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Polycrisis: Factors, impacts, and responses in the housing market

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ABSTRACT

The phenomenon of polycrisis poses a significant and pressing challenge to the global community in the present era. The issues show diverse origins, consequences, and remedies, yet possess the capacity to profoundly disrupt the lives of countless individuals globally. The objectives of this study are to identify the factors, impact, and responses related to the occurrence of polycrisis in the housing market globally, with the goal to increase awareness among housing market regulators and participants who have been directly impacted by polycrisis and to ensure preparedness for future crises. A qualitative research method was employed in this study, where a desktop study was conducted to fulfil the research objectives. The qualitative data was then subjected to a thematic analysis. To address polycrisis effectively, a thorough strategy is necessary, considering historical occurrences, present conditions, and future potentialities. Therefore, this paper holds significant value for governments, businesses, and individuals looking to reduce their environmental footprint and effectively handle the consequences of economic, political, and social upheavals. The study is in line with both local and global goals, including the Sustainable Development Goals (SDG) 8, 11, and 13.

1. Introduction

Various health crises, economic crises, armed conflicts, warfare, and climate change have inflicted harm upon human lives, residences, infrastructure, ecosystems, and economies. These crises result in joblessness, restricted availability of healthcare and education, heightened poverty levels, displacement, psychological distress, and long-lasting economic consequences. That phenomenon is known as polycrisis or metacrisis, which denotes a formidable and all-encompassing challenge currently faced by the world.

This crisis comprises a multitude of issues and obstacles that require attention. The phenomenon under consideration involves a variety of interconnected crises that worsen each other within the global ecosystem [1–4]. Regardless of their varied origins, impacts, and solutions, these crises all have the capacity to cause widespread devastation to the lives of millions of individuals globally [1–4].

The prevailing forms of polycrisis in contemporary times encompass environmental, economic, political, social, technological, and health crises [1,3–5]. Climate change, air pollution, and water scarcity are all part of the environmental crisis. Economic crises involve the occurrence

of financial crises, recessions, and stock market crashes. Social upheaval, lack of governmental stability, and armed conflict are among the phenomena associated with political crises. Instances of social crises include poverty, inequality, and crime. One example of a technological crisis is cyber-attacks. Health crises encompass pandemics, communicable diseases, and occurrences of drug overdose.

Polycrises are complex and often interrelated. Environmental crises often have the potential to trigger economic, political, or social crises [1, 3,4,6,7]. Water scarcity resulting from climate change can give rise to food shortages, political instability, and poverty. Likewise, an economic crisis has the potential to trigger a political or social crisis. For instance, an economic downturn can result in social unrest and destitution.

The impacts of polycrisis can have extensive and enduring consequences [1,8]. Polycrisis can lead to humanitarian catastrophes, such as the mass displacement of millions of individuals, in addition to economic and political instability. In addition, they can contribute to environmental degradation, such as the devastation of habitats or the decline of biodiversity [9].

Addressing polycrisis necessitates international collaboration and proactive measures. Collaboration between governments, businesses, and individuals is imperative to minimise their environmental footprint

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List of abbreviations	
IMF	International Monetary Fund
SDGs	Sustainable Development Goals
SEC	Securities and Exchange Commission
UNDP	United Nations Development Programme's
WEF	World Economic Forum

and address the consequences of economic, political, and social turmoil [2,10,11]. Governments can bolster the economy and assist businesses by allocating funds towards renewable energy sources, thereby implementing economic stimulus packages. Enterprises could diminish their carbon footprints and allocate resources towards research and development of technologies aimed at mitigating climate change. People can endorse environmental initiatives and champion social justice.

Hence, the problem of polycrisis demands urgent attention due to the interdependence of existing and emerging risks. The Global Risks Report 2023 by the World Economic Forum (WEF) highlights three possible factors that could lead to a polycrisis: the crisis related to the cost of living, inadequate efforts to address the climate crisis, and the strain on limited resources [12]. A polycrisis has the potential to result in catastrophic outcomes, such as armed conflict.

The phenomenon of polycrisis is becoming more prevalent in the contemporary world. These are instances where multiple intricate and interrelated crises intersect, posing challenges in identifying an efficient response [3–5]. Polycrisis includes various categories such as economic, social, environmental, and political crises. Every variant of polycrisis presents distinct difficulties and differing degrees of intricacy.

Polycrisis is occurring more frequently in the current global environment, and its impacts are growing in significance. The world is currently grappling with an unparalleled level of intricacy and interconnectedness, ranging from the global pandemic to climate change. The emergence of new forms of polycrisis, such as the migration crisis, has resulted in widespread suffering and disruption globally [1].

The notion of a 'polycrisis' was deliberated upon at the 2023 WEF in Davos. A 'polycrisis' denotes a collection of interconnected global risks that have cumulative effects, resulting in a total impact that surpasses the individual contributions of each risk. The Global Risks Report 2023 by the WEF identifies various global risks and emphasises the need for proactive measures to equip the world in dealing with future disruptions [12]. The report highlights the cost-of-living crisis as the most pressing immediate concern, whereas the failure to address the climate crisis is identified as the most significant risk in a decade [12].

The International Monetary Fund (IMF) and the World Bank Group have been urged to intensify their efforts in tackling the numerous crises confronting their member nations [13]. These crises encompass the consequences of climate change and significant inflation. There have been proposals to restructure the global development finance system to mitigate the severe impacts of these crises on low- and middle-income countries (LMICs) [13].

The United Nations Development Programme's (UNDP) Regional Bureau for Asia and the Pacific has published a recent academic report titled "Polycrisis and Long-term Thinking." This report examines the concept of polycrisis and emphasises the importance of adopting a long-term perspective [14]. The report was published in 2023 by the UNDP. The report highlights that the accelerated process of globalisation since the mid-20th century has resulted in a multitude of emerging risks. Furthermore, it emphasises the significance of implementing governance and risk analysis measures that specifically target the underlying connections among various existential crises, with the aim of averting a worldwide polycrisis [14].

Managing a polycrisis is a challenging task, and it is unlikely that a single solution will be sufficient to address it effectively [15,16]. An

all-encompassing and integrated approach is required to tackle the root causes and effectively handle the consequences [3,15]. Furthermore, it requires collaboration among diverse entities, such as governmental bodies, non-governmental organisations, and businesses.

To proficiently handle a complex and interconnected series of crises, it is crucial to comprehend the fundamental reasons behind them and formulate tactics to effectively tackle them [3,5,9,10]. This takes a tight cooperation among various stakeholders to pinpoint the underlying factors and devise all-encompassing remedies that tackle the intricacy of the situation. It is crucial to ensure that all individuals involved in a polycrisis understand the consequences and are ready to act [10,15–17]. It demands educational and awareness initiatives that specifically target the significance of cooperation and collaboration in tackling intricate challenges.

An examination of polycrisis in the real estate market provides valuable insights into the impacts of economic and social forces on the housing market [3,15,16,18]. Polycrisis in the real estate market may refer to periods characterised by swift and unpredictable fluctuations in the housing market, which can have substantial ramifications for the overall housing market. Through the examination of these complex crises, economists can acquire a more comprehensive comprehension of the fundamental elements that contribute to the fluctuations in housing prices, as well as the potential ramifications of such occurrences.

Furthermore, examining these polycrisis can enhance the comprehension of real estate experts regarding the hazards and prospects linked to investing in the housing sector, and enable them to formulate tactics [10] to effectively manoeuvre through an unstable housing market. Studying polycrisis can offer valuable understanding of the operations of the real estate market, benefiting both investors and prospective homebuyers.

With the ongoing economic recovery, it is anticipated that the housing market will sustain its growth in the forthcoming years. The pandemic has had a significant impact on the residential housing market. Rental prices have declined, rental demand has decreased, and tenant rights have been modified. Landlords have had to adapt to the current economic environment.

It is crucial to analyse the collaboration between governments, businesses, and individuals to tackle polycrisis and minimise its impact. To accomplish this, it is imperative to conduct a thorough examination of worldwide collaboration and initiatives, as documented and emphasised by multiple sources such as WEF [12], IMF [13], and UNDP [14]. This study is also in line with three Sustainable Development Goals (SDGs): SDG 8, which focuses on promoting decent work and economic growth; SDG 11, which aims to create sustainable cities and communities; and SDG 13, which addresses climate action.

The study's novelty lies in its examination of different categories of polycrisis, such as economic, social, environmental, and political crises, and the complexities involved in each variant's impact on the housing market. The study also underscores the increasing importance of the impacts of polycrisis in the present global context, highlighting the unparalleled complexity and interdependence spanning from the global pandemic to climate change. An innovative aspect of this study is its emphasis on fostering collaboration among a wide range of entities, including governmental bodies, non-governmental organisations, and businesses. By considering the wide-ranging effects of economic and social forces on the market, this analysis offers valuable insights into the factors that contribute to the polycrisis, as well as the strategies employed by housing stakeholders - regulators and participants - to mitigate these impacts. The strong emphasis on collaboration as a primary strategy for addressing complex and interconnected crises represents an innovative approach. Its contribution focuses on advocating for an integrated approach that recognizes the underlying connections among different crises.

This study has four research questions.

RQ 1. What are the contributing factors of the polycrisis

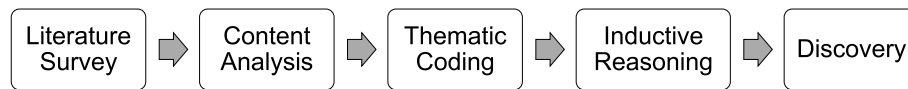


Fig. 1. Literature review flowchart.

RQ 2. What are the impacts of polycrisis on the housing market housing market regulators and participants?

RQ 3. How polycrisis has been mitigated in the past and present by the housing market regulators and participants?

RQ 4. What actions should be taken to decrease the impacts of future polycrisis on the housing market regulators and participants?

Three research objectives were formulated based on the research questions.

Objective 1. To determine contributing factors of the polycrisis?

Objective 2. To examine the impacts of polycrisis on the housing market housing market regulators and participants.

Objective 3. To determine the responses in mitigating the impacts of housing market for future polycrisis.

The focus of this study is to provide an overview of the polycrisis, encompassing its factors, impact, and responses in the housing market. In this study, there are no specific geographical limitations, but the focus is on the overall housing market.

The following section will commence by outlining the study methods that were utilized. The next part will outline important terms that are crucial for this research, such as stakeholders, the housing market, and polycrisis. The subsequent part will discuss the evolution of polycrisis, examining its past, present, and future iterations. Following the previous segment, the next part of the presentation will focus on the discussion of the study findings. The findings will explore the factors that contribute to polycrisis, its impacts, and how the market responds to it.

2. Methods

The study has employed a literature review, incorporating methods such as literature survey, content analysis, thematic coding, inductive reasoning, and discovery (see Fig. 1). These methods have previously been employed by researchers in the specific area of study, particularly in the real estate and housing market, namely Maalouf et al. [19], Jagun et al. [20], Jagun et al. [21], and Sassanelli et al. [22]. The description of the process can be found in Fig. 1.

Based on Fig. 1, this study began by identifying and collecting relevant literature using specific keywords. The search was performed using the following keywords: "polycrisis, AND factors, AND impacts, AND responses, AND housing AND market, AND stakeholders, AND regulators, AND participants, AND players." Through meticulous analysis, a grand total of more than two hundred articles were discovered that were directly pertinent to this study.

This involved searching databases, academic journals, books, and other credible sources to gather a comprehensive collection of literature related to the study topic. The collected literature was then analysed to extract relevant information. This consist of reading and reviewing the content of each source to identify key concepts, theories, methodologies, and findings that were pertinent to the research question.

After analysing the content, this study identified and coded themes present in the literature. Themes were recurring patterns or topics that emerged from the analysis. This process involved categorizing and organizing the information into meaningful themes that captured the main ideas and concepts within the literature.

Inductive reasoning involved the identification of patterns and themes in the literature, leading to the development of a conceptual framework and generalization. This step was essential in generating new

ideas and theories that could inform future studies, policy decisions, and market trends. Consequently, it enabled the formulation of conclusions and the generation of insights based on the coded themes.

From the processes, this study answered research questions and fulfilled research objectives.

Table 1

Market regulator and market participants in the housing market.

Category	Stakeholders	References
Market regulators	1) Federal, State, Regional, and Local Government & Agencies	[23,24]
	2) Environmental Consultants	[10,25,26]
	3) Insurance Companies	[27–31]
	4) Financial Institutions	[2,16,32]
Market Participants	1) Real Estate Developers	[21,33–35]
	2) Landowners	[36–42]
	3) Architects	[43–45]
	4) Engineers	[46–48]
	5) Surveyors	[49–53]
	6) Real Estate Agents	[52,54]
	7) General Contractors	[21,55–58]
	8) Subcontractors	[21,55–58]
	9) Suppliers	[51,59,60]
	10) Property Managers	[61–63]
	11) Property Owner	[62–66]
	12) Tenants	[51,67–69]
	13) Investors	[21,53, 70–72]
	14) Legal firms	[73–76]

Table 2

Types of crisis.

Category	Crises	Example	References
Political crisis	Political conflict, often between two or more countries or regions.	Civil wars Coups Secessionist movements	[23,84,85]
Economic crisis	These are periods of economic distress, often caused by a combination of factors.	Recessions Financial crisis Deflation	Tenants [3, 18,23] Tenants
Environmental crisis	These are events that cause large-scale damage to the environment, often due to human activities.	Oil spills Hazardous waste dumping Deforestation	[10,83,85, 86]
Social crisis	These are situations that cause disruption to the social fabric.	Ethnic or religious conflicts Civil unrest Pandemics	[10,80,85]
Cultural crisis	These are events that affect the culture of a community or society, often due to a clash of values or beliefs.	Identity politics Xenophobia Erosion of traditional customs	[83,87,88]
Health Crisis	A health crisis is a sudden outbreak of a disease, natural disaster, or other factors that can lead to significant health problems.	Pandemic Endemic Epidemic	[89–91]

Table 3
Contributing factors to polycrisis.

Category	Contributing Factors	Lead to:	References
Economic Factors	Globalization and increasing economic inequality/economic insecurity and volatility	Financial market crashes Currency devaluations Debt defaults	[2,9,85,92]
Political Factors	Populist movements	Civil unrest Economic and financial crisis Other types of political crisis	[2,5,9,85,92]
Social Factors	Social divisions, such as those between different ethnicities, religions, or socio-economic classes.	Social unrest Exacerbate existing economic.	[10,85,92,93,94]
Environmental Factors	Climate change	Political crises Severe weather events Natural disasters Other environmental disasters worsen existing economic and political crises	[9,10,16,89]
Technological Factors	Rise of new technologies, such as artificial intelligence, which can lead to rapid technological change.	Economic disruption Social, political, and environmental crises	[83]

3. Introduction to polycrisis, housing market and its stakeholders

3.1. Polycrisis

Polycrisis refers to the occurrence when an organisation or individual is confronted with numerous challenges or crises at the same time [3–5]. This can be caused by numerous factors, including economic recessions, political instability, natural calamities, and the impacts of globalisation. Polycrisis can have severe repercussions, such as a deterioration in economic output, a rise in unemployment rates, and the emergence of social turmoil.

3.2. Housing market

The housing market is a segment of the economy that is particularly susceptible to the impacts of a polycrisis. During periods of economic recession, such as the one we are experiencing now, the housing market tends to be negatively impacted because of decreased demand. Consequently, individuals face challenges in securing mortgages or locating potential buyers for their properties. Furthermore, political turmoil and catastrophic events can exert an adverse influence on the housing market, impeding individuals from obtaining or affording housing. To alleviate the impacts of a polycrisis on the housing market, governments can adopt strategies such as offering monetary assistance to both businesses and individuals, as well as making substantial investments in infrastructure and services.

3.3. Stakeholders in the housing market

The housing market stakeholders can be divided into two main parties: market regulators and market participants. Market regulators

are responsible for overseeing and enforcing regulations, while market participants are the individuals and organisations involved in buying, selling, and investing in housing.

This study defines, a market regulator is an autonomous entity or governmental organisation tasked with overseeing financial markets and safeguarding the interests of investors. Market regulators have the primary responsibility of overseeing and enforcing the rules and regulations established by a governing body, such as the Securities and Exchange Commission (SEC). In addition, they supervise the actions of brokers, dealers, and other participants in the financial market to guarantee their adherence to the established rules and regulations. Furthermore, market regulators possess the authority to scrutinize and legally pursue infringements of the established guidelines and regulations, and to levy penalties and other punitive measures as required.

In this study, a market participant refers to an individual or entity that engages in any activity or transaction associated with the purchase and sale of goods and services within a specific market. Market participants encompass a variety of entities such as consumers, producers, wholesalers, retailers, government agencies, financial institutions, and market intermediaries.

The list of stakeholders in the housing market is as per Table 1.

4. Polycrisis: a historical, present and future perspectives

The term "polycrisis" denotes the concurrent occurrence of multiple crises on a global scale [3,4]. The concept of polycrisis has existed for centuries, with ancient times supplying some of the earliest documented instances. Today, the term is now employed to characterise the unparalleled multitude of global challenges that nations and individuals are confronting.

In the past, polycrisis has arisen due to factors such as warfare, famine, economic downturns, natural calamities, and various other

Table 4
The impacts of Polycrisis on real estate markets based on geographical regions.

Region	Impacts	Percentage Change	References
United states	Homes sales declined	−17.8 %	[106]
	Rental rates decreased	−1.4 %	[66]
	San Francisco rental rates dropped	−9.2 %	[63]
United Kingdom	Property sales dropped during the first lockdown period	−50 %	[108]
	House prices fell in May 2020, the largest monthly decline since 2009	−1.7 %	[108]
Australia	Rental rates fell in the second quarter of 2020, the sharpest decline in over two decades	−1.3 %	[67]
	Property prices declined between April and September 2020	−1.8 %	[67]
Germany	Property prices increased despite the pandemic	N/A	[96,97]
South Korea	Property prices increased despite the pandemic	N/A	[96,97]
China	In Wuhan, housing prices decreased in the first quarter of 2020	−2.5 %	[102]
	Rental rates in major cities fell in the first half of 2020	−6%	[100]
Canada	Home sales fell in March 2020 compared to the previous years	−14.3 %	[109]
	Rental rates in Toronto decreased in the second quarter of 2020	−5%	[109]

Table 5

The impact of polycrisis on the housing market regulators.

Stakeholders	Impacts	References
Governments	<ul style="list-style-type: none"> Increased government spending on disaster relief, emergency response, and reconstruction efforts Increased stress on government resources due to large-scale relief efforts Increased strain on the global economy due to disruption of supply chains and decreased trade 	[90, 110–114]
Environmental Consultants	<ul style="list-style-type: none"> Increased request to assess the damage caused by a natural disaster and provide solutions. Potential increase in costs for environmental consultants due to increased demand for their services. Worker's wellbeing 	[115,116]
Insurance Companies	<ul style="list-style-type: none"> Insurance companies must pay more claims in the event of a natural disaster. Potential losses for insurance companies due to increased claims and higher premiums 	[27,117,118]
Financial Institutions	<ul style="list-style-type: none"> Financial institutions may suffer losses due to decreased demand for credit or increased defaults on loans. Increased risk for financial institutions, as they may be unable to recoup losses due to decreased demand for credit or increased defaults on loans. Increase in costs for businesses. 	[2,16,119]

global concerns. During the Roman Empire, a combination of factors including civil wars, invasions, and economic decline contributed to its ultimate downfall [77,78]. The Spanish conquest of the New World in the 16th century led to a series of interconnected crises, including the enslavement of Indigenous populations, the transmission of diseases, and the devastation of the environment [79].

Currently, the world is still experiencing a widespread polycrisis, as showed by the works of Lawrence et al. [3], Kinski [5], Henig & Knight [4], and Homer-Dixon et al. [80]. Humanity is currently confronted with several urgent challenges, including the climate crisis, economic inequality, pandemics, and escalating geopolitical tensions. These global issues are interrelated, implying that addressing one crisis will

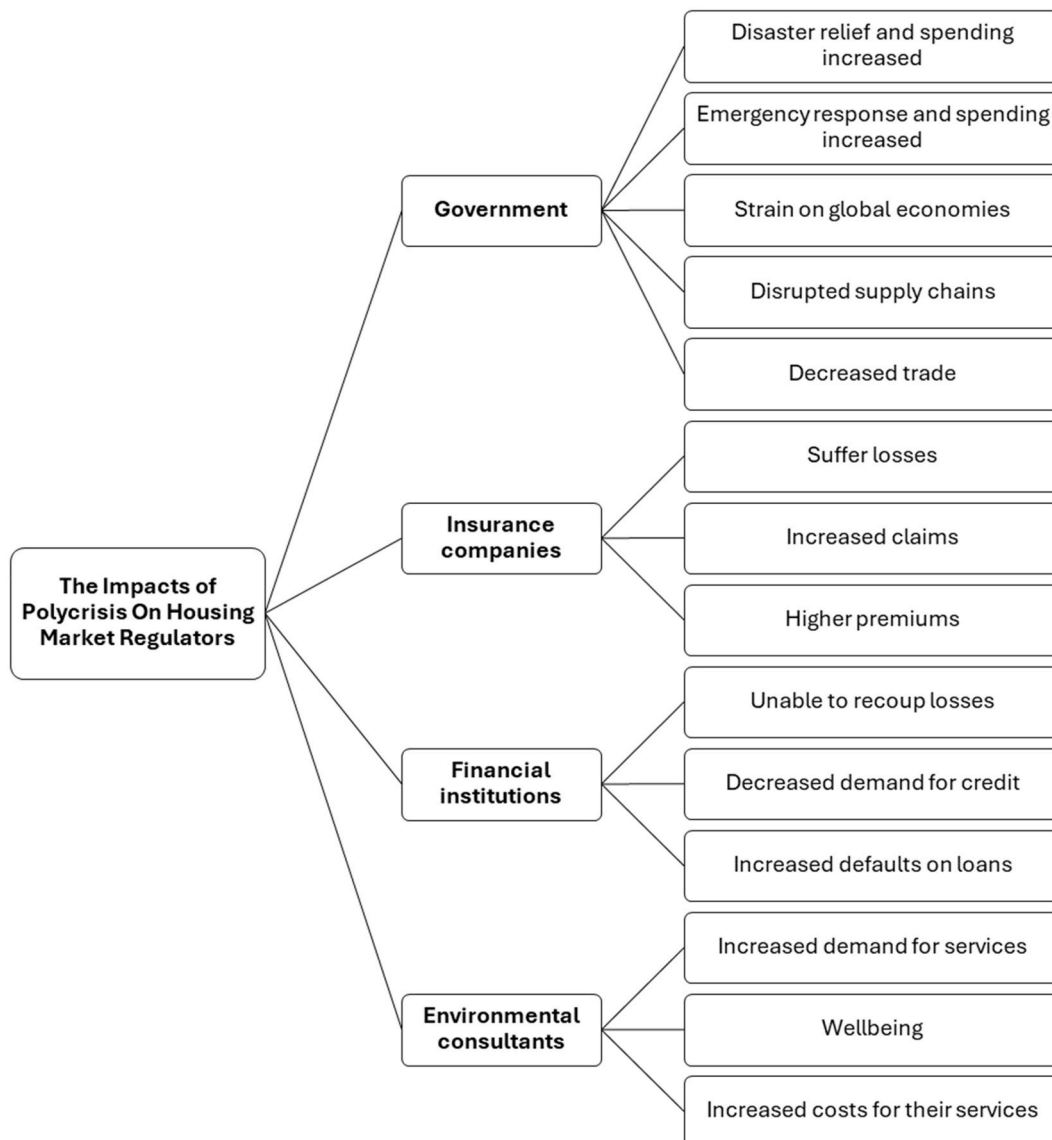
**Fig. 2.** Conceptual framework of the impacts of the polycrisis on housing market regulators.

Table 6
The impact of polycrisis on housing Market Participants.

Stakeholders	Impacts	References
Real Estate Developers	<ul style="list-style-type: none"> •Decreased profits •Project delays •Risk of insolvency 	[125–127]
Landowners	<ul style="list-style-type: none"> •Increased financial risk •Reduced property values •Difficulty obtaining financing for projects. 	[128,129]
Architects	<ul style="list-style-type: none"> •Reduced demand for their services •Longer project timelines •Fewer opportunities for new work 	[130–132]
Engineers	<ul style="list-style-type: none"> •Reduced demand for their services •Longer project timelines •Fewer opportunities for new work 	[133–136]
Surveyors	<ul style="list-style-type: none"> •Reduced demand for their services •Longer project timelines •Fewer opportunities for new work 	[51,137]
Real Estate Agents	<ul style="list-style-type: none"> •Reduced demand for their services •Fewer transactions •Fewer investment opportunities 	[72,138–140]
General Contractors	<ul style="list-style-type: none"> •Reduced demand for their services •Longer project timelines •Fewer opportunities for new work 	[57,98,141–143]
Subcontractors	<ul style="list-style-type: none"> •Reduced demand for their services •Longer project timelines •Fewer opportunities for new work 	[57,98,141–143]
Suppliers	<ul style="list-style-type: none"> •Reduced demand for their materials •Delayed payments •Increased default risks 	[56,144–146]
Property Managers	<ul style="list-style-type: none"> •Reduced demand for their services •Fewer tenants •Increased vacancy rates 	Tenants [51,61,62, 147]
Property Owners	<ul style="list-style-type: none"> •Reduced property values •Fewer tenants •Increased vacancy rates 	[108,139,148–150]
Tenants	<ul style="list-style-type: none"> •Reduced housing options •Increased rental costs •Reduced affordability 	[124,151–154]
Investors	<ul style="list-style-type: none"> •Increased financial risk •Reduced returns •Fewer investment opportunities 	[109,155–158]
Legal Firms	<ul style="list-style-type: none"> •Revenue affected •Closure of courts and offices •Delayed or postponed proceedings •Decrease in billable hours •Remote work •Difficulties in maintaining communication and collaboration 	[159–163]

have repercussions on the other. Addressing the climate crisis can mitigate the spread of diseases, while reducing economic inequality can alleviate conflict.

In the coming years, it is expected that polycrisis will become more intricate and polycrisis, as suggested by various sources [1,10,12, 81–83]. Advancements in technology, such as artificial intelligence and robotics, have the potential to worsen economic inequality. Similarly, the rise in global travel can contribute to the dissemination of novel diseases. Therefore, it is imperative for nations and individuals to collaborate to find remedies for these issues prior to them becoming overwhelming. This encompasses activities such as allocating funds towards sustainable energy, ensuring universal healthcare coverage, and enhancing global collaboration.

In general, polycrisis is a long-standing global issue that has persisted for centuries and is expected to persist in the future. Collaboration between nations and individuals is imperative to tackle these challenges and safeguard both humanity and the planet.

Polycrisis is often characterised by intricacy and challenges in its management. It is crucial to determine the nature of the polycrisis and devise a suitable course of action to minimise the crisis's impacts and achieve a positive result. They can appear in diverse contexts, encompassing social and political matters as well as economic and

environmental considerations. Table 2 presents instances of polycrisis.

5. Contributing factors to polycrisis

Polycrisis, also known as multiple crises, are becoming more prevalent in the contemporary world [1]. The reasons for this can be attributed to various factors, which can be broadly classified as shown in Table 3.

To mitigate the likelihood of polycrisis in the future, it is crucial to comprehend the primary causative elements behind such occurrences [16]. The factors have led to substantial disruptions in both microeconomics and macroeconomics, which are clear in the present day. The real estate market, including the housing market, has been significantly affected by polycrisis. Hence, it is imperative to thoroughly analyse the complete scope of these impacts and investigate strategies to overcome them. This will allow us to mitigate the adverse impacts of polycrisis.

6. Polycrisis impact

This subtopic will begin by exploring the broader implications of polycrisis in a general context. It will then examine how this crisis specifically affects the real estate and housing market. Finally, the discussion will assess the complex consequences of the polycrisis on key stakeholders in the housing market, including market regulators and participants.

6.1. The impacts of polycrisis in general

The notion of polycrisis has gained significance in contemporary times owing to the surge in global interconnectedness and the intricacy of the interdependent global economy. The repercussions of a polycrisis can be large, exerting influence on individuals, enterprises, and the broader economy.

Polycrisis typically engenders a condition of ambiguity and volatility. This can have significant detrimental impact on businesses and the economy, as it can result in diminished consumer confidence and decreased investment. Uncertainty among consumers reduces their propensity to make significant purchases, thereby causing a ripple effect on businesses and the overall economy. It can result in heightened levels of stress and anxiety at the individual level [9,16]. Individuals may experience uncertainty about their employment stability, financial solvency, or capacity to meet financial obligations. This can give rise to a variety of mental health disorders, including depression, anxiety, and potentially even suicide.

Furthermore, polycrisis can exert a detrimental impact on the environment [9,10,18]. When multiple natural disasters coincide, they can exert excessive strain on local resources and lead to amplified environmental devastation compared to if they had happened sequentially.

Polycrisis can ultimately result in a social impact, as stated by Hoyer et al. [10]. Political turmoil, economic volatility, and social upheaval can result in a deterioration of social unity and heighten the likelihood of violence and civil disorder.

In general, polycrisis can have extensive consequences for individuals, businesses, and the economy [4,16,18,82,93]. Consequently, it is crucial for governments, businesses, and individuals to implement measures to alleviate the impacts of polycrisis and be ready for next occurrences.

6.2. The impacts of polycrisis on the real estate market

The impacts of the ongoing economic crisis on the real estate market is significant and should not be underestimated [3,16,95–97]. The pandemic has led to a significant decrease in the demand for real estate, as a reduced number of individuals have the financial ability to acquire or lease properties. This has had a significant impact on the industry, resulting in a reduction in prices, sales, and available inventory.

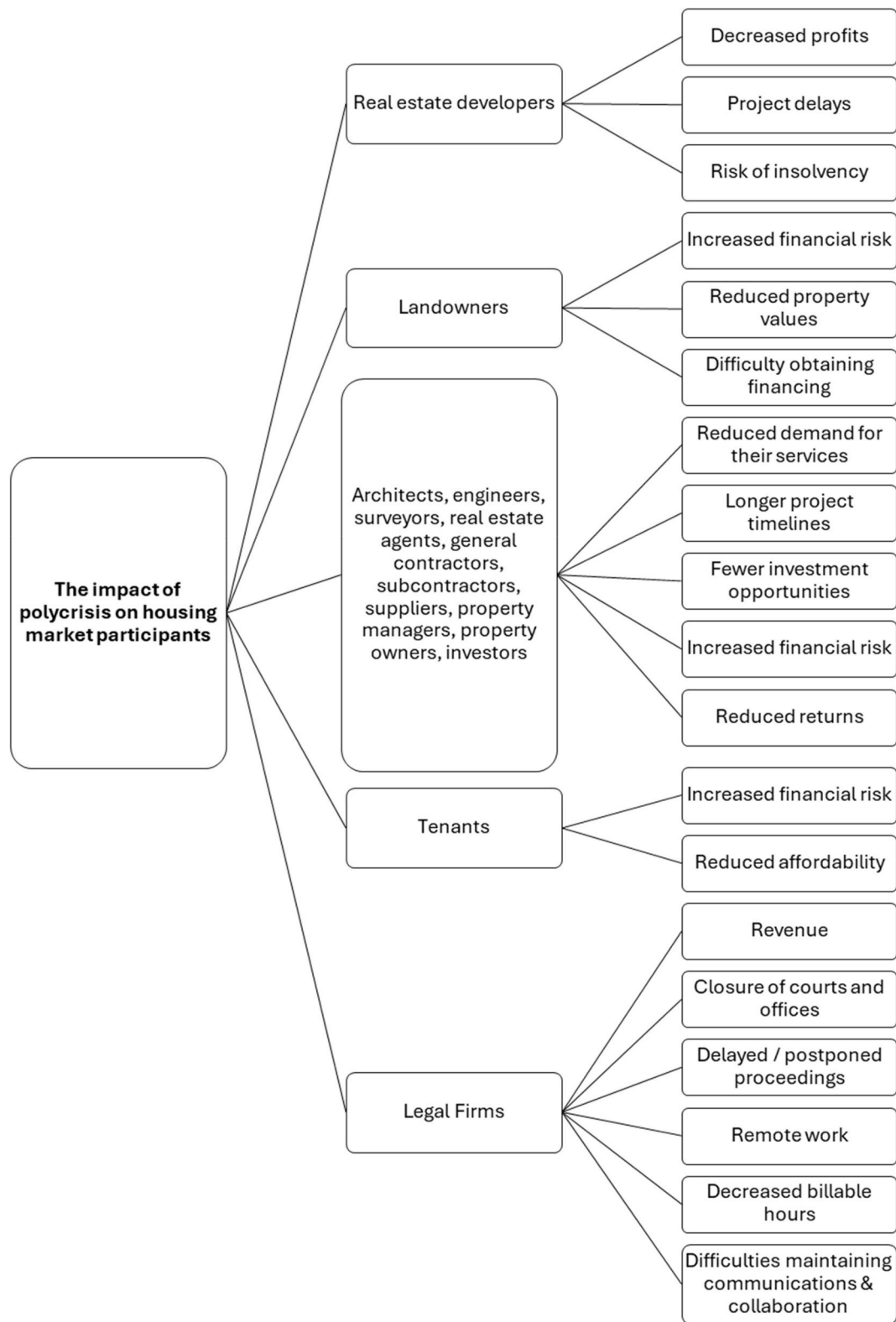


Fig. 3. The impacts of polycrisis on the housing market participants.

Consequently, real estate investors are facing a challenging predicament, unable to generate profits due to the decline in property prices and reduced demand.

The decline in sales has had a direct impact on the real estate market, resulting in a reduction in the volume of new construction projects [35, 71,98,99]. Consequently, there has been a decline in employment

opportunities for construction workers and developers, along with a reduction in the construction of new residential properties. Moreover, the decline in the construction of new residential properties has led to a reduced availability of choices for prospective home purchasers.

The drop in demand for real estate has set back the real estate market. With a decrease in home affordability, there is a corresponding

Table 7
Housing market regulators responses towards polycrisis.

Market Regulators	Responses	References
Government	<ul style="list-style-type: none"> •Tightening regulations. •Increasing oversight of the housing market. •Increasing the number of inspections and appraisals. •Implementing new licensing requirements •Increasing penalties for violations of existing regulations. 	[164–169]
Insurance companies	<ul style="list-style-type: none"> •Increasing the premiums. •Introducing new insurance products •Ensure that the insurance products they offer are sufficient to protects customers. 	[170–172]
Financial institutions	<ul style="list-style-type: none"> •Increasing the due diligence on real estate transactions •Introducing new forms of financing that reflect the risks associated •Ensure that the loan products they offer are sufficient to protect lenders. 	[16, 173–175]
Environmental consultants	<ul style="list-style-type: none"> •Performing more detailed environmental assessments of prospective real estate investments •Developing new strategies to reduce the environmental risks associated with polycrisis. •Work with government regulators to ensure that environmental regulations are sufficient to protect communities from environmental losses 	[176–179]

decrease in demand for rental properties [100–102]. This has resulted in a decline in rental rates, as landlords are unable to sustain the prices, they were previously able to impose before the pandemic.

The prevailing economic crisis has exerted a substantial influence on the real estate market, prompting numerous investors to reassess their strategies [103,104]. While there is a possibility of the market recovering in the future, investors must be mindful of the risks linked to the present economic conditions and adapt their strategies accordingly.

6.3. The impacts of polycrisis on the housing market

The impacts of polycrisis on the housing market can be classified into direct and indirect impact.

An immediate consequence of polycrisis on the housing market is a surge in housing demand. In periods characterised by economic, political, and social instability, individuals are inclined to pursue housing as a means of ensuring stability and protection [105,106]. This can lead to a rise in housing prices because of heightened competition. Moreover, the accessibility of inexpensive housing may diminish as a result of the polycrisis. With the escalation of prices, the task of finding affordable housing becomes progressively more challenging for low-income households. This can result in a rise in homelessness and other housing-related problems. Polycrisis can also exert indirect ramifications on the housing market [107]. For instance, economic instability causing a rise in unemployment can result in a decline in consumer expenditure, subsequently leading to a decrease in demand for housing. In addition, political instability can result in a decline in foreign investment, thereby impeding developers' ability to secure funding for new housing projects [35]. Ultimately, a social crisis can result in a surge in criminal activity, rendering specific regions less appealing to prospective purchasers. This can additionally diminish the demand for housing, leading to a decline in prices. Table 4 highlights the impacts of the pandemic, a part of polycrisis on the real estate market.

Table 4 presents a comprehensive summary of the impacts of polycrisis on real estate markets in various geographical regions, showcasing percentages that demonstrate the extent of changes in pricing, sales, and rental rates. The impacts have been conspicuous in most nations, with noteworthy decreases in property prices, sales, and rental rates.

Nevertheless, the extent of these changes significantly differs across different regions, indicating that the intensity of the consequences is affected by local characteristics and the unique conditions of each country. A notable contrast is observed between Western nations and Asian countries such as Germany and South Korea. Despite the pandemic, Germany and South Korea witnessed an increase in property prices, whilst the United States, United Kingdom, Australia, and Canada faced substantial losses in key real estate measures [96,97]. The difference can be attributed to various factors, such as the effectiveness of government interventions in mitigating the economic impacts of the pandemic, the strength of local economies, and the level of investor trust in these markets.

Another significant disparity lies in the magnitude of the decrease in rental rates among different locations. San Francisco, located in the United States, witnessed a remarkable decline of 9.2 % in rental rates [63] whilst major cities in China observed an average decrease of 6 % in rental rates [100]. Conversely, the United Kingdom and Australia witnessed comparatively smaller decreases of 1.7 % and 1.3 % correspondingly [67,108]. These discrepancies may be influenced by factors such as the stringency of lockup measures, the extent of government assistance for renters, and the overall supply and demand dynamics of each market.

The impacts on home sales also differed considerably among locations. During the first lockdown period, property sales in the United Kingdom decreased by 50 %, which was a significant drop compared to the United States and Canada, where the declines were 17.8 % and 14.3 % respectively. These differences can be attributed to factors like the timing and length of lockdowns, economic uncertainty, and the availability of financing options for potential buyers.

Hence, polycrisis can exert both immediate and indirect impacts on the housing market. Rising demand can result in elevated prices, while reduced accessibility of affordable housing can contribute to a surge in homelessness. Furthermore, secondary consequences such as reduced consumer expenditure and diminished foreign investment can result in a decline in both demand and prices. Having knowledge about the possible consequences of polycrisis is crucial in order to make well-informed choices regarding the housing market.

6.4. The impacts of polycrisis on the housing market regulators

The polycrisis has had an impact on regulators in the housing market. The polycrisis has prompted stricter regulations for governments, insurance companies, financial institutions, and environmental consultants. These entities now have to consider various factors when creating housing market policies or managing risks.

This encompasses a heightened emphasis on environmental concerns, along with regulations on the divulgence of information and conscientious lending practices. Simultaneously, polycrisis can introduce further intricacies and difficulties for regulators in the housing market. The convergence of multiple crisis scenarios can engender a more unstable marketplace, making it arduous to predict and mitigate risks. This may exert pressure on regulators to devise strategies to stimulate more investment, while guaranteeing that any modifications to market regulations are implemented in a prudent manner. Table 5 summarized the impacts of polycrisis on the housing market regulators.

The housing market regulators are significantly affected by the impacts of polycrisis, as shown in Fig. 2. The impacts of the polycrisis on housing market regulators are multifaceted. The increase in government expenditure on disaster relief and emergency response will put a strain on their budgets, diverting funds that could have been used for housing market regulation and oversight. The disrupted supply chains and reduced trade will have a ripple effect on the worldwide economies, leading to a slowdown in the housing market and a decrease in property values. This, in turn, will result in insurance companies facing a rise in claims and having to pay out higher amounts in settlements, leading to losses for them. As a consequence, insurance premiums may also

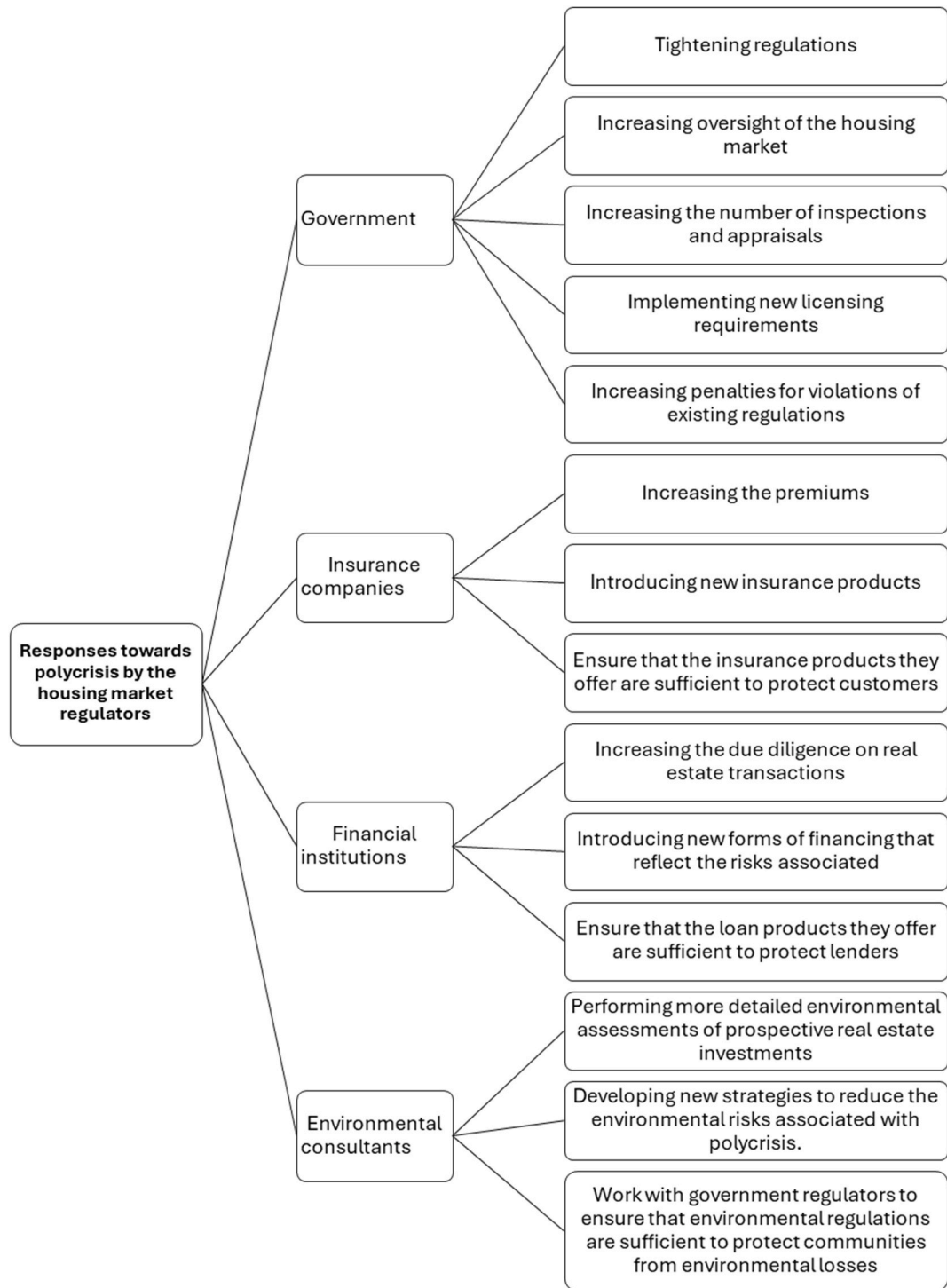


Fig. 4. Conceptual framework of responses towards polycrisis by the housing market regulators.

increase for homeowners, adding to their financial burden. Financial institutions will also be impacted as reduced credit demand and a surge in loan defaults will make it harder for them to recover their losses. They may have to implement stricter lending practices, further dampening the housing market. The polycrisis may also lead to environmental damage, requiring the expertise of environmental consultants to assess the extent of harm and develop mitigation strategies. However, the increased demand for their services will likely come with higher expenses, adding another cost for housing market regulators to bear. Overall, the polycrisis poses significant challenges for housing market regulators, requiring them to navigate through increased expenses, reduced market

activity, and potential environmental risks.

6.5. The impact of polycrisis on housing market participants

The polycrisis crisis has caused significant distress among participants in the housing market [120]. Homeowners are facing financial difficulties as prices have sharply declined [121]. Due to circumstances, investors have been compelled to sell off their portfolios, resulting in an abundance of properties flooding the market [122,123]. The severity of the situation has led many people to seek assistance from the government. Even those who have successfully overcome the difficult

Table 8
Housing market participants' responses towards polycrisis.

Market Participants	Responses	References
Real Estate Developers	<ul style="list-style-type: none"> • Reduce development costs • Revise building plans to meet new market demands • Offer flexible payment terms • Explore new ways of financing projects 	[127, 180–183]
Landowners	<ul style="list-style-type: none"> • Reduce lease rates • Offer incentives to potential tenants • Explore new ways of generating revenue • Investigate alternative uses for their land 	[38,184]
Architects	<ul style="list-style-type: none"> • Using cost-effective materials and designs that help reduce construction and maintenance costs. • Explore alternative solutions for a project • Using prefabricated components or modular designs 	[43, 185–188]
Engineers	<ul style="list-style-type: none"> • Exploring new ways of maximizing energy efficiency and minimizing costs • Investigate the use of renewable energy sources 	[187,189]
Surveyors	<ul style="list-style-type: none"> • Reduce energy costs • Providing accurate assessments • Developing innovative solutions to help reduce costs 	[190–192]
Real estate agents	<ul style="list-style-type: none"> • Offering flexible payment terms to potential buyers • Reducing commission fees • Exploring new ways to market properties • Develop marketing strategies to attract more buyers 	[61,193]
General Contractors	<ul style="list-style-type: none"> • Reducing their overhead costs • Consolidating their subcontractors • Offer flexible payment terms • Offer incentives 	[143,194, 195]
Subcontractors	<ul style="list-style-type: none"> • Offering flexible payment • Utilizing cost-effective materials • Exploring new ways to increase efficiency • Investigate alternative ways of generating revenue 	[143,194, 195]
Suppliers	<ul style="list-style-type: none"> • Offering maintenance services • Renting out their equipment • Offering flexible payment • Offering discounted prices • Investigate alternative sources of materials • Seek out new markets 	[146,196]
Property Managers	<ul style="list-style-type: none"> • Offering flexible rental terms and payment • Reducing management fees • Exploring new ways of generating revenue • Seek out alternative sources of income • Offering temporary housing services 	[61,72, 197–199]
Property Owners	<ul style="list-style-type: none"> • Offering flexible payment • Reducing rental rates • Exploring new ways to generate revenue • Explore alternative uses for their property • Establishing small businesses • Developing a communal garden 	[61, 197–199]
Tenants	<ul style="list-style-type: none"> • Seeking out flexible rental terms and payment • Explore alternative housing options • Sharing a rental unit • Taking advantage of short-term rental services 	[108,197, 199]
Investors	<ul style="list-style-type: none"> • Exploring new markets • Seeking out alternative sources of income • Investigate different types of investments • Real estate crowdfunding • Peer-to-peer lending 	[200–206]
Legal firms	<ul style="list-style-type: none"> • Adopting remote working • Adapting to technological advances 	[162,207, 208]

circumstances are still facing the consequences. As a result, they are forced to make significant adjustments to their way of life in order to meet their basic needs.

One example of this is the increase in rental prices, which is closely linked to gentrification. According to Rinn et al. [124], regular rent hikes play a crucial role in the process of gentrification, affecting both individual rental agreements and the overall housing market. These increases also contribute to various forms of displacement. The authors argue that the actions taken by residents have a significant impact on how gentrification occurs. Overall, the future of the housing market remains uncertain due to the impacts of the ongoing crisis. The impacts are summarized in Table 6.

The participants in the housing market have been significantly affected by the polycrisis, as demonstrated in Table 6 and illustrated in Fig. 3. Real estate developers have met diminished profits, project setbacks, and the possibility of bankruptcy, while landowners have faced heightened financial risk, diminished property values, and challenges in securing project financing. Professionals in the fields of architecture, engineering, surveying, real estate, construction, property management, and investment have all experienced a decrease in demand for their services, longer project durations, and fewer opportunities for investment. Consequently, they face heightened financial risk, diminished returns, and decreased affordability. Legal firms are meeting difficulties that impact both their functioning and financial income. The challenges they are currently facing include remote work, postponed proceedings, and obstacles in keeping effective communication and collaboration.

7. Responses towards polycrisis

Building upon the previous topic, this subtopic will delve into the overarching reactions to polycrisis in a universal context. It will then scrutinize how this crisis specifically addressed by the housing market. Ultimately, the discussion will evaluate the stakeholders' responses to the polycrisis in the housing market, encompassing market regulators and participants.

7.1. Responses towards polycrisis in general

Reactions to a polycrisis can differ based on the seriousness and characteristics of the polycrisis involved. Occasionally, governments and organisations may choose to take a proactive stance by implementing comprehensive strategies to effectively tackle polycrisis concurrently. This may entail synchronising endeavours across various sectors, including healthcare, economy, and social welfare, to guarantee a comprehensive response. Furthermore, there may be a pursuit of international cooperation and collaboration to combine resources and expertise in addressing the interrelated challenges.

Conversely, reactions to polycrisis can also be reactive, as authorities focus on addressing immediate crisis situations rather than engaging in long-term strategic planning. This strategy may require the distribution of resources and focus towards the most urgent crisis, disregarding others, which could potentially worsen the overall impacts of the polycrisis. The success of responses to polycrisis hinges on the ability to identify the interconnectedness among various crises and devise comprehensive solutions that tackle their underlying origins.

7.2. Responses towards polycrisis by the housing market

The housing market has been affected by the repercussions of the polycrisis. Primarily, there has been a substantial decline in the demand for housing due to individuals exercising greater caution in making

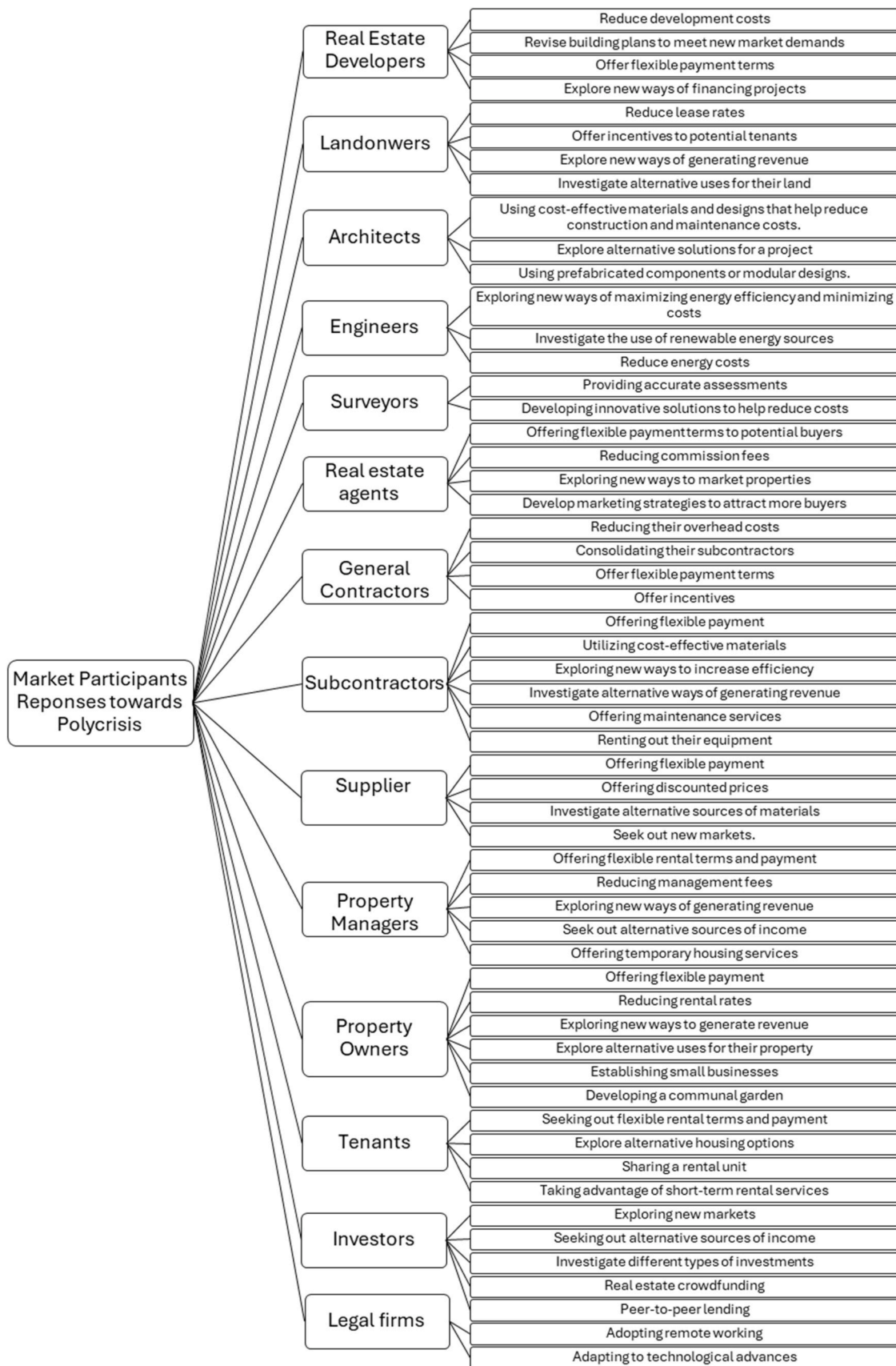


Fig. 5. Conceptual framework of responses towards polycrisis by housing market participants.

substantial financial commitments considering the prevailing uncertainty. Consequently, there has been a decline in property sales and a rise in the inventory of unsold homes. Moreover, numerous homeowners have met financial adversities because of unemployment or decreased earnings, resulting in challenges in meeting their mortgage payments. The consequence of this is an increase in foreclosures and a potential escalation in the number of homes listed as distressed properties. Moreover, the housing market's growth has been hindered by the suspension or postponement of construction projects and new housing developments. Collectively, the polycrisis crisis has engendered a formidable milieu for the housing sector, characterised by diminished demand, heightened financial hardships for property owners, and a deceleration in the development of new residential structures.

7.3. 7.3responses towards polycrisis by housing market regulators

The response to polycrisis involves the implementation of stricter regulations, enhanced oversight, higher premiums, the introduction of innovative insurance products, increased due diligence, the adoption of new financing methods, more comprehensive environmental assessments, and the formulation of novel strategies to mitigate environmental risks by the government, insurance companies, financial institutions, and environmental consultants. Specifically, Table 7 contains the list, while Fig. 4 provides a conceptual representation.

Government, insurance companies, financial institutions, and environmental consultants can all address polycrisis by implementing stricter regulations, raising premiums, enhancing due diligence, introducing innovative loan products, and conducting comprehensive environmental assessments. These measures are intended to safeguard homeowners, lenders, and communities against financial and environmental damages resulting from polycrisis. Parties can engage in collaboration with government regulators to ensure that the regulations.

7.4. Responses towards polycrisis by housing market participants

The participants in the housing market are reacting to a polycrisis, which refers to the convergence of polycrisis. The participants encompass a wide range of individuals involved in the real estate industry, such as real estate developers, landowners, architects, engineers, surveyors, real estate agents, general contractors, subcontractors, suppliers, property managers, property owners, tenants, and investors. Each entity is reacting to the polycrisis crisis in distinct manners, contingent upon their position within the housing market.

Table 8 displays the responses of housing market participants towards the polycrisis found in literature.

To summarise (as depicted in Fig. 5), the housing market is currently experiencing a complex crisis, and it needs diverse responses from all involved parties. Developers and landowners could decrease expenses and investigate alternative methods of funding, while architects and engineers can seek out economical materials and designs that optimise energy usage. Surveyors can offer property valuation assessments, while real estate agents can offer flexible payment options and reduced commission rates. General contractors and subcontractors could decrease their overhead expenses and provide adaptable payment conditions, while suppliers can pursue reduced prices and explore alternative sources. Property managers and owners have the option to lower rental rates and explore alternative sources of income. Likewise, tenants and investors can consider flexible payment arrangements and expand their investment portfolios.

Moreover, in response to the challenges posed by the polycrisis, market participants are adopting a strategic approach by enhancing productivity through digital transformation. This approach is similar to what has been observed in other fields, such as small and medium enterprises [209,210].

In summary, the responses demonstrate involved collaboration and initiatives – both locally and globally, as stressed by WEF [12], IMF [13],

and UNDP [14]. Therefore, the responses correspond to three Sustainable Development Goals (SDGs): SDG 8, which focuses on promoting decent work and economic growth; SDG 11, which aims to create sustainable cities and communities; and SDG 13, which addresses climate action.

8. Conclusion

The housing market is a complex system that is susceptible to numerous economic, political, and social shocks. These shocks can result in a state of "polycrisis," where multiple crises occur simultaneously, making it difficult to effectively address the issue. This study aims to identify the factors, impacts, and responses related to polycrisis in the housing market - globally, thereby increasing awareness and preparedness among regulators and participants. This is achieved through a comprehensive review of the current literature and meticulous analysis of the data.

The findings show that polycrisis and its contributing factors can be grouped into seven categories: economic, political, social, environmental, technological, cultural, and health. The impacts, conversely, can be divided between stakeholders, i.e., market regulators and market participants. Market regulators include government authorities, environmental consultants, insurance companies, and financial institutions, while market participants consist of developers, landowners, architects, engineers, surveyors, estate agents, contractors, subcontractors, suppliers, property managers, property owners, tenants, investors, and legal firms.

However, it is important to note that this study is limited to providing an overview of the polycrisis, encompassing its factors, impact, and responses in the housing market. While there are no specific geographical limitations in this desktop study, the focus is on the overall housing market. Therefore, it is crucial to further scrutinize the current housing market trends and methods for combating the polycrisis from regulatory and market participants' perspectives. Furthermore, conducting further research on the categories and field-specific studies of different countries' developmental stages is necessary. This will allow for a comprehensive identification of polycrisis factors, their impact, and the appropriate measures to mitigate them.

Moreover, it would be advantageous to conduct further research that considers the diverse developmental stages of different countries' classifications and field-specific investigations. This entails scrutinising the conditions of advanced economies, emerging nations, and the most underdeveloped countries. This will streamline the evaluation of the extent of polycrisis factors, their impacts, and the required interventions, as well as the development of appropriate measures, approaches, and strategies to tackle them.

In developed nations, research can prioritize the exploration of the complex relationship between economic, political, and social factors that contribute to situations characterised by multiple crises. This is due to the presence of advanced infrastructure, technology, and human resources. This involves analysing the impacts of financial crises, political turmoil, and environmental difficulties on the stability and adaptability of these nations. Furthermore, studies focused on specific fields have the capacity to investigate sectors such as healthcare, education, and transportation with the aim of identifying weaknesses and possible remedies.

Conducting research on the polycrisis faced by developing countries in managing multiple crises simultaneously would be advantageous. This may involve examining the possible difficulties presented by insufficient resources, governance structures that may need to be reinforced, and infrastructure that may require additional development to improve their ability to respond efficiently. Future studies can effectively identify and implement strategies to foster resilience and minimise the adverse impacts of polycrisis situations by gaining a thorough understanding of the specific developmental needs of these countries.

Conversely, it is crucial to give priority to focused research in order

to efficiently tackle the distinct difficulties encountered by the least-developed countries. These nations encounter difficulties associated with poverty, inadequate infrastructure, and constrained access to resources. Research in this context can seek to investigate the fundamental factors that contribute to polycrisis situations in these countries, encompassing issues such as food insecurity, health epidemics, and political instability. Future studies can also develop tailored strategies to address these challenges and promote sustainable development by acquiring a thorough understanding of the complex dynamics involved.

To obtain a thorough comprehension of the multiple factors that contribute to polycrisis, it is crucial to conduct research that considers the developmental stages of different countries and field-specific studies. This knowledge has the potential to aid in the creation of appropriate measures, tactics, and strategies that can help countries effectively navigate these complex challenges and promote resilience for the future.

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