is applied: seemingly harsh sanctions may have little impact if listed individuals do not hold assets abroad or travel internationally, as is the case for many armed group leaders in this context. More generally, targets are often able to evade restrictions through creative maneuvers.[20] Despite the emphasis on targeted application, sanctions may also still cause overcompliance especially by risk-averse financial institutions, leading to broader effects than intended.[21]

Measures against corruption

Measures against corruption, such as capacity building in anti-corruption agencies, are typically embedded in more complex agendas to reform public administrations in stabilization contexts. They tend to rest on the assumption that corruption causes grievances in populations and may help conflict actors finance their activities, thus contributing to violence. While plausible and in many instances relevant, this is sometimes combined with an overly technocratic view of corruption as a result of justice or audit agencies lacking experience or knowledge, which neglects the political drivers and functions of corrupt practices.[22] Indeed, persisting patronage networks in many conflict-affected settings make it difficult for technical anti-corruption measures to challenge underlying political bargains.[23] Moreover, however detrimental their broader consequences, such informal bargains may also serve to limit violence among key actors, making a very careful analysis of potential unintended consequences imperative.[24] Somalia is perhaps one of the starkest examples of anti-corruption capacity-building efforts having failed to transform an underlying social order due to the lack of political will or even the active resistance of key stakeholders.[25]

Interventions targeting illicit flows and transnational organized crime (TOC)

Interventions targeting illicit flows and transnational organized crime (TOC) comprise efforts to disrupt illicit flows from the "top-down" (e.g., through more consistent detection and law enforcement), as well as attempts to provide paths toward alternative, licit economic activity.[26] In stabilization contexts, these measures are supposed to reduce crime-related violence and limit the financial capabilities of conflict actors. While addressing a key element of many conflict economies, such measures face manifold challenges in practice. The first one is effectiveness – in Mali, for example, top-down state policy on crime failed to curb either the armed Tuareg insurgency in the North or the ability of armed actors to finance

themselves through trafficking activity.[27] Second, like anti-corruption efforts, top-down measures against illicit flows may inadvertently upset important informal political bargains in conflict-affected societies and thereby exacerbate violence. This concern is arguably less acute for interventions focused on offering alternative livelihoods, though there is also a risk of entrenched actors capturing such new opportunities.[28]

External measures addressing grievances regarding land access and resources

At the heart of many conflict-affected contexts are land and resource grievances. These grievances are complex, historically entrenched and often form part of conflict actors' central political demands for ceasing hostilities. External measures addressing grievances regarding land access and resources may help actors target structural inequalities through more equitable arrangements, providing positive incentives for societal transformation and reduced violence. However, technical interventions such as putatively "pro-poor" land tenure registration may lack sensitivity for local understandings and traditions.[29] In Côte d'Ivoire, a 1998 land reform sought to secure smallholder rights for indigenous communities and facilitate land privatization. However, the interpretation of this law under President Laurent Gbagbo provided fertile ground for violent tensions between communities and contributed to a long period of internal conflict.[30] More generally, critics have noted a proliferation of "technical optimization" efforts such as localized systems for land registration, which fail to address the deeper economic and social forces underpinning prevailing inequalities and thus overlook the deeply political conditions needed for sustainable stabilization.[31]

Targeted development aid

Targeted development aid in stabilization contexts seeks to financially support specific projects or processes held to be important for building sustainable peace. Important instances of this logic can be found in the context of disarmament, demobilization and reintegration (DDR) programs, which attempt to guide former combatants into alternative livelihoods, sometimes in conjunction with support to conflict-affected communities more broadly. Though such development programs rightly place emphasis on making DDR efforts more sustainable, they are challenging to effectively implement, partly due to the sheer difficulty of generating economic activity that is both quick enough to convince actors to participate and also offers a credible longer-term perspective. Moreover, measures can quickly become technical and distract from the political nature of conflict actors' interests and incentives. Conflict actors may, for example, attempt to capture the financial benefits of a DDR program without genuinely ceasing armed activity, sometimes taking the form of elaborate "round-tripping" operations.[32]

Peace-positive private sector investment

Finally, peace-positive private sector investment seeks to combine commercial gain with deliberate conflict transformation impact, moving beyond "conflict-sensitive" investments and "do-no-harm" approaches.[33] For example, private investments into sustainable resource extraction in contexts like the eastern DRC may generate alternative livelihoods outside of armed group membership. The challenge here is not only finding investors that at once bring the required risk appetite and readiness to genuinely go beyond conflict sensitivity or

common ESG standards. Careful design and monitoring are also essential to prevent benefits from being captured by actors who are not genuinely committed to sustainable peace.

Existing Frameworks for Practice-Oriented Political Economy Analysis

To effectively draw on this range of possible interventions into political economies of conflict, policymakers already employ various tools and frameworks for practice-oriented analysis. Often building on frameworks from the academic literature, political economy analysis (PEA) emerged in the international development community to go beyond "technical solutions" that had often proven ineffective in practice.[34] PEA is supposed to generate insights into structural, institutional and actor dynamics in pertinent settings,[35] helping policymakers better understand what policy responses and interventions are best suited for the challenges presented.[36] While PEA can broadly be applied to questions regarding international development assistance, its approach is also salient for political economy interventions specifically in stabilization contexts.

One prominent approach in practice-oriented PEA is "political marketplace analysis," which posits that in many parts of the world, "government is dominated by monetized transactional politics."[37] This perspective focuses on patron-client relationships and political competition among elites for the loyalty and allegiance of citizens. In this context, violence is understood as a bargaining tool employed to obtain a more favorable distribution of material resources, rather than as an expression of deep antipathy or hatred.[38] Peace agreements and other conflict resolution efforts may temporarily reduce violence, but they are vulnerable to changes in political-economic conditions as actors may seek "renegotiation" whenever circumstances seem favorable. Following the fall of dictator Al-Bashir, the escalation of violence and subsequent coup in Sudan arguably provided a grim recent example of this problem.[39] Similar thinking also informs other frameworks that focus on the distribution of power and underlying negotiation processes in society. For example, analyses of "elite bargains" and "political settlements" have sought to provide practitioners with relatively simple typologies of political-economic configurations that are systematically associated with certain conflict patterns or development outcomes.[40] Perhaps the most explicit application of these diagnostic lenses to stabilization work has taken place in the United Kingdom, as reflected in the Government's 2019 "Approach to Stabilization" as well as in the DFID's "Building Stability Framework."[41]

Practice-oriented PEA frameworks have undoubtedly helped anchor the notion of "thinking and working politically" among practitioners of development and stabilization policy, and offered insights into relevant actors, networks, institutions, and competing interests.[42] Yet, existing frameworks have overwhelmingly focused on the "here and now," using empirical information to analyze past and present developments and at best to provide a general outlook on potential future trajectories. While their express purpose is to inform the design of future interventions, thinking through any specific potential measure's effectiveness and unintended consequences requires significant further analytical work, for which PEA frameworks themselves do not provide much guidance. This is an area where simulation games can make a distinctive contribution, as the next section explores.

Games as Analytical Tools

Aims and Characteristics of "Serious" Games

In addition to their widespread use for entertainment, games and simulations have been applied in a wide range of contexts to address real-world problems. The two terms emanate from slightly different traditions. "Games" typically refer to exercises that feature explicit "win conditions," giving players a motivating goal and metrics of success (e.g., accumulating points, reaching a certain location first). These are often also associated with a higher level of simplification and abstraction meant to create an engaging interactive experience, such as the depiction of quantitative variables in point systems or tokens. In contrast, "simulations" usually eschew a uniform definition of what "success" looks like for all participants, while employing "rules, data and procedures designed to depict an actual or assumed real life situation" as truthfully as possible.[43] In contrast to simulations for predictive analysis in science and engineering, though, simulations of human-driven interaction typically leave space for agency within a rule-defined scenario.[44]

Ultimately, both games and simulations are partial approximations of reality, employing forms of storytelling to elucidate the "human aspect of decision-making."[45] The type of interactive tabletop workshop exercise addressed in this guide, as well as the wargaming efforts from which it draws much inspiration, correspond to aspects of both traditions as outlined above. For simplicity, we will use the term "game" throughout, while acknowledging the strong affinity of our work to what others refer to as simulation efforts.

In contrast to games for entertainment, "serious" games typically serve one or both of the following main objectives: first, to generate analytical insights; and second, to provide an educational and learning experience for participants. Games create a synthetic environment to explore interactive, often non-linear developments and their potential consequences. They are therefore particularly useful for analyzing complex dynamics with many factors that interact in many ways – dynamics that are very hard to squeeze into formal mathematical models but much easier to "play" as a "game" with human players. Games can then educate their players by, for example, helping them understand a concept or theory, build skills such as negotiation techniques, or enable joint training and constructive group dynamics. Pournelle captures these basic motivations by distinguishing between games that seek to "create knowledge" and games that seek to "share knowledge."[46]

Clearly, analytical and educational objectives are not mutually exclusive, but rather a matter of relative emphasis. Indeed, almost any analytical game will also have some educational value, as players engage with a problem from a new point of view, encounter problems that require learning to solve, and get to practice certain skills. Conversely, while there are many games that can be considered purely educational – in the sense that they teach established knowledge or "how to" decision-rules, such as military doctrine, to a target audience – plenty of educational games are also open enough to allow for analytical insights that are novel for their players. That said, the focus here is on the use of games as a forward-looking analytical instrument, i.e., to "create knowledge" that is not yet available through other means.

Games create a "safe to fail environment" where participants can conduct actions without having to live with the consequences in the real world.[47] This makes them a relevant tool for any type of negotiation and bargaining setting,[48] and especially for those that require risky decisions or engaging with confrontational dynamics, where failure could result in potentially devastating costs.[49] In addition to their obvious utility for exploring possible developments

that have not (yet) materialized in the real world, the centrality of human interaction in games means that they can also be useful tools whenever the causal mechanism of interest concerns human behavior.[50]

Compared to survey or lab experiments that try to generate such insights about human behavior by controlling conditions, games' immersive nature engages participants in an arguably more realistic fashion and may thus help approximate the dynamics of real-world decision-making.[51] Indeed, games are inherently "consequence-based": players experience the consequences of their actions through role-play within the game, increasing their immersion.[52] Mouat argues that this role-play facilitates "action, reaction, counter-action" thinking, leading to better anticipation of what will happen instead of what should happen.[53] This applies irrespective of whether the game players are actually representatives of the relevant real-world actors, or whether participants are only attempting to emulate the behavior of actors as well as possible.

As a caveat, it must be stressed that games are not predictive tools telling us with certainty what will happen in the future.[54] Such determinism would run counter to the very foundation of these approaches, namely the recognition of meaningful human agency and room for consequential decisions on the part of various actors. What games can do is provide substantiated, forward-looking insights by evidencing potential outcomes of strategic interactions, as well as by indicating their respective likelihood if the same game is played repeatedly.[55] While they complement rather than replace other forms of analysis, they can make a distinctive contribution that other approaches do not offer.[56]

Applications With Relevance to Stabilization Policy and Political Economy Interventions

Various types of games are used in a wide range of disciplines and sectors such as psychology, behavioral economics, business management, and military studies. One strand of research in psychology and behavioral economics has used "economic games" to empirically investigate human behavior and achieve a better understanding of interpersonal processes, in contrast to the strong reliance on abstract assumptions about "rational" actors in conventional game theory.[57] For example, variants of the "dictator game" have demonstrated the prosocial behavior of individuals across many different research questions.[58] In this single-player game, the participant is asked to allocate part of an amount of money to another player under different contextual conditions. This simple mechanic has been adapted in various forms and is used to study decision-making for resource distribution, generosity and self-interest.[59] Since the 1980s, such experiments have led to a series of empirical findings that resulted not only in several Nobel prizes in economics but also in massive changes to the prevailing understanding of economic behavior.[60]

In corporate settings, games are also used by businesses keen to identify threats, opportunities and future developments in their industry. Alongside other future-oriented methods such as scenario planning, "business wargaming" has emerged as an increasingly common tool to analyze interactions between firms and their competitors and to contribute to corporate strategy processes.[61]

Additionally, there is a long tradition of wargaming in military and strategic studies. Chinese nobles and generals played strategic games as early as 4000 years ago,[62] while modern wargames ("Kriegsspiele") were first developed in Europe by 19th-century Prussia as it prepared for the German Wars of Unification.[63] Games appeal to military analysts for precisely the reasons outlined above: they offer unique possibilities to apply external stimuli and

explore responses in order to approximate actors' behavior under real-world conditions.[64] While methods have evolved and grown more sophisticated over time, wargames remain an important element of military strategy and planning – for example, NATO's Allied Command Transformation operates the "Experimentation and Wargaming" branch, which develops wargames to improve the organization's operational readiness.[65]

Though most wargames aimed at informing military strategy happen behind closed doors, some do take place in the public domain. The "International Crisis Wargame Series" is one such example. Developed at the Hoover Institution and Naval War College in 2018, the series addressed the question of how the cyber vulnerabilities of nuclear command affect nuclear use.[66] The game ran over a period of three years; the 850 participants included players with military, nuclear or cyber expertise, industry leaders, and former heads of state.[67] These players simulated decision-making in a national security cabinet.[68] The game's design also incorporated experimental elements that enabled more substantiated insights into the causal mechanisms underpinning conflict dynamics. Applying a systematic research design by which some conditions were altered and others kept stable across various iterations of the game, it was used to test hypotheses about the impact of cyber exploits on nuclear use. As a one-move game, it was intended to be played multiple times in one session to test as many hypotheses as possible. The outcomes of various sessions with different participants fed into the design team's data collection process.

Most games aimed at analytically informing military strategy and policy have focused on the inter-state level. While games have also been applied to intra-state conflict and external intervention, these exercises have tended to primarily focus on educational experience.[69] For example, the Norwegian Military Academy developed the game "MONUSCO" for its military students to navigate the different courses of action available to Norway's contingent of troops to the UN peace operation in the eastern DRC.[70] The game is set at the lowest tactical level, allowing students to explore how peacekeepers' on-the-ground behavior in a selected locality of the eastern DRC may influence potential developments. Players step into roles such as a village chief, a local militia leader, a DRC army commander, and a BBC journalist.

For a broader audience, a 2017 "megagame" called "War in Binni" explored the interactions between the government of the fictional country Binni and its armed political opposition, neighboring countries, and international actors like the UN.[71] This game was intended to sensitize both university students and the public to dynamics of intrastate conflict and mechanisms of international conflict resolution. In a similar vein, "Land Rush," a board game developed by academics An Ansoms, Klara Claessens, Okke Bogaerts, and Sara Geenen, addresses conflicts over land rights in the Global South.[72] The game was designed for university students to better understand the core tensions and negotiation processes between stakeholders regarding agrarian change.[73] In addition to supporting participants' understanding of concepts, theories, processes, or specific cases, such educational games also serve to develop participants' skills such as critical thinking or teamwork.[74]

Despite their fruitful application in business settings and international politics even beyond armed confrontation, games focusing explicitly on political economy issues remain rare. A recent exception is "The Chips are Down," a game designed by the Center for a New American Security, which addresses strategic competition between China and the US over Taiwan's semiconductor industry. The game design highlights global political economy questions like strategic dependencies and the exploitation of supply chain vulnerabilities. Based on a scenario set in 2025, three teams (US, China, Taiwan) interacted with each other as they tested out strategies regarding Taiwan's semiconductor industry.[75] Teams were staffed with high-level participants from policymaking, civil society and industry. Another example is the game "Food Alert," which seeks to inform policy analysis and implementation on managing global food systems.[76] About 60 officials from the European Union and national governments

played the game at a conference in 2024 to test how resilient current food systems are to external shocks such as increased grain prices and ongoing developments like climate change. Participants were assigned roles such as farmer lobbyists or union representatives advocating for their respective interests. They were asked to come up with strategies in different taskforces to mitigate the impact of crises.[77] The "Food Alert" game is not confined to individual countries but rather addresses global dynamics in food security. It underscores the importance of anticipating the global dynamics of future events and highlights the role that a subset of actors can play in this process. This game illustrates how games played by policy officials can contribute to anticipatory analysis, enriching the policymaking process.

Overall, there is both a rich gaming tradition and a robust contemporary gaming practice in fields adjacent to political economy analysis in conflict settings. This strongly suggests that these approaches hold potential utility for this field and provides a useful repository of possible design elements. However, there is currently no best practice example or recipe for designing games specifically to better understand political economy dynamics in crisis settings and to inform the design of external policy interventions.

Building and Running a Game on Political Economy Dynamics in Stabilization

The following sections discuss a five-step process and provide a structured overview of key choices for designing a simulation game on political economy issues in conflict settings. For each design choice, we outline the available options and the main opportunities and drawbacks associated with them. While each design choice can generally be considered independently from the others, certain elements of the different approaches may be combined with each other. Many games also exhibit some typical combinations which are discussed at the end.

The process steps and design choices integrate aspects from the wider literature on games and simulations and specifically on wargaming, notably including practice-oriented manuals such as NATO's Wargaming Handbook or the Wargaming Handbook by the UK Ministry of Defence.[78] To account for the specific challenges of simulating political economy dynamics in intra-state conflict, however, we draw heavily on our first-hand experience designing a tabletop game for a workshop exercise on the conflict in the eastern DRC. The considerations on design and execution that we grappled with serve as practical examples throughout the guide.

We provide this guide under the premise that policy practitioners using simulation games can, at a minimum, benefit from understanding the range of game options available as well as which kinds of games are most useful for certain questions or objectives, even if the operational task of actually designing a game is to fall to others. While extensive prior experience is not a precondition for a successful gaming exercise, there is of course also great value in engaging directly with gaming experts and relevant communities of practice, even if they may have a slightly different thematic focus.

Introducing GPPi's Simulation Game on the Eastern DRC

Given the limitations of existing approaches to political economy analysis discussed earlier, GPPi developed a hands-on simulation game to explore how practitioners of stabilization policy may fruitfully use this approach in their work. This "proof of concept" further served to develop a transferable design scaffolding that could quickly be tailored to a specific country context and policy question at hand. A concrete country setting and policy issue were chosen so the approach could be applied under realistic conditions and generate insights of substantive relevance for the practitioners who participated in the game, albeit without corresponding to an immediate real-world decision.

We chose to focus on the case of the eastern DRC due to its relevance as a longstanding and intractable conflict, as well as the strong salience of political economy dynamics in this context. Since the mid-1990s, the provinces of Ituri, North Kivu and South Kivu have seen sustained and often overlapping episodes of violence. Among the many different armed actors – including government forces and an enormous diversity of non-state groups with and without links to foreign supporters – alliances and patterns of aggression and defense tend to shift all the time. Political economy issues such as land disputes, extortion and natural resource extraction have played a prominent role in sustaining these fragmented actors and sometimes in incentivizing clashes. Major bilateral donors, UN organizations and other institutions continue to financially support the DRC through humanitarian assistance

and development cooperation, leading to a high level of aid dependency.[79] The result has been a cyclical history of at least partly well-meaning interventions with limited positive effects, showing how difficult it is to anticipate the complex second- and third-order effects of any new initiative, and how likely they are to undermine or distort such an initiative.

Against this backdrop, our game focused on a concrete hypothetical policy impulse, namely the provision of international donor funding for a renewed disarmament, demobilization and reintegration (DDR) effort. The eastern DRC has already seen several such program cycles implemented in the past. None of these attempts succeeded in durably advancing stability in the region, as programs struggled with slow and limited participation, their failure to deliver the prospect of a sustainable livelihood, and the frequent return of participants to armed groups after short periods of time.[80] Still, DDR remains a central element of the DRC government's agenda and a focus of international support, most recently through the Programme de Désarmement, Démobilisation, Rélevement Communautaire et Stabilisation (P-DDRCS) launched in 2021. Building on learnings from past efforts, the program places particular emphasis on community reintegration, the social and economic development components of DDR, and the military's role in ensuring community protection. These aspects were similarly emphasized in the fictional policy impulse used for our game.

In sum, our starting point was a hypothetical policy initiative in a real-world conflict, and the challenge – establishing its likely impact and possible risks – was one that practitioners of stabilization policy often face in their work. Throughout the following discussion of process steps and design choices, we detail the game design we developed to address this challenge and explain key decisions we made in the process.

Roadmap:
Building a Game Through a Political Economy Lens

Step 1: Specify Objectives

Before investing in a game, designers need to clarify what goals they seek to achieve. Most fundamentally, this concerns the distinction between educational and analytical objectives. Serious games that serve mainly to improve players' general skills or impart knowledge on issues that are already well understood by experts can be considered primarily or even purely educational. In these cases, the game designer knows what "good" and "bad" choices are in the game, so consequences or payoffs can be defined accordingly.

In contrast, this guide focuses on games with a primary focus on analysis for specific research or policy objectives, such as an improved evaluation of potential courses of action within a given conflict. These objectives should be articulated clearly at the outset, for example in the form of a research question often phrased in a way that seeks to describe regularities, explain causal mechanisms, or understand change.[81] Alternatively, the NATO Wargaming Handbook proposes starting to design a game by making statements about the problem at hand. Statements such as "We don't understand yet how to effectively employ X to achieve Y," or "We are unable to move enough supplies to area A due to B and C," similarly serve to define the exercise's empirical focus and desired outcome.[82] A key feature of primarily analytical games is that the designer does not have perfect knowledge of – and does not want to exhaustively define in advance – what count as good or bad choices during the game. This is the case even if the desired outcome (military victory, minimizing losses, achieving a negotiated peace deal accepted by all relevant parties) is clear. The game itself is a vehicle to help build that understanding.

The game on the eastern DRC sought to understand how relevant conflict actors might react to a renewed push for DDR, with particular emphasis on how the actors' strategic interplay would unfold over time beyond their initial reactions. This meant it was necessary to identify the relevant set of actors as well as the economic, social and political incentive structures and constraints under which they operate – and to then come up with an appropriate setup to capture their complex interactions.

Step 2: Gain a Sound Understanding of the Case

To design a game that can provide analysis relevant to informing stabilization policy interventions, substantial information is needed on conflict dynamics, actors and the material political economy in which they operate. Usual starting points will be the academic literature on the given case study as well as practitioner-oriented contributions from research institutes or think tanks, which can be supplemented with primary research as required.

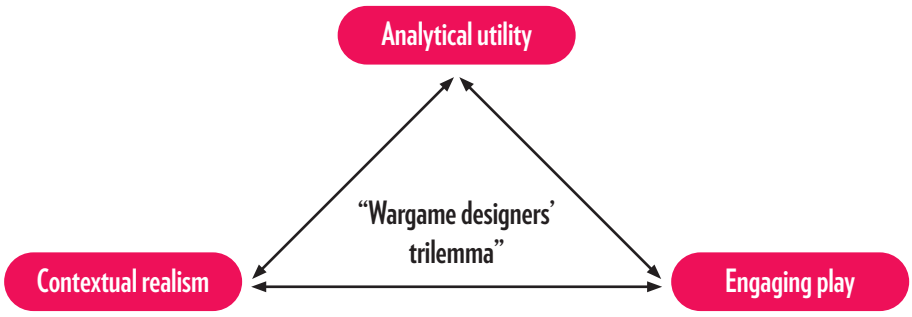
Particularly central for the purposes of gamification is a mapping of relevant actors. While armed actors are surely a primary focus of most games addressing conflict-affected settings, non-armed political actors such as governments, regional organizations or community stakeholders should also be included if deemed relevant for the question to be addressed. Relevant dimensions for this actor mapping include historical context, motivations, financing structures, and relationships to other conflict actors and the local population. This information will also help to prepare briefing materials for players, to be created at a later stage.

Regarding the material political economy of the given conflict context, designers should not only collect information on major economic assets and activities (licit and illicit), but also seek to understand in more systemic terms which structures, norms and "rules of the game" are in place.[83] In this regard, analytical tools from PEA such as the political marketplace framework can offer relevant insights. Step 2 should be understood as an iterative process, whereby empirical data gathering will inform certain design choices, which may in turn ask for further research.

Building on the project team's prior knowledge of the eastern DRC context, we conducted a systematic review of the most recent academic and practice-oriented case literature. Aspects that became clearer through this research included the proliferation of roadblocks as an important source of income for armed groups, as well as the intricate system of "upward profit sharing" in the national army (Forces armées de la République du Congo, or FARDC), which allows low-level soldiers to engage in illicit revenue generation while paying contributions to their commanders.[84] These are important elements of the political economy contexts we sought to reflect in our game design.

Step 3: Make Your Design Choices

Like any other form of analysis, building an analytical game raises inevitable trade-offs (also see deep dive into Design Choices). No single design will be able to address all conceivable priorities equally; clarity of objectives is therefore imperative. A "trilemma" between key basic goals has been identified for war game design, and it also applies to analytical games more generally:[85]



Source: Reddie et al. (2022)

First, any analytical game seeking to generate answers to open-ended questions will, by definition, try to achieve analytical utility. This means that, to go beyond merely observing situation-specific dynamics, game designers need to clarify concepts and be parsimonious in their analytical explanations.[86] Second, engaging play is required to keep players' interest and motivation throughout the exercise. Games require players to immerse themselves in a simplified and imaginary decision environment, often with limited sensory aids: sitting in a conference room, it is cognitively and emotionally difficult to adopt the role of a warlord or village elder in a remote border region. Without at least some elements to hold their attention and support immersion, players may be inclined to follow random decision-making.[87] Third, an analytical game designer will be inclined to maximize contextual realism, in the sense of capturing real-world dynamics in their complexity as credibly as possible.

While all three of these goals are important, they cannot all be pursued simultaneously in equal measure and indeed partly stand in direct trade-offs with one another. Maximizing analytical utility will require abstracting relevant factors and eliminating extraneous ones, which reduces contextual realism; it often also benefits from command choices (like prescribing an orchestrated sequence of steps) that lead to a less engaging experience for players (who have to wait longer for their turn). An unrestrained pursuit of contextual realism will lead to a design that is both too "messy" to be analytically useful and too cognitively cumbersome to be enjoyably played.[88] While narrative features and well-designed game materials will help maintain players' interest and active participation, prioritizing engaging play will make for an exercise that is neither representative of real-world challenges nor analytically useful.[89] It makes sense to begin reflecting on the relative priority of these three objectives at early stages of the design process, but they will ultimately have to be addressed when considering each of the specific design choices detailed below.

In addition, game designers should carefully engage with the ethical implications of many of the choices they face. Analytical games are a form of research involving human participants; game designers must therefore identify and mitigate potential risks to these participants before implementation. This will also be the focus of the ethics reviews required by some game sponsors as part of their standard processes – even if such requirements are commonly bypassed, as a 2022 King's College London study based on an international survey among wargame designers has shown.[90]

Besides patchy implementation, standard ethics reviews also often fail to address important normative challenges beyond the protection of participants. One key aspect in this regard, which is intimately related to the implicit assumptions and positionalities of game designers, concerns data collection and simplification. By relying on existing research and inevitably simplifying real-world conflict dynamics, a game may unintendedly reproduce the existing "dominant narratives" about the context.[91] Another concern, especially relevant for games sponsored by policy actors like government ministries, is a potential "bias to action," by which game dynamics are excessively structured around the policy choices available to the actors and lose sight of other dynamics that may be more relevant on the ground. To maintain a critical perspective in these setups, analysis must remain open-minded toward the policies and interventions under study.

Our efforts to balance analytical utility, engaging play and contextual realism in the DRC game are reflected across the various design choices detailed below. Regarding ethical questions, one important aspect was how to deal with the "conflict minerals" narrative, which emphasizes natural resources as a cause of violence. This narrative has captivated many activists and policymakers but faces increasingly critical scrutiny regarding its analytical value and the problematic impact of measures that it has inspired. [92] We did feature income from natural resources in the game since it is empirically relevant, but – alert to the risk of reinforcing preconceptions and stereotypes – we were careful to contextualize the issue in the briefing material and avoid excessively focusing on this dimension.

Step 4: Prepare Supporting Material

Supporting material includes player briefings that provide all information needed to participate in the game. Information can, for example, be presented in the form of actor profiles covering actors' motivations and their current situation in the game. Especially

for games based on real-world scenarios but played by non-specialists, a balance must be struck between providing sufficient background information and omitting details that are not directly needed and may cognitively overburden participants. Supporting material can also include geographical maps as visual tools, a game board, tools to quantitatively or qualitatively track game developments, or action cards. In addition to providing players with relevant information and instructions, supporting material also has an important role to play in immersing them in the game scenario. While it would be presumptuous and often problematic for players to emulate the behavior of actors operating in a very different physical and cultural environment, material that is well-presented and "real-looking" can help them achieve a degree of connection with their roles.

Players of our DRC game received a booklet that included individual briefings with short actor profiles and background information, the game rules, and an introduction to the policy impulse. In addition, we used a geographical map as a game board as well as two digital tools (a log sheet to record all actors' moves and a quantitative tool to track changes in group sizes and finances). While we consciously refrained from encouraging players to personally identify with the actors they represented, we achieved a high degree of immersion and engagement by confronting them with a cognitively challenging but manageable amount of information and clearly visualizing developments on a physical map.

Step 5: Play the Game and Reflect on Insights

When an initial game design is established, it is important to embed it into a cycle of continuous refinement and iteration. By playtesting versions of the game before the final exercise, designers can identify mechanical issues or spot potential unintended developments early on. Playtesting allows designers to assess the supporting material, rules, and roles and responsibilities of players as well as of the game team.[93] These test runs are likely to involve a different group of participants than the final game exercise, but they can already yield preliminary analytical insights.

"Hot washes" are another important step in the cycle of designing and refining games. When concluding a game exercise, a hot wash discussion can address observations from the exercise as well as key design issues, such as how the use of certain materials may have influenced player's behavior.[94] During hot washes, game players and moderators step out of their assigned roles and discuss observations from a meta perspective. For analytical games, priority will be given to discussing observed developments and outcomes and the resulting takeaways, as well as to a meta-reflection on whether research objectives were met. For educational games, hot washes will focus less on discussing concrete outcomes and more on the learning experience of players. Discussions between game participants and the team can inspire design choices for further iterations and thus feed into the game design cycle.

We developed the DRC game in a series of three workshops, with post-game feedback from hot washes continuously feeding into the refinement of the game design. In addition, multiple rounds of internal playtesting before each of our game workshops allowed us to make design adjustments in response to unforeseen developments or player behavior.

Step 6: Engage With Policy Implications

Finally, for games designed to inform real-world policymaking, observations need to be translated into actionable next steps and recommendations. In such a discussion, players of course do not return to their assigned game roles. The circle of participants may also be extended or adjusted to include the game sponsors and other relevant stakeholders. Ideally by this point, there would already be clear conclusions to draw about the likely impact of available policy choices and potential unintended consequences. The discussion should thus focus on weighing the respective implications and risks associated with different courses of action, defining a preferred approach, and finding feasible ways to implement it.

As our game was explicitly conceived as a "proof of concept" rather than an attempt to inform an acute policy decision, our final discussion focused on transferable takeaways regarding the potential and pitfalls of DDR programs and on the prospects of this instrument for the DRC context. Some key insights are summarized in the concluding part of this guidebook.

Design Choices:
The Menu of Options for Creating a Simulation Game

1. Scenario: "fact & fiction"	Real-world setting with simplified (not fictionalized) elements	Real-world setting with fictionalized elements	Fully fictional scenario	
2. Evolution of scenario	Static scenario	Pre-defined events & developments	Randomized events & developments	
3. Interaction format	Single sided, "team vs. scenario" format	Two-sided, "red team-blue team" format	Multi-sided format	
4. Representation of physical space	No map	Stylized map	Detailed map (topographical or thematic)	
5. Degree of quantification	No quantification of variables	Simplified quantification	Granular quantification	
6. Adjudication approach	Rules-based adjudication	Analytically assisted adjudication (through calculated models)	Expert judgment	Consensus
7. Facilitation approach	Process moderation only	"Thought partnership" facilitation		
8. Briefing format	Relying on players' own knowledge	Written briefing material	Real-time expert input	
9. Prescriptiveness of briefings	Briefings prescribe objectives in detail	Briefings only broadly define objectives	Players determine objectives for themselves	
10. Transparency of information	Open design: mutual transparency of all information	Closed design: private information for individual actors		
11. Selection of participants	Actual representatives of conflict actors	Subject-matter experts	Generalist policy practitioners	Participants from the general public
12. Organizational setup	Fully in-person	Hybrid	Remote	

1. Scenario: "Fact & Fiction"

The scenario defines the basic framework of a game. For games taking place in a conflict and stabilization context, the scenario would typically include the conflict actors involved, the relationships between them, and structural features of the political economy in which they operate. Depicting complex, real-world political dynamics in such a way that an interactive game becomes possible will always require simplification, and in some cases may further benefit from the judicious use of deliberately fictional elements. Highly complex scenarios without fictional elements may limit engaging play even if zooming in on a granular social context (e.g., on the village level).

As an overarching point, it merits stressing that all games are distortions of reality. Designers will rely on omissions and might integrate tacit assumptions into the game. As discussed above, the art of game design is to choose and balance the distortion in a way that serves the overall objective.

Options	Opportunities	Challenges
Model a real-world setting based on empirical information and only simplify as needed	Obviously links to a real-world case, minimizing the need to contextualize insights Emphasizes seriousness of exercise	May encourage complacency about how "realistic" the scenario is Faces difficulty in maintaining engaging play, given internal diversity and complex decision-making processes of actors Risks overlooking dynamics not yet observed in the real world or reflected by available information
Introduce fictionalized elements into a real-world context	Allows gameplay to pragmatically incorporate specific figures (e.g., exact number of armed group members) that are difficult to obtain empirically Makes it easier to represent internally fragmented groups through archetypical examples	Increases risk of reproducing designers' biases and preconceptions May introduce confusion over which information is factual vs. fictional
Use a fully fictional scenario	Increases personal distance from and reduces engrained biases about a certain context Opens players' imaginations, especially when fictional scenario combines several real-world contexts94 Better for answering abstract research questions (e.g., success conditions for a certain policy option)	Raises questions about how to transfer insights to real-world cases Not suitable for analyzing dynamics and assessing options in a specific setting

Design Choice in Our DRC Game: Real-World Setting With Deliberately Fictionalized Elements

We used the real-world conflict context of the eastern DRC, basing key aspects of the scenario on empirical research on the relationships between conflict actors and the material political economy. But we also introduced fictional elements, like precise locations and characteristics for local army battalions, to enable gameplay and represent complex actors through example factions.

2. Evolution of Scenario

While players' decisions and interactions should be key drivers of game dynamics and outcomes, designers have to deal with the possibility of changes in contextual conditions over the course of the game. These changes can relate to conflict actors' immediate situation, such as the discovery of an unexpected income source, or pertain to more general events. Examples of the latter include developments in regional politics, shifting macro-economic conditions, or weather and environment-related events.

Options	Opportunities	Challenges
Static scenario: Contextual conditions remain as they are described in the initial scenario	Cognitively simplest: allows players to think more carefully about other players' strategies as well as their own Enables repeating the same game with different players or with minor variations in the scenario	Leads to an unrealistic scenario, especially if the game is meant to cover an extended period but all exogenous conditions remain unchanged over time
Pre-define developments that will occur over the course of the game (e.g., reading from a script that is successively revealed)	Helps systematically explore the influence of a specific exogenous factor of interest, especially when playing a game repeatedly	Suppresses the element of contingency in the game, though random factors (e.g., dice throws) could be used to determine if and when pre-defined developments materialize
Use randomized prompts (e.g., event cards) to introduce developments beyond players' control	Helps capture the impact of realistic random factors related to conflict actors' immediate situation or of more general events	May trade analytical for entertainment value, unless frequency, character and magnitude of events are carefully calibrated

Design Choice in Our DRC Game: Static Scenario

We opted for a static scenario, given the relatively limited timespan covered by the game (one month per round, less than one year overall) and already high level of complexity

3. Interaction Format

In game design, the term "format" is typically used to refer to the number of "player cells," which determines the basic interaction logic in the game.[95] There are three basic kinds: single-sided or "team vs. scenario" formats, where all players are on the same team and adversaries or allies are scripted, rather than interactive; two-sided or "red team vs. blue team" formats,[96] where players are assigned to one of two conflict parties, who stand in an adversarial relationship to each other; and multi-sided formats, with more than two teams who may all interact with one another. In all formats, designers need to ascertain that all teams face sufficiently frequent and relevant decision points to continuously engage players.

Options	Opportunities	Challenges
Single-sided, "team vs. scenario" formats	Useful for training purposes Allows for playing the same game repeatedly to systematically explore the impact of specific changes in a scenario on players' behavior	Limits the space for unexpected outcomes to arise from strategic interactions Strongly links the quality of insights to the design of a pertinent and engaging scenario
Two-sided, "red team vs. blue team" formats	Lends itself to situations where a dyadic relationship is key or can reasonably be considered in isolation from the broader actor landscape Can detect vulnerabilities and test defenses (as done in cybersecurity)[97]	Only captures one aspect of the given conflict and may oversimplify dynamics
Multi-sided formats	Actively represents more conflict parties, reducing reliance on assumptions about third parties' behavior and enabling engagement with complex interactive dynamics	Introduces the challenge of managing the interplay of different teams Can lead to distraction or loss of attention if some teams are mostly bystanders while others dominate the course of events

Design Choice in Our DRC Game: Multi-Sided Format

We chose a multi-sided format to account for the complex actor landscape in the eastern DRC. This allowed us to represent a broad range of armed groups, units of the FARDC and a national government actor. We then broke actors down to a level at which empirical research suggests a reasonable degree of leadership cohesion.

4. Representation of Physical Space

Political economy dynamics are embedded in the physical space of conflict-affected contexts. As resources and populations are concentrated in specific locations, the feasibility of various strategies will depend on physical proximity or distance. In addition, though contemporary conflict is evolving due to elements like cyber warfare, territorial movement by conflict actors typically remains a relevant aspect. Designers may therefore include a map in their game materials, either as an illustration (e.g., a projection on paper) or as a physical game board for table-top exercises. Such maps can serve to depict the material aspects of political economies of conflict, from the location of natural resources to towns that may be subjected to taxation. In addition, they can be used to track the physical movements of actors over the course of the game.

The design of the map depends on its purpose: in tactical wargaming, hexagonal grids are often drawn over geographic maps, determining the distances players can move per round and helping depict the attributes of certain locations on a game board (e.g., the amounts and types of resources per tile).[98] Because rectangular tiles introduce artificial distortions, identically-sized hexagonal tiles are preferred in order to regulate the distance between the center of each tile and its neighbors. However, such a grid may not be necessary if a map merely serves to illustrate the geographical features of the environment or the approximate position of actors during the game.

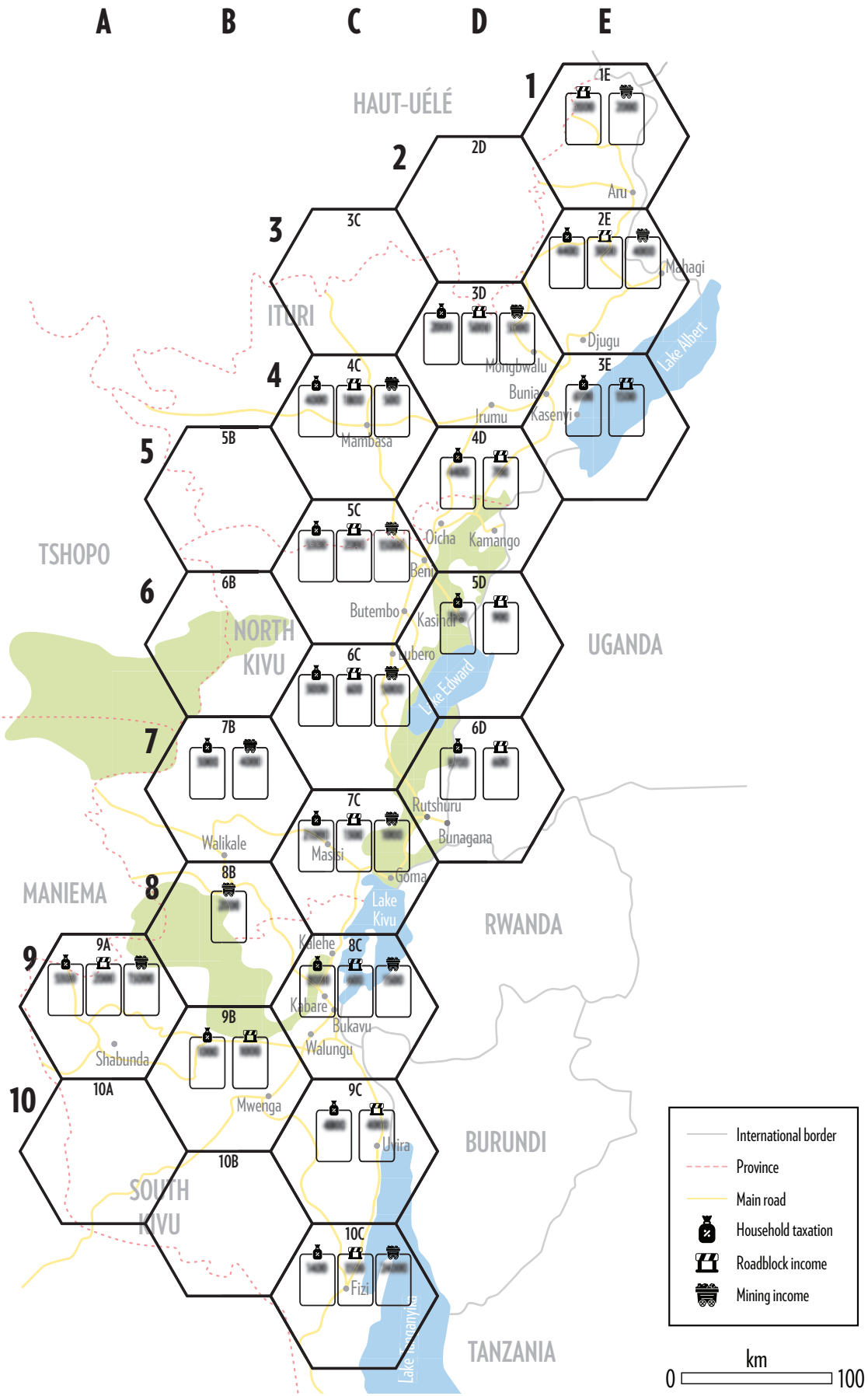
Maps can be designed in varying degrees of detail and may concentrate on depicting either topography or theme. Topographical maps represent the geographic relief of a given terrain which may be needed to analyze close combat operations.[99] Thematic maps, meanwhile, represent geography through a selected lens, for instance focusing on the location of natural resources or opportunities for illicit taxation.[100]

Options	Opportunities	Challenges
No map	Helps draw players' attention to other materials provided, such as quantitative indicators or guiding questions on political or social dimensions	Complicates assessing the feasibility of certain options, since it is very difficult for players to account for distances and geography
Stylized or highly simplified map	Increases players' immersion by visualizing a few selected elements of the political economy or conflict actors' movement throughout the exercise Can help "rationalize" the complex and messy landscape of real-world conflict[101]	Requires elements included on map to be carefully chosen to avoid unrealistically nudging or constraining players' decision-making
Detailed map (topographical or thematic)	Topographical maps make it possible to simulate close combat operations in detail Thematic maps allow players to focus on potential targets for policy intervention	Can cause cognitive overload and confusion

Design Choice in Our DRC Game: Highly Simplified Map

The final version of our map featured a hex grid overlayed on a highly simplified topography of the region. Each tile included the aggregate values of different types of income sources available in that area. We also used personnel tokens to visualize the physical locations of group members. These choices allowed us to tangibly visualize key aspects for decision-making (e.g., physical distances, location of income sources), though somewhat at the expense of players' attention to more qualitative guidance on how social factors are also shaping actors' behavior.

Example Map From Our DRC Game



5. Degree of Quantification

The degree of quantification determines how key variables are represented in the game. In games focusing on the political economy of conflict, typical quantifiable variables include attributes of conflict actors – like the size of an armed group, the number of new recruits or the income generated per round – as well as the financial value of selected economic assets (e.g., natural resources to be extracted, potential for household taxation, income from roadblocks). In addition, designers may also consider quantifying abstract variables (e.g., level of trust in the population) by assigning them a certain value on a scale.

Options	Opportunities	Challenges
No quantification of variables	Draws players' attention away from quantitatively optimizing variables (e.g., financial income) when this is not a realistic or relevant dynamic in the selected conflict context	Makes it difficult to track relative strength between actors over time, hindering realistic decision-making and adjudication
Simplified quantification	Allows for accurately tracking key developments, even if only in terms of trends Can elicit dynamism from players as they compete over resources, while keeping cognitive load manageable	Variables selected for quantification are likely to become a strong focus of players' attention – important not to capture too many or irrelevant variables
Granular quantification	Conveys complexity more realistically and reduces likelihood of omitting important dynamics (especially if using computers to capture and calculate variables)	Increases cognitive load for players and may distract from other aspects of the game[102] Risks creating false precision, suggesting a degree of accuracy that cannot be achieved in this type of analysis[103]

Design Choice in Our DRC Game: Granular Quantification of Selected Variables

Our tracking tools became significantly more sophisticated throughout the project: in the first workshop, we used materials that merely captured broad qualitative developments; in the final one, we used a quantitative tracking tool that instantly translated players' moves into changes to their financial status and membership base. A focus on user-friendliness and simple presentation was key to managing cognitive load and avoiding excessive focus on the tool's calculations.

6. Adjudication Approach

Adjudication settles whether players' in-game decisions are permissible and determines their consequences, based on some combination of preset rules and real-time judgments. Reliably enforcing a common set of known rules is critical for players to be able to understand their options and to avoid controversies over process. At the same time, games should prioritize the "primacy of players" and avoid constraining their decision-making ability in excessive or arbitrary ways.[104] The choice of adjudication approach will have a direct impact on how the game unfolds, from the "gameplay" experience to the range of options available to players and the outcomes resulting from their choices. The selected approach will also affect comparability across game iterations.[105]

Here, we concentrate on the distinctions between basic adjudication approaches.[106] First, rules-based adjudication relies on predetermined outcomes of decisions made by players. Second, analytically assisted adjudication uses resolution tables and computerized models but may also incorporate expert judgment.[107] Alternatively, such experts can also make authoritative decisions without reference to a formalized process. Finally, in contrast, players may themselves jointly adjudicate in a consensus adjudication approach. The choice of adjudication approach will depend, among other factors, on the circle of players (e.g., their level of expertise to judge plausible moves) and the number of rounds to be played. In addition to the basic approach, designers need to consider how adjudication will take place in practice: game designs can opt for "in-stride adjudication" where decisions are made on the spot, or "off-site adjudication" where the game is stopped so adjudicators can retreat to determine results.[108]

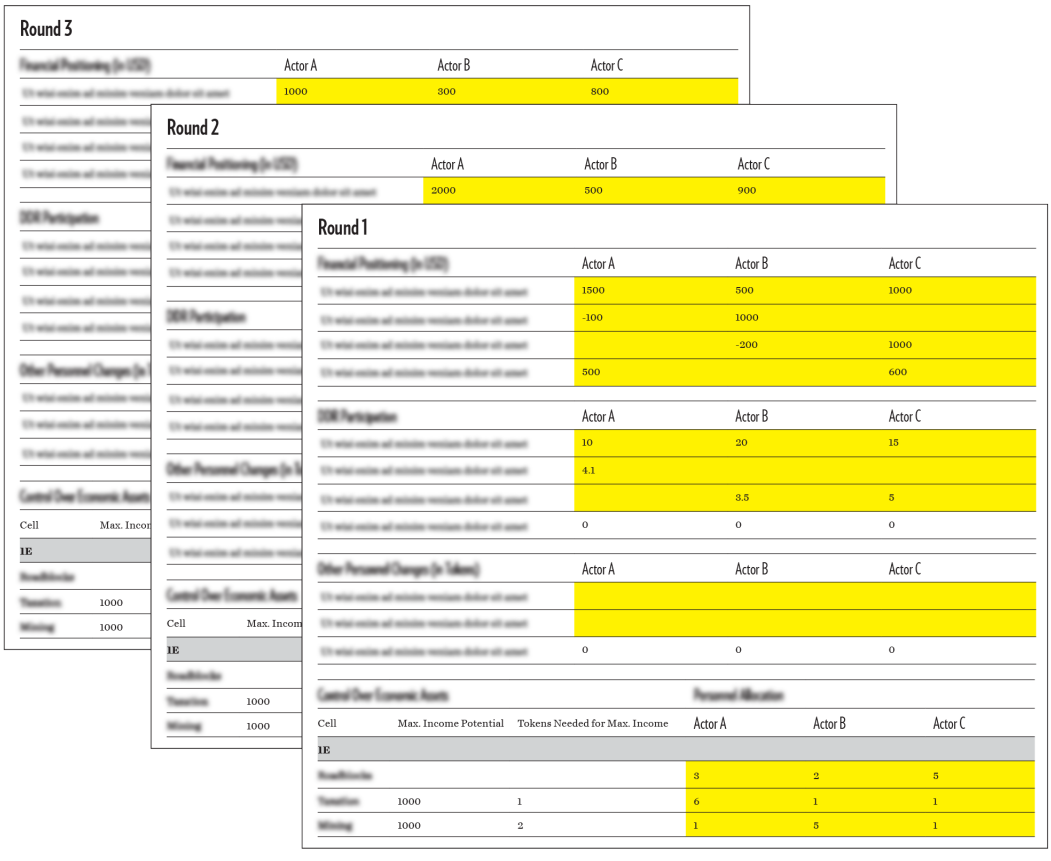
Options	Opportunities	Challenges
Rules-based adjudication	Faster game rounds Can accommodate more rounds with high comparability across different game sessions Less subject-matter expertise required from adjudicator	Restricts the game to tight parameters, constraining players' decision space and ability to pursue creative strategies available to real-world actors Players may be inclined to look for rule loopholes and raise questions about the permissibility of moves that adjudicators will be ill-placed to answer
Analytically assisted adjudication	Facilitates consistent and non-arbitrary decision-making, even when uncertainty and luck are involved (e.g., through probability distributions and random number generators)	Tools' effectiveness depends on whether key outcome drivers can be credibly captured though a limited set of variables Significant upfront analytical effort (specification of game mechanics) and logistical preparation required
Expert judgment	Allows for responses to unexpected developments, enabling a broader range of actions for players	Quality of adjudicator judgment strongly drives the exercise's analytical value – involving multiple expert adjudicators will typically increase decision quality, but also the time required per decision[109]
Consensus adjudication	Mobilizes all knowledge available in the game room	Time-consuming Reduces immersion for players because they constantly shift between representing an actor and a more detached, arbitrating role

Design Choice in Our DRC Game: Combination of Analytically Assisted Adjudication and Expert Judgment

Given our game's focus on flexible and creative strategizing, we relied on expert judgment to a significant degree – even though clear procedural rules, quantified variables and strong use of tools established the framework within which decisions had to be made. In addition to two adjudicators with robust thematic and case knowledge, an academic expert with deep country expertise was also present and consulted when appropriate. For the adjudication of direct military confrontations between actors, we used a "combat calculator" (accounting for respective number of fighters, offensive vs. defensive posture, and a randomness factor).

Example Table Excerpted From Our DRC Game

Round 1		Actor A	Actor B	Actor C
Membership changes	Actual DDR participation (in tokens)	0	0	0
	Recruitment or dismissal of personnel	0	0	0
	Fighters lost in confrontation	0	0	0
Current expenses	Monthly consumption	0	[illegible]	[illegible]
	Maintenance costs	[illegible]	[illegible]	[illegible]
Current income	Total income	[illegible]	[illegible]	[illegible]
Account balance	Change to last round (USD)	[illegible]	0	[illegible]
Stocktaking at end of round	Overall number of members	0	0	[illegible]
	Personnel needed to control economic assets (in tokens)	[illegible]	[illegible]	[illegible]
	Available fighters (in tokens)	0	0	0
	Total financial account (in USD)	[illegible]	[illegible]	[illegible]



Inputs from round sheets automatically update the overall status sheet.

Example values are used here and for illustrative purposes only.

Input by moderators

7. Facilitation Approach

Facilitation plays a significant role in the execution of any interactive game. It ensures that players stay engaged and informed as the game progresses,[110] and may also help them overcome moments of "analysis paralysis."[111] While the adjudication and facilitation roles can be merged in one person, assigning these roles to separate individuals can make it easier for them to concentrate on their respective core tasks and ensure a better flow of the game overall. From a conceptual design perspective, however, the more pertinent question concerns how the facilitation role is interpreted.

There are two basic approaches to facilitating a game. The first option is process moderation, which is limited to procedural responsibilities like timekeeping, as well as summarizing key developments and announcing adjudicated outcomes. Alternatively, moderators can also offer support for players' decision-making: facilitators engaged in such "thought partnership" may provide guidance to players if and when it is needed but should avoid excessively influencing the overall course of the game.

Options	Opportunities	Challenges
Process moderation only	Requires little subject-matter expertise from moderator Emphasizes players' own responsibility and autonomy over actions	May leave players uncertain or overwhelmed, potentially resulting in poor decision-making
"Thought partnership" facilitation	Prevents "analysis paralysis" by actively helping players structure and think through potential courses of action Opportunity for experts to provide ad-hoc advice during the game (see also "8. Briefing Format")	Quality of guidance strongly depends on moderator's level of subject-matter expertise Moderator may significantly influence the game's overall outcome if they prescribe particular choices as most sensible or realistic (especially if supporting several players in parallel)

Design Choice in Our DRC Game: "Thought Partnership" Facilitation

Moderators and an external expert were available for discussion with players during deliberation phases. While we provided guidance on the feasibility of moves, we took care to not be prescriptive in the process.

8. Briefing Format

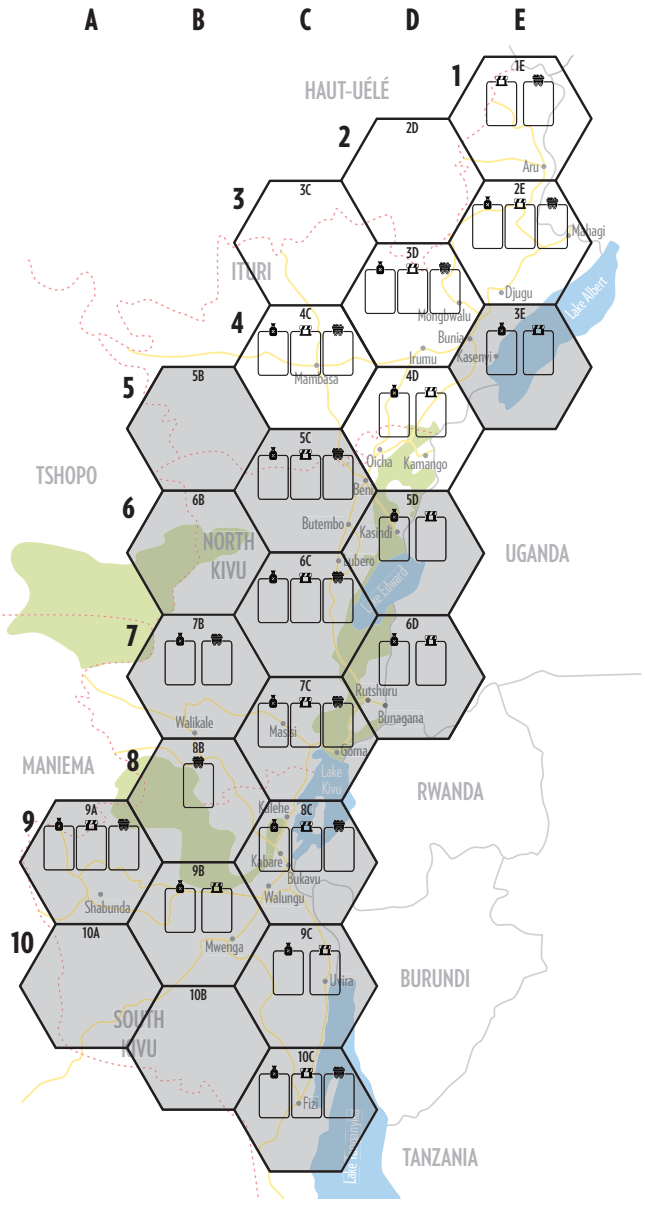
Information about the conflict context is at the heart of any game on stabilization and peacebuilding policy. Designers can choose to streamline the information available about a conflict context through written briefings or expert input, or refrain altogether from proactively providing information to players. When allowing players to rely on their own knowledge, designers must reflect carefully on whether certain key information can genuinely be taken for granted. As noted above, the way briefings are presented also has a major impact on players' level of immersion in their roles – for example, providing them with facsimiles of "official documents" will likely be more immersive than merely informing them about key points through a descriptive text.

Options	Opportunities	Challenges
Relying on players' own knowledge	Actively draws on players' subject-matter expertise Can increase players' ownership over decisions and sense of agency	Only feasible if all players have deep (and reasonably similar) expertise regarding the geographical context and subject of the game Players may legitimately hold diverging perspectives and have different degrees of awareness about specific aspects
Written briefing materials	Ascertains all players share baseline knowledge Conveys essential game-specific information (e.g., the situationally specific motivations of an actor) Remains available for reference as needed during the game	May implicitly nudge players toward certain actions as briefings reflect designers' own knowledge and assumptions
Real-time input from subject-matter experts	Enables access to information relevant for any specific questions that arise from playing the game	Players may excessively rely on expert guidance at the expense of self-directed, creative thinking Experts may be inclined to draw players to analytical abstraction or impose a particular lens on conflict dynamics

Design Choice in Our DRC Game: Combination of All Options

All players participating in our game brought a degree of expert knowledge on relevant themes and, in some cases, specifically regarding the DRC. Players received written briefings in advance, which covered the key interests and constraints for the actor they were to represent, along with relevant background information. For the final exercise, an academic expert on the region was present and available for consultation throughout the game, especially regarding the feasibility of proposed moves.

Example Briefing Sheet From Our DRC Game



Briefing Sheet: Conflict Actor A (1 Player)

Quick facts:

- [illegible]

Motivations:

[illegible]

Financing:

- [illegible]

Further relevant factors for groups behavior and decisions:

[illegible]

9. Prescriptiveness of Actor Briefings

If designers choose to provide written briefings, there will be various ways to address players' objectives in the game in this material. Highly prescriptive briefings can offer detailed guidance on individual actors' motivations or "missions," and even specify their criteria for success. Purely descriptive briefings, meanwhile, provide general contextual information about actors and conflict dynamics, while leaving players to determine their objectives for themselves. Briefings can also tread a middle ground, defining broad objectives and sketching out vital actor interests, but leaving out the implications these may have for choices that will arise during gameplay.

Options	Opportunities	Challenges
Briefings prescribe objectives in detail	Ensures consistent interpretations of objectives (e.g., core political, economic and social interests that actors seek to achieve) Still leaves players some space for creative and unexpected strategies in pursuit of these objectives	Requires designers to carefully anticipate potential game developments Unlikely to cover all situations players will face, especially in flexible games Designers' own analysis and assumptions will strongly influence the outcomes and insights resulting from the game
Briefings only define broad objectives	Provides helpful guardrails while leaving a lot of room for players' agency	May lead to unexpected interpretations and a perceived lack of guidance, especially if players have limited subject-matter expertise
Players determine objectives themselves	Provides most leeway for players to interpret briefings, while minimizing the influence of designers' assumptions on game dynamics Players have maximum flexibility to react to unexpected game developments	Only feasible with very knowledgeable and confident players May decrease the predictability and plausibility of players' moves

Design Choice in Our DRC Game: Briefings Only Defined Broad Objectives

Our actor briefings only defined broad objectives for each conflict actor, both at a high level (e.g., an entire armed faction) as well as on the local level (e.g., for the commander of a specific army battalion). We avoided imposing specific definitions and metrics of success. To determine these, players drew on their own knowledge and experience, which was in many cases significant, and asked for guidance from the external expert and moderators as needed.

10. Transparency of Information

When compiling information for players, designers must decide how much each player should know about the others. With an open design, all information is made available to all players throughout the game. With a closed design, access to certain information will be deliberately limited. For example, there may be no transparency about individual finances between players.

Options	Opportunities	Challenges
Open design	Easier for players to grasp overall situation and make strategic decisions	Sacrifices realism, as conflicts are typically characterized by incomplete information and misperceptions about other actors' situations and intentions
		Blocks certain relevant strategies such as "bluffing" about an actor's military or financial capacity
Closed design	"Fog of war" and other typical situations of highly imperfect knowledge are simulated more realistically[112]	Designers have to decide who will have access to what information, which has a major impact on the game
	Opens up additional strategies to players (e.g., deliberate disclosure, "bluffing"/deception)	More difficult to implement in practice, since access to documents and other resources needs to be carefully managed

Design Choice in Our DRC Game: Open Design

All players received the same briefing booklet, which included all actor briefings, the rule book and the game's policy impulse. Players also had transparency on the group sizes and finances of other actors via access to the quantitative tool. We considered a more closed design, but ultimately decided against it in order to facilitate the game's practical implementation; and because we concluded, at least regarding the briefing booklet, that most of the information provided would plausibly be available to other actors in the real world.

11. Selection of Participants

The quality of any game will be determined by the selection of players. They will be key in driving forward the interactive dimension of these exercises. In games for research purposes, this group is also called the "sample," similar to survey designs or experiments.[113] Games involving actual representatives of conflict actors constitute a special case: Besides detached analytical purposes, participants and potential game sponsors and designers may also seek to use such games as a deliberate intervention into the conflict, aimed at changing conflict actors' behavior in the real world. Subject-matter experts have less of an immediate stake in the conflict and will bring their knowledge about the conflict context into the game. Generalist policy practitioners will often be able to rely on transferable experiences from other conflict contexts as they play the game. They may therefore particularly benefit from ad-hoc guidance, as players often have a good idea of potential dynamics but may lack context-specific information. In contrast, participants from the general public will strongly benefit from active facilitation and require very didactic and accessible briefings that emphasize relevant context knowledge.

Options	Opportunities	Challenges
Actual representatives of conflict actors	Likely to perform roles in the exercise very realistically Game might in itself become part of conflict transformation	Players' behavior may be distorted because they are aware of the presence of observers and may even intentionally want to send certain signals to other players and audiences Designers will need to address many political sensitivities and ethical issues to convince such a sample to join in the first place and to draw valid insights from the exercise Logistical challenges (will at minimum require significant advance planning)
Subject-matter experts	Fewer stakes in the conflict while still requiring only limited guidance on context and plausible moves Able to realistically fill in any potential gaps in player briefings and to flexibly adapt to developments in the game	Participants may be drawn into a more detached analytical role, although they are supposed to simulate the behaviors of specific actors More constrained set of relevant potential participants
Generalist policy practitioners	Participants tend to be able to immerse themselves quickly and open-mindedly in game dynamics, while still bringing relevant thematic expertise and knowledge of related settings that may inspire their strategies as players Enables direct involvement of relevant decision-makers also beyond country experts Players might be less likely to question or "fight" the context-specific scenario	Players may rely quite heavily on briefing material and hesitate to make decisions without certain pieces of information they know to be relevant
Participants from the general public	Makes it easier to play a game many times with different players Absence of strong, established perspectives on a given context can support an open-minded approach	Players may struggle with unexpected developments Risk of over-reliance on selected salient pieces of information from the briefings to make decisions

Design Choice in Our DRC Game: Briefings Only Defined Broad Objectives

Our actor briefings only defined broad objectives for each conflict actor, both at a high level (e.g., an entire armed faction) as well as on the local level (e.g., for the commander of a specific army battalion). We avoided imposing specific definitions and metrics of success. To determine these, players drew on their own knowledge and experience, which was in many cases significant, and asked for guidance from the external expert and moderators as needed.

Workshop participants using the map and tokens during the game. Source: GPPi.

12. Organizational Setup

Choosing the appropriate setup for the game is essential to ensure its successful implementation. The most basic and arguably most consequential practical decision is whether to implement a game in-person, hybrid or completely remote. In hybrid setups, where some participants meet in-person while others join online, organizers should carefully consider whether all remote participants should be clustered in one or several teams or distributed equally. They also need to place strong emphasis on technical solutions to enable the same interactions as among on-site participants (e.g., bilateral conversations, exchanges in selected sub-groups). The question of organizational setup is also related to the duration of a game, which may vary from just a few hours to multiple days. Asynchronous designs that run remotely may even run over an extended period as players do not need to interact on the spot but are granted time to decide on actions and make their moves at their own pace. While these matters should mainly be decided based on necessities arising from other design choices, the constraints of participants and sponsors of course also play an important role.

Options	Opportunities	Challenges
Fully in-person	Emphasizes human interaction as a key aspect distinguishing games from computer-based modeling	More expensive in terms of resources from sponsors, designers and participants
	Improved analytical discussions	May limit availability of best possible players
	Stronger social dynamics among participants	
Hybrid setup	Easier to accommodate individual time or resource constraints	Requires strong logistical planning and execution to enable equal participation and valuable experience for online participants
	Can open game to players in remote locations who bring exceptional geographical or thematic expertise	
Remote setup	Very low logistical barriers for participation, making it possible to organize games at short notice and include players in remote locations	Requires bespoke design as in-person dynamics cannot be simply transferred to the online space
		Quality of player interaction may suffer from reduced attention spans
		Hard to ensure immersive and engaging gameplay

Design Choice in Our DRC Game: From Hybrid to Fully In-Person Setup

We organized the first workshop with a hybrid setup to enable greater flexibility for participants, but integrating online participants and enabling effective communication on- and offline proved challenging. Especially missing were spontaneous interactions between players during the deliberation phases. We held subsequent workshops solely in person, which significantly improved the game environment and the quality of interactions between players, allowing for both formal and informal follow-up discussions to take place beyond the confines of the game. The in-person setup also allowed the tangible tabletop game materials (physical map, personnel tokens) to better support players' engagement and dynamism.

Typical Combinations of Design Choices

While most of the design choices just discussed can largely be considered independently from one another, some combinations naturally occur more frequently than others. To build an overarching typology of games, it helps to look at the "rigidity" of designs, that is, the extent to which a game regularizes otherwise fluid human interactions. This happens through some mix of formal rules and procedures, which prescribe the scope of action for players, and authoritative decision-making by an adjudicator.[114]

Varying degrees of rigidity in game design create a linear spectrum, on which four basic archetypes can be located.

Source: Adapted from Fridheim (2022, 259)

Seminar games

At one end of the spectrum are seminar games, which usually involve only minimal formalization through rules or an adjudicating moderator (also known as the "white cell"), and may resemble structured workshop discussions.[115] While offering a high level of flexibility and the space to discover dynamics that the designer has not anticipated, they can be prone to what the wargaming literature describes as the "BOGSAT trap," referring to "a bunch of guys/gals sitting around a table" who generate only insights of limited novelty and instead "regurgitate" existing perspectives.[116]

Matrix games

Matrix games are somewhat more rigid, as exercises are divided into deliberations and plenaries. During deliberations, players also negotiate with each other to build alliances or joint courses of action.[117] In the plenary, players are asked to state their moves as sequences of logical arguments which can be countered by other players. Adjudicators decide on the feasibility of proposed moves as well as on their cumulative outcomes. While this leaves ample space for creativity by players and for unforeseen yet plausible moves, some critics question the consistency and replicability of these judgments and therefore consider these games to be somewhat subjective. Such designs therefore benefit from an adjudication approach in which expertise-based judgment is embedded in a set of explicit rules and analytically supported through calculative models and data where appropriate.[118]

Kriegsspiele

The term "Kriegsspiel" (German for "wargame") comes from the first modern European wargames developed in 19th-century Prussia.[119] In the contemporary field of wargaming, Kriegsspiele employ a highly formalized rulebook as well as mathematical tables for

adjudication.[120] They most frequently feature two-sided, closed formats (i.e, the two teams have incomplete information about each other) and tend to emphasize developments that physically unfold in geographical space as represented on a map.[121] These game designs are most useful for relatively narrow issues, with player options that can be captured through a limited set of variables – like tactical military maneuvers. They are less useful for exploring issues that involve more complex linkages across various domains of political, social and economic life.[122]

Computer-based games

Finally, computer-based games make use of mathematical tables and models for adjudication to an even higher degree than manual Kriegsspiele. Here, we refer to computer-based games with human agency and not agent-based simulations. Computer-based games may automate select elements of human behavior, while leaving humans to conduct other actions themselves.[123] On the one hand, by tracking variables and automating the results of confrontations, such games can make the adjudicator's work easier.[124] They can also reduce bias, which may potentially arise from human adjudication. On the other hand, any type of computer-assisted method that takes in a high volume of data will both require significant resource investment and firmly embedded assumptions made by the designers.

Arguably, the dimension of rigidity is also related to the level of subject-matter expertise required from players. A free-form game with little formalization will rarely develop any dynamism or elicit an insightful discussion unless players are highly knowledgeable and able to develop plausible courses of action. In highly rigid games, which are easy to play without any particular expertise on the part of the players, the onus for producing analytical value and substantial findings is then completely on the game design – and thus, on the comprehensiveness of the designers' knowledge of the context and their ability to balance their own biases and assumptions. Players can always make decisions based on simple principles or "common sense," but they will nonetheless require significant prior knowledge about their roles and context to directly gain analytical value.

Conclusion:
Takeaways From Our Proof-of-Concept Game

Key Developments in Our DRC Game

As noted, three iterations of the tabletop workshop exercise on political economy dynamics in the eastern Democratic Republic of the Congo were conducted with a group of policy practitioners, culminating in a one-and-a-half-day workshop that offered space for developments to unfold over more rounds.

All iterations of the game exemplified key challenges to the effectiveness of DDR programs and, by extension, conflict interventions more broadly. Both in a first iteration of the game addressing only Ituri province and in later iterations covering multiple and simultaneous theaters of conflict, players struggled to commit to the possibility of demobilization; the risk was that other groups would stay active or even expand their operations. This security dilemma, which hindered any substantial demobilization process from gaining traction, was consistent with findings from research on past DDR programs in the eastern DRC and other contexts.

Unsurprisingly, it was also apparent that the availability of significant illicit income sources reduced the DDR program's financial attractiveness. This was especially pronounced in the longer and more elaborate iterations of the game. Indeed, many players sought to increase their illicit revenues after the program had been announced. In some of these cases, players clearly sought to reduce the risk of individual members defecting by offering higher incomes or by otherwise driving up the price of their participation in the program (for example, by pushing for the integration of their commanders into higher FARDC positions). In doing so, actors frequently engaged in tacit cooperation with ostensible rivals, sometimes through elaborate and creative side deals. But in other instances, players also engaged in deliberate military or political displays of force. While these points all draw attention to potential unintended consequences of DDR efforts in general, the specific ways they manifested themselves in the game highlighted the particular constellations and actors that posed the most risk to this DDR program.

These cautionary observations notwithstanding, the game also provided some indications of circumstances under which DDR efforts may stand a greater chance of success. At least in the final iteration of the game, a concerted negotiation effort allowed the government player to simultaneously demobilize conflict actors in Ituri province, successfully reducing these actors' activities and scale by a significant margin – again, consistent with previous historical episodes.

Lessons Learned and Outlook

The approach and design chosen for the DRC game proved suitable for the task at hand. The moderate constraints imposed on players by the flexible matrix design allowed for a lot of creative thinking around possible moves, which was crucial for a game intended to elucidate potential unexpected dynamics. Although some players called for more guidance and direction in their moves in post-game discussions, their freedom of action served to

reduce the impact of biases and assumptions embedded into the game design. Moreover, expert input helped players make plausible moves, which reduced the likelihood of unrealistic developments.

An important lesson from the project was to dedicate sufficient time to run the game. The first two workshops, featuring net play times of about 90 minutes and two-and-a-half hours respectively, did not allow developments to unfold in sufficient complexity. Over just two and three rounds respectively, actors were not able to experience the dynamics of repeated interactions needed to generate insightful in-game feedback – in the sense of players experiencing the consequences of their actions and adjusting their behavior accordingly – which is critical for the game to add analytical value. As a result, initial decisions of questionable plausibility remained untested. Realized over one-and-a-half days, the final workshop allowed for more rounds to be played, which leveled out extreme developments and uncovered the longer-term effects of the policy impulse. The time needed for deliberation in particular is not to be underestimated, especially if one actor is likely to conduct many simultaneous negotiations (as was the case here for the DRC government).

Moreover, there was an observable availability bias regarding the game materials used. Having a game map and quantified economic assets, players were inclined to focus on physical movements and to maximize their revenue, despite continuous reminders about the importance of qualitative social and ideational drivers of behavior. Future versions of the game could integrate such aspects either by formally capturing them – e.g., by quantifying these qualitative variables in the game tool – or by featuring additional community or political actors as players in the game.

Overall, the game constituted a successful proof of concept for using simulation games for practice-oriented, forward-looking political economy analysis in conflict settings. Many participants highlighted the educational experience provided by the exercise in the concluding workshop discussions, which was also visible in their consistently high degree of engagement and immersion. Analytically, the game was able to not only capture key dynamics familiar from analyses of past DDR efforts both in the DRC and beyond, but also to generate more granular leads regarding the potential impact and pitfalls of one concrete intervention option that warrant further consideration.

Beyond observations from playing the game itself, our experience of developing it demonstrated the time investment needed to tailor a game on political economy dynamics to a specific conflict context and to arrive at design choices that maximize analytical value. Supporting designers working on future projects in this area was an important part of the motivation for compiling this guide. Beyond this publication, designers would undoubtedly benefit from using off-the-shelf elements from previous relevant efforts, such as templates for player briefings or frameworks for quantitative tools that only need to be customized rather than built from scratch. Collaboration across teams working with gaming methods at different institutions can help advance the methodology and make better use of available capacity. In this vein, we are happy to make the materials from our game available upon request and to support future efforts on related questions.

For ministries and other institutions where games could fruitfully support analysis and policymaking, it is worth thinking through in advance at what points in internal processes such an exercise could be most useful, who would be called on to participate, and which preparations could already be made to accelerate execution when a relevant need arises. The case for drawing on this method more strongly, especially in crisis management and stabilization contexts, is clear. Among the various benefits outlined in this guide, one participant at our final workshop highlighted specifically that "a simulation as an analytical instrument reduces noise." While simulation games can – and should – not simply replace more established forms of analysis, they can thus complement them in important ways.

References

1 Park and Choi (2020) studied the adverse impact of targeted or "smart" sanction regimes on civilian populations. Despite sanctioning countries adapting their regimes to counter the harmful effects of more comprehensive sanction regimes targeted sanctions may still negatively impact the situation of civilians when, e.g., political elites remain unconstrained and continue human rights violations. See: Jiyoun Park and Hyun Jin Choi, "Are smart sanctions smart enough? An inquiry into when leaders oppress civilians under UN targeted sanctions," *International Political Science Review* 43, no.(2022): pp. 433—449.

2 The "greed and grievance" debate in the academic study of civil war was first initiated by Paul Collier and Anke Hoeffler. Since then, more academic literature has addressed economic dimensions within conflict studies. See: Paul Collier and Anke Hoeffler, "Greed and grievance in civil war," *Oxford Economic Papers* 56, no. 4 (2004): pp. 563-595. For an introduction to the Political Marketplace Framework, see: Alex de Waal, "Introduction to the Political Marketplace for Policymakers," UK Department for International Development, *JSRP Policy Brief*, 2016, accessed 1 February 2024, https://web.archive.org/web/20240201134546/https://assets.publishing.service.gov.uk/media/57a0896240f0b652dd0001cc/JSRP-Brief-1.pdf.

3 Claire Mcloughlin, "Political Economy Analysis: Topic Guide," 2nd Ed., GSDRC, University of Birmingham, Birmingham, December 2014, p. 2. accessed 1 February 2024, https://web.archive.org/web/20240201153351/https://gsdrc.org/topic-guides/political-economy-analysis/.

4 Achim Wennmann, "The Political Economy of Violent Conflict Within States," in *Oxford Research Encyclopedia of International Studies*, Oxford: Oxford University Press, 2019.

5 Mary Kaldor, "In Defence of New Wars," *Stability: International Journal of Security and Development* 2, no. 1 (2013).

6 Wennmann, "The Political Economy of Violent Conflict Within States," p. 4.

7 Christopher Cramer, "Homo Economicus Goes to War: Methodological Individualism, Rational Choice and the Political Economy of War," *World Development* 30, no. 11 (2002): pp. 1845–64; Jack L. Snyder, *From Voting to Violence: Democratization and Nationalist Conflict*, New York: W.W. Norton, 2000.

8 Christine Cheng, *Extralegal Groups in Post-Conflict Liberia*, Oxford: Oxford University Press, 2018; Alexandre Jaillon, Janvier Murairi, Peer Schouten and Saidi Kubuya, "'Everything That Moves Will Be Taxed': The Political Economy of Roadblocks in North and South Kivu (2017)," IPIS, 2017, accessed 1 February 2024, https://web.archive.org/web/20240201153648/https://ipisresearch.be/publication/everything-moves-will-taxed-political-economy-roadblocks-north-south-kivu/; Congo Research Group, "Inside the ADF Rebellion (Report)," 14 November 2018, p. 14, accessed 1 February 2024, https://web.archive.org/web/20240201153618/https://www.congoresearchgroup.org/wp-content/uploads/2018/11/Inside-the-ADF-Rebellion-14Nov18.pdf.

9 Mats Berdal and David Keen, "Violence and Economic Agendas in Civil Wars: Some Policy Implications," *Millennium* 26, no. 3 (1997): pp. 797–9.

10 Karen Ballentine and Heiko Nitzschke, "The Political Economy of Civil War and Conflict Transformation," *Berghof Research Center for Constructive Conflict Management* 39, no. 3 (2005): p. 3.

11 David Keen, "A Rational Kind of Madness," *Oxford Development Studies* 25, no. 1 (1997): pp. 67–75.

12 Olu Arowobusoye, "Why They Fight: An Alternative View on the Political Economy of Civil War and Conflict Transformation," Berghof Research Center for Constructive Conflict Management, 2005, p. 39, accessed 1 February 2024, https://web.archive.org/web/20240201153727/https://berghof-foundation.org/files/publications/dialogue3_arowobusoye.pdf.

13 Philipp Rotmann and Léa Steinacker, "Stabilization: Doctrine, Organization and Practice," Global Public Policy Institute, 2014, p. 40, accessed 1 February 2024, https://web.archive.org/web/20240201102707/https://gppi.net/2014/03/01/stabilization-doctrine-organization-and-practice. See also Philipp Rotmann, "Toward a Realistic and Responsible Idea of Stabilisation," *Stability: International Journal of Security & Development* 5, no. 1 (2016): p. 5, https://doi.org/10.5334/sta.414.

14 Ballentine and Nitzschke, "The Political Economy of Civil War and Conflict Transformation," p. 3.

15 Christopher J. Coyne and Garrett Wood, *The Political Economy of Foreign Intervention*, Berlin: Springer, 2020, p. 5.

16 Aaron Griffiths and Catherine Barnes, eds., "Powers of Persuasion: Incentives, Sanctions and Conditionality in Peacemaking," *Accord* 19, London: Conciliation Resources, 2008, p. 4.

17 Adapted from Griffiths and Barnes, "Powers of Persuasion," p. 9.

18 Roger Karapin and Leonard Feldman, "Unintended Consequences," *Polity* 48, no. 4 (2016): p. 495.

19 U.S. Department of the Treasury, *Treasury Sanctions Alain Goetz and a Network of Companies Involved in the Illicit Gold Trade*, 17 March, 2022, accessed 1 February 2024, https://web.archive.org/web/20240201103148/https://home.treasury.gov/news/press-releases/jy0664.

20 Global Witness, "Undermining Sanctions: How Mining Magnate Dan Gertler Appears to Have Dodged US Penalties," 2 July 2020, accessed 1 February 2024, https://web.archive.org/web/20240201103500/https://www.globalwitness.org/en/campaigns/corruption-and-money-laundering/undermining-sanctions/; International Crisis Group, "Sanctions, Peacemaking and Reform: Recommendations for U.S. Policymakers," 28 August 2023, accessed 20 February 2024, https://www.crisisgroup.org/united-states/8-sanctions-peacemaking-and-reform-recommendations-us-policymakers.

21 Pierre-Hugues Verdier, "Sanctions Overcompliance: What, Why, and Does It Matter?," *North Carolina Journal of International Law* 48 (2023): p. 471.

22 Véronique Dudouet, "Hitting the Target but Missing the Point?: Assessing Donor Support for Inclusive and Legitimate Politics in Fragile Societies," Berghof Foundation, January 2017, p. 19, accessed 1 February 2024, https://web.archive.org/web/20240201103751/https://berghof-foundation.org/library/hitting-the-target-but-missing-the-point.

23 Ulrike Hopp-Nishanka, "Breaking the Vicious Cycle," Berghof Foundation, May 2022, p. 13, https://web.archive.org/web/20240201133404/https://berghof-foundation.org/library/breaking-the-vicious-cycle-entry-points-for-anti-corruption-in-inclusive-peace-processes.

24 Alex De Waal, *The Real Politics of the Horn of Africa: Money, War and the Business of Power*, Cambridge: Polity, 2015.

25 Dudouet, "Hitting the Target but Missing the Point?," p. 19

26 Zahbia Yousef and Louisa Waugh, "Organised Crime and Conflict: Implications for Peacebuilding," Saferworld, May 2022, https://web.archive.org/web/20240201133625/https://www.saferworld-global.org/resources/publications/1392-organised-crime-and-conflict-implications-for-peacebuilding-.

27 Global Initiative against Transnational Organized Crime, "Illicit Trafficking and Instability in Mali: Past, Present and Future," January 2014, accessed 1 February 2024, https://web.archive.org/web/20240201133853/https://globalinitiative.net/analysis/illicit-trafficking-and-instability-in-mali-past-present-and-future/; Yousef and Waugh, "Organised Crime and Conflict: Implications for Peacebuilding," p. 22.

28 Ryan S. Jablonski, "How Aid Targets Votes: The Impact of Electoral Incentives on Foreign Aid Distribution," *World Politics* 66, no. 2 (2014): pp. 293–330.

29 Mathijs Van Leeuwen, An Ansoms, Emery Mushagalusa Mudinga, Aymar Nyenyezi Bisoka, Rene-Claude Niyonkuru, Jonathan Shaw and Gemma van der Haar, "Promoting Land Tenure Security for Sustainable Peace — Lessons on the Politics of Transformation," *Current Opinion in Environmental Sustainability* 49 (April 2021): p. 58.

30 Catherine Boone, "Legal Empowerment of the Poor through Property Rights Reform: Tensions and Trade-Offs of Land Registration and Titling in Sub-Saharan Africa," *The Journal of Development Studies* 55, no. 3 (2019): p. 393.

31 Van Leeuwen et al., "Promoting Land Tenure Security for Sustainable Peace — Lessons on the Politics of Transformation."

32 Michel Thill, "In Search of a Winning Formula: Lessons on DDR and Community Reintegration in the Democratic Republic of the Congo," New York: Social Science Research Council, May 2021, p.13, accessed 1 February 2024, https://web.archive.org/web/20240201134059/https://www.ssrc.org/publications/in-search-of-a-winning-formula-lessons-on-ddr-and-community-reintegration-in-the-democratic-republic-of-the-congo/.

33 Finance for Peace, "The Rationale for a Peace Finance Impact Framework," January 2023, p. 24, https://web.archive.org/web/20240201134413/https://financeforpeace.org/resources/the-rationale-for-a-peace-finance-impact-framework/.

34 Derick Brinkerhoff and Marc Cassidy, "Reflections on Ten Years of USAID's Experience with Political Economy Analysis and Thinking and Working Politically" RTI International, Adapt Consult and Thinking and Working Politically Community of Practice (TWP CoP), 2023, p. 1; Alina Rocha Menocal, Marc Cassidy, Sarah Swift, David Jacobstein, Corinne Rothblum and Ilona Tservil, "Thinking and Working Politically Through Applied Political Economy Analysis" U.S. Agency for International Development, April 2018, accessed 1 February 2024, https://web.archive.org/web/20240201141605/https://www.usaid.gov/democracy/document/thinking-and-working-politically-through-applied-political-economy-analysis.

35 Brinkerhoff and Cassidy, p. 2.

36 Verena Fritz, Brian Levy and Rachel Ort, *Problem-Driven Political Economy Analysis: The World Bank's Experience* Washington D.C.: World Bank Publications, 2014, p. 2.

37 Alex de Waal, "Introduction to the Political Marketplace for Policymakers."

38 Ibid., p. 3.

39 Alex de Waal, "The Revolution No One Wanted," *London Review of Books* 45, no. 10 (2023).

40 Christine Cheng, Jonathan Goodhand and Patrick Meehan, "Elite Bargains and Political Deals Project/Synthesis Paper: Securing and Sustaining Elite Bargains That Reduce Violent Conflict," UK Stabilisation Unit, April 2018, accessed 1 February 2024, https://web.archive.org/web/20240201153842/https://assets.publishing.service.gov.uk/media/5c18e70ce5274a46704bdb72/Elite_Bargains_and_Political_Deals_Project_-_Synthesis_Paper.pdf; Christine Bell, "What We Talk about When We Talk about Political Settlements: Towards Inclusive and Open Political Settlements in an Era of Disillusionment," September 2015, p. 12, accessed 1 February 2024, https://web.archive.org/web/20240201135054/https://www.research.ed.ac.uk/en/publications/what-we-talk-about-when-we-talk-about-political-settlements-towar.

41 Alex de Waal, Benjamin Spatz, and Aditya Sarkar, "Situating the Contribution of the Political Marketplace Framework to Peace Processes," PeaceRep Report World Peace Foundation, 2023, p. 2, accessed 1 February 2024, https://web.archive.org/web/20240201141341/https://peacerep.org/publication/contribution-political-marketplace-framework-peace-processes; UK Government, "The UK Government's Approach to Stabilisation: A Guide for Policy Makers and Practitioners," 7 March 2019, accessed 1 February 2024, https://web.archive.org/web/20240201141502/https://www.gov.uk/government/publications/the-uk-governments-approach-to-stabilisation-a-guide-for-policy-makers-and-practitioners.

42 Andrés Mejía Acosta and Jethro Pettit, "Practice Guide: A Combined Approach to Political Economy and Power Analysis Discussion–Note Prepared for the Swiss Development Cooperation," Institute of Development Studies, 2013, p. 8; Brinkerhoff and Cassidy, "Reflections on Ten Years of USAID's Experience with Political Economy Analysis," pp. 7–8.

43 Sanu Kainikara, "Effective Wargaming: Impact of the Changing Nature of Warfare," Royal Australian Air Force: Air Power Development Centre, 2003, p. 4, accessed 1 February 2024, https://airpower.airforce.gov.au/sites/default/files/2021-03/WP13-Effective-Wargaming-Impact-of-the-Changing-Nature-of-Warfare.pdf.

44 Ernest H. Page, "Modeling and Simulation, Experimentation, and Wargaming-Assessing a Common Landscape," The MITRE Corporation, 2016, p. 1, accessed 1 February 2024, https://web.archive.org/web/20240201142154/https://apps.dtic.mil/sti/citations/AD1108003.

45 E. D. McGrady, "Getting the Story Right about Wargaming," *War on the Rocks*, 8 November 2019, accessed 1 February 2024, https://web.archive.org/web/20240201142516/https://warontherocks.com/2019/11/getting-the-story-right-about-wargaming/.

46 Philip E. Pournelle, "Designing wargames for the analytic purpose," *Phalanx* 50, no. 2 (2017): pp. 48-53.

47 Philip Sabin, "What Strategic Wargaming Can Teach Us," German Institute for Defense and Strategic Studies, 2021, p. 6, accessed 1 February 2024, https://web.archive.org/web/20240201143019/https://gids-hamburg.de/wp-content/uploads/2021/05/GIDSstatement2021_05_Sabin.pdf.

48 Arvid Bell and Brian Mandell, "Cognitive Maelstroms, Nested Negotiation Networks, and Cascading Decision Effects: Modeling and Teaching Negotiation Complexity with Systemic Multiconstituency Exercises," *Negotiation Journal* 34, no. 1 (2018): pp. 37–67.

49 Håvard Fridheim, "Wargaming Dos and Don'ts–Eight Lessons for Planning and Conducting Wargames," *Scandinavian Journal of Military Studies* 5, no. 1 (2022): p. 224.

50 Erik Lin-Greenberg, Reid BC Pauly, and Jacquelyn G. Schneider, "Wargaming for International Relations Research," *European Journal of International Relations* 28, no. 1 (2022): p. 5.

51 Ibid., p. 10.

52 Ibid., p. 30.

53 Tom Mouat, "Practical Advice on Matrix Games," 3 October 2019, p. 5, accessed 1 February 2024, https://web.archive.org/web/20240201143157/http://www.mapsymbs.com/PracticalAdviceOnMatrixGames.pdf

54 NATO, "NATO Wargaming Handbook," 2023: p. 6, accessed 1 February 2024, https://web.archive.org/web/20240201154440/https://paxsims.files.wordpress.com/2023/09/nato-wargaming-handbook-202309.pdf; Robert C. Rubel, "The Epistemology of War Gaming," *Naval War College Review* 59, no. 2 (2006): p. 3.

55 Scholars of wargaming have argued for pushing this inferential strategy quite far, making wargames an element of quasi-experimental designs. See, for example, Andrew W Reddie and Bethany L Goldblum, "Evidence of the Unthinkable: Experimental Wargaming at the Nuclear Threshold," *Journal of Peace Research* 60, no. 5 (September 2023): pp. 760–76, https://doi.org/10.1177/00223433221094734.

56 Elizabeth Bartels, "Getting the Most out of Your Wargame: Practical Advice for Decision-Makers," *War on the Rocks*, 19 November 2019, accessed 1 February 2024, https://web.archive.org/web/20240201144221/https://warontherocks.com/2019/11/getting-the-most-out-of-your-wargame-practical-advice-for-decision-makers/.

57 Isabel Thielmann, Robert Böhm, Marion Ott and Benjamin E. Hilbig, "Economic Games: An Introduction and Guide for Research," Collabra: Psychology 7, no. 1 (2021): p. 2; Gili Freedman and Mary Flanagan, "From Dictators to Avatars: Furthering Social and Personality Psychology through Game Methods," *Social and Personality Psychology Compass* 11, no. 12 (2017): p. 2.

58 Christoph Engel, "Dictator Games: A Meta Study," *Experimental Economics* 14, no. 4 (2011): pp. 583–610.

59 Ibid.

60 Daniel Kahneman and Vernon Smith, "Foundations of Behavioral and Experimental Economics," *Advanced Information on the Prize in Economic Sciences* 1, no. 7 (2002): pp. 1–25; Reinhard Selten, "New Challenges to the Rationality Assumption: Comment," *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift Für Die Gesamte Staatswissenschaft*, 1994: pp. 42–44.

61 Jan Oliver Schwarz, Camelia Ram and René Rohrbeck, "Combining Scenario Planning and Business Wargaming to Better Anticipate Future Competitive Dynamics," *Futures* 105 (2019): p. 134.

62 Peter Perla, "Wargaming and the Cycle of Research and Learning," *Scandinavian Journal of Military Studies* 5, no. 1 (2022): p. 203.

63 Paul Schuurman, "A Game of Contexts: Prussian-German Professional Wargames and the Leadership Concept of Mission Tactics 1870–1880," War in History 28, no. 3 (July 2021): pp. 504–24.

64 Lin-Greenberg, Pauly, and Schneider, "Wargaming for International Relations Research," pp. 8–9; McGrady, "Getting the Story Right about Wargaming."

65 NATO Strategic Warfare Development Command, "Allied Command Transformation Engages in Audacious Wargaming Activities to Refine the Alliance's Military Instrument of Power," 13 April 2023, accessed 1 February 2024, https://web.archive.org/web/20240201144327/https://www.act.nato.int/article/allied-command-transformation-engages-in-audacious-wargaming-activities-to-refine-the-alliances-military-instrument-of-power/.

66 Hoover Institution, "International Crisis Wargame Series," Wargaming and Crisis Simulation Initiative, accessed 1 February 2024, https://web.archive.org/web/20240201144409/https://www.hoover.org/international-crisis-wargame.

67 Jacquelyn Schneider, "The Biggest Cyber Risk in Ukraine?," *Foreign Affairs*, 7 March 2022, accessed 1 February 2024, https://web.archive.org/web/20240201144529/https://www.foreignaffairs.com/ukraine/biggest-cyber-risk-ukraine.

68 Hoover Institution, "International Crisis Wargame Series," Hoover Institution, accessed October 17, 2023, https://www.hoover.org/international-crisis-wargame.

69 Amanda M. Rosen, "Simulations and Games to Teach Conflict and Political Violence," in *Oxford Research Encyclopedia of International Studies*, Oxford: Oxford University Press, 2022.

70 Carsten F. Roennfeldt, Daniel E. Helgesen and Bjørn Anders Hoffstad Reutz, "Developing Strategic Mindsets with Matrix Games," *Scandinavian Journal of Military Studies* 5, no. 1 (2022).

71 Rex Brynen, "War in Binni: another McGill megagame," *PaxSims*, 3 January 2017, accessed 1 February 2024, https://web.archive.org/web/20240201144742/https://paxsims.wordpress.com/2017/01/03/war-in-binni-another-mcgill-megagame/.

72 An Ansoms, Klara Claessens, Okke Bogaerts and Sara Geenen, "LAND RUSH: Simulating Negotiations Over Land Rights - A Ready-to-Use Simulation," *Simulation & Gaming* 46, no. 6 (2015): pp. 742–62.

73 Green Economy in the South, "'Land Rush' – Just a Game?," 10 July 2014, accessed 1 February 2024, https://web.archive.org/web/20240201144822/https://greeneconomyinthesouth.wordpress.com/2014/07/10/land-rush-just-a-game/.

74 Rosen, "Simulations and Games to Teach Conflict and Political Violence," p. 2.

75 Becca Wasser, Martijn Rasser and Hannah Kelley, "When the Chips Are Down: Gaming the Global Semiconductor Competition," Center for a New American Security, 27 January 2022, accessed 1 February 2024, https://web.archive.org/web/20240201145125/https://www.cnas.org/publications/reports/when-the-chips-are-down.

76 Center for Systems Solutions, "Food Alert," last accessed 21 March 2024, https://web.archive.org/web/20240321100320/https://foodalert.socialsimulations.org/.

77 Agniezska de Sousa, "Europe Is Wargaming a Food Crisis," *Bloomberg*, 6 March 2024, last accessed 21 March 2024, https://web.archive.org/web/20240321102134/https://www.bloomberg.com/news/features/2024-03-06/eu-governments-prepare-for-possibility-of-food-crisis.

78 NATO, "NATO Wargaming Handbook"; UK Ministry of Defence: Development, Concepts and Doctrine Centre, "Wargaming Handbook," August 2017.

79 OECD, "Democratic Republic of Congo - Aid at a Glance," 2023, last accessed 1 February 2024, https://web.archive.org/web/20240202104609/https://www.oecd.org/countries/democraticrepublicofthecongo/.

80 Thill, "In Search of a Winning Formula," p. 4.

81 Norman Blaikie, "Research Question," in *The Sage Encyclopedia of Social Science Research Methods*, eds. Michael Lewis-Beck, Alan E. Bryman, and Tim Futing Liao, Los Angeles: Sage Publications, 2003.

82 NATO, "NATO Wargaming Handbook," p. 19.

83 Acosta and Pettit, "Practice Guide," p. 15.

84 Peer Schouten, "Violence and Fragmentation in Congo's Political Marketplace," *Conflict Research Programme at London School of Economics and Political Science*, March 2021, p. 29, last accessed 21 March 2024, https://web.archive.org/web/20240321094052/https://www.lse.ac.uk/ideas/projects/conflict-research-programme.

85 Andrew W. Reddie, Ruby E. Booth, Bethany L. Goldblum, Kiran Lakkaraju and Jason Reinhardt, "Wargames as Data: Addressing the Wargamer's Trilemma," *arXiv Preprint arXiv:2302.08065*, 2023, p. 3.

86 Ibid., p. 7.

87 Ibid., p. 5.

88 See also Lin-Greenberg, Pauly and Schneider, "Wargaming for International Relations Research," p. 10, on the tension between the "internal validity" of game design and player immersion through "enveloping detail."

89 That said, engaging play and contextual realism are also in some regards complementary, as rich empirical detail may help players immerse themselves in the game. See Reddie et al., "Wargames as Data," p. 10.

90 Ivanka Barzashka, "Ethics Compliance and Wargaming," *PAXsims*, 24 October 2023, accessed 1 February 2024, https://web.archive.org/web/20240201145439/https://paxsims.wordpress.com/2023/10/24/ethics-compliance-and-wargaming/.

91 Séverine Autesserre, "Dangerous Tales: Dominant Narratives on the Congo and Their Unintended Consequences," *African Affairs* 111, no. 443 (2012): pp. 202–22.

92 Christoph N. Vogel, *Conflict Minerals, Inc: War, Profit and White Saviourism in Eastern Congo*, London: Hurst & Company, 2022.

93 Fridheim, "Wargaming Dos and Don'ts–Eight Lessons for Planning and Conducting Wargames," p. 229.

94 Stephen L. Dorton, Theresa Fersch, Emily Barrett, Andrew Langone, Mark Seip, Shane Bilsborough, Curtis B. Hudson, Paul Ward and Kelly J. Neville, "The Value of Wargames and Tabletop Exercises as Naturalistic Tools," 2023: p. 2, accessed 1 February 2024, https://bit.ly/3SqfqOe.

95 Page, "Modeling and Simulation, Experimentation, and Wargaming-Assessing a Common Landscape," p. 4.

96 In traditional wargaming, such exercises are run with a red team attacking something which is defended by the blue team, see Robin Mejia, "Red Team, Blue Team: How to run an effective simulation," Networkworld, 2008, accessed 19 March 2024, https://web.archive.org/web/20240319134409/https://www.networkworld.com/article/804444/lan-wan-red-team-blue-team-how-to-run-an-effective-simulation.html.

97 David B. Fox, Catherine D. McCollum, Eric I. Arnoth and Darrell J. Mak, "Cyber Wargaming: Framework for Enhancing Cyber Wargaming with Realistic Business Context," The MITRE Corporation, 2018, p. 5, accessed 1 February 2024, https://web.archive.org/web/20240201151139/https://apps.dtic.mil/sti/citations/AD1108071.

98 Luiz Cláudio S. Duarte and Thiago Schaedler Uhlmann, "The Role of Wargames in the Development of Game Design," XVI Brazilian Symposium on Computer Games and Digital Entertainment, 2017, p. 137, accessed 1 February 2024, https://web.archive.org/web/20240201151439/https://www.sbgames.org/sbgames2017/papers/ArtesDesignFull/175106.pdf.

99 Natural Resources Canada, "Topographic & Baseline Thematic Mapping," 4 February 2008, accessed 1 February 2024, http://bit.ly/3SqrNK2.

100 Engberg-Pedersen, "Maps and Wargames as Emotional Technologies," p. 64.

101 Anders Engberg-Pedersen, "Maps and Wargames as Emotional Technologies," in *Visualizing War: Emotions, Technologies, Communities*, eds. Anders Engberg-Pedersen and Kathrin Maurer, New York: Routledge, 2018, p. 64.

102 Peter Nesbit et al., "Understanding Optimal Decision-Making in Wargaming," 2013, p. 3, accessed 1 February 2024, https://web.archive.org/web/20240201151833/https://vtechworks.lib.vt.edu/items/5c4f7106-862d-4cce-9057-cc367bfab7a5.

103 Eric M. Murphy, "Wargames & the Scientific Methods," Air War College, 2017, p. 8, accessed 1 February 2024, https://web.archive.org/web/20240201151924/https://apps.dtic.mil/sti/citations/AD1038115.

104 UK Ministry of Defence, "Wargaming Handbook," p. 24.

105 Lin-Greenberg, Pauly and Schneider, "Wargaming for International Relations Research," p. 20.

106 NATO, "NATO Wargaming Handbook," p. 10.

107 For example, wargames have employed gunfire tables with a combination of deterministic and stochastic calculations to determine the outcome of a gun strike during a game. See Charles Turnista, "Adjudication in Wargaming for Discovery," Cybersecurity & Information Systems Information Analysis Center, 2016, accessed 19 February 2024, https://web.archive.org/web/20240219152252/https://csiac.org/articles/adjudication-in-wargaming-for-discovery/3/.

108 Rex Brynen, "2.10 From POL-MIL Gaming to Dungeons & Dragons," Connections US Wargaming Conference 2018, National Defense University, 2018, p. 25, accessed 1 February 2024, https://bit.ly/4bno0G4.

109 Andrew W. Reddie, Bethany L. Goldblum, Jason Reinhardt, Kiran Lakkaraju, Laura Epifanovskaya, Michael Nacht, "Applying Wargames to Real-World Policies—Response," *Science 363*, no. 6434 (March 29, 2019): pp. 1406–7.

110 Yuna Huh Wong, Sebastian Joon Bae, Elizabeth M. Bartels and Benjamin Michael Smith, "Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action," RAND, 2019, p. 14.

111 111 Rex Brynen, "Gaming 'Fog and Friction': How Simulations Enhance Student Understanding of Complex Policy Processes in Political Science," in *Simulations and Student Learning*, eds. Matthew Schnurr and Anna MacLeod Toronto: University of Toronto Press, 2021, p. 38.

112 Peter P. Perla and Raymond T. Barrett, "*An Introduction to Wargaming and Its Uses*," Center for Naval Analyses, 1985, p. 9, accessed 1 February 2024, https://web.archive.org/web/20240201152458/https://apps.dtic.mil/sti/citations/ADB098178.

113 Lin-Greenberg, Pauly and Schneider, "Wargaming for International Relations Research," p. 25.

114 Kainikara, "Effective Wargaming," p. 9; Tomas By, "Formalizing Game-Play," *Simulation & Gaming* 43, no. 2 (2012): p. 160; Paul Vebber, "Wargaming – Does 'Better' Mean More Art, or More Science?" *Wargaming Connection*, 21 May 2015, accessed 1 February 2024, https://web.archive.org/web/20240201152624/https://wargamingcommunity.wordpress.com/2015/05/21/wargaming-does-better-mean-more-art-or-more-science/.

115 Matthew E. Hanson, "Improving Operational Wargaming: Its All Fun and Games until Someone Loses a War," Army Command and General Staff College, 2016, p. 18, accessed 1 February 2024, https://web.archive.org/web/20240201152928/https://apps.dtic.mil/sti/citations/tr/AD1021990.

116 Ibid., p. 21.

117 Fridheim, "Wargaming Dos and Don'ts–Eight Lessons for Planning and Conducting Wargames," p. 224.

118 Tom Mouat, "Matrix Games," *Mapsymbs*, accessed 1 February 2024, https://web.archive.org/web/20240201153110/http://www.mapsymbs.com/wdmatrix.html.

119 Matthew Kirschenbaum, "Kriegsspiel as Tool for Thought," Digital Humanities Conference Abstracts, 2010, pp. 47–8.

120 NATO, "NATO Wargaming Handbook," p. 12.

121 Fridheim, "Wargaming Dos and Don'ts–Eight Lessons for Planning and Conducting Wargames," p. 224.

122 UK Ministry of Defence: Development, Concepts and Doctrine Centre, "Wargaming Handbook," p. 87.

123 Jan Hodický et al., "Computer Assisted Wargame for Military Capability-Based Planning," *Entropy* 22, no. 8 (2020): p. 5.

124 Per-Idar Evensen et al., "Wargaming Evolved: Methodology and Best Practices for Simulation-Supported Wargaming," The Interservice/Industry Training, Simulation & Education Conference, 2019, p. 5.

Acknowledgements

We would like to thank everyone who helped shape the project on which this publication is based throughout the past year and a half. The project significantly benefitted from our many conversations with experts on stabilization policy, gaming and the Democratic Republic of the Congo (DRC). At the German Federal Foreign Office, we are particularly thankful for the close collaboration with Sophia Armanski, Markus Bollmohr, Janna Chalmovsky, and Lieneh Modalal, whose engagement and openness to innovative approaches was instrumental for the entire effort. The landscape of serious games is both intriguing and complex, and we appreciate the valuable exchanges we have had with Sarah Pagung, Becca Wasser and Andrew Reddie, whose inputs helped us better understand different traditions and available options. We would like to thank Elizabeth Newbury especially for her insights and comments on a draft of this handbook. The intricate conflict dynamics in eastern DRC continue to pose significant conceptual and empirical challenges to observers. We have gained valuable insights through conversations with many experts on the DRC including Thierry Vircoulon, Koen Vlassenroot, Stephanie Wolters, Jason Stearns, and Christoph Vogel, who generously shared their time and expertise with us. We are particularly thankful for the contributions of Judith Verweijen, with whom we discussed our project and the DRC's conflict environment already at an early stage and who later joined us in-person for the final game workshop.

Our project was accompanied by a practitioner group composed of experts from government and international organizations, implementing agencies and policy research working on political economy questions, DRC and/or stabilization and peacebuilding more broadly. We are grateful to this group that continuously participated in our workshops and dedicated considerable time and effort to playing our game across multiple sessions. Their active involvement and constructive feedback throughout this process have been instrumental in shaping and improving our game design and deriving insights on the applications of games from a practitioner perspective.

Prior to the implementation of any workshops, it was necessary to test our game thoroughly. We extend our sincere appreciation to our GPPi colleagues who enthusiastically participated in our playtesting sessions. We would also like to thank our GPPi colleagues Melissa Li, Fennet Habte and Julian Lehmann for providing valuable feedback on earlier drafts of the guide. Jeffrey Love helped lay important conceptual and empirical groundwork for this project during his internship at GPPi in the summer of 2022. Finally, we would like to thank Sonya Sugrobova, Marc Shkurovich and Katharina Nachbar for their excellent editorial work and their creative inputs for the project materials and this guide.

This publication is funded by the German Federal Foreign Office as part of the project "Stabilization Lab: Improving Key Instruments for Crisis Prevention, Conflict Resolution and Peacebuilding." The views expressed herein solely reflect those of the authors and do not present the official position of the German government.

Reflect. Advise. Engage.

The Global Public Policy Institute (GPPi) is an independent non-profit think tank based in Berlin. Our mission is to improve global governance through research, policy advice and debate.

Reinhardtstr. 7, 10117 Berlin, Germany
Phone +49 30 275 959 75-0
gppi@gppi.net
gppi.net