UDK: 368:502.131.1
DOI: 10.5937/TokOsig2303315T

Nataša P. Tešić, Master of Economics[1]

INSURANCE AS AN IMPORTANT FACTOR OF SUSTAINABLE DEVELOPMENT

SCIENTIFIC PAPER

Abstract

Considering contemporary global challenges, from the Covid-19 pandemic to economic instability, the concept of sustainability is becoming increasingly important. This paper explores the important role of insurance in achieving the Sustainable Development Goals (SDGs) on a global level. Focusing on a three-dimensional approach to sustainability that includes environmental, economic and social aspects, the paper analyzes how the insurance sector can contribute to sustainable development. The paper includes a comparative analysis exploring the correlation between the insurance penetration rate and the Sustainable Development Index (SDG Index) for selected countries. This analysis provides insight into how development of the insurance sector can affect a country's ability to achieve the SDGs. The paper also considers the impact of insurance on economic growth, social inclusion and environmental protection through various policies and services. The analysis points to the potential of insurance to be a catalyst for changes, encouraging sustainable initiatives at all levels – from individual households to companies and governments.

Key words: *Sustainable Development Goals (SDG), insurance, economic growth, environmental protection, social inclusion*

I. Introduction

The concept of sustainability, which has become a central element in shaping the future, is gaining importance in view of contemporary global challenges, including

[1] Faculty of Business Economics Bijeljina, the University of East Sarajevo; e-mail: natasa.tesic@fpe.ues.rs.ba
Paper received on: 11 September 2023
Paper accepted on: 25 September 2023

the Covid-19 pandemic and the economic crisis. Sustainable development, defined as development that meets the needs of current generations without endangering future ones,[2] relies on the synergy of environmental, economic and social dimensions. Insurance sector, as a key risk management factor, can have a central role in promotion of sustainable development. This paper shows how insurance can contribute to achieving the SDGs, focusing on its impact on the economic, environmental and social aspects of sustainability.

Faced with the new reality and changed social expectations, the insurance sector is also undergoing significant changes. On one hand, the Covid-19 pandemic posed a number of challenges, and on the other, digital transformation brought by the industrial revolution 4.0 introduced additional complexity. Global threats question future sustainability of the world's population, and an unsustainable future is not an insurable future.[3]

1. Insurance and Sustainable Development Goals

Insurance is an important risk protection mechanism that can contribute to achieving the SDGs adopted by the United Nations General Assembly in 2015. SDGs present an ambitious vision of transformation towards a more sustainable future by 2030.[4] Previous research showed that insurance had a key role in achieving certain SDGs, especially those related to reducing poverty and famine, improving health and education, promoting decent work and economic growth, and undertaking climate action.

Among the key sources dealing with this topic are studies conducted by *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ)[5], Swiss Re[6] and the World Bank.[7] These sources emphasized various aspects of insurance's contribution to achieving the SDGs, from reducing poverty and famine to increasing economic stability and climate actions. Specific studies, such as those conducted by CISL[8] and

[2] WCED. (1987). *Report of the World Commission on Environmental and Development: Our Common Future – Brundtland Report*. WCED. *https://www.un-documents.net/our-common-future.pdf.*

[3] Tešić, N. (2022). ESG risks in the insurance market. *Development of modern insurance market – constraints and possibilities* (pp. 237–252). Faculty of Economics, University of Belgrade.

[4] United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations Sustainable Development Summit 2015. New York. *https://sustainabledevelopment.un.org/post2015/summit.*

[5] GIZ. (2017). *Inclusive Insurance and the Sustainable Development Goals*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

[6] Swiss Re. (2017). Insurance: adding value to development in emerging markets. *Sigma*, 4/2017, Zürich, Swiss Re.

[7] World Bank Group. (2021). *Developing Insurance Markets. The Insurance Sector's Contribution to the Sustainable Development Goals (SDGs)*. *https://doi.org/10.1596/978-1-4648-1715-9.*

[8] Cambridge Institute for Sustainability Leadership (CISL) (2019). Mutual microinsurance and the Sustainable Development Goals: An impact assessment following Typhoon Haiyan. Cambridge, UK: Cambridge Institute for Sustainability Leadership.

Allianz[9] are focused on the impact of microinsurance and corporate strategies on achieving the SDGs. These sources point to a wide range of influence that insurance can have on sustainable development, from the macro to the micro level.

Progress in achieving the Sustainable Development Goals is monitored using specific SDG indicators. Each of 17 SDGs is broken down into 169 sub-goals and 231 indicators, which are integrated into the SDG indicator database. The database, maintained by the United Nations, contains extensive data on indicators for each country and each goal, as well as global progress reports.[10] However, global statistics concerning the insurance sector are often insufficiently available, which presents a significant challenge for supervisors and regulators.

Analysis of the link between the insurance sector and achievement of the SDGs can be initiated through a comparative study of the progress of different countries in achieving the SDGs, taking into account the level of development of their insurance market.[11] This development level is most often measured by the insurance penetration rate, which is an indicator of the insurance sector development in relation to the overall development of the economy of a given country. Specifically, the insurance penetration rate is calculated as the ratio of total insurance premiums to the country's gross domestic product (GDP), expressed as a percentage. That rate provides an insight into the degree of development of the insurance sector within the economic structure of a country. When the insurance penetration rate is higher, it can be an indicator of a higher level of economic stability, as well as development of financial markets. In this manner, it is possible to assess how the insurance sector development can be reflected in a country's ability to achieve the SDGs, which is the basis of this analysis.

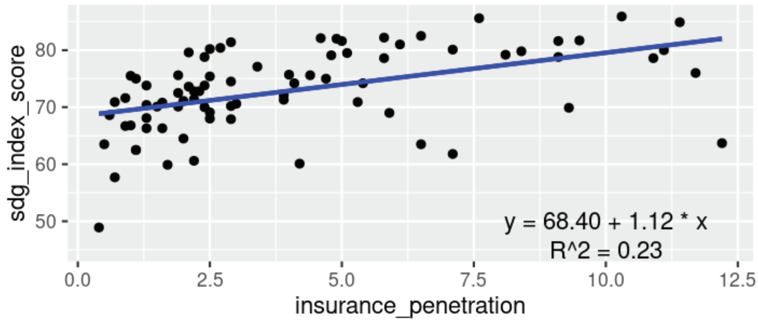
Chart 1 shows the correlation between the SDG Index and the insurance penetration rate for selected countries in 2021. SDG index presents a percentage indicator of the achievement of the SDGs, with a value of 100, indicating that all SDGs have been fully realised.

[9] Allianz. (2019). Review of our contribution to the SDGs. *https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/responsibility/documents/Allianz_SDG_Report.pdf.*

[10] United Nations Statistics Division. (n.d.). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. United Nations. Preuzeto sa *https://unstats.un.org/sdgs/indicators/indicators-list/*.

[11] Holliday, S., Remizova, I., & Stewart, F. (2021). The Insurance Sector's Contribution to the Sustainable Development Goals (SDGs). World Bank Group. *https://documents1.worldbank.org/curated/en/560821632197166715/pdf/The-Insurance-Sector-s-Contribution-to-the-Sustainable-Development-Goals-SDGs.pdf.*

Chart 1. Relation between the SDG index and the insurance penetration rate (linear regression model)



Source: Author's calculations based on data from OECD.stat and SDG Index database 2021 (Online database for the Sustainable Development Report 2021).
Note: Programming language R is used for the analysis.

Analysis included 80 countries with corresponding insurance penetration rates and SDG indices (detailed data are shown in Attachment 1) and showed a tendency for countries with higher insurance penetration rates to make more progress in SDGs implementation. On the other hand, countries with a lower insurance penetration rate showed weaker performance in achieving sustainable development. Based on this review, there might be a link between development of the insurance market and the efficiency in achieving sustainable development. Table 1 showed descriptive statistics of the variables used in the analysis. The relation between the insurance penetration rate and the SDG index will be further looked into through linear regression analysis in the next part of the paper.

Table 1. Descriptive statistics for the SDG index and insurance penetration rate for 2021

	No. of observations (n)	Average value (mean)	Standard deviation (sd)	Minimum (min)	Maximum (max)
SDG index	80	72.95	7.25	48.9	85.9
Insurance penetration (in %)	80	4.08	3.13	0.4	12.2

Source: Author's calculations based on data from OECD.stat and SDG Index database 2021 (Online database for the Sustainable Development Report 2021).
Note: Programming language R is used for the analysis.

Average value of the SDG index for all countries in the sample is 72.95, with a standard deviation of 7.25. Values ranged from 48.9 to 85.9, which showed a wide variability in achieved SDGs in countries. Regarding the insurance penetration rate, the average value is 4.08%, with a standard deviation of 3.13%. Values of the insurance penetration rate ranged from a minimum of 0.4% to a maximum of 12.2%.

Detailed data analysis[12] showed that there were countries with a high SDG index and a high insurance penetration rate (Finland with an SDG index of 85.9 and an insurance penetration rate of 10.3%; Denmark with an SDG index of 84.9 and an insurance penetration rate of 11.4 %; and the Great Britain with an SDG index of 80.0 and an insurance penetration rate of 11.1%). However, there are countries with a high SDG index but a lower insurance penetration rate. For example, Sweden has a high SDG index of 85.6 and the insurance penetration rate of 7.6%. Norway has the SDG index of 82.0 and the insurance penetration rate of 4.9%, while Austria has the SDG index of 82.1 and the insurance penetration rate of 4.6%. On the other hand, there are countries with lower SDG indices and a low insurance penetration rate. For example, Pakistan has the SDG index of 57.7 and the insurance penetration rate of 0.7%. Nigeria has the lowest SDG index at 48.9 with the insurance penetration rate of 0.4%, while Bangladesh has the SDG index of 63, 5 and the insurance penetration rate of 0.5%.

These variations illustrate a complex nature of the relation between the development of the insurance market and the achievement of the SDGs, which points to the need for further research into this phenomenon. In order to evaluate the impact of insurance penetration on the achievement of the SDGs, a linear regression model was used. Results are shown in Table 2.

Table 2. Impact of insurance penetration on the SDG index, 2021.

Independent variable	Coefficient	Std. error	t-value	p-value
Insurance penetration	1.1151	0.2302	4.845	6.31e-06
Constant	68.4007	1.1795	57.991	< 2e-16
Additional statistics:				
R^2 = 0.2313				
F-statistics = 23.47, p < .05				
SEE = 6.393				
n = 80				

Source: Author's calculations based on data from OECD.stat and SDG Index database 2021 (Online database for the Sustainable Development Report 2021).
Note: Programming language R is used for the analysis.

[12] See Attachment 1 at the end of the paper.

Results of the linear regression analysis indicate that the regression as a whole is statistically significant, as shown by the F test ($F = 23.47$, $p < 0.05$). Correlation between the insurance penetration rate and the SDG index is moderately strong positive linear. According to the coefficient of determination ($R^2 = 0.2313$), about 23.1% of the variation in the SDG index can be explained by changes in the insurance penetration rate. Evaluation of the coefficient with the variable. Insurance penetration (1.1151) is statistically significant based on the t-test ($t = 4.845$, $p < 0.001$). A positive slope coefficient suggested that the SDG index increased with an increase in the insurance penetration rate. Although the results are statistically significant, it should be noted that the coefficient of determination R^2 is relatively low, which means that the linear model explains only part of variations in the SDG index.

By comparing the insurance penetration rate and the SDG index, we can see the contribution of insurance to the realisation of the SDGs, however, numerous factors and conceptual differences should be taken into account. For example, the insurance penetration rate may be low due to various factors. Thus, in some countries it is low due to insufficient economic activity and low income of the population, while in other countries the low insurance penetration rate is a consequence of insufficient awareness of the importance of insurance or an insufficiently developed insurance sector.

Relation between progress in realising the SDGs and the expansion of insurance cannot be explained solely based on the level of the living standard in a country. The 2020 Sustainable Development Report showed that even countries with a high standard of living may encounter difficulties in realising certain SDGs, especially environmental ones (SDGs 12-15).[13] Such situation is often attributed to high levels of production and consumption that contribute to environmental pollution. On the other hand, less developed countries and countries with a lower SDG index often have better results in terms of achieving some environmental SDGs, precisely owing to a lower volume of production and consumption, i.e. a lower impact on the environment. However, those countries mostly face challenges in realising other SDGs (SDGs 1-9), such as access to basic healthcare and infrastructure services, which is necessary to ensure sustainable development and general well-being of a society. It should be noted that the contribution of insurance to realisation of the SDGs is not always clearly stated, and thus it is difficult to express it metrically. Although insurance can significantly contribute to reducing the risk of natural disasters, health problems and other unforeseen risks, there are many other factors affecting realisation of SDGs. The connection between insurance and SDGs is indisputable, but assessing its contribution to realisation of these goals is not a simple process.

Globally, insurance has a significant role in realising SDGs at all levels – from individual households to companies and governments. Integration of insurance

[13] Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., & Fuller, G. (2020). The Sustainable Development Report 2020. Cambridge University Press.

and SDGs illustrates how financial stability and social protection can contribute to a broader sustainable development and the reduction of inequality. In this context, insurance can provide a significant contribution to realisation of SDGs through a wide range of economic, social and environmental initiatives. The analysis in the paper will show in detail the influence that insurance companies can have in promotion of sustainable development, especially through development of policies and services that support economic growth, social inclusion and environmental protection.

2. Contribution of Insurance to the Economic Component of Sustainable Development

Economic dimension of sustainable development is extremely important because it implies efficient distribution of resources and long-term growth and stability. In order to achieve it, sustainable economic development requires a balance between the economic growth, the environmental protection and the social justice. Role of the insurance sector in realising the economic aspect of sustainable development is multiple. Insurance can contribute to promotion of sustainable investments, risk management, support for development of small and medium-sized enterprises, as well as advocacy for socially responsible business. Contribution of insurance to sustainable development is particularly present in the economic dimension, and this chapter will explore how insurance contributes to individual SDGs from an economic perspective.

Contribution of insurance to the economic aspect of sustainability is particularly expressed in the SDG 13: Action to Combat Climate Change. Through risk transfer and financial support for reconstruction, insurance directly affects that goal. At the macroeconomic level, insurance helps mitigate the costs of disasters, enabling faster recovery and reducing long-term economic and social losses.

It is crucial to note here that small countries and lower- and middle-income countries recover faster when they are insured against disasters.[14] These countries often have limited resources for reconstruction, and the transfer of risk to insurance can have a positive macroeconomic impact. Benefits of insurance, especially in stimulation of economic activity, are most pronounced within three years after a disaster.[15]

In addition to these macroeconomic benefits, insurance companies develop innovative services such as microinsurance and index insurance. These services enable wider segments of the population to protect themselves from catastrophic risks, contributing to economic inclusion and poverty reduction. Improving access to such innovative solutions has the potential to expand and equalize insurance pools

[14] Von Peter, G., Von Dahlen, S., & Saxena, S. (2012). Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes. BIS Working Papers No 394. *https://www.bis.org/publ/work394.pdf.*
[15] Ibid.

for catastrophic risks[16] by creating a direct economic contribution towards realisation of the SDG 13. Public-private partnerships, such as regional insurance pools in the Caribbean and the Pacific[17] are examples of key instruments in the economic aspects of adapting to climate risks.

The insurance sector can actively contribute to the economic aspects of the SDG 13 through its pricing, risk modeling and natural disaster protection activities. Given its capabilities, the insurance sector can be an important factor in the transition to a low-carbon economy.[18] In order to achieve greater disaster resilience, the insurance sector should continue to develop new services that are adapted to the specific needs of vulnerable communities.

Insurance has the potential to play a significant role in actions against global famine, especially in the context of the SDG 2 End Hunger. According to the State of Food Security and Nutrition in the World 2022, the number of people exposed to famine and food insecurity is on the rise.[19] In this context, insurance can provide necessary protection to agricultural producers against various risks. This is important because a large part of the poor population relies on agriculture as their primary source of income.[20] Agricultural insurance not only helps manage risk and sustain food production, but also encourages sustainable agricultural practices.[21]

Globally, governments around the world have already recognised the value of agricultural insurance in ensuring food security. Countries like the USA and the EU provide significant subsidies for insurance premiums.[22] In addition to protection against

16 Churchill, C., & Matul, M. (2012). *Protecting the poor: A microinsurance compendium* (Vol. 2). International Labour Organization.

17 GFDRR. (2017). What Makes Catastrophe Risk Pool Work. Washington DC: World Bank, GFDRR. *https://www.gfdrr.org/en/feature-story/what-makes-catastrophe-risk-pools-work*.

18 Golnaraghi, M., Geneva Association Task Force on Climate Change Risk Assessment for the Insurance Industry. (2021). *Climate Change Risk Assessment for the Insurance Industry*. The Geneva Association. *https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public//climate_change_risk_assessment_for_the_insurance_industry.pdf*.

19 FAO, IFAD, UNICEF, WFP, & WHO. (2022). The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable. *https://doi.org/10.4060/cc0639en*.

20 World Bank. (n.d.). Agriculture. Preuzeto 15. maja 2023, sa *https://www.worldbank.org/en/topic/agriculture/overview*.

21 Kalfin, N., Sukono, S., Supian, S., & Mamat, M. (2022). Insurance as an alternative for sustainable economic recovery after natural disasters: A systematic literature review. *Sustainability*, 14(7), 4349. *https://doi.org/10.3390/su14074349;* Mills, E. (2004). *Insurance as an adaptation strategy for extreme weather events in developing countries and economies in transition* (Report No. LBNL-52220). Lawrence Berkeley National Laboratory. *https://escholarship.org/uc/item/5609x12n*.

22 Glauber, J. W. (2013). The growth of the federal crop insurance program, 1990–2011. *American Journal of Agricultural Economics*, 95(2), 482–488; Möhring, N., Dalhaus, T., Enjolras, G., & Finger, R. (2020). Crop insurance and pesticide use in European agriculture. *Agricultural Systems*, 184, 102902. https://doi.org/10.1016/j.agsy.2020.102902; Bielza, M., Stroblmair, J., Gallego, J., Conte, C. G., Dittmann, C. (2007). Agricultural risk management in Europe. *AgEcon Search*, 1-61. *https://ageconsearch.umn.edu/record/9252/*.

unforeseen events, insurance encourages investments and access to credits, which further stabilizes income sources and contributes to the growth of food production.

Insurance can significantly contribute to strengthening and improving the sustainability of cities and communities (SDG 11 Sustainable Cities and Communities). Insurance can stimulate all three dimensions of sustainability. From the economic aspect, insurance plays a key role in increasing the resilience of cities and urban communities. This is achieved by supporting infrastructure projects, preventive measures for loss reduction, promoting safe driving and minimizing financial expenses after a disaster. As risk bearers, insurers are key players in assessing and managing risks associated with infrastructure projects. On the other hand, as institutional investors, insurers use their great capacity to cover long-term credit risk to provide financial support to these projects.[23]

By contributing to all sustainability dimensions, insurance can improve healthcare systems and help society in achieving the SDG 3 Good Health and Well-being. Economic contribution is reflected primarily in reducing the financial burden of health care. Health insurance led to reduction and even abolishment of financial barriers in provision of healthcare. Households that have health insurance are less prone to too high healthcare expenses (costs of healthcare from their own pocket exceeding 10% or 25% of the home budget)[24] – thus insurance prevents poverty (SDG 1) and famine (SDG 2).

Insurance has a great potential when it comes to contribution to reducing inequality, both in countries and among them, which is a goal of the SDG 10 Reduce Inequalities. In the context of growing inequality and poverty,[25] insurance can encourage economic stability, especially in developing countries. For example, climate risk insurance helps farmers in countries with low and medium-sized income levels to recover faster from disasters. Investing in the insurance sector in these countries can further create jobs and reduce inequality.

One of the goals, to which insurance can contribute significantly through all three dimensions of sustainability, is the SDG 1 No Poverty. Although we witnessed a constant decrease in the global poverty rate over time, Covid-19 interrupted this progress in 2020. According to the UN, the poverty rate increased from 8.3% in 2019 to 9.2% in 2020, which stopped progress in poverty reduction in approximately three years.[26]

[23] IFC. (2018). Crowding-in capital: how insurance companies can expand access to finance. *EM Compass*. Note 52. *https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/resources/crowding-in+capital+how+insurance+companies+can+expand+access+to+finance.*

[24] Hoang-Vu Eozenou, P., Neelsen, S., Florina Pirlea, A. (2023). *Universal Health Coverage as a Sustainable Development Goal*. World Bank. *https://datatopics.worldbank.org/world-development-indicators/stories/universal-health-coverage-as-a-sustainable-development-goal.html.*

[25] United Nations. (2022). *The Sustainable Development Goals Report 2022*. *https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf.*

[26] Ibid.

Insurance provides key mechanisms for economic resilience in fight against poverty. It helps cover costs of unexpected events, which strengthens the financial stability of individuals and communities. When people face unpredictable situations, such as Covid-19, insurance through unemployment insurance or insurance against disease, can provide financial stability, helping people avoid falling in extreme poverty. In addition, insurance can help reduce poverty through support for continuous business operations, preservation of jobs and reducing the need for state social benefits.

Role of the insurance sector in realising the SDG 8 Decent Work and Economic Growth is becoming more recognised. The main task of the UN Agenda is to promote inclusive and sustainable economic growth, employment and decent work for all. In fact, it is the only SDG where insurance is explicitly mentioned.[27] This potential contribution is visible in every aspect of sustainability – economic, environmental and social. Insurance not only supports entrepreneurship and investments, but also strengthens productivity and relieves financial shocks. By increasing business resilience and risk reduction for entrepreneurs and investors, insurance enables development of new companies and job creation, which directly contributes to the promotion of decent work and economic growth.

Contribution of insurance to achieving the SDG 5 Gender Equality is visible in providing protection to women and girls in different aspects of their lives, including healthcare, financial security and protection against violence. For example, microinsurance can play a key role in reducing economic losses for women, especially given the fact that women in 2020 made almost 45% of the total loss of employment.[28] By providing financial security in case of a disease or death of a spouse, this type of insurance provides women greater economic stability.

Strengthening of industry, innovations and infrastructure are crucial for realisation of the SDG 9 Industry, Innovations and Infrastructure. In this context, insurance can significantly contribute to all three dimensions of sustainability – economic, social and environmental. This sector is able to take and manage risks in infrastructure projects, enabling investors and companies to reduce potential losses and ensure financial protection in case of damages or unplanned events.

The last goal here is the SDG 17 Partnerships for the Goals that focuses on strong global partnerships and cooperation. That means improvement of international cooperation and support to developing countries in realising all goals of sustainability. Insurance in cooperation with international organizations, governments and the

[27] 8.10 – Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all. United Nations. (n.d.-a). *Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all.* Taken on 20th May 2023, from *https://unric.org/en/sdg-8/*.

[28] United Nations. (2022). *The Sustainable Development Goals Report 2022*.

non-governmental sector, can contribute to the SDG 17 in several ways. For example, credit insurance provides a greater flow of capital and goods, while insurance companies help attract investments in economies with low and medium-sized revenues, mitigating risks such as political instability and natural disasters.[29] These mechanisms allow for most of the SDG-related investments to be directed towards the least developed countries thus providing a significant economic contribution to the SDG 17.

3. Role of Insurance in Achieving Environmentally Sustainable Development

Environmental sustainability is crucial for the planet's future, especially in view of accelerated climate crisis. Intergovernmental Panel on Climate Change (IPCC) warns that current efforts are not sufficient to mitigate climate changes.[30]

Insurance sector, which manages 44 trillion USD of global property,[31] has an important role in transition to a low-carbon economy. This sector not only helps understand climate changes but also encourages decarbonization through its investment strategies.

The United Nations launched Principles for Sustainable Insurance (PSI), a document signed by 150 insurers.[32] Although it is a significant progress, there is room for growth and innovation, especially because only one third of global premiums comes from PSI signatories. With initiatives like PSI and Net-Zero Insurance Alliance,[33] and by applying the concept of green insurance, insurance companies become key players in realising global SDGs. Further, a specific contribution of insurance is presented in achieving different SDGs, with special reference to the environmental dimension.

SDG 13 Climate Action opens a space for a significant environmental contribution of the insurance sector. The sector can create innovative services such as crop insurance and natural disaster insurance, which not only reduce economic losses, but encourage sustainable resource management. In addition, the sector can financially support the transition to a low-carbon economy, with annual investments

[29] Holliday, S., Remizova, I., & Stewart, F. (2021); Access to Insurance Initiative. (2023). *SDG 17: Partnerships for the Goals*. *https://a2ii.org/en/sdg-17*.

[30] IPCC. (2023). *IPCC Sixth Assessment Report. Climate Change 2023 (AR6)*. Preuzeto sa *https://www.ipcc.ch/report/ar6/syr/*.

[31] International Association of Insurance Supervisors (IAIS). (2022). *2022 Global Insurance Market Report*. Preuzeto sa *www.iaisweb.org*.

[32] UNEP Finance Initiative. (n.d.). Signatory Companies – Principles for Sustainable Insurance. Preuzeto 20. maja 2023. sa *https://www.unepfi.org/insurance/insurance/signatory-companies/*.

[33] UNEP Finance Initiative. (2022). Insuring the net-zero transition: Evolving thinking and practices. A white paper produced by the Net-Zero Insurance Alliance convened by UN Environment Programme's Principles for Sustainable Insurance Initiative. United Nations Environment Programme Finance Initiative.

between USD 1.6 and 3.8 trillion by 2050.[34] Examples such as index insurance of coral reefs in Mexico[35] and Africa Risk View[36] for drought risk management, illustrate how insurance can effectively manage climate risks.

Although 74% of the world's population has access to clean water, two billion people still do not have access to safe sources.[37] It has serious consequences for public health and economic development, and is directly related to the SDG 6 Clean Water and Sanitation. In this context, the insurance sector can have an indirect but significant contribution. Insurance can support projects to improve water supply and sanitation, as well as sustainable irrigation methods with innovative products. For example, insurance based on the hydrological drought index-based insurance in Spain[38] and federal crop insurance for sustainable rice irrigation methods in the USA[39] show how insurance can manage the risks associated with water resources. These models not only encourage investments in the water sector but also promote sustainable practices.

SDG 12 Responsible Consumption and Production – emphasis is on importance of responsible handling of resources and products. Although the link between insurance and this goal may seem vague, there are many ways for the sector to have a significant impact. In particular, insurance services can serve as powerful incentives to promote environmentally responsible practices. For example, insurance that covers the costs of e-waste recycling or restoration of polluted areas can motivate companies to handle waste responsibly. In addition, by developing specialized insurance services for investors and renewable energy companies, the insurance sector can further encourage sustainable initiatives. An example of this is the company *Chubb*, which offers insurance services to companies dealing with electronic waste management, providing coverage for potential losses associated with its improper disposal.[40]

SDG 15 Life on Land calls for the protection of life on land and fight against a serious problem of deforestation. Insurance can have an important role, especially in reducing the risk of natural disasters and negative impacts on the environment. For example, insurers can encourage farmers to adopt sustainable practices by of-

[34] United Nations. (2022). *The Sustainable Development Goals Report 2022*.

[35] The Nature Conservancy & Willis Towers Watson. (2021). Wildfire Resilience Insurance: Quantifying the Risk Reduction of Ecological Forestry with Insurance. Preuzeto sa: *https://www.nature.org/content/dam/tnc/nature/en/documents/FINALwildfireresilienceinsurance6.27.21.pdf*

[36] ARC. (2016). *Risk Models. Drought*. Preuzeto sa *https://www.arc.int/drought*.

[37] United Nations. (2022). *The Sustainable Development Goals Report 2022*.

[38] Guerrero-Baena, M.D., & Gómez-Limón, J.A. (2019). Insuring water supply in irrigated agriculture: A proposal for hydrological drought index-based insurance in Spain. *Water*, 11(4), 686. *https://doi.org/10.3390/w11040686*.

[39] Smith, R. (2019). *Newly approved rice irrigation practices aid sustainability*. Farm Progress. Preuzeto sa *https://www.farmprogress.com/rice/newly-approved-rice-irrigation-practices-aid-sustainability*.

[40] Chubb. (2016). *Electronic Waste: Managing the Environmental and Regulatory Challenges*. Preuzeto sa *https://resource-recycling.com/e-scrap/wp-content/uploads/sites/2/2016/06/chubb-e-waste-wp.pdf.*

fering appropriate insurance. It can be an effective way to slow down and reverse the deforestation trend. In addition, insurance can encourage sustainable forestry practices and reduce the risk of wildfires, as shown by a study by the Nature Conservancy and Willis Towers Watson.[41]

SDG 7 Affordable and Clean Energy ensures access to clean and affordable energy, which is a key prerequisite for the development of agriculture, business, communications, education, healthcare and transport.[42] The role of the insurance sector in realising that goal could include investments in renewable energy projects, such as solar parks, wind farms and hydropower plants. Dynamic growth of India's renewable energy sector serves as an example. As the sector expands, the need for adequate insurance that will mitigate various potential risks associated with the development and exploitation of renewable energy sources increases. Forecasts show that renewable energy insurance will grow by 15–20% in 2023.[43] In addition, insurers can offer insurance for renewable energy infrastructure, which would reduce the risk for investors and facilitate financing of such projects. Companies like *Allianz* offer specialized insurance for renewable energy projects covering risks such as technical defects, delivery problems and project interruptions.[44]

Preservation of oceans and seas is crucial for human existence and recognized in the SDG 14 Life below Water. Seas and oceans cover 70% of the planet and provide food, energy and water. At the same time, the ocean absorbs about a quarter of the world's annual carbon dioxide (CO2) emissions, thereby mitigating climate changes and their consequences.[45]

Insurance companies have various roles in achieving that goal, both directly and indirectly. They can encourage sustainable practices in sectors such as fisheries, offer cover for damage caused by pollution and financially support the protection of marine ecosystems. Examples include *Caribbean Oceans and Aquaculture Sustainability Facility* (COAST)[46] for sustainable fishery and *Vessel Pollution Liability Insurance*[47] for

[41] The Nature Conservancy & Willis Towers Watson. (2021).
[42] United Nations. (n.d.-b). *Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all*. Preuzeto 21. maja 2023, sa *https://unric.org/en/sdg-7/*.
[43] ETEnergyWorld. (2023). *Why insurance in renewable energy sector will see a massive uptick in 2023*. Preuzeto sa *https://energy.economictimes.indiatimes.com/news/renewable/why-insurance-in-renewable--energy-sector-will-see-a-massive-uptick-in-2023/99081037*
[44] Allianz. (2014). *Allianz offers customers an increasing number of green solutions*. Preuzeto sa *https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/responsibility/documents/2014_GreenSolutions_factsheet.pdf.*
[45] United Nations. (n.d.-c). *Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development*. Preuzeto 21. maja 2023, sa *https://unric.org/en/sdg-14/*.
[46] World Bank. (2019). *Innovative fisheries insurance benefits Caribbean fisherfolk*. Preuzeto sa *https://www.worldbank.org/en/news/feature/2019/09/20/innovative-fisheries-insurance-benefits-caribbean-fisherfolk*.
[47] Great American Insurance Group. (n.d.). *Pollution coverage*. Preuzeto sa *https://www.greatamericaninsurancegroup.com/about-us/business-operations/product/ocean-marine/pollution-coverage*

cleaning of pollution. In addition, the world's first natural resource insurance was established to protect coral reefs in Mexico.[48]

SDG 1 No Poverty. Emphasis is on the eradication of poverty, which is a central goal of the Agenda for Sustainable Development. Insurance, as one of the social protection mechanisms, can contribute to realisation of that goal in the environmental field. This includes preventive measures, investing in building resilience to climate changes and providing protection against financial losses caused by extreme weather events. By providing financial security against extreme weather conditions, insurance opens options for poverty reduction and climate change adaptation in developing countries.[49] Index insurance against flood (tested in India) can provide financial protection and reduce the risk of poverty caused by climate changes. It has been shown that expanding such insurance schemes could help strengthen agricultural livelihoods, reduce post-disaster costs for governments and contribute to poverty reduction, gender equality and food security protection.[50]

Insurance has the potential to contribute indirectly to achieving the SDG 3 Good Health and Well-being, which focuses on promoting healthy lifestyle and well-being for all. On one hand, insurance companies can invest in green and sustainable projects that improve quality of air, water and land, reducing the exposure of people to pollution and climate changes.[51] On the other hand, investments in sustainable technologies such as telemedicine and digital healthcare technology can reduce the environmental impact of traditional healthcare models.

Insurance can have a key role in managing climate risks and community recovery after extreme weather events. For example, by investing in better sanitation conditions and climate resilience insurance can reduce disease incidence such as malaria, which took 627,000 lives in 2020.[52] In addition, insurance can help maintain healthcare systems, especially in crises like a Covid-19 pandemic, which further deteriorated the situation with malaria.

SDG 9 Industry, Innovation and Infrastructure, and SDG 11 Sustainable Cities and Communities require more resilient and more sustainable infrastructure, as well as reduction of the negative impact on the environment, so in many aspects, environmental contribution of insurance to their realisation can be similar. In both

[48] The Nature Conservancy & Willis Towers Watson. (2021).

[49] Linnerooth-Bayer, J., Surminski, S., Bouwer, L.M., Noy, I., Mechler, R. (2019). Insurance as a Response to Loss and Damage?. In: *Mechler*, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (Eds.), *Loss and Damage from Climate Change* (pp. 287-314). Climate Risk Management, Policy and Governance. Springer.

[50] Amarnath, G. (2021). *How a new framework can provide flood insurance guidance to millions of farmers*. PreventionWeb. *https://www.preventionweb.net/news/how-new-framework-can-provide-flood-insurance--guidance-millions-farmers*

[51] Holliday, S., Remizova, I., & Stewart, F. (2021). The Insurance Sector's Contribution to the Sustainable Development Goals (SDGs). World Bank Group. *https://documents1.worldbank.org/curated/en/560821632197166715/pdf/The-Insurance-Sector-s-Contribution-to-the-Sustainable-Development-Goals-SDGs.pdf*

[52] United Nations. (2022). *The Sustainable Development Goals Report 2022*.

cases, insurance companies can support environmental initiatives through green insurance, providing coverage for renewable energy projects, energy efficiency and sustainable building, as well as promoting resilience to climate changes.

Although similarities of the contribution of insurance to the environmental dimension of the SDG 9 and the SDG 11 are obvious, differences in focus allow insurance companies to adapt their products and services to specific needs for these goals. For example, in case of the SDG 9 it could be insurance for producers of clean technologies, such as solar panels and wind turbines, in order to encourage development of sustainable technologies and reduce the impact of industry on the environment. Regarding the SDG 11, insurance can provide environmental contribution through packages aimed at financing and preserving environmentally friendly public transport systems, such as electric buses, trams or trains. This not only effectively reduces air pollution and carbon dioxide emissions in urban areas, but also contributes to creating sustainable urban communities.

A project that shows how insurance can contribute to achieving the SDG 9 is *Prins Hendrikzanddijk* in the Netherlands. Insurance had a key role here, not only as a mechanism for damage compensation but also as an incentive for investment and promotion of natural solutions. The project had a significant economic contribution, creating an additional 0.4-1.07 million Euros a year through eco-systemic services.[53] Mass timber insurance offered by *Zürich North America*[54] is an example of a green insurance, which in terms of environment, contributes to the SDG 9 and the SDG 11 at the same time. By promoting sustainable building materials, insurance can contribute to the construction of cities resilient to climate changes that minimize their environmental imprint.

4. Influence of Insurance on the Social Dimension of Sustainable Development

Social dimension of sustainable development includes the impact of business on people and communities, including working conditions, human rights and health.[55] Although it is not a priority in relation to economic and environmental aspects, it has a key role in overall sustainability. Insurance sector with annual premiums of almost seven trillion dollars[56] has a great potential to contribute to global

[53] IADC, CEDA, & Vital Ports. (2021). Financing sustainable marine and freshwater infrastructure: A joint study to explore private financing of green coastal, river and port projects. *https://www.financing-smafi.org/wp-content/uploads/2021/09/financing-sustainable-marine-and-freshwater-infrastructure.pdf*

[54] Zurich North America. (2021). Mass timber is taking root in commercial construction. *https://www.zurichna.com/knowledge/articles/2021/10/mass-timber-is-taking-root-in-commercial-construction.*

[55] OECD. (2022). *Measuring the social performance of firms through the lens of the OECD well-being framework*. *https://www.oecd.org/wise/Measuring-the-Social-Performance-of-Firms-through-the-Lens-of-the-OECD--Well-being-Framework-Policy-Brief-February-2022.pdf.*

56 Swiss Re Institute. (2022). *World insurance: Inflation risks front and centre* (sigma 4/2022). Swiss Re. *https://www.swissre.com/dam/jcr:4500fe30-7d7b-4bc7-b217-085d7d87a35b/swiss-re-institute-sigma-4-2022.pdf*

social sustainability, overcoming its basic function of protection against financial losses. In the paper, an analysis of how insurance from the social aspect contributes to specific SDGs will be shown.

SDG 1 No Poverty. Poverty was observed as a multidimensional problem and insurance can contribute by providing financial stability in crucial moments. In addition to mitigating financial consequences of accidents or diseases, insurance helps strengthen community resilience and provides access to basic services such as healthcare and education. For example, California Medi-Cal programme reduced poverty rates and enabled healthcare for those with lower income.[57] In China, pilot projects in Yunnan and Hebei showed how insurance can be an effective poverty risk management, especially regarding diseases and natural disasters.[58]

Insurance can have an important social role in realising the SDG 3 Good Health and Well-being, which is focused on healthy lifestyle and well-being for all. In addition to financial protection, insurance promotes social inclusion and equality by providing access to healthcare services, especially for vulnerable groups.[59] For example, partnerships with governments and NGOs can improve vaccination programs and healthcare for mothers and newborns. Insurance not only serves as a financial support, but also strengthens social and healthcare systems.

Insurance has a distinctly significant social component that directly contributes to achieving the SDG 8 Decent Work and Economic Growth. Social contribution of insurance is manifested through its ability to increase social security, reduce poverty and inequality, and to promote decent work for all.

At the company level, insurance helps preserve jobs and earnings, which further protects workers and their families. Insurance also promotes inclusion and equality in the workplace, providing all workers, regardless of their social status, access to insurance services. Microinsurance programmes are significant since they are used effectively in fight against child labour, as shown by studies from Pakistan.[60] These programs provide financial protection to families in cases of economic shocks, reducing the need for child labour.

---

[57] Danielson, C., Malagon, P., & McConville, S. (2023). *The Impact of Health Insurance on Poverty in California*. Public Policy Institute of California. *https://www.ppic.org/publication/the-impact-of-health-insurance-on--poverty-in-california/*.

[58] Swiss Re Institute. (2018). *Insurance in poverty reduction: a case from China*. *https://www.swissre.com/institute/research/topics-and-risk-dialogues/society-and-politics/insurance-in-poverty-reduction-a-case--from-china.html*.

[59] Yokobori, Y., Kiyohara, H., Mulati, N., Lwin, K. S., Bao, T. Q. Q., Aung, M. N., Yuasa, M., & Fujita, M. (2023). Roles of Social Protection to Promote Health Service Coverage among Vulnerable People toward Achieving Universal Health Coverage: A Literature Review of International Organizations. *International Journal of Environmental Research and Public Health*, *20*(9), 5754. *https://doi.org/10.3390/ijerph20095754*.

[60] Landmann, A., & Frölich, M. (2013). Can Microinsurance Help Prevent Child Labor? An Impact Evaluation from Pakistan. *Political Economy - Development: International Development Efforts & Strategies eJournal*.

SDG 10 Reduced Inequalities. We are faced with growing economic and social inequalities, climate changes, migrations and gender discrimination, the role of insurance in providing social protection is becoming more important. Reducing inequality can be viewed through three key areas. The first is to improve the accessibility of insurance, especially for low-income persons, thus reducing the risk of social exclusion. The second includes innovation such as microinsurance and climate risk insurance, which strengthen social cohesion and allow efficient adaptation to different types of shocks. For example, World Food Program (WFP) uses insurance for better preparation and recovery from climatic shocks at different levels.[61] The third area refers to social responsible business, where insurance companies adopt the ESG criteria to encourage inclusion and reduce inequality.[62] In this way, insurance not only provides direct social value, but also encourages active involvement of all groups in social and economic activities.

SDG 11 Sustainable Cities and Communities. Social contribution of insurance is increasingly prominent especially in growing urbanization, climate changes and social inequalities. Considering urbanization and climate changes, health insurance can mitigate risks of air pollution by providing financial support for treatment and prevention.[63] Innovations such as telematics programs in vehicles reduce the number of traffic accidents and pollution,[64] while microinsurance and real estate insurance provide financial stability to poor households. Moreover, investment in infrastructure projects highlights the role of insurance in building more sustainable urban environments, particularly in low- and moderate-income communities.

SDG 5 Gender Equality. Insurance has an extensive role in the empowerment of women and the promotion of gender equality at the global level. Insurance sector directly fights against gender inequality through innovative services such as microinsurance and insurance of reproductive health.[65] These services not only provide financial support and protection, but empower women to take control of their lives and health. Partnerships with organizations such as the ILO and the IFC aim to reduce the gender protection gap[66] and increase gender inclusion, which was

[61] World Food Programme. (2021). Sovereign Climate Risk Financing and Insurance: Protecting vulnerable people and communities with pre-arranged funding for rapid responses. *https://docs.wfp.org/api/documents/WFP-0000132157/download/*.

[62] The Geneva Association. (2022). *The role of insurance in promoting social sustainability*. *https://www.genevaassociation.org/sites/default/files/2022-11/social_sustainability_report.pdf*.

[63] Chen, S., & He, L. (2021). Air Pollution and Medical Insurance: From a Health-Based Perspective. *Sustainability*, *13*(23), 13157. *https://doi.org/10.3390/su132313157*.

[64] Stevenson, M., Harris, A., Mortimer, D., Wijnands, J. S., Tapp, A., Peppard, F., & Buckis, S. (2018). The effects of feedback and incentive-based insurance on driving behaviours: study approach and protocols. *Injury Prevention*, *24*(1), 89–93. *https://doi.org/10.1136/injuryprev-2016-042280*.

[65] World Health Organization. (2020). *Universal health coverage for sexual and reproductive health: Evidence brief*. *https://www.who.int/publications/i/item/WHO-SRH-20.1*.

[66] International Labour Organization. (2022). *Targeting women in insurance*. *https://www.ilo.org/empent/areas/social-finance/WCMS_775545/lang–en/index.htm*.

important during the Covid-19 pandemic. Domestic violence insurance provides basic support to victims, helping them break the cycle of abuse.[67] These initiatives not only reduce women's economic vulnerability, but also contribute to building societies that are more inclusive.

SDG 9 Industry, Innovations and Infrastructure. Focus is on resilient infrastructure, sustainable industrial production and innovation and insurance can have an important role. That role does not only refer to economic and environmental support, but also to social aspects of that goal. Social contribution of insurance in sustainable development can be manifested in different ways, starting from protecting jobs in industry to facilitating the expansion of information and communication infrastructure. In the industrial sector, insurance packages can provide financial stability to workers, especially in developing countries, thereby easing social tensions and contributing to social welfare. Regarding information and communication infrastructure, insurance can minimize financial risks related to network development and expansion, which is essential in less developed countries. In addition, insurance provides protection against cyber attacks, encouraging further use of digital resources.

Insurance can also provide a significant indirect social contribution to achieving the SDG 4 Quality Education. Various insurance policies provide financial stability that enables continued education, especially in poor and vulnerable communities. For example, life insurance and specialized insurance plans can maintain a stable cash flow for families, ensuring that children's education is not compromised in times of crisis. Some services even offer additional education savings, recognizing the needs of low-income populations.[68] In addition, insurance can have a role in protecting education infrastructure, from school buildings to digital resources, enabling faster recovery from unforeseen events and preserving the integrity of educational systems.

II. Conclusion

In terms of global challenges shaping the present and the future, this paper explores the role of insurance as a significant factor in realising Sustainable Development Goals. A comparative analysis of a sample of 80 countries established a positive correlation between the development of the insurance market and efficiency in realising SDGs, thus highlighting insurance as a potential catalyst for sustainable initiatives at the global level.

Insurance proves to be a multifunctional mechanism that contributes to economic stability, environmental sustainability and social inclusion. In the economic

[67] Health Care Insider (2021). *What Are Domestic Violence and Health Insurance Protections? https://healthcareinsider.com/qle-domestic-violence-abuse-172654.*

[68] GIZ. (2017). *Inclusive Insurance and the Sustainable Development Goals*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

context, insurance promotes efficient allocation of resources and long-term growth, while from the environmental aspect it encourages transition to sustainable energy solutions and management of climate risks. Regarding social aspect, insurance goes beyond its traditional role and becomes an instrument for promotion of financial resilience and social justice. In this sense, insurance not only has the capacity to respond to current challenges, but also to shape a more sustainable and more inclusive society for future generations. Further researches and development of institutional infrastructure could strengthen the role of insurance in achieving global Sustainable Development Goals.

Literature

- Access to Insurance Initiative. (2023). *SDG 17: Partnerships for the Goals*. *https://a2ii.org/en/sdg-17*.
- Allianz. (2014). *Allianz offers customers an increasing number of green solutions*. Preuzeto sa *https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/responsibility/documents/2014_GreenSolutions_factsheet.pdf.*
- Allianz. (2019). Review of our contribution to the SDGs. *https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/responsibility/documents/Allianz_SDG_Report.pdf.*
- Amarnath, G. (2021). *How a new framework can provide flood insurance guidance to millions of farmers*. PreventionWeb. *https://www.preventionweb.net/news/how-new-framework-can-provide-flood-insurance-guidance-millions-farmers.*
- ARC. (2016). *Risk Models. Drought*. Preuzeto sa *https://www.arc.int/drought.*
- Bielza, M., Stroblmair, J., Gallego, J., Conte, C. G., Dittmann, C. (2007). Agricultural risk management in Europe. *AgEcon Search*, 1-61. *https://ageconsearch.umn.edu/record/9252/.*
- Cambridge Institute for Sustainability Leadership (CISL) (2019). Mutual microinsurance and the Sustainable Development Goals: An impact assessment following Typhoon Haiyan. Cambridge, UK: Cambridge Institute for Sustainability Leadership.
- Chen, S., & He, L. (2021). Air Pollution and Medical Insurance: From a Health-Based Perspective. *Sustainability*, *13*(23), 13157. *https://doi.org/10.3390/su132313157.*
- Chubb. (2016). *Electronic Waste: Managing the Environmental and Regulatory Challenges*. Preuzeto sa *https://resource-recycling.com/e-scrap/wp-content/uploads/sites/2/2016/06/chubb-e-waste-wp.pdf.*
- Churchill, C., & Matul, M. (2012). *Protecting the poor: A microinsurance compendium* (Vol. 2). International Labour Organization.

- Danielson, C., Malagon, P., & McConville, S. (2023). *The Impact of Health Insurance on Poverty in California*. Public Policy Institute of California. *https://www.ppic.org/publication/the-impact-of-health-insurance-on-poverty-in-california/.*
- ETEnergyWorld. (2023). *Why insurance in renewable energy sector will see a massive uptick in 2023*. Preuzeto sa *https://energy.economictimes.indiatimes.com/news/renewable/why-insurance-in-renewable-energy-sector-will-see-a-massive-uptick-in-2023/99081037.*
- FAO, IFAD, UNICEF, WFP, & WHO. (2022). The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable. *https://doi.org/10.4060/cc0639en.*
- GFDRR. (2017). What Makes Catastrophe Risk Pool Work. Washington DC: World Bank, GFDRR. *https://www.gfdrr.org/en/feature-story/what-makes-catastrophe-risk-pools-work.*
- GIZ. (2017). *Inclusive Insurance and the Sustainable Development Goals*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
- Glauber, J. W. (2013). The growth of the federal crop insurance program, 1990–2011. *American Journal of Agricultural Economics*, 95(2), 482–488.
- Golnaraghi, M., Geneva Association Task Force on Climate Change Risk Assessment for the Insurance Industry. (2021). *Climate Change Risk Assessment for the Insurance Industry*. The Geneva Association. *https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public//climate_change_risk_assessment_for_the_insurance_industry.pdf.*
- Great American Insurance Group. (n.d.). *Pollution coverage*. Preuzeto sa *https://www.greatamericaninsurancegroup.com/about-us/business-operations/product/ocean-marine/pollution-coverage.*
- Guerrero-Baena, M.D., & Gómez-Limón, J.A. (2019). Insuring water supply in irrigated agriculture: A proposal for hydrological drought index-based insurance in Spain. *Water*, 11(4), 686. *https://doi.org/10.3390/w11040686.*
- Health Care Insider (2021). *What Are Domestic Violence and Health Insurance Protections? https://healthcareinsider.com/qle-domestic-violence-abuse-172654.*
- Hoang-Vu Eozenou, P., Neelsen, S., Florina Pirlea, A. (2023). *Universal Health Coverage as a Sustainable Development Goal*. World Bank. *https://datatopics.worldbank.org/world-development-indicators/stories/universal-health-coverage-as-a-sustainable-development-goal.html.*
- Holliday, S., Remizova, I., & Stewart, F. (2021). The Insurance Sector's Contribution to the Sustainable Development Goals (SDGs). World Bank Group. *https://documents1.worldbank.org/curated/en/560821632197166715/pdf/The-Insurance-Sector-s-Contribution-to-the-Sustainable-Development-Goals-SDGs.pdf.*

- IADC, CEDA, & Vital Ports. (2021). Financing sustainable marine and freshwater infrastructure: A joint study to explore private financing of green coastal, river and port projects. *https://www.financing-smafi.org/wp-content/uploads/2021/09/financing-sustainable-marine-and-freshwater-infrastructure.pdf.*
- IFC. (2018). Crowding-in capital: how insurance companies can expand access to finance. *EM Compass*. Note 52. *https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/resources/crowding-in+capital+how+insurance+companies+can+-expand+access+to+finance.*
- International Association of Insurance Supervisors (IAIS). (2022). *2022 Global Insurance Market Report*. Preuzeto sa *www.iaisweb.org.*
- International Labour Organization. (2022). *Targeting women in insurance*. https://www.ilo.org/empent/areas/social-finance/WCMS_775545/lang–en/index.htm.
- IPCC. (2023). *IPCC Sixth Assessment Report. Climate Change 2023 (AR6)*. Preuzeto sa *https://www.ipcc.ch/report/ar6/syr/*.
- Kalfin, N., Sukono, S., Supian, S., & Mamat, M. (2022). Insurance as an alternative for sustainable economic recovery after natural disasters: A systematic literature review. *Sustainability*, 14(7), 4349. *https://doi.org/10.3390/su14074349.*
- Landmann, A., & Frölich, M. (2013). Can Microinsurance Help Prevent Child Labor? An Impact Evaluation from Pakistan. *Political Economy - Development: International Development Efforts & Strategies eJournal*.
- Linnerooth-Bayer, J., Surminski, S., Bouwer, L.M., Noy, I., Mechler, R. (2019). Insurance as a Response to Loss and Damage?. In: Mechler, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (Eds.), *Loss and Damage from Climate Change* (pp. 287-314). Climate Risk Management, Policy and Governance. Springer.
- Mills, E. (2004). *Insurance as an adaptation strategy for extreme weather events in developing countries and economies in transition* (Report No. LBNL-52220). Lawrence Berkeley National Laboratory. *https://escholarship.org/uc/item/5609x12n.*
- Möhring, N., Dalhaus, T., Enjolras, G., & Finger, R. (2020). Crop insurance and pesticide use in European agriculture. *Agricultural Systems*, 184, 102902. https://doi.org/10.1016/j.agsy.2020.102902.
- OECD. (2022). *Measuring the social performance of firms through the lens of the OECD well-being framework*. *https://www.oecd.org/wise/Measuring-the-Social-Performance-of-Firms-through-the-Lens-of-the-OECD-Well-being-Framework-Policy-Brief-February-2022.pdf.*

- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., & Fuller, G. (2020). The Sustainable Development Report 2020. Cambridge University Press.
- Smith, R. (2019). *Newly approved rice irrigation practices aid sustainability*. Farm Progress. Preuzeto sa *https://www.farmprogress.com/rice/newly-approved-rice-irrigation-practices-aid-sustainability.*
- Stevenson, M., Harris, A., Mortimer, D., Wijnands, J. S., Tapp, A., Peppard, F., & Buckis, S. (2018). The effects of feedback and incentive-based insurance on driving behaviours: study approach and protocols. *Injury Prevention*, *24*(1), 89-93. *https://doi.org/10.1136/injuryprev-2016-042280*.
- Swiss Re Institute. (2018). *Insurance in poverty reduction: a case from China*. *https://www.swissre.com/institute/research/topics-and-risk-dialogues/society-and-politics/insurance-in-poverty-reduction-a-case-from-china.html.*
- Swiss Re Institute. (2022). *World insurance: Inflation risks front and centre* (sigma 4/2022). Swiss Re. *https://www.swissre.com/dam/jcr:4500fe30-7d7b-4bc7-b217-085d7d87a35b/swiss-re-institute-sigma-4-2022.pdf.*
- Swiss Re. (2017). Insurance: adding value to development in emerging markets. *Sigma*, 4/2017, Zürich, Swiss Re.
- Tešić, N. (2022). ESG risks in the insurance market. *Development of modern insurance market - constraints and possibilities* (pp. 237-252). Faculty of Economics, University of Belgrade.
- The Geneva Association. (2022). *The role of insurance in promoting social sustainability*. *https://www.genevaassociation.org/sites/default/files/2022-11/social_sustainability_report.pdf.*
- The Nature Conservancy & Willis Towers Watson. (2021). Wildfire Resilience Insurance: Quantifying the Risk Reduction of Ecological Forestry with Insurance. Preuzeto sa: *https://www.nature.org/content/dam/tnc/nature/en/documents/FINALwildfireresilienceinsurance6.27.21.pdf.*
- UNEP Finance Initiative. (2012). Principles for sustainable insurance. Preuzeto sa *www.unepf.org/psi/the-principles/.*
- UNEP Finance Initiative. (2022). Insuring the net-zero transition: Evolving thinking and practices. A white paper produced by the Net-Zero Insurance Alliance convened by UN Environment Programme's Principles for Sustainable Insurance Initiative. United Nations Environment Programme Finance Initiative.
- UNEP Finance Initiative. (n.d.). Signatory Companies – Principles for Sustainable Insurance. Preuzeto 20. maja 2023. Sa *https://www.unepfi.org/insurance/insurance/signatory-companies/.*
- United Nations Statistics Division. (n.d.). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for

Sustainable Development. United Nations. Preuzeto 18. maja 2023. sa *https://unstats.un.org/sdgs/indicators/indicators-list/*.
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations Sustainable Development Summit 2015. New York. *https://sustainabledevelopment.un.org/post2015/summit*.
- United Nations. (2022). *The Sustainable Development Goals Report 2022*. *https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf*.
- United Nations. (n.d.-a). *Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all***.** Preuzeto 20. maja 2023, sa *https://unric.org/en/sdg-8/*.
- United Nations. (n.d.-b). *Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all*. Preuzeto 21. maja 2023, sa *https://unric.org/en/sdg-7/*.
- United Nations. (n.d.-c). *Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development*. Preuzeto 21. maja 2023, sa *https://unric.org/en/sdg-14/*.
- Von Peter, G., Von Dahlen, S., & Saxena, S. (2012). Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes. BIS Working Papers No 394. *https://www.bis.org/publ/work394.pdf*.
- WCED. (1987). *Report of the World Commission on Environmental and Development: Our Common Future – Brundtland Report*. WCED. *https://www.un-documents.net/our-common-future.pdf*.
- World Bank Group. (2021). *Developing Insurance Markets. The Insurance Sector's Contribution to the Sustainable Development Goals (SDGs)*. *https://doi.org/10.1596/978-1-4648-1715-9*.
- World Bank. (2019). *Innovative fisheries insurance benefits Caribbean fisherfolk*. Preuzeto sa *https://www.worldbank.org/en/news/feature/2019/09/20/innovative-fisheries-insurance-benefits-caribbean-fisherfolk*.
- World Bank. (n.d.). Agriculture. Preuzeto 15. maja 2023, sa *https://www.worldbank.org/en/topic/agriculture/overview*.
- World Food Programme. (2021). Sovereign Climate Risk Financing and Insurance: Protecting vulnerable people and communities with pre-arranged funding for rapid responses. *https://docs.wfp.org/api/documents/WFP-0000132157/download/*.
- World Health Organization. (2020). *Universal health coverage for sexual and reproductive health: Evidence brief. https://www.who.int/publications/i/item/WHO-SRH-20.1*.
- Yokobori, Y., Kiyohara, H., Mulati, N., Lwin, K. S., Bao, T. Q. Q., Aung, M. N., Yuasa, M., & Fujita, M. (2023). Roles of Social Protection to Promote Health

Service Coverage among Vulnerable People toward Achieving Universal Health Coverage: A Literature Review of International Organizations. *International Journal of Environmental Research and Public Health*, *20*(9), 5754. *https://doi.org/10.3390/ijerph20095754*.

- Zurich North America. (2021). Mass timber is taking root in commercial construction. *https://www.zurichna.com/knowledge/articles/2021/10/mass-timber-is-taking-root-in-commercial-construction*.
- *https://stats.oecd.org/*
- *https://www.sdgindex.org/*

Attachment 1 – Data on insurance penetration rate and SDG index for 80 countries in 2021

No.	Country	Insurance penetration	SDG index
1.	Finland	10.3	85.9
2.	Sweden	7.6	85.6
3.	Denmark	11.4	84.9
4.	Germany	6.5	82.5
5.	Belgium	5.8	82.2
6.	Austria	4.6	82.1
7.	Norway	4.9	82.0
8.	France	9.5	81.7
9.	Slovenia	5	81.6
10.	Netherlands	9.1	81.6
11.	Czech Republic	2.9	81.4
12.	Ireland	6.1	81.0
13.	Croatia	2.7	80.4
14.	Poland	2.5	80.2
15.	Switzerland	7.1	80.1
16.	United Kingdom	11.1	80.0
17.	Japan	8.4	79.8
18.	Slovak Republic	2.1	79.6
19.	Spain	5.1	79.5
20.	Canada	8.1	79.2
21.	New Zealand	4.8	79.1
22.	Hungary	2.4	78.8
23.	Italy	9.1	78.8

No.	Country	Insurance penetration	SDG index
24.	Portugal	5.8	78.6
25.	Korea, Rep.	10.9	78.6
26.	Chile	3.4	77.1
27.	United States	11.7	76.0
28.	Malta	4	75.7
29.	Serbia	1.9	75.6
30.	Australia	4.4	75.6
31.	Ukraine	1	75.5
32.	Greece	2.5	75.4
33.	Israel	4.7	75.0
34.	Romania	1.1	75.0
35.	Uruguay	2.9	74.5
36.	Luxembourg	4.1	74.2
37.	Thailand	5.4	74.2
38.	Bulgaria	2.4	73.8
39.	Russian Federation	1.3	73.8
40.	Costa Rica	2.1	73.6
41.	Vietnam	2.3	72.8
42.	Argentina	2.2	72.8
43.	Ecuador	1.9	72.5
44.	China	3.9	72.1
45.	Kazakhstan	0.9	71.6
46.	Tunisia	2.2	71.4
47.	Brazil	3.9	71.3
48.	Peru	2	71.1
49.	Malaysia	5.3	70.9
50.	Algeria	0.7	70.9
51.	Dominican Republic	1.6	70.8
52.	Colombia	3	70.6
53.	Turkey	1.3	70.4
54.	United Arab Emirates	2.9	70.2
55.	Jordan	1.9	70.1
56.	Oman	1.5	70.1
57.	Iran, Islamic Rep.	2.4	70.0
58.	Singapore	9.3	69.9
59.	Mexico	2.5	69.1
60.	Jamaica	5.9	69.0

No.	Country	Insurance penetration	SDG index
61.	Egypt, Arab Rep.	0.6	68.6
62.	Sri Lanka	1.3	68.1
63.	Panama	2.5	68.0
64.	El Salvador	2.9	67.9
65.	Lebanon	1	66.8
66.	Qatar	0.9	66.7
67.	Indonesia	1.6	66.3
68.	Saudi Arabia	1.3	66.3
69.	Philippines	2	64.5
70.	South Africa	12.2	63.7
71.	Trinidad and Tobago	6.5	63.5
72.	Bangladesh	0.5	63.5
73.	Kuwait	1.1	62.5
74.	Ghana	1.1	62.5
75.	Namibia	7.1	61.8
76.	Kenya	2.2	60.6
77.	India	4.2	60.1
78.	Guatemala	1.7	59.9
79.	Pakistan	0.7	57.7
80.	Nigeria	0.4	48.9

Source: OECD.stat and SDG Index database 2021 (Online database for the Sustainable Development Report 2021).

Translated by
Jelena Rajković