Article in Press: JJEES 16(2), June 2025.
This article has been accepted for publication and will appear in the upcoming issue. The final published version will be available through the journal website after copyediting, typesetting and proofreading.

Sustainable Contractors' All Risks (CAR) Policy Underwriting Model of Indonesia Non-Life Insurance

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Received on 23 November 2023, Accepted on 24/1/2025

ABSTRACT

Considering the indirect negative environmental and social impacts that may result from Contractors' All Risks (CAR) policy underwriting activities, there is a dire need to implement the sustainability concept and integrate the environmental and social risks into these underwriting activities. As a result of this integration, the sustainable Contractors' All Risks (CAR) policy underwriting activities are expected to reduce risk and contribute to economic, environmental, and social sustainability. The focus of this study is two-fold: the first is to define the risk criteria to be assessed against the environmental and social risks, while the second is to propose a conceptual model of sustainable Contractors' All Risks (CAR) policy underwriting for Indonesia's non-life insurance which expected to aspire non-life insurers in Indonesia to eventually establish their internal sustainable underwriting guidelines.

Keywords: Environmental and social risks management; Sustainable underwriting; Insurance; Non-life insurance; Underwriting. JEL Classification: G220.

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1. Introduction

Environmental and social risks have been repeatedly identified as the most severe over the last few years (World Economic Forum, 2022) and instigated global awareness of the importance of sustainability. As a result, this set of circumstances has also caused the notion of transformations in the insurance sector (Chiaramonte et al., 2020; Johannsdottir, 2014). In this sense, insurers demonstrate increasing efforts to be able to emerge as sustainable, even if the implicit potential of the sustainability concept in the business processes is not fully understood yet (Negri, 2018). Some insurers have announced divestment programs from fossil fuels, whilst some perform Corporate Social Responsibility (CSR) practices. It is a positive signal. However, the insurance sector needs to comprehensively implement the sustainability concept into all aspects of its risk management, on the liability side and the asset side (Belozyorov & Xie, 2021; Nogueira et al., 2018).

On the liability side, risk management occurs in underwriting preceding the risk transfer that takes place through the stipulation of an insurance policy. For this very reason, the core risk management activities of the insurance business model are executed in underwriting, therefore, sustainability implementation in underwriting is indispensable.

Contractors' All Risks (CAR) policy, as the subject matter of this research, is an insurance policy that provides cover for losses or damages that happen during construction projects. Considering the direct environmental and social impacts caused by construction activities, there is a dire need to implement the sustainability concept and integrate the environmental and social risks into Contractors' All Risks (CAR) policy underwriting.

There are a few studies which assess the sustainability implementation into insurance risk management (Negri, 2018; Nogueira et al., 2018), but there is hardly any one addressing the sustainability implementation in underwriting. In order to fill this gap in literature, we aim

to explore this issue. The focus of this study is two-fold; the first is to define the risk criteria to be assessed against the environmental and social risks; and the second is to propose a conceptual model of sustainable Contractors' All Risks (CAR) policy underwriting for Indonesia non-life insurance.

2. Literature Review

Environmental and social issues can create risks to financial institutions such as insurers (OECD, 2001). On that account, risk management experts demanded that the sustainability implementation in the insurance industry should be carried out by integrating those risks into all business activities, including interactions with stakeholders (Linnenluecke & Griffiths, 2010; Sato & Seki, 2010; Lozano, 2012; Allais et al., 2017; Dubey et al., 2017; Gillan et al., 2021). Nevertheless, experts expected that this integration would not only be implemented into day-to-day office operations, but into underwriting activities as well (United Nations Environment Programme Finance Initiative Principles for Sustainable Insurance, 2019). As an addition to improved financial performance and reputation, the integration of these environmental and social risks into underwriting activities are intrinsically anticipated to be able to stimulate the sustainability implementation into all other business activities (OECD, 2001; Negri, 2018; Nogueira et al., 2018).

The result of a review, conducted to the contents of sustainability reports published by Indonesia non-life insurers for the period of 2020 and 2021, showed that Corporate Social Responsibility (CSR) practices and eco-friendly business operations as the top 2 most prevalent sustainability strategies, and only 1 non-life insurer reported about the environmental and social risks integration in underwriting (Agnes et al., 2023). This factual condition is, of course, somewhat peculiar, given the fact that environmental and social risks have been repeatedly

identified as the most severe risks over the last few years and are still predicted to be predominant for the next 10 years (World Economic Forum, 2022). In all good conscience, sustainability implementation certainly will have a greater impact and strengthen the non-life insurance industry's contribution to building a sustainable society if such implementation is executed by integrating environmental and social risks into underwriting, instead of merely focusing on Corporate Social Responsibility (CSR) practices and eco-friendly business operations.

Contractors' All Risks (CAR) policy, as the subject matter of this research, is an insurance policy that provides cover for losses or damages that happen during construction projects. There are various versions of Contractors' All Risks (CAR) policy. However, the one that is generally issued by Indonesian non-life insurers consists of material damage and third-party liability sections. The material damage section provides indemnification to any unforeseen and sudden physical loss or damage of the contract works due to any cause, other than those specifically excluded in the policy, whilst the third-party liability section covers accidental bodily injury or property damage of third parties in connection with the performance of the contract works.

Compared to the other lines of business in the non-life insurance industry, the construction & engineering line, under which Contractors' All Risks (CAR) policy is classified, had been indicated to contain the largest number of environmental and social high risks. According to the United Nations Environment Programme Finance Initiative Principles for Sustainable Insurance (UNEP FI PSI) assessment, the construction & engineering line is depicted to possess environmental high risks to climate-related emissions, deforestation, controversial site clearance, soil pollution, water pollution, impacts on world heritage sites, impacts on threatened species, and unconventional energy practices, whereas it has social high

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risks in terms of forced resettlement, poor worker safety, violation of worker rights, and misconduct of security personnel (United Nations Environment Programme Finance Initiative Principles for Sustainable Insurance, 2019). Please refer to Table 1 to obtain a detail indication of potential environmental and social risks levels associated with the construction & engineering line.

Table 1. Line of Business Construction & Engineering Heat Map

Criteria	Theme	Risk Criteria	Risk Mitigation Examples & Good Practice	Risk Level
Environmental	Climate change	Air pollution, greenhouse gas emissions, and transition risks	Disclosure of climate-related emissions in operations and/or products	
			Breakdown of fuel/material/carbon intensity mix relevant to the client or transaction	
			Environmental & social impact assessment (ESIA) covering negative health impacts, mitigation, and decommissioning where relevant	
			Decarbonisation transition plan/targets, customers fitting new emission mitigation technology, TCFD disclosures	
		Physical risks (e.g. heat, wildfire, extreme precipitation, flood, windstorm, tropical cyclones, sea level rise, water stress)	Nature-based solutions	
	Environmental degradation	Exposure to unconventional mining practices (e.g. mountain top removal, riverine tailings dumping, deep sea mining)	Involvement in initiatives: Extractive Industries Transparency Initiative, International Council on Mining & Metals, Kimberley Process	
		Deforestation or controversial site clearance (e.g. palm oil on peatlands or fragile slopes, illegal fire clearance/logging, biodiversity loss, dam construction)	Certification for palm oil, paper, etc. Dam construction standards: IHA Hydropower Sustainability Assessment Protocol, UNEP Dams & Development, Equator Principles	
		Soil pollution	ESIA covering possible negative health impacts, mitigation measures,	

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			and decommissioning plans where relevant	
		Water pollution	Water management practices	
	Protected sites/species	Impacts on World Heritage Sites or other protected areas	ESIA covers impacts on endangered species and sites, including mitigation	
		Impacts on species on IUCN Red List of Threatened Species	ESIA that covers impacts on endangered species and sites, including necessary mitigation measures	
	Unsustainable practices	Exposure to unconventional energy practices (e.g. Arctic oil, hydraulic fracturing, tar sands, deep sea drilling)	Various energy initiatives	
		Illegal fishing vessels, controversial fishing practices or aquaculture techniques	PSI-Oceana guide on illegal, unreported & unregulated (IUU) fishing, IUU fishing lists, Aquaculture/Marine Stewardship Council certification	
		Plastic pollution	PSI guide on the risks of plastic pollution, marine plastic litter, and microplastics to the insurance industry	
	Animal welfare/testing	Live transport over 8 hours or poor conditions or illegal/exotic animals (dead or alive)	Live transport over 8 hours must hold a certificate including training on ventilation/temperature. Good conditions on food, water, spacing, lighting, etc.	
		Controversial living conditions or use of chemicals/medicines	Relevant certification for farming or ethical animal treatment during clinical treatments	
		Lack of anaesthetic or distress-reducing techniques	Compliance with Guiding Principles on Replacement, Reduction & Refinement	
		Use of wild subjects or Great Apes in testing	Compliance with Guiding Principles on Replacement, Reduction & Refinement	
Social	Human rights	Child labour	Policy/statement on protecting and promoting human rights, prohibits child labour, shared with suppliers, regular audits and public findings (e.g. ILO, UNDHR)	
		Human trafficking	Human rights policy that includes a statement on protecting and promoting human rights and prohibits human trafficking	
		Forced labour	Human rights policy that includes a statement on protecting and promoting human rights and prohibits forced labour	
		Forced resettlement (including land/water rights for native people, land grabbing)	Free, prior & informed consent (FPIC) achieved. Effective environmental & social impact assessment (ESIA) process covering	

			consultation, resettlement, compensation aspects	
		Poor worker safety record	Effective occupational health & safety policy that defines safety responsibilities and prevention measures to minimise fatalities, injuries, and health impacts	
		Violation of worker rights	Code of conduct that outlines company's commitment to respect workers' rights	
		Misconduct of security personnel (e.g. physical harm to people, human rights abuses)	Whistle-blower channel to report such violations	
	Controversial weapons	Controversial weapons exposure	Anti-Personnel Mine Ban Convention, Convention on Cluster Munitions	

(Source: UNEP FI PSI, 2019)

In conjunction with the UNEP FI PSI assessment, previous research similarly suggested the extensive range of environmental high risks carried by the construction industry since it generates the consumption for 40% of total energy production and 16% of the entire sum of water volume available, as well as discharging 25% of greenhouse gas emissions and 30–40% of solid wastes (Berardi, 2013; Darko et al., 2017; Shan et al., 2017; Susanti et al., 2019; Jingke Hong et al., 2019; Klufallah et al., 2019; Q. He et al., 2020).

Currently, there are no specific regulatory guidelines and manuals regarding sustainable construction or finance. Thus, this study intends to propose a conceptual model of sustainable Contractors' All Risks (CAR) policy underwriting for Indonesian non-life insurance based on the summarization of the UNEP FI PSI guide, the Institute for Sustainable Infrastructure guide, and other related sources.

3. Methods

The data collected in this study is a combination of primary and secondary qualitative data. The primary data was gathered through interviews with non-life insurance underwriting experts and complemented by the secondary data which was obtained from published literature, government documents, and related sources. Qualitative data analysis occurred simultaneously during the research, included in data collection activities.

The study is structured in four phases: First, undertake a literature review to acquire insights on negative environmental and social impacts attributable to the construction industry, second, to define the risk criteria to be assessed against the environmental and social risks in the proposed conceptual model. These risk criteria were determined as a result of the initial literature review, and third, to gather data from the expert interviews. At this phase, the chief and head of the underwriting department from 5 (five) non-life insurance companies were selected as experts and requested to assess of the selected risk criteria. Two were selected as representatives from national companies with total assets below 2 trillion rupiahs and one representative for each of these categories: national company with total assets above 2 trillion rupiahs, joint venture company with total assets below 2 trillion rupiahs, and joint venture with total assets above 2 trillion rupiahs. The Delphi method was chosen for the expert interview phase because it allows informants to respond to other informants' opinions and even to make revisions against their initial opinions. In this way, the method would greatly benefit the designing process of the proposed conceptual model. The fourth phase is to formulate the proposed conceptual model of sustainable Contractors' All Risks (CAR) policy underwriting.

4. Results and Discussion

The process of underwriting a risk consists of the following stages: risk selection, establishing appropriate terms and conditions for the risk, and deciding the appropriate price

for the risk. The risk selection process in Contractors' All Risks (CAR) policy underwriting must be guided by risk appetite. It begins with the physical risks identification which afterward assessed against economic risks. The risk identification and assessment process will be based on the construction type, location, Estimated Total Contract Value (ETCV), contractor(s)/subcontractor(s) reputation, etc.

Bearing in mind that sustainable underwriting aims to reduce risk and contribute to economic, environmental, and social sustainability, thus the Contractors' All Risks (CAR) policy underwriting should be transformed by way of integrating environmental and social risks into the process (United Nations Environment Programme Finance Initiative Principles for Sustainable Insurance, 2019; Urban & Wójcik, 2019).

4.1. Defining the Risk Criteria

Based on the summarization of risk levels, identified in Table 1, the Institute for Sustainable Infrastructure guide and the Regulation of the Minister of Public Works and Housing of the Republic of Indonesia No. 9/2021, concerning guidelines for Sustainable Construction Implementation, the selected risk criteria, to be assessed against the environmental and social risks in the proposed sustainable Contractors' All Risks (CAR) policy underwriting model, are listed in Tables 2 and 3. All these criteria were selected based on their extent of impact against the environmental and social risks as well as operationalities, that is why nearly all the selected risk criteria are already adopted in the Regulation of the Minister of Public Works and Housing. Nonetheless, risk criteria E1, E7, S1, and S3 were still selected because the operationalities of the assessment process can still be accomplished properly by examining project documents (e.g. Detail Engineering Design (DED), contracts, etc.) and conducting further investigation (e.g. via news websites, direct interviews with contractors,

etc.). A concise summary of the literature review, conducted as the basis for determining the extent of impact from the selected risk criteria, will be briefly explained in the following paragraphs.

Table 2. Risk Criteria for Environmental Risk Assessment

Risk Criteria	Risk Criteria Code	Regulation Reference Code
Impacts on Greenfields	E1	N/A
Impacts on wetlands, shorelines, and waterbodies	E2	KL-7.4.1
Pollutants and wastes	E3	KL-7.1.1
Recycled materials	E4	KL-5.4.1
Prefabricated materials	E5	KL-5.5.1
Regional materials	E6	KL-5.2.1
Useful life	E7	N/A

(Source: Authors, 2022)

Table 3. Risk Criteria for Social Risk Assessment

Risk Criteria	Risk Criteria Code	Regulation Reference Code
Social conflict	S1	N/A
Workplace safety and health	S2	KL-1.1.1
Local employment ratio	S3	N/A

(Source: Authors, 2022)

Impacts on Greenfields (E1)

Land-use and land-cover change has been recognized as one of the factors that causes major effects to the environment and the climate (Brovkin et al., 2013; Prestele et al., 2016). Anthropogenic land-use and land-cover changes are estimated to contribute substantially to the

increased amount and concentration of world's greenhouse gas emissions which ultimately leads to global warming and climate change (Wulan et al., 2015). In consideration of the construction industry's share in discharging 25% of the total greenhouse gas emissions (Q. He et al., 2020) and Indonesia's status as the second largest emitter of greenhouses gases from deforestation (Zarin et al., 2016; Tacconi & Muttaqin, 2019), we find that it is significantly important to include this risk criterion into the proposed model.

Impacts on wetlands, shorelines, and waterbodies (E2)

As a consequence of population growth and urbanization, a large number of construction megaprojects have emerged in Southeast Asia, including Indonesia (Hawken et al., 2021). Despite the many benefits presented by these construction megaprojects, disruptions to the environment are also sparked off, including changes in urban water flows, riparian deposition, and flood regimes (Douglass & Miller, 2018). Most major cities and populated areas in Indonesia are located in coastal or riparian environments, on that ground, we then considered to include this risk criterion into the proposed model.

Pollutants and wastes (E3)

Due to its substantial waste generation which takes part approximately 30–40% of solid wastes volume across the world (Berardi, 2013; Darko et al., 2017; Q. He et al., 2020), the waste management issues of the construction industry demand our full attention (Bao et al., 2020). With that being said and the waste crisis which Indonesia is trying to tackle nowadays, we decided to include this risk criterion into the proposed model.

Recycled materials (E4)

The construction industry is not only generating a large number of wastes, but it is also consuming massive amounts of natural resources (Hossain et al., 2020). Minimizing the usage of raw materials will reduce natural resources extraction, the embodied carbon emissions, the energy required to produce and transport those materials, and volume of wastes sent off to landfills (Institute for Sustainable Infrastructure, 2015). This risk criterion is undoubtedly correlated with risk criteria E3 and must be included in the proposed model.

Prefabricated materials (E5)

The advantages of prefabricated materials are manifested by high production efficiency, energy conservation, environmental protection, waste reduction, and guaranteed quality (Ma et al., 2020; Jie & Nan, 2020; Hu & Chong, 2021). This risk criterion is still closely interconnected with risk criteria E3 and E4, hence it is included in the proposed model.

Regional materials (E6)

Transportation is a significant consumer of fossil fuels and the source of greenhouse gas emissions and other pollutants. At the same time, its process also reduces the lifespan of infrastructure due to wear and tear, pollute waters, and damage marine environments. Regional materials, even materials sourced or processed on site, will reduce the impact of long transportation and support the local economies (Institute for Sustainable Infrastructure, 2015). For these reasons, we concluded that this risk criterion should also be included in the proposed model.

Useful life (E7)

Impeccable design and high quality materials will extend useful life of the completed construction projects. The longer the useful life, the less it will need to be replaced, and eventually will reduce the energy, water, and materials, required for refurbishment and rebuilding (Institute for Sustainable Infrastructure, 2015). In this context, we selected this risk criterion to be included in the proposed model.

Social conflict (S1)

Construction projects, primarily the megaprojects, often provoking social conflicts among stakeholders. These conflicts are normally incited because disparities of interests among stakeholders result in prominent social contradictions that affect social stability. Social conflicts can be caused by various reasons, ranging from land acquisition, demolition, forced resettlement, labor disputes, environmental degradation, wellbeing of the local populations, etc. (Z. He et al., 2020; Singto et al., 2021; Magsi et al., 2022). Genuinely aware of the importance of this risk criterion, we made the decision to include it into the proposed model.

Workplace safety and health (S2)

A construction environment is extremely dynamic and deeply focused on the deadlines which make it very likely to have a high risks of workplace safety and health. Fatigue, due to overexertion, is named to be the leading cause of work-related injuries in the construction environment (Fang et al., 2015). Mismanagement of workplace safety and health will exacerbate and increase the number of work-related accidents and injuries (Lette et al., 2018; Ismail, 2019). In that regard, we included this risk criterion into the proposed model.

Local employment ratio (S3)

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In most of the cases, a fair proportion of local employment will be able to prevent social conflicts related with the projects. An emphasis on employment of minority and/or disadvantaged groups members will help to develop local skills and capabilities (Institute for Sustainable Infrastructure, 2015). From that perspective, we selected this risk criterion to be included in the proposed model.

4.2. Expert Interviews

Referring to Tables 2 and 3, expert interviews are subsequently performed to capture experts' perception on the selected environmental and social risk criteria. In these interviews, experts were requested to make assessment towards the selected risk criteria and discussions were held for each of the selected risk criteria. Current implementation, challenges, and prospects of sustainable underwriting were addressed in these discussions. Later, experts were requested to rate the selected risk criteria from a scale of 1 to 10 with the following conditions: 10 should be awarded to any most important risk criteria and 1 to any least important. The results of the rating are summarized in Table 4, while the risk criterion ranking is shown in Table 5.

Table 4. Results of the Experts' Rating

Risk Criteria Code	Experts					Total Score
	A	B	C	D	E	
E1	10	6	10	7	10	43
E2	10	10	10	7	10	47
E3	10	6	8	10	10	44
E4	5	8	6	8	5	32
E5	5	8	6	8	5	32

E6	5	8	6	8	7	34
E7	8	10	6	10	7	41
S1	10	10	10	10	10	50
S2	10	8	10	10	10	48
S3	8	10	8	10	9	45

(Source: Authors, 2022)

Table 5 Risk Criteria Ranking

Risk Criteria Code	Risk Criteria
S1	Social conflict
S2	Workplace safety and health
E2	Impacts on wetlands, shorelines, and waterbodies
S3	Local employment ratio
E3	Pollutants and wastes
E1	Impacts on greenfields
E7	Useful life
E6	Regional materials
E4	Recycled materials
E5	Prefabricated materials

(Source: Authors, 2022)

4.3. Formulation of the Sustainable Contractors' All Risks (CAR) Policy Underwriting Model

The overview of the entirety process flow of the proposed sustainable Contractors' All Risks (CAR) policy underwriting model is outlined in Figure 1, while the environmental and social risks assessment process is then detailed in Figure 2. Any risk assessment process portrayed by either Figure 1 or 2 will be resulted as underwriting decision. It could be an immediate rejection or a decision to proceed to the next step of the risk assessment process, whether it is with or without precondition. A precondition could be in the form of exclusion,

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warranty, subjectivity, additional clauses, premium loading rate, higher deductible, policy limit reduction, etc.

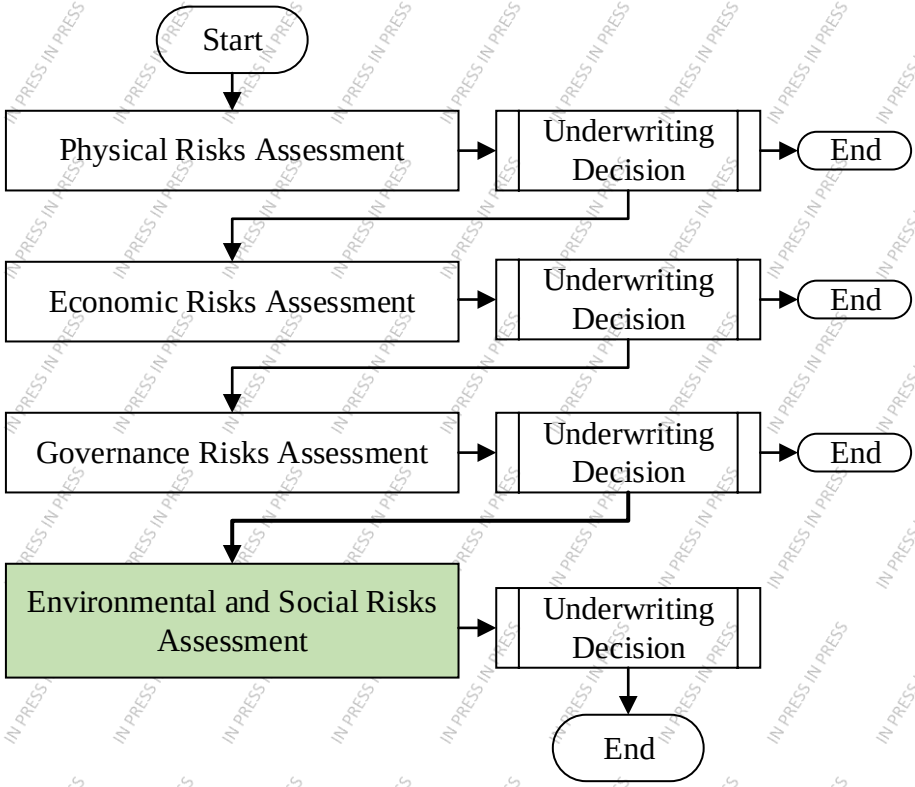

Figure 1. Sustainable Contractors' All Risks (CAR) Policy Underwriting Model

(Source: Authors, 2022)

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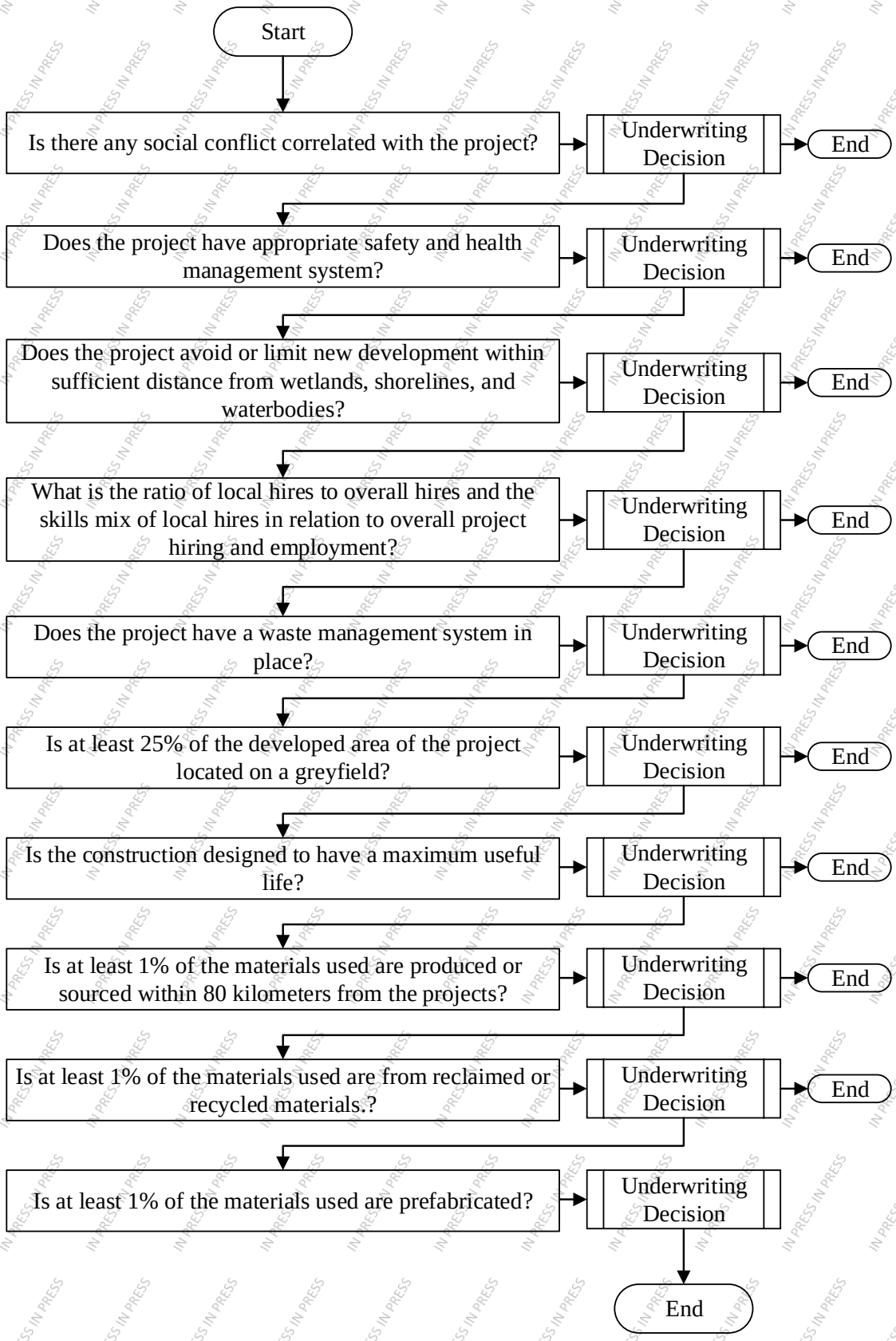

Figure 2. Environmental and Social Risks Assessment

(Source: Authors, 2022)

5. Conclusions

The aim of sustainable underwriting is to reduce risk and contribute to economic, environmental, and social sustainability, thus, the Contractors' All Risks (CAR) policy underwriting should be transformed by way of integrating environmental and social risks into the process. Based on previous study, the process of integrating those risks needs to be in alignment with non-life insurance company's targets, vision, and mission. On that account, this study intends to not only promote the concept of sustainable underwriting or alarm the Indonesia non-life insurance sector about its significance, but to propose conceptual model for sustainable Contractors' All Risks (CAR) policy underwriting as well. This study aspires for the proposed conceptual model to be of any use for those insurers to eventually able of establishing their internal sustainable underwriting guidelines. Last of all, the proposed conceptual model may be adapted elsewhere with customized risk criteria by following the same method and assessment made towards local applicable regulations.

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Article in Press: JJEES 16(2), June 2025.
This article has been accepted for publication and will appear in the upcoming issue. The final published version will be available through the journal website after copyediting, typesetting and proofreading.