Annex 4: Mapping of climate change risks to prudential risks – Life insurance, including health

Climate change risk channel	Sub Type	Underwriting risk	Market risk	Credit / Counterparty risk	Operational / Reputational / Strategic risk
Transition risk	**Policy**		- Energy efficiency regulation of commercial and residential property reduces the value of undertakings' investments in real estate that do not comply with the requirements. - Increase in carbon taxes and/or reduction in emission rights, negatively affects investments in carbon intensive sectors, like mining, energy, transport and manufacturing. - Late government intervention to achieve transition to low carbon economy disrupts the stability of the real economy and the financial sector, depressing asset values and interest rates. - Transition to low-carbon economy results in higher spreads on government bonds of countries that are economically dependent on oil & gas exploration, coal mining and/or carbon-intensive industries.	- Collateral backing of commercial and residential mortgage portfolio decline in value e.g. due to government policy with regards to the energy efficiency of real estate.	- Transition to low-carbon economy reduces demand for life insurance products, e.g. occupational pension plans, where undertakings' customer base is heavily exposed to conventional carbon-intensive industries.
	Legal		- Price declines of investments in carbon-intensive sectors due to companies facing litigation	- Reinsurance undertaking faces claims for not considering the impact of its underwriting decisions on	- Undertakings that do not take into account the impact of their investment decisions on climate change experience

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			for failing to avoid or minimise adverse impacts on the climate, or failing to adapt to climate change.	climate change, resulting in a lower credit standing and higher exposure of undertakings to reinsurance losses.	direct claims for damages and litigation costs.
	Technology		- Advances in clean energy technology result in stranded assets of companies involved in oil & gas exploration and carbon-based power generation. - Companies or sectors invest in new low-carbon technologies but some of those prove not to be successful, depressing their asset values..	- Advances in clean energy technology result in losses on private loans to companies dependent on carbon-based power generation as well as companies developing unsuccessful clean energy technologies.	- Undertaking's strategy fails to take into account disruption induced by technology-driven transition to a low-carbon economy with consumers demanding new life insurance products and services, leading to a drop in demand for its products.
	Market sentiment		- Shift in customer preferences for climate-friendly goods and services, e.g. electrical cars and transport vehicles, puts investments in producers of conventional, carbon-based goods and services under pressure.	- Shift in business preferences to occupy sustainable office and retail space lowers the value of mortgage loans on climate-unfriendly commercial property.	- Shift in customer preferences for sustainable companies diminishes demand for the undertaking's insurance products and services, as its investment strategy does not sufficiently take into account the long-term impact on sustainability factors.
	Reputation		- Investments in certain companies perform poorly because of their reputation of contributing to climate change.	- Higher spreads on loans to certain companies and real estate funds that have a climate-unfriendly reputation, resulting in lower revenue for these companies and lower occupancy rates of	- Undertakings' investments in carbon-intensive industries result in reputational damage, making it difficult to attract and retain customers and staff.

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				the real estate.	
Physical risk	**Acute**	- Climate change increases the frequency and concentration of extreme weather events and natural disasters, resulting in higher life and health insurance claims. - Higher life and insurance claims as a climate change-induced rise in heat waves increases mortality among elderly populations with pre-existing health conditions or vulnerabilities. - Higher rates of ill health (morbidity) and deaths (mortality) due to climate change-related rise in wildfires and resulting air pollution, leading to higher life and health insurance claims.	- Higher credit spreads on government bonds issued by countries that are highly susceptible to acute physical risks. - Downgrade of municipal bonds issued by municipalities whose infrastructure, economy and/or revenues are impacted by extreme weather events. - Values of real estate portfolios decline to properties being located in areas highly sensitive to the increase in extreme weather events. - Climate change-related shocks, e.g. a pandemic, negatively affecting the economy and the financial system and depressing interest rates and asset values. - Increased currency volatility of countries that are vulnerable to the rise of extreme weather events and natural disasters, increasing undertakings' foreign exchange risk.	- Higher frequency and concentration of extreme weather events and natural disasters reduces the credit standing and/or leads to defaults of reinsurance undertakings, exposing undertakings to reinsurance losses. - Uninsured losses on commercial and residential property arising from climate change-induced physical perils negatively affect the performance of mortgage loans.	- Climate change-related increase in extreme weather events and natural disasters affecting undertakings' own assets (property, equipment, IT systems and human resources), increasing costs and potentially compromising operations. - Lower economic activity due to increase in extreme weather events reduces consumer demand for life insurance policies.

Climate change risk channel	Sub Type	Underwriting risk	Market risk	Credit / Counterparty risk	Operational / Reputational / Strategic risk
	Chronic	- Chronic rise in temperatures and humidity are breeding ground for vector-borne diseases, increasing the likelihood and severity of epidemics and pandemics and causing higher life and health insurance claims. - Global warming extends the transmission season and geographical range of many infectious diseases, e.g. Lyme disease, avian influenza, meningitis, dengue fever and tropical bacterial and viral infections, leading to higher life and health underwriting claims.	- Higher credit spreads on government bonds issued by countries that are highly susceptible to chronic physical risks. - Fall in value of real estate portfolios due to properties being located in areas highly impacted by the increase in chronic physical risks, e.g. coastal urban areas vulnerable to sea level rise. - Government prioritises water supply to households and resulting water scarcity will put pressure on non-essential business activities, depressing the value of non-essential investment assets.	- Higher incidence of pandemics results in losses on commercial mortgages, as consumers avoid shopping malls and working from home reduces demand for office space. - The availability and cost of reinsurance cover for mortality and morbidity risks becomes prohibitive for smaller insurers in certain markets due to the increase in frequency of epidemics and pandemics, thereby increasing their risk profile.	- Chronic climate change-related impacts, e.g. sea level rise or rise in pandemics, affects undertakings' own assets (property, equipment, IT systems and human resources), increasing costs and potentially compromising operations. - Increasing frequency of epidemics and pandemics constrains insurers to provide life and health insurance.