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Agriculture a risky business: Risk transfer solutions as a cornerstone for resilient agri-food systems?

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Abstract

Agricultural production is prone to a multitude of risks like natural hazards, biological risks (pests and diseases) and political risks¹ jeopardizing farm incomes and food security. Climate change is aggravating most of these risks. Therefore, risk management on farm level becomes indispensable comprising the following strategies: adaptation, prevention, spreading, retention and risk transfer. Among these strategies risk transfer is the one which has received little attention in agricultural economic research for the (sub-)tropics although having substantial potential to make agri-food systems more resilient. This article contributes to fill the gap.

Keywords: Risk management, risk transfer, crop insurance, agricultural insurance, agriculture

Loss and damage in agriculture

Agriculture is a risky business all around the world and farmers - particularly smallholder under rain-fed conditions - are the most vulnerable stakeholders in the agri-food systems. Exposed are the agricultural assets: crops in the field, grassland, livestock, agricultural infrastructure² and stored products. This article lays a focus on crops in the field because of their high exposure.

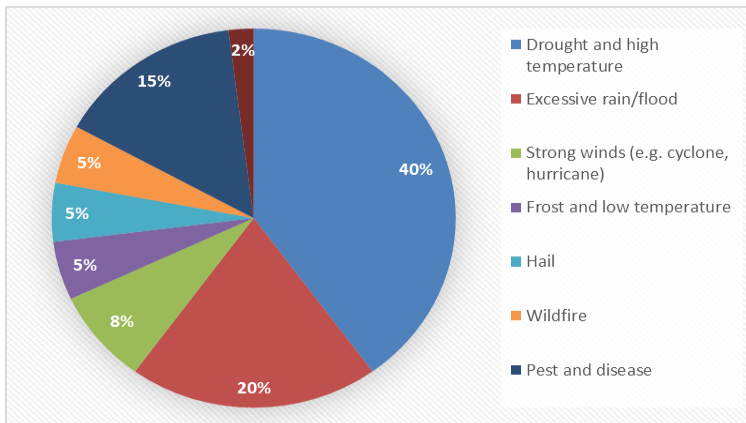
Every year substantial parts of the global agricultural production are lost. However, data on loss and damage in agriculture is scarce as not being systematically collected on global level. Therefore, only estimations are available. Presently the most reliable ones are from FAO estimating between 1992 and 2021 production losses (crops and livestock) of 123 billion US\$ per year in average – equivalent to 5% of global agricultural GDP – oscillating roughly between 100 and 150 billion US\$ per year. Losses vary considerably between regions and countries. (FAO. 2023)

On national level - if there are insurance systems in place - the situation is different. Data on loss and damage are collected by insurance providers, however in many countries except USA data and, in particular granular data, e.g. peril specific causes of loss, is not publicly available.

¹ In addition, price and market risks are important, however not dealt with in this article.

² Comprising of machinery, equipment, irrigation devices, stables, sheds, storage facilities.

Therefore, **figure 1** can only provide an estimation in respect of causes of crop losses per peril globally. Also here, the respective shares might vary considerably between regions and countries.



Source: own research

Figure 1: Causes of crop losses and its estimated share on loss and damage globally

Risk transfer in agriculture – instruments, current status and success factors

Risk transfer is a legally binding process of transferring the particular farm risks to a third party, normally insurance companies, mutuals or funds. It can be organised in two ways:

1. On national level

Here insurance programs are predominant in covering the agricultural assets on farm level.

Figure 2 shows the diversity of crop insurance systems in place differentiating eight categories of institutional setup. The Americas and Asia have a relatively good insurance coverage. Many countries with no sizeable insurance are located in Africa.

Another indicator of crop insurance is the market size – in **table 1** represented by the premium in 2023. The comprehensive systems represent also the most important crop insurance markets.

An important question is what factors are decisive for implementing and running sustainably national insurance systems. Based on the international experience of the last decades the following success factors can be identified:

1. Risk transfer system as integral part of the **national agricultural policy**. Cross-party consensus is necessary for a sustainable system.
2. Instead of disaster payments **premium subsidies** which are more efficient and lead to increased market penetration.
3. **Legal and institutional framework** first to be developed – product development will follow. In other words: “System approach before product approach”.
4. **Public-private partnership** between farmers, state, (re)insurance and – especially in countries of the Global South - the banking sector. Compulsory linkage of ag credits with insurance.
5. Range of **insurance products** to cover the specific needs of farms in respect of their size, crops and financial status.
6. Sustainable **reinsurance** agreements.
7. **Monitoring and auditing** by state institutions.
8. **Agricultural information system** providing reliable information on e.g. crop land, farm sizes, yields, market prices. The current lack of information in many countries of the Global South could be overcome, e.g. by using remote sensing.

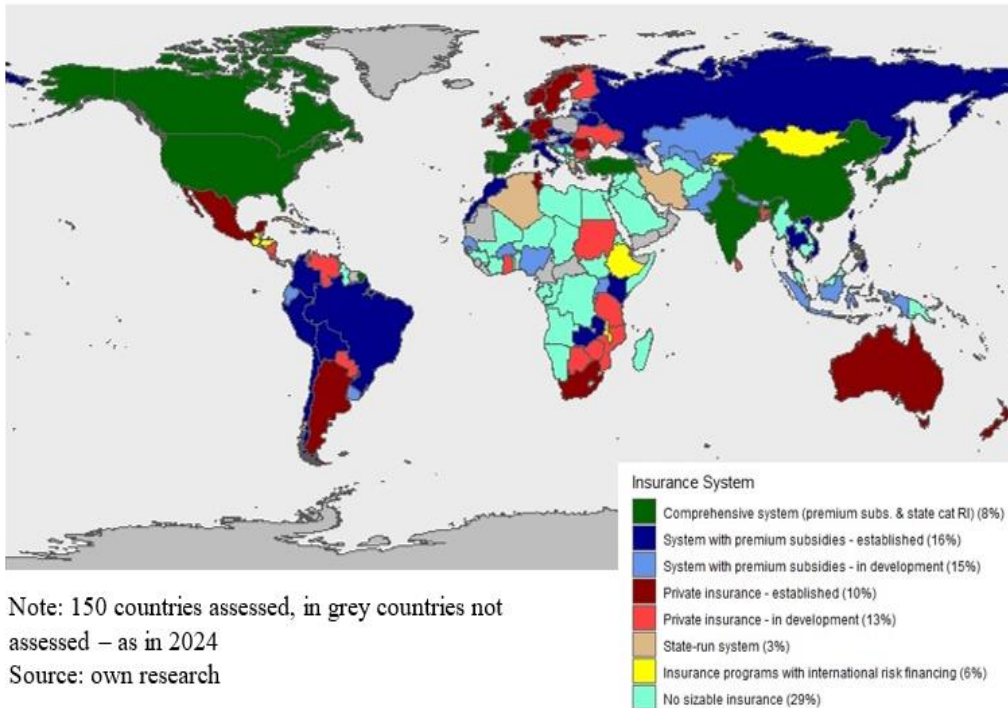


Figure 2: World map of crop (agricultural) insurance systems

Table 1: The most important crop insurance markets - Premiums in 2023 [million €]

Country	Multiperil crop insurance (MPCI)	Hail and named peril insurance	Total
USA	19,500	1,500	21,000
China	11,500	-	11,500
India	3,210	-	3,210
Canada	2,200	245	2,445
France	759	167	926
Brazil	814	90	904
Spain	821	-	821
Italy	641	-	641
Germany	40	235	275
Poland	230	-	230
Argentina	5	201	206
Japan	188	-	188
Australia	-	183	183
Turkey	172	-	172
Argentina	25	125	150
South Africa	5	125	130
Sum	40,110	2,871	42,981
Total crop premium worldwide	42,500	3,500	46,000

Source: Munich Re. 2024 and author

2. On supranational level:

As national ag insurance systems are complex and laborious to establish - as alternative and complimentary instruments - the following ones have been launched in the last 15 years³:

- African Risk Capacity (ARC): focus on agriculture and drought cover; since 2012.
- Caribbean Catastrophe Risk Insurance Facility (CCRIF): incl. Central America, parametric tropical cyclone and earthquake insurance; since 2007.
- Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI): parametric tropical cyclone and earthquake insurance; since 2016.

Their objectives are to strengthen the fiscal resilience and to access rapid and legally binding financial resources after disasters. Features and challenges of these programs are:

- Different economic sectors - not only agriculture – are beneficiaries.
- Each country decides on participation, coverages and coverage levels. However, these are often below expectations and the projections of the business plans.
- Coverages are based on triggers (parametric instead of indemnity-based insurance).
- The programs depend on international risk financing as national budgets are tight. Therefore, for financial sustainability future international commitments are crucial.
- As indemnifications are paid to the national government their distribution to the businesses and population in the affected regions is a big challenge.

Conclusions and Outlook

Despite the achievements implementing risk transfer solutions on national and supranational level in the last two decades, there is still a considerable development potential, especially in countries of the Global South. To unlock this potential making agri-food systems more resilient, it is required: Political vision and will, cooperation between the public and private sector, reliable information about the assets, more applied research and emerging technologies.

The new international initiatives “Loss and Damage Fund”, launched at COP 28, and the “Global Shield against Climate Risks”, launched at COP 27, are encouraging. Their efficiency and sustainability will depend on the concrete risk transfer instruments and contractual framework which have still to be developed and implemented. (BMZ. 2024)

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