



IAIS

INTERNATIONAL ASSOCIATION OF
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ISSUES PAPER ON INDEX BASED INSURANCES, PARTICULARLY IN INCLUSIVE INSURANCE MARKETS

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About the IAIS

The International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from more than 200 jurisdictions. The mission of the IAIS is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders and to contribute to global financial stability.

Established in 1994, the IAIS is the international standard setting body responsible for developing principles, standards and other supporting material for the supervision of the insurance sector and assisting in their implementation. The IAIS also provides a forum for Members to share their experiences and understanding of insurance supervision and insurance markets.

The IAIS coordinates its work with other international financial policymakers and associations of supervisors or regulators, and assists in shaping financial systems globally. In particular, the IAIS is a member of the Financial Stability Board (FSB), member of the Standards Advisory Council of the International Accounting Standards Board (IASB), and partner in the Access to Insurance Initiative (A2ii). In recognition of its collective expertise, the IAIS also is routinely called upon by the G20 leaders and other international standard setting bodies for input on insurance issues as well as on issues related to the regulation and supervision of the global financial sector.

Issue Papers provide background on particular topics, describe current practices, actual examples or case studies pertaining to a particular topic and/or identify related regulatory and supervisory issues and challenges. Issues Papers are primarily descriptive and not meant to create expectations on how supervisors should implement supervisory material. Issues Papers often form part of the preparatory work for developing standards and may contain recommendations for future work by the IAIS.

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Contents

1	Introduction	4
2	Background on Index Based Insurances	5
2.1	Definitions and Terminology Issues	6
2.2	Other background	9
2.3	Stakeholders.....	10
3	Legal Certainty – Is index based insurance considered to be insurance?	13
3.1	Preference for formality under the insurance law	13
3.2	Insurable Interest	15
4	Consumer protection issues.....	16
4.1	Product Development	16
4.1.1	Basis Risk.....	17
4.1.2	A Credible Index	18
4.2	Ex-gratia Payments.....	19
4.3	Subsidies	20
4.4	Competition and Monopoly	20
4.5	Product Security	20
4.5.1	Provisions and Capital	20
4.5.2	Reinsurance Risk Management	21
5	Pilot Projects.....	21
5.1	Characteristics when maturity is reached.....	24
5.2	Licensing pilots	26
5.3	Legal certainty	28
5.4	Security.....	29
5.5	Understanding and quantifying risk, pricing, valuation and reinsurance	30
5.6	A Credible Index	31
5.7	Viable operations	31
5.8	Enabling Regulation and Supervision.....	32
	Annex 1: Considering basis risk	33
	Annex 2: Summary of key points for project sponsors.....	36
	Annex 3: IAIS Supervisory and Supporting Papers in respect of Inclusive Insurance.....	38

1 Introduction

1. The International Association of Insurance Supervisors (IAIS), through the Insurance Core Principles (ICPs),¹ provides a globally accepted framework for the supervision of the insurance² sector. Its mission is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders³ and to contribute to global financial stability.
2. There is a general recognition that enhanced access to insurance services helps reduce poverty, improve social and economic development and supports major public policy objectives such as improving health conditions for the population, dealing with the effects of climate change and food security. The role of index based insurances in this respect is discussed below. Insurance supervisors in emerging markets and developing economies are increasingly looking for an appropriate balance between regulation, enhancing access to insurance services and protecting policyholders.
3. As part of its objective to develop insurance markets, the IAIS has been working on its “access agenda” since 2006. The Supervisory and Supporting Material that the IAIS has adopted to promote access to insurance and inclusive insurance is listed in annex 3.
4. The term “inclusive insurance” is used in this paper in the broad sense of the word, denoting all insurance products aimed at the excluded or underserved market, rather than just those aimed at the poor or a narrow conception of the low-income market. In developing countries, the majority of the population often classifies as un- or underserved. Thus inclusive insurance is a mainstream topic of relevance to the development of the retail insurance market as a whole. While the term “inclusive insurance” is aimed at excluded or underserved markets, the term “microinsurance” has been defined as insurance that is accessed by low-income populations, provided by a variety of different entities, but run in accordance with generally accepted practices (which include the ICPs)⁴.
5. **Structure of the paper:** This paper is structured as follows:
 - A discussion on the **motivation and scope** of the paper provides background on the reasons that various promoters have sought to develop index based insurance, and discusses the scope of index based insurances that are the focus of this paper. Some context and background to index based insurance products in an inclusive insurance environment is also included;
 - A section that discusses relevant **stakeholders** and how they may be different to other insurance related subject areas;
 - Sections covering issues summarised under the heading of “**legal certainty**” and then a range of particular **consumer protection** issues and how they tend to have been considered and resolved;

¹ The complete set of ICPs including introduction, Principles, Standards and Guidance can be found on the public section of the IAIS website (<http://www.iaisweb.org/ICP-on-line-tool-689>)

² Insurance refers to the business of insurers and reinsurers, including captives.

³ The IAIS Glossary defines a “customer” as a “policyholder or prospective policyholder with whom an insurer or insurance intermediary interacts, and includes where relevant, other beneficiaries and claimants with a legitimate interest in the policy”. The glossary does not define “policyholder” although earlier papers had noted that “policyholders includes beneficiaries”.

⁴ See paragraph 1.32 of the Application Paper on Regulation and Supervision supporting Inclusive Insurance Markets.

- Given the particular prominence of index based insurance **pilot projects** compared to other types of insurance, there is a discussion on such projects and the way that supervisors might approach them that reflects both a proportionate approach and provides for innovation. This section is also expected to be of interest to those parties that are involved in pilots and may guide their expectations for interaction with insurance supervisors.
6. This paper focusses on the insurances usually directed at weather related or natural catastrophe event risks. These insurances sometimes focus on agriculture and other times on protection from natural catastrophes. There have also been cases where the index is focused on other measures, for example intended as a proxy to risks such as political instability or economic adversity. Similar products may also be targeted at catastrophic health or life insurance covers such as pandemics. The paper does not exclude those innovations from the scope. However, the paper does not address products where the index is solely a function of capital markets, asset prices or other economic measures, or where payouts are determined by the value of underlying assets in an investment portfolio, nor does it address products that are based on an index related to mortality rates particularly directed at long term longevity risk. While descriptions and examples of how index based insurances function are provided from both developed and developing market perspectives, the primary focus of this paper is on insurance supervisors who are seeking to enhance financial inclusion in developing markets.

2 Background on Index Based Insurances

7. Index based insurance is an innovative and increasingly popular approach to insurance provision. The product involves contracts where a claim is defined with reference to a pre-determined index⁵.
8. Often, the index seeks to reflect losses arising from weather and catastrophic events, attracted by the opportunity to avoid the cost and administrative delay from traditional services of insurance claims assessors. This attraction can extend to having the potential to avoid adverse selection and moral hazard as well. These features provide the promise of significantly reducing underwriting and claim assessment costs. They also allow the claims settlement process to be quicker and more objective⁶. The combination of these elements has encouraged efforts to reduce the barriers to providing effective and affordable insurance, particularly for lower income groups that tend to be more vulnerable to such events. Improved access to insurance can directly and indirectly enhance livelihoods, reduce poverty and create opportunities for economic advancement. Regarding agriculture in particular, the provision of effective insurance is also seen as a way to facilitate a more productive agricultural sector.
9. Index based insurances can change the nature of the risk profile facing insurers. More technical perspectives emphasise the attraction of index based products as a way of addressing the challenges of “moral hazard” in the case of agriculture. Others argue that expanded insurability of natural hazards may well lead to increased exposure to risk that might not otherwise occur.

⁵ Index based insurance can also be referred to as “parametric insurance” as the index trigger can sometimes be thought of as a “parameter”. These terms can be used in the sector somewhat interchangeably.

⁶ More rapid claim payments may not be automatic, especially if the data to determine index values are not produced in a sufficiently timely fashion.

10. Index based insurance schemes have also been seen as an attractive way of supporting the transfer of catastrophic event risks to capital markets. A desire for greater resilience in the face of natural disaster events has led to an increasing level of attention. Transfer of risk to capital markets is also argued to be facilitating the expansion of insurability.
11. In many respects, index based insurance programs directed at low income clients do face many of the same challenges as other efforts to advance inclusive insurance. Not all challenges are a consequence of the index based insurance context. These challenges could include the need to overcome cost barriers in service delivery, ensure rapid claim payment, and have customer service delivery that takes account of the possibility that clients have limited financial literacy⁷.
12. Other issues arise that are particular to index based products or specific to the context in which they operate. Many of the current programs are in a pilot stage. The context may mean that pilot phases may take longer to achieve outcomes and it may take longer for the initiative to become sustainable. Piloting of agricultural products are constrained, for example, by the timing and frequency of agricultural seasons.
13. The index itself needs to be well structured and functional. Like other microinsurance programs, an index based insurance scheme may depend on having a very large number of clients so as to maintain low cost premiums, but the specific nature of the risk index might make it more difficult to broaden the program. In agricultural insurance, it is a competing challenge to orient the index toward consumers who are located in similar agro-climatic conditions to better reflect potential risk exposures. In fact, the more broadly an index is applied to increase the potential number of covered clients, the more challenging it is to reduce the risk that the index will not be sufficiently responsive to reflect the circumstances of local clients (increasing basis risk⁸).

2.1 Definitions and Terminology Issues

14. Index based insurance discussions often consider the way that the product is applied in different situations (micro, meso, macro).
 - **Micro:** where products are targeted at and purchased by individuals and small enterprises. When the focus is on “low income” customers it is usual that one of the barriers might be the level of the premium, in absolute terms and relative to the risk, so products tend to be designed with a view to minimising cost, maximising efficiency, and eliminating unnecessary elements that would add to the cost. Often, collective schemes with identified individual beneficiaries (similar to group type insurances) are also considered to be “micro” even though they may have a legal policyholder at the scheme level. This is an important distinction in this paper.
 - **Meso:** where mid-level groups, entities and other subnational organisations involved in the sector might be the main client and an alternative channel to deliver a form of protection to micro levels. In these instances, the “meso” entity is considered to be exposed to a potential loss. It may use the funds from a claim payment to provide direct

⁷ For other IAIS discussions on more inclusive insurance see earlier papers on the topic including, for example, the Issues Paper on Conduct of Business in Inclusive Insurance (see Annex 3: IAIS Supervisory and Supporting Papers in respect of Inclusive Insurance).

⁸ “Basis risk” is discussed more fully later in the paper (see section Basis Risk and in the Annex 1: Considering basis risk).

or indirect benefits to micro clients but the relationship between the “meso” entity and the “micro” clients is not considered to be “insurance”⁹; and

- **Macro:** where one or more governments are the purchaser(s) and beneficiary. They may utilise the funds for purposes directed at individuals, for example to fund emergency relief, but the individuals are not recipients of a designated insurance payout. Recent sovereign parametric risk transfer mechanisms might involve alternative risk transfer (ART) / capital market solutions.
15. To an extent, this distinction might be similar to more conventional insurance applications, particularly regarding inclusive insurance, but the element of the potential for a meso or macro level entity to be insured, and therefore to have a risk exposure or financial outcome when events occur, can take on different features. The nature of the relationship between an insured and insurer, and the expectations of end micro consumers can differ. As a result, supervisors may need to consider differences between micro, meso and macro situations when developing responses to supervisory risks and concerns¹⁰.
16. Another important set of considerations to the discussion involves insurance definitions, insurable interest, adverse selection and moral hazard. Box 1 provides some basic discussion of these elements. It is important that insurance claim events and amounts are able to be legally defined for both indemnity insurance and index based insurances. Legal definition, insurable interest, adverse selection and moral hazard are all issues that may be more complex in an index based insurance context. Often, however, problems with one or other of these elements are confused with “basis risk” problems. This paper will discuss all of these elements in some detail.

Box 1: Key elements that make insurance possible

Fundamentally, in return for payment of a premium, insurance makes a promise to meet claims. Claims are defined in legal and contractual terms by a combination of the occurrence of the event that qualifies for (or “triggers”) a claim, and the manner in which the amount of that claim will be established. Insurance contracts seek to define the event occurrence in terms that make it clear that a claim event has occurred, often addressing both what is and what is not a qualifying event. Under an “indemnity” concept, the claim amount would then be determined by the extent of the loss that the claimant incurs and reimbursed in financial terms or by restoring the client to their original situation replacing or repairing property. In other situations, commonly in life insurance, the claim could be expressed as a nominal amount. Insurance relies on the event and the potential payment being capable of definition.

Insurance is said to differ from gambling because it sets out to provide protection against losses but not to provide payments that represent a gain. Purchasers of insurance should have an “insurable interest”, meaning that they should incur a loss if the event occurs and the insurance coverage should be directed toward repairing that loss. If a purchaser of

⁹ It may also be that an index based product sold to an insurance company could be considered to be a meso product. To be clear, the contracts that are provided by that insurer to its own clients would be insurance contracts that are either conventional or, in the case of being index based, would be “micro level” contracts. If the meso client is not an insurer then the contracts and promises made to clients should be clearly and transparently not insurance contracts and insurance promises.

¹⁰ Readers may wish to review particular sections of the paper that suggest potential for different approaches reflecting the micro-, meso-, or macro basis of the scheme such as, for example, the treatment of formality, explanations of basis risk, and conditions that would be required for a “credible” index.

insurance was to gain financially from the occurrence of an insured event and the receipt of the proceeds of a claim, then this would create a very different situation and is sometimes cited as making the delivery of insurance impossible, or at least, very problematic.

To be effectively delivered, conventional insurance provision includes efforts to avoid or reduce the risk of “adverse selection”; that is that an individual’s private information about their own ‘riskiness’ might be such that higher risk customers take advantage of insurance that is priced at too low a level. Screening and charging appropriate risks has long been part of the underwriting process when considering taking on new insurance risks, as has designing marketing strategies that effectively discriminate between those that would be seeking to maximise such an adverse selection opportunity. After the issuance of a product, “moral hazard” can continue as there could be a strong incentive for the insured to seek to benefit from the insurance policy by inducing the claim event, or at least not going to an effort to prevent it. The existence of an “insurable interest” and the efforts to avoid “adverse selection” at the point of issue and “moral hazard” problems after the product is issued has been important to the effective delivery and development of insurance markets.

17. These issues are fundamental to the development of index based insurance solutions, particularly for the “micro” market where there is a strong imperative to reduce cost and ensure that affordability is not a barrier to access. “Case-by-case” underwriting and claims assessments can be costly especially when sums insured are small. As a result, the use of an index for claim definition is important for access. However, once there is a difference in the definition of claim events and actual risk exposures then there is a potential concern regarding “basis risk”.
18. An index based product with claim payments determined on an objective basis independent of the actions of individuals is said to virtually eliminate “moral hazard” concerns. Index based insurances use an “index” in some way or another to determine the claim event or the amount of the claim or both. This contrasts with an “indemnity” contract that provides for claims that rely solely on an actual loss event and the determination of the actual (and measurable) damage suffered. Some contracts mix both indemnity and index based features or elements or construct the index using data that may be theoretically subject to influence so that moral hazard issues may remain at least in part.
19. By linking claim payments to an index that is not reflective of an individual’s “higher” or “lower risk”, then adverse selection may not be eliminated. Some advocates of index based products suggest it reduces or eliminates moral hazard and adverse selection but, as they are somewhat different insurers and supervisors should be careful not to confuse the two issues. The extent to which “adverse selection” effects can be reduced or eliminated also depends on the product structure, distribution and sales approach, and the granularity of the index in the face of heterogeneous risks. Some of these issues are not a function of an index based product. In other cases, adverse selection might be reduced by taking a broad coverage for the index but with reduced granularity leading to increased basis risk. Although moral hazard may be reduced by index based insurance approaches, insurers and supervisors should ensure that they do not confuse the reduction in moral hazard with a reduction in adverse selection type risks. It is important that the remaining adverse selection risk is still given appropriate attention.
20. The use of an index means that claim payments may not relate directly to the loss, instead being related through a statistically inferred relationship and correlation. Considerable quantitative expertise is required to design products, price risks, and understand them when they are based on an index. Over time, a body of technical experts with the capacity

to design and price such products has grown and now contributes to a range of new developments around the world.

21. Regarding agricultural insurances, there tends to be two main types of agricultural index based insurance:
 - **Aggregate loss / Area-based / Area yield:** where the index is calculated as a statistic from the actual experience in the area, for example crop yield or livestock mortality, for a particular “area” or “aggregate”. The term “area yield” may be applied when crops are the insured commodity. The products provide coverage for those within the “area” and reflect an average loss experience across the area. The loss that might be incurred by an individual would usually be different to the overall “average”. Payments can then be made based on the losses that would have occurred in the “area” rather than at the “farm by farm” level.
 - **Indirect loss:** where the index is based on indirect statistics, for example weather related measures such as rainfall levels, temperature, wind speeds, etc. and the expectation of a causal link to the insurance peril of interest. The source of data for the index can vary, with several instances in place where the indexes use data from satellite images instead of or as a supplement to weather station data. When the product is designed, a link between the index and actual losses might be contended and / or investigated such that the intention is that there is a relationship between the performance of the index and the economic outcomes for policyholders. This relationship might not be one of perfect and direct “cause and effect” although it would be expected to be demonstrable by way of correlation.
22. Natural catastrophic risk products also have similar approaches being “industry loss” triggers, or other “independent” calculated triggers based on experience or, alternatively, physical parameter based approaches such as measured wind speed, seismic event size or rainfall levels. Although sometimes simpler, and more straightforward to explain, physical parameters may well involve more basis risk than an industry loss product that draws on actual insured claims experience.
23. Aggregate loss products have a longer history than indirect index products. Many of the latter remain in pilot phases. Depending on the product involved, indirect parameters can be easier to introduce in emerging markets where some global data sets may be available and more easily introduced than building a local, more detailed data collection capacity in the short term. More recently, some index products have also been designed where the trigger of the index anticipates claim events rather than responding to them after the event.

2.2 Other background

24. Many practitioners, particularly those active in agricultural risks, point to challenges with inadequate data. Data limitations can reflect a lack of granular data, a lack of a time series of data, or even a lack of analytical capacity¹¹. Data limitations can impact the practical feasibility of designing the index because data is not sufficiently credible to assess the performance of the index. Data limitations might also impact the ability of an index to reflect the risks as a reasonable proxy (minimising basis risk), often because data points are not sufficiently granular¹². This is often raised in the context of weather stations in particular.

¹¹ For example, a cattle insurance program where satellite data is available but the absence of a capable partner to do analysis was a problem.

¹² Weather index insurance designers often criticise the lack of density of weather stations, implying that they cannot get sufficient sensitivity in an index to reflect variations in local conditions.

It is also cited as one of the challenges in understanding risk to the extent needed to attract reinsurance capacity.

25. Developments have been advancing to better reflect the loss exposure of clients in a relevant index. “Crop Cutting Experiments”¹³ have involved some local data gathering in the insured areas without resorting to case by case claims assessment. Additionally, and expected to be of increasing relevance, is the use of technologies to gather very specific data such as the use of satellite imagery and remote sensing in an effort to more accurately measure outcomes in agriculture and reduce basis risk in products. The use of such approaches will increase cost but is still likely to be cheaper than individual case assessments.
26. For example, a “**Normalized Difference Vegetation Index**” (NDVI) is sometimes used to provide drought related protection for livestock by measuring the “greenness” of vegetation as a proxy for the abundance of forage for cattle and their health. The effect of a drought on cattle disease and eventual yield / loss is studied against historical average yields in a given area. The NDVI is calculated from data collected by remote sensing satellites and is available at granular levels covering the whole planet on a daily frequency since 1981.¹⁴
27. Other developments can be more generic to inclusive insurance such as the use of mobile telephony based payment systems where rapid expansion has become a reality by overcoming distribution and delivery barriers. Somewhat unusually, at the time of writing, there tends to be a different level of interest in the role of mobile distribution in broader “inclusive insurance” efforts contrasted with the focus on bundling in agricultural contexts, distributing index based agricultural products through “input providers” such as, for example, distributors of seeds or fertilisers.
28. In addition, this paper notes and discusses the issue of subsidies. Agricultural insurance, in any form, is subject to an ongoing discussion regarding the role of subsidies. This discussion is somewhat unique to agriculture insurance in the policy and academic literature and, because of the features of index based agriculture insurance products, is worthy of a mention in this paper in terms of the considerations that might be relevant to supervisors.

2.3 Stakeholders

29. There are multiple stakeholders in the index based insurance context and, as in other instances where more inclusive insurance is being pursued, some of these stakeholders have new or specific roles and perspectives that need to be understood. The stakeholders include but are not limited to:
 - Insurance customers;
 - Insurance supervisors;
 - Other government agencies;
 - Agencies that support the production of the index;

¹³ Crop Cutting Experiments refers to a process where the progress of crops is measured by a sampling of some crops. The results of these experiments can then be the basis of an index. The intention of such an approach is to allow for some physical inspection of conditions whilst avoiding the full case by case inspection required by claims assessment under an indemnity type of cover. The intention is also to try to reduce basis risk by more closely following actual conditions as identified in the sample.

¹⁴ See <https://www.ncdc.noaa.gov/cdr/terrestrial/normalized-difference-vegetation-index>

- External (non-governmental) stakeholders;
 - Donors and other sponsors;
 - Public private partnerships; and
 - Intermediaries.
30. Insurance customers are the ultimate stakeholders. At the core of the supervisory role is the need to consider and reflect the interests of policyholders.¹⁵ Whether policyholders are engaged with an indemnity product or an index based product is usually not an important distinction that defines whether they are intended to be protected or not. This is an issue of wide relevance including regarding the legal treatment of index based contracts (see “Legal Certainty – Is index based insurance considered to be insurance?” below). However, there can be specific issues that arise as a result of the product or its delivery that are addressed later in the paper in section 4 (see “Consumer protection issues”).
31. Insurance supervisors know that communication, cooperation and information exchange with other key parts of governments is important to ensure that they can fulfil their supervisory mandate to protect the interests of policyholders and contribute to the fair, safe and stable development of insurance markets. Each new product area brings a different set of stakeholders within governments. Index based products can bring new stakeholders into view such as ministries of agriculture or those responsible for disaster management and recovery for example. Importantly, this means that they may be less familiar with the role of the insurance supervisor and the staff at the supervisory authority may be less familiar with the policy motivations of these other stakeholders.
32. Practical arrangements for communication with other government agencies may need to be put in place. Initially, this may take the form of some regular scheduled meetings between senior level officers. Exchanges could expand into more structured working groups with a regular agenda. Understanding other agency objectives and views, underlying policy objectives, understanding what data is held by other agencies that may be of supervisory use, and accessing complementary technical expertise would all be of value. Insurance supervisors may have expertise including financial and actuarial issues and, for example, ministries of agriculture may have beneficial expertise on agricultural risks and outcomes. Consideration should also be given to the extent to which information can or should be exchanged, and the protocols that should be put in place to plan in advance for situations where achieving supervisory objectives may be at greater risk.
33. Ministries of government tend to be obvious counterparts for interaction. There may also be some merit in opening communication with authorities, organisations or agencies that may be involved in the production of data that is relevant for any indexes. Such engagement can assist in promoting understanding of the credibility of the index and the data that is used for its production.
34. External (non-governmental) stakeholders can also be different. Value chains for delivery of products may include different organisations to those usually involved in the insurance sector. It is usual that these organisations have different priorities and their supervisory agencies have limited understanding of the work of the insurance supervisor. Just as mobile telephony has created new channels for insurance delivery, agricultural insurances have seen a significant engagement of organisations that provide agricultural inputs to farmers. Other external stakeholders might provide some of the services required to

¹⁵ The IAIS uses the term “policyholders” generally to include also other beneficiaries and claimants and also potential policyholders. See IAIS ICPs (Introduction Paragraph 1 for example).

support the product such as the provision of data or the calculation of the index. Other global partnerships, such as the Access to Insurance Initiative (A2ii), may help with workshops and conferences in educating supervisors for their efforts in implementing index insurance regulation in their jurisdiction. Project sponsors should understand that a divergence of incentives between partners can become problematic and should work to ensure partners are selected and have incentives that are consistent with the longer-term objectives of a project.

35. Donors and other sponsors may be engaged to deliver pilot projects. Donors and other sponsors are defined to include those who are contributing project funds and those that are supporting project design with technical assistance, project management, or particular technical expertise. Usually, in the early stages of a project, these sponsors would be the usual “project sponsors”. Over time local insurance entities may more likely be “project sponsors”. As noted below, index based insurance provision is particularly likely to involve pilot projects and these pilot projects are more likely than other types of insurance to extend for longer numbers of phases.
36. Donors can play a particularly critical role in pilot projects, especially as they share many of the same goals as the insurance supervisors – ultimately a viable, fair, safe and stable market for the product protecting the interests of policyholders. To this end, donors have an interest in ensuring that projects are able to move toward maturity and to see that the necessary steps are funded. Regrettably, donors are sometimes only able to commit to some of the phases required to go from initial steps to a fully mature market, so other donors might come forward to advance further work. This paper proposes a structure that balances initial proportionality with a commitment to making progress even if the stakeholders are not able to commit to their own engagement continuing through the full set of phases to maturity (see section 5).
37. Donors can consider incorporating best practices elaborated in this paper as part of their project approval processes. A checklist is included for the guidance of donors and other project sponsors in the annex (see Annex 2: Summary of key points for project sponsors).
38. Public private partnerships may play a critical role. Governments may partner with local insurers (and others) to advance their underlying policy objective. Supervisors may need to be aware of the existence of particular partnerships.
39. Intermediaries may include some new specialised or dedicated market participants. Some intermediaries may be involved in the distribution of index based insurances that are not involved in other insurance distribution activities. Micro finance providers may be providing insurance for the first time through this form attached to lending¹⁶. Agricultural input providers, sellers and distributors of seeds, fertilisers and other agricultural products, are also actively involved in distributing index based crop insurances¹⁷. Cooperatives have also been seen as a useful distribution channel and farming cooperatives can play a role¹⁸.

¹⁶ This form of loan and insurance package is common to distribute credit life type products, described as “bundled products”. It has also been applied in agricultural finance where loans and agricultural insurance are sold as a package and is sometimes referred to by practitioners as “interlinked insurance”.

¹⁷ Input providers can act as large and powerful partners but also can raise supervisory and regulatory issues regarding how the usual relationships between insurers and distributors can change in a different dynamic. This issue is broadly akin to the experiences also seen in the relationships between insurers and Mobile Network Operators in the mobile insurance context.

¹⁸ For more information on the role of, and regulatory and supervisory approaches relevant to, mutuals, cooperatives and other community based organisations see the Application Paper on Regulation and Supervision supporting Inclusive Insurance Markets issued by the IAIS (Refer Annex 3: IAIS Supervisory and Supporting Papers in respect of Inclusive Insurance).

In each case, these new distributors may have different perceptions of their role to that of traditional agents and brokers.

3 Legal Certainty – Is index based insurance considered to be insurance?

40. It is often noted that index based insurance products might or might not be considered to be insurance at all. There are considerations in both international accounting standards and in local insurance and other laws¹⁹ that can give rise to the potential for either uncertainty or inconsistency of treatment. Sometimes, insurance laws may be outdated, focused on indemnity type products, may be silent or unclear on the definition of insurance when considering index based products or may be explicit in excluding these products from the insurance law.
41. Much of the mathematical work in insurance is focused on assessing two elements: the probability that a claim will occur and the cost of that claim when it does occur. The calculations could equally be applied to other financial instruments. Derivatives and various insurance linked securities might provide a similar protection to the buyer but may not be legally defined as “insurance” in a jurisdiction.

3.1 Preference for formality under the insurance law

42. The IAIS approaches the issue of legal certainty from the perspective of insurance supervisors noting that various laws in different jurisdictions may have other objectives. The treatment of index based products as insurance is relevant for insurance supervisors with respect to the objectives of supervision. Insurance supervisors seek to achieve the core objectives of insurance supervision; the maintenance of a fair, safe and stable insurance sector for the benefit and protection of policyholders.²⁰
43. As an objective, index based insurances that are developed with the intention of advancing access to insurance especially for lower income and underserved clients should be part of the formal insurance sector. This objective is informed particularly by the need to ensure that consumer protection mechanisms are in place as well as to ensure that the broader insurance market is not undermined by a product that is perceived as “insurance” but is not, in fact, legally or practically regulated as insurance in a formal manner in practice.

Is it an insurance contract?

44. However, it may be acceptable for the product to be delivered under legal arrangements that do not make it an insurance product in some situations. Other legal consequences might depend on whether or not an index based product is defined as an insurance contract. These consequences might include defining whether or not the product is treated one way or another for accounting or taxation purposes for providers and for clients and beneficiaries.
45. When considering formality as an insurance contract in an inclusive insurance context it may be more important to the insurance supervisor that index based insurance *falls under* the insurance supervisory framework and that the objectives of insurance supervision are able to be achieved.

¹⁹ For example, definitions for taxation purposes.

²⁰ Refer IAIS ICPs, particularly Standard 1.3.

Is it issued by licensed insurers?

46. It may or may not be the case that all index based insurances are issued by licensed insurers. Similarly, index based products may or may not be subject to the full range of normal insurance supervisory activities especially if this would be disproportionate. It may or may not be the case that the product is issued as a legal insurance contract for accounting or other purposes but, even if it is not a legal insurance contract, the activity should still *fall under* the insurance framework in the jurisdiction.

Is it considered to be licensed insurance?

47. It may or may not be the case that all index based products are actually considered to be licensed insurance. In particular, it is relevant to take into account the extent that supervisory objectives may be at risk and to apply proportionate approaches. The three levels of index based insurance are different in this respect.

- For a product delivered as a “micro” level product, it is expected that it would be treated as a licensed insurance product issued by a licensed insurer.
- When a product is defined as a “meso” level product, then the insured party is the meso partner who then may pass on a benefit of the product to micro level participants. Given the potential for confusion between meso schemes and group micro schemes, and the fact that meso policyholders may not be fully expert in index based insurances, then it is desirable that the product is included as part of the formal insurance market.
- When a product is defined as a “macro” product, then it is more likely that it may not be formal. It is also more likely that the sovereign client will not have directly linked the insurance with individual potential pay-outs and will not be collecting earmarked contributions. In such instances the risk to insurance market stability (even through reputational contagion is expected to be negligible) so such schemes may not be included in the formal domestic market if preferred.

48. A key to avoiding risk to the supervisory objective of continued fair, safe and stable insurance markets would be that if the product is not issued by a licensed insurer, then the product is well understood to not be regulated and protected as a supervised insurance product²¹. Individuals may or may not believe that their benefit is “insurance”. This understanding can be tested and verified through research and through experience²². It can also be reinforced through appropriate language in product contractual and promotional communications. Any variation in treatment from that of applying to a micro level scheme for meso and macro level schemes would need to include strong constraints on communication and processes²³ to avoid confusing the benefit with “insurance”. Such constraints would not be an impediment to a genuine meso-level structure but would be a constraint for those that some observers could consider to be “meso” but are actually group style “micro” under the definition in this paper. Such constraints would be expected to be readily applied to macro level schemes. For meso and macro schemes, the end micro clients should not, by definition, believe they are direct one to one beneficiaries in a legal

²¹ In some jurisdictions a similar concept exists for other excluded products, some of which might even have “insurance” in the normally used product name. If something is called insurance but everyone thinks it is not regulated insurance then that is ok. For example “National Insurance Schemes”, or in some countries “product warranty” is well understood not to actually be insurance.

²² Experience may include evidence that no micro level customers approach the insurance supervisor, or that no customers seek to access the insurance complaint mechanism about the product.

²³ An example of a process that should be avoided would be the collection of earmarked or identified contributions from individuals on a regular basis or the description of contributions as “premiums”.

sense of the insurance product or that they have a defined level of individual cover in the event of a particular adverse risk event. Even the most sophisticated meso policyholders may need to be advised of the important implications if the product is not formal insurance.²⁴

49. Some jurisdictions may amend the law to specify index based insurance as included as “insurance” with the qualifier that this is as needed “for the purposes of” the law²⁵. Others may include a definition that adds a power that allows the insurance supervisor to issue an instrument that has this effect as needed.
50. Whether or not a macro level scheme is included as formal insurance, and also when meso and micro schemes are being considered, there are some elements that need to be included in the supervisory arrangements. As is sometimes the case with other inclusive insurance initiatives, expertise from the insurance supervisor may be needed by the other government agencies. Coordination and cooperation with these agencies is important especially as they may be less familiar with the insurance supervisor and their role. Statistics should be shared to facilitate basic public information such as the need to publish the size of the insurance market.

3.2 Insurable Interest

51. When discussing index based insurances the issue of insurable interest arises when, in some cases, a legal condition for a product to be an insurance contract is that an insurable interest exists. In other cases, the presence of defined insurable interest is a requirement for an insurance type accounting treatment instead of one that would apply to derivatives. It can be problematic if insurable interest is defined in the context of indemnity contracts with claims based loss adjusting – something that index based insurances seek to move away from. In an indemnity context, insurable interest is generally taken as a continuous requirement before and through the period that the contract is on risk and especially at the point of claim²⁶.
52. Beyond a legal consequence arising from a definition, index based insurance contracts should generally require an insurable interest at the point of purchase in the same way as any other insurance on sound risk management grounds. That is, the client has a reasonable expectation that the cost to them, or economic loss, in the event the adverse event occurs is equal to or more than the expected payout that the client will receive. In fact, this condition would continue to be the case throughout the contract up to and, for that matter, including at the point of a claim.
53. The key difference between index based insurance and indemnity insurance is that the insurable interest requirement is not checked at the point of claim. This is not to say there is no insurable interest – just that it is not validated at the point of claim.
54. Legal definitions may be less clear in the phrasing, perhaps referring to having a legal requirement that there be an insurable interest, but being unclear on the timing or continuity requirement. However, it may well be generally interpreted as being continuous.

²⁴ If the rules for a meso scheme are softened then the meso scheme cannot tell its micro members that they have “an insurance for them” individually. It can say it has taken out an insurance that will allow it to waive some loans in the event of adversity if it wants but it should not promise to waive a particular person’s loan in advance for example.

²⁵ For example, Kenya has a draft proposal to make such a provision in their insurance law.

²⁶ Some jurisdictions do not require a formal insurable interest at the point of sale, for example to facilitate taking out insurance on items that are about to be purchased.

Legal definitions may also not recognise the element of “reasonable expectations” noted above, preferring the ex-post assessable absolute certainty in losses and claim amounts.

55. In the event that a definition of insurable interest is based on an approach born of prudent underwriting then it would be consistent between both indemnity and index based insurances. The policyholder should reasonably consider that their expected loss in the event of the insured event occurring is at least as much as their expected claim payment. This expectation should be held prior to taking out the contract until the claim payment is actually received. Similarly, if the policyholder has an expectation that they will be receiving claim payments in excess of their expected loss at least from one of the insured events, then this leads to unacceptable risk management challenges for insurers, and adverse selection, independent of the type of insurance involved. Such a definition and approach is sound for insurers as well as from the perspective of insurance supervisors.
56. In addition to the need for insurable interest defined in terms of expected losses and expected claim payments, it is also relevant to note that insurable interest needs to be held by the policyholder regardless of whether or not it is a micro- meso- or macro-level scheme. For meso and macro level schemes, the policyholder has to expect to sustain a loss as a result of the occurrence of the adverse event. This expectation may arise because of a direct or indirect impact on the policyholder or a commitment to support others²⁷.

4 Consumer protection issues

57. The ultimate objective of insurance supervision is to protect the interests of policyholders and to develop fair, safe and stable insurance markets (refer to ICP Standard 1.3). When insurance products are being made more available to a broader group of customers, the insurance market becomes more inclusive, but at the same time it has to be recognised that the new group of customers are less familiar with insurance products by definition.
58. When inclusion extends to a group of clients with lower incomes, they will tend to be more vulnerable to a range of consumer protection issues. They tend to have limited resources so are less able to absorb or sustain an adverse experience. More limited resources also means that they may be more exposed to a range of perils as a result of their living conditions.
59. Limited experience with insurance products can be associated with limited financial literacy in the insurance realm. Broader financial literacy may also be limited. General education and language literacy may also be limited. In such cases, special attention is required and special recognition is needed of the risks of consumer protection issues arising from these causes and need to address them.
60. Index based insurances are usually more complex than most other retail insurance products, meaning that it is a bigger challenge to ensure that consumers are protected and the possibility of problems arising from misunderstanding or other causes is increased.

4.1 Product Development

61. When developing products, insurers (and other project sponsors) should focus their efforts on the needs of customers. With respect to index based insurances, this is particularly relevant as a range of product design features may require decisions and these should be

²⁷ Note that the commentary on formality in this paper would imply that a meso scheme would not be a group distribution micro scheme. In some cases, when the meso scheme does not have its own insurable interest then it is more likely to be a group micro scheme in reality.

informed by client needs. Client needs may influence a wide range of product development decisions. These may include, but not be limited to, the events that are covered by the contract, the level of severity of the events before it is expected that events would give rise to a claim (the “trigger” level), the selection or construction of an appropriate index, the premium that would be affordable, the frequency and modality of premium payments, and the distribution that is best placed to provide various product delivery services such as enrolment, premium collection and claim payment.

62. It is noted that the IAIS has developed papers on the role of product approvals in supervisory regimes including those that are supportive of more inclusive insurance markets.

4.1.1 Basis Risk

63. When developing products, the issue of basis risk is usually at the forefront of consideration. Basis risk is an important issue but it should not be at the exclusion of other issues. In some cases, adverse outcomes have been attributed to basis risk when the issue was actually more accurately ascribed to other product design issues. When considering basis risk, a fuller discussion is provided in the annex (see Annex 1: Considering basis risk).
64. Consumer protection concerns regarding basis risk focus on events when an adverse event occurs and the index is not triggered so no payment is made (adverse basis risk). Such a perspective ignores the impact of false positive pay-outs (positive basis risk). It also tends to underestimate the need for a defined concurrence between policyholder and provider views of when an event is “adverse” or not.
65. To reduce the number of or potential for adverse basis risk events, it is possible to increase the number of events that involve a payment, lowering the trigger,²⁸ but this coincides with an increase in cost of cover and a reduced focus on extreme event protection, making the product less accessible, especially to low income clients. At the same time, a lower trigger point means that engagement with clients is more frequent, and this may have both advantages and disadvantages²⁹. It would seem that efforts to better communicate the existence of a more adverse basis risk to potential clients would be desirable. Given the observation that some events that have caused concern among stakeholders that an adverse basis risk event occurred were actually attributable to events that failed to meet the defined trigger; these events should have more correctly been recognised as a poorly designed product that did not meet the customer expectations and that the benefits and effects of the trigger level in the contract were not sufficiently well understood between clients and those designing the product.
66. Some consideration of how to measure basis risk has been emerging. This can vary from the more straightforward back testing to a more complex consideration of probabilities of particular outcomes and the expected losses arising from that basis risk event. Back testing analysis could be useful in discussions with supervisors as well as to help to educate clients. Project sponsors might also expect to see such an approach as part of

²⁸ To reduce the number of or potential for adverse basis risk events, it is also possible to decrease the number of events that involve a payment, increasing the trigger, if this is associated with clients understanding of the impact of the higher trigger.

²⁹ For example, beyond the additional cost of the insurance, a disadvantage may be the increase in processing costs that paying claims more frequently would entail. An advantage may be that more frequent claim payments may provide the opportunity to reinforce educational benefits of insurance more generally, and could then more effectively allow for the subsequent introduction of an optional higher trigger with a lower premium to clients who are then more informed regarding insurance.

their due diligence and reputational risk management. The information can be shared with clients regardless of whether the scheme operates at the macro, meso or micro level. The information is also useful to validate a common understanding of just what represents a truly “adverse” event. Measurement and disclosure of that measure are also discussed in annex 1.

67. It is certainly to be expected that the existence of basis risk needs to be explained. This could include, at a minimum, an explanation that an adverse basis risk event is possible³⁰.
68. Compared to adverse basis risk, the response to positive basis risk is less clear. There is a concern that the more positive basis risk that exists the more likely that the product could be perceived as other than insurance. There is also a concern that increased positive basis risk adds cost, reducing the efficiency and accessibility of the product, especially to lower income clients. There is also less consensus about whether or not there is a need to explain positive basis risk in all situations. It is less likely to be the case that positive basis risk might be worth explaining in advance in all cases as it could, arguably, undermine the expectations that have been expressed elsewhere in this paper regarding expectations of outcomes in the context of insurable interest, especially for clients where the product is provided in a micro- level scheme. In a meso and macro level scheme, it may be considered relevant to include an explanation of positive basis risk to the client. It is notable that some micro schemes do disclose both adverse and positive basis risk outcomes to clients, effectively exceeding this minimum standard.
69. Notably, regarding disclosure, a second issue that has been found to need attention is the existence of a trigger point below which there would be no claim payment. Whilst this is analogous to an excess or deductible on a conventional insurance policy, it has been an issue in some cases where the client misunderstood, and the misunderstanding was discussed as a basis risk problem because the client suffered a loss but the index did not trigger a claim. It is mentioned here as, in this example, the product design itself ultimately was redesigned to help to make the explanation³¹. Using a ladder of progressive triggers, providers were able to explain the option of a higher premium for the lower trigger level, and automatically advanced understanding of the level of the higher trigger and the lack of claim payment below it to potential clients. Such an approach may produce better outcomes than changing the product to lower the trigger level for all clients in a bid to avoid adverse basis risk as mentioned in paragraph 66.

4.1.2 A Credible Index

70. In a mature environment, the index used to support the product should be credible to all sides. It should be able to be reliably calculated in a timely manner and those producing the index should be credible and expected to be able to continue to do the work in a timely manner. A poorly designed index may be a source of errors that are attributed to basis risk events when, potentially, they could have been avoided through better index design.
71. Project sponsors find that giving thought to a fall-back solution in the event of issues with the index is sensible. As index based insurance often deals with extreme events, it sometimes happens that unusual stresses cause the measurement to fail when it might

³⁰ The Kilimo Salamo scheme in Kenya does disclose both forms of basis risk to micro clients in their initial education materials and discussions with clients.

³¹ In this example, if a high trigger point is adopted and is demonstrated in back test results then farmers can identify “very bad” years with the cover and “bad” years without cover. They also have the option to purchase cover to provide for a lower trigger. With this explanation, even if nobody takes the lower trigger and higher premium, the existence of a range of “bad” years that do not pay is now more tangible for clients.

be otherwise expected to have been needed. For example, in some extreme situations, local weather measurement equipment might suffer damage, exceed operating capacity, lose power or transmission, etc.

72. As with all new initiatives, the availability, quality, suitability and continuity of data can be a problem. It is useful to think through how reliable the data sources and measures are (and will be at times when they might be triggered such as heavy rainfall or some other natural catastrophe). Sponsors may give some thought to what should be done if the index calculation or data collection is impeded. Analysis of the risks, planning for contingencies and continuity are all relevant issues that need to be addressed to ultimately secure the credibility of the index. It is sometimes the case that local data is less reliable and less extensive than other sources external to the jurisdiction, so implications of any decision to require local data sources might need to be balanced with this need for reliability and sufficiently extensive information.
73. To be credible, an index may also need to be produced in a timely manner. The independence and transparency of the index production is also important. What constitutes timely, independent and transparent index production may differ between schemes that involve micro-, meso- and macro level arrangements.
74. The role of arbitration in the event of an index dispute should also be considered. The extent to which arbitration is included in the contractual arrangements may influence decisions about how it might be included in the context of resolving an index dispute.

4.2 Ex-gratia Payments

75. In the event of an adverse outcome, whether it be genuine adverse basis risk or some other cause, the question of whether or not an ex-gratia payment³² is to be made can arise. Although there may be significant disadvantages to making such payments³³, in a number of cases, such payments have been made so the question arises particularly because of this precedent. In fact, in some schemes, funding is set aside in advance to provide for such payments. In other situations, partners reviewed the merits of such an ex-gratia payment and agreed on the merits but not the allocation of costs between them, leading to the collapse of the project.
76. It is possible that the insurance supervisor will find that they become involved in discussions about cases where ex-gratia payments might be considered. This would be expected given the role of insurance supervisors regarding the interests in the fair treatment of policyholders. In the case of less sophisticated clients, there may be a further case for the insurance supervisor to become proactively engaged. The approach to this issue should be expected to be different in pilot phases (see below). A mature phase should have a more robust index in place and associated improved consumer education and insurance literacy.

³² “ex-gratia payments” refer to situations where payments were made to insured parties that were not something that they were legally entitled to under a strict reading of the contract and the application of its benefit definitions.

³³ Some disadvantages include creating the expectation or setting undesirable precedents that such payments will be made whenever an event does not trigger a claim, undermining the economics of the product, in the case of the particular product or of insurance more broadly.

4.3 Subsidies

77. Subsidies are a contentious issue in agriculture insurance in particular which can arise in discussions of index based insurances that are covering agricultural risks. Subsidies can also be a political issue. A tax exemption may or may not also be seen as a subsidy.
78. Whilst it is not a prudential issue regarding whether or not the product is subsidised, it does concern the supervisor if the subsidies are not transparent or if they are capable of being removed, leaving the client with a substantial increase in cost for insurance that is not expected or well understood.
79. Some subsidies may also be structured in a way that focusses on covering claims, reinsurance costs, or expenses. If a subsidy is structured as a premium reduction, especially if it is transparent, then it is easier to ensure that it is targeted and that it may lead to less risk to supervisory objectives if it is reduced, targeting is increased, or if the sponsoring party withdraws from providing the subsidy altogether.

4.4 Competition and Monopoly

80. There are a number of potential entities that can be engaged in the delivery of index based insurance. These include insurers, distribution channels, index providers, and reinsurers. It may be that initial developments select a limited number of participants in each role. Equally, in both the short and long term, it is possible that some parts of the process are not open to competition. For example, there may not be a number of diverse input providers with similar characteristics in a jurisdiction.
81. All players may prefer to maintain their competitive advantage, however it is desirable that some parts of the system are open to potential competition. This does not have to happen to all parts of the system at the same time.
82. Whilst competition policy might not be under the auspices of the insurance supervisor, it is important that the supervisory role does not inadvertently create a situation where a competitive market (initially or at a later stage) is difficult to ultimately achieve. At the very least, efforts to ensure that a range of insurers are able to access the distribution, reinsurance and other elements of the scheme will be relevant to consider.

4.5 Product Security

4.5.1 Provisions and Capital

83. Establishing adequate technical provisions under index based insurance products is conceptually similar to indemnity based products, although the techniques may differ given that the index based claim trigger information will be a key part of the calculation. However, the short term nature of most agricultural products including the short risk period, certainty of claim amount post trigger, and lack of delay in claim payment all suggest that adequate claim provisions will be able to be determined with a great deal of certainty quite quickly compared to many other conventional insurance lines.
84. Nevertheless, some care is needed in setting and assessing technical provisions, as the usual assumption that the risk is evenly distributed or even increasing over the policy period is not always the case with index based insurances, especially those that cover climate related agricultural risks.
85. Beyond adequate technical provisions, it is unlikely that capital will need a different consideration simply as a result of the index based nature of the product. The same principles can be applied to developing capital requirements. Proportionate approaches

may also suggest that practical solutions are applied when the business class is not materially relevant to the overall risk to the financial soundness of providers.

4.5.2 Reinsurance Risk Management

86. The most significant risk challenge for most index based products is the need for catastrophic reinsurance protection. Aggregation of risk by geography is usually a feature of index based insurance initiatives. Significant risk from adverse events is also a key motivation for developing the product. Addressing the systemic nature of the risk, and the catastrophic level extremes, is likely to require a greater level of understanding than more conventional insurance operations.
87. A second risk source can exist for insurers to the extent that payments under the direct insurance products are not precisely matched by payments under contractual reinsurance products. They may reinsure the product but hold some risk through potential ex-gratia issues or because their reinsurance does not directly match the coverage they provide to their client(s).
88. Beyond the use of appropriate reinsurance, the maintenance of effective reinsurance and access to cover is a matter that should get attention. Access to reinsurance has been reported as a constraint in a number of instances. Perceptions are that loadings for taking insurance risk in uncertain situations is also a potential barrier to insurance affordability. It may be that an assessment of the total exposures would be relevant in considering the potential loss and therefore the potential to retain risk as this approach has been successfully used in some pilot situations. In others, reinsurance capacity for a pilot was not available and provided a specific constraint on provision of products to clients despite the total exposure involved being somewhat immaterial in the context of the project. Still, in other projects, reinsurance capacity was not available without stringent risk mitigation requirements that meant that most people were not able to access any cover at all. Thus it is important for supervisors to understand how reinsurance availability may impact innovation and the development of successful index insurance programs.
89. Increasingly, for natural catastrophe events, the alternative risk transfer mechanisms and capital market solutions such as insurance linked securities have played an important role in providing capacity.

5 Pilot Projects

90. Many index based insurance schemes commence, or exist, as pilot projects. A project might start to provide cover to clients during a very initial phase, or it could do so at a later phase after more work has been done on the concepts. For the purpose of this paper, a project becomes a pilot once it starts to offer cover to clients. Before this, a project might conduct studies and develop various elements of their project proposals.
91. Although many insurance initiatives may require experimentation, index based insurance can have a greater tendency to operate in a “pilot” phase and do so for a longer period. When considering inclusive insurance initiatives for example, the IAIS has already noted the need to innovate and the possibility of “pilots”³⁴. In the Application Paper on Regulation

³⁴ The Application Paper on Regulation and Supervision supporting Inclusive Insurance Markets notes that “1.31.4 Pilots – this refers to innovations advanced through experimentation. Some projects can lead to confirmed innovations that are then ‘scaled-up’, others may fail and cease. Pilots are currently being conducted by a broad range of entities, sometimes with the support of sponsors that can bring substantial resources to the project. Other pilots may be less formal or less substantial.” When

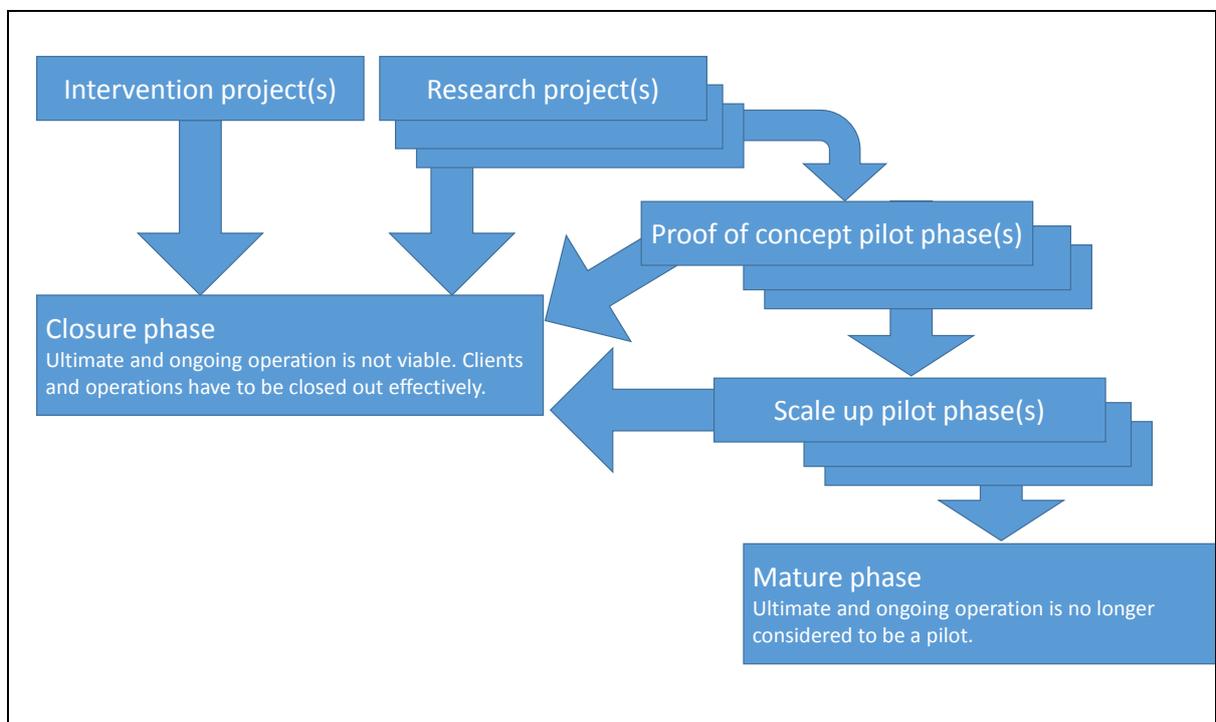
and Supervision supporting Inclusive Insurance Markets (Application Paper), supervisors are encouraged to facilitate innovation when seeking to expand the level of inclusiveness in the insurance market so as to avoid regulatory and supervisory approaches being a barrier to financial inclusion. Some index based products may need to remain in a pilot phase for longer because of the nature of the risk or the complexity of the product. The timetable for agricultural product pilots that may have to run through several phases may be dictated by cropping seasons. Natural catastrophic exposures may need to be refined against a backdrop of limited data and seasonal risk factors.

92. Pilots may be different to other insurer product development initiatives. Index based insurance initiatives are likely to involve a wider number of pilot sponsors beyond the insurer itself, potentially including other government agencies such as the ministry of agriculture, or those responsible for disaster recovery, providers of agricultural inputs, foreign donors, or experts in the particular risk. When the pilot commences, these other sponsors may well have a far better understanding of the product and the proposed process than the insurer. The other sponsors may have a far greater control over the project design and implementation than the insurer, in contrast to a normal insurance product development where the control lies with the insurer itself. In this paper, this group is referred to as the “Project Sponsors”.
93. By definition, a “pilot” has the potential to progress well and move to further subsequent pilot phases or to a mature phase, or it might not progress well leading to a revisiting of the work and potentially the cessation of the scheme altogether. Figure 1 shows that a series of phases and an eventual destination of ongoing success or cessation can all be expected. This paper identifies four types of schemes with varying characteristics.
 - Research projects: Often with a research objective, to investigate a particular issue and to report the resulting findings, these projects can involve formal academic approaches including sampling and survey work. They might also involve considering both a group that is provided with access to a product and another group who are not provided with the same access so as to compare outcomes. Beyond the research objective, the project may have an intention that the work might progress toward a more mature market in the long term in the particular research location or it may not have that intention, perhaps aspiring to contribute to the development of markets more generally as a result of the learning from the project.
 - “Proof of concept” stage projects: These projects are designed to gather information, refine and develop products, delivery mechanisms, and other elements of what might eventually become part of a mature market. They may start at a very embryonic stage with small numbers of contracts and covered risks. There may be several cycles that successively refine and expand the scope of the testing before a concept is considered to be beyond the “proof of concept stage” during which time the numbers involved may also grow.

discussing the need for insurance to operate within a separate legal entity, the Application Paper notes “2.13 For larger entities, the requirement for a separate legal entity should not be a material barrier. Larger mixed entities may, however, start their efforts with a “pilot”. Pilot situations can be part of a transitional arrangement.”. A fuller section (2.15 to 2.21) discusses proportionate approaches to “Licensing pilots” including the use of registration processes, less formal “equivalence” approaches, and orderly continuity considerations. Motivations for formality are also discussed. On formalisation, it is noted that transitional arrangements may be necessary to allow informal insurance to migrate to a regulated environment including when pilots are conducted.

- **“Scale up” stage projects:** These projects are operating with a concept that is largely settled, and are focussed on the need to find ways to expand the scale of the product delivery. They may include advancing to cover a broader geographic area, additional types of client, or adding new distribution channels for example. During this stage, the growth of numbers of policyholders and risks covered is a main motivation for project sponsors.
- **“Intervention” type projects:** These projects focus on using the insurance mechanism to deliver benefits to clients for a defined period of time. Unlike other projects, they are not permanent or motivated by an intention to have the potential to graduate toward a mature market for the service provided. Rather, they are motivated by using the insurance approach because it may be a more efficient way to get the results that the project is seeking.

Figure 1: Pilots and phases progress toward either a mature market or closure



94. Proportionate solutions are likely to be needed. They might apply at the commencement of pilot initiatives in particular. They might also continue, progressively changing in a transitional manner, as the project moves forward closer to maturity. Even in maturity, some application of proportionality might still be appropriate.
95. This section considers how some of the issues might be addressed in the pilot stages from the initial and simplest starting point and then as the project moves forward. The simplest starting point might be considered as one illustration of how a minimum set of requirements might exist. The further examples of how the issue might be developed toward final maturity can be considered as illustrations of steps that would be expected to be taken in second and subsequent phases.
96. Each of these stages suggests an increasing effort to ensure that the ultimate scope of work is planned and completed.

5.1 Characteristics when maturity is reached

97. This section considers the characteristics of a “mature phase” as a guide regarding what has to be put in place before reaching the end of pilot phases. It is also sensible and prudent that, in a well-planned pilot, consideration is given to what might happen if the pilot proves to be unsuccessful. These characteristics can be identified from a number of perspectives including those of the providers and promoters, prudential, competition and market conduct supervisors, and policymakers concerned about a range of issues.

98. In the mature phase:

- **Viability:** The scheme should be viable for market participants including all of those involved in the production and delivery of the product as well as those who purchase it.
 - For providers, the scheme would have secured sufficient economies of scale. A viable and credible business plan should be able to be produced by those insurers that are covering the risk in the product. Other key providers in the value chain, especially those involved in distribution and servicing, should also consider the product to be viable, the index should be credible and sufficient data should be available for pricing and valuation purposes. Adequate reinsurance protection is available and utilised. Technical capacity to manage the product on an ongoing basis is in place;
 - For clients, the product should be affordable³⁵, product design features (the index, trigger contingencies by type and level) should be acceptable and relevant to client risks, credible and trusted. The product meets the needs of clients regarding their risk profiles and the need to transfer some or all of these risks. The product provides an adequate level of security of the promises made. Customers are treated fairly.
- **Sustainability, overall:** Even if a scheme is viable and sustainable for all providers, it may be heavily reliant on one or more of the participants and their continuity in the provision of some functions.
 - Critical functions that are needed to deliver the product should be identified and known to be sustainable. In the event that a provider of a critical function would cease to provide that function then alternative arrangements are in place for the function to be maintained.
 - Critical functions may include the provision of reinsurance capacity or the delivery of the index or any other component of the delivery.
- **Competition:** Regardless of whether or not the ultimate product is provided in a way that includes an element of monopoly in practice, the range of services should be open to competition. New entrants should be able to come into the market if they wish. As a result, exclusive arrangements should be avoided and, to the extent that they are in place then they should be limited in duration and ultimately removed. This absence of

³⁵ Affordability might be tested when considered by clients as a voluntary purchase. The G-20 Global Partnership for Financial Inclusion (“GPI”) defines financial inclusion to include the access and use of products and services voluntarily. Whether or not a product in a pilot is provided on a voluntary and separate purchase basis, judgements about the affordability of the product should be made using a perspective of voluntary purchase. In other words, the product may be bundled with another service but it would be purchased in that way because it was convenient and efficient and not purchased in that way solely because it was compulsory.

exclusivity is particularly relevant, for example, when there is one provider of the index, one critical distribution channel, or one key provider of reinsurance support.

- **Subsidies, if they exist at all, should be “smart”³⁶.** They should not create features of exclusivity.
- **Regulation:** There is an enabling regulatory and supervisory environment that provides legal certainty for all participants, which is proportionate, and effective. Insurance is provided within the formal insurance market. Supervision is conducted by supervisors with adequate technical knowledge of the product.

99. The scheme should cover risks with sufficient data for both index construction and for pricing and valuation assessments to be made.

100. All elements should be functional in a mature phase. For example, it would be a significant concern if large numbers of insured customers were not adequately able to access consumer protection services or if informal or illegal insurances became common practice, potentially undermining the development of the formal insurance sector.

101. All pilots should plan for success. At appropriate points during the various pilot stages, project sponsors should include plans to support the transition to a mature phase. In the absence of such plans, it is likely that schemes might reach maturity in some respects but have serious shortcomings in others such that the product is not properly effective. Most sponsors aim to contribute to an eventual mature phase successful outcome.

102. As a general approach:

- Pilots that are in the initial stage may only need to comply with a minimum set of requirements consistent with a proportionate approach. Not all sponsors can commit to delivery of all needed elements at the start of a pilot and the precise form of solutions for clients and other stakeholders might not be clear; as such, the phase is very much aimed at proving concepts.
- Pilots in subsequent stages should be making further progress in areas so that the eventual transition to a mature phase will be completed. By definition, the initial stage has provided some justification to the sponsors that they should proceed to the second phase, even if it involves considerable revisions. As a result, some recognition of the need to put long-term solutions in place and some steps to progress in that direction should be included in project funding when appropriate.

103. Subsequent sections of this chapter discuss the possible “minimum requirements” in the initial phase and examples of steps for further progress and transition that should be reasonably expected in subsequent phases. For the purposes of this paper, a “phase” would generally be one product cycle (for example, in the case of crop insurance it would relate to one crop season, in the case of insurance against hurricane risks it would relate to one hurricane season). Even if it is proposed to have multiple cycles of product in the first phase (for example when crop seasons are short), the end of a phase should reflect the planned decision points to proceed to the next phase. In some cases, the decision points for sponsors will define the end point of a phase if it is sooner than other triggers.

104. Not all pilots proceed to success. A pilot that does not proceed should be able to close up in an orderly fashion and minimise the potential for undesirable consequences. As a result:

³⁶ See section 4.3.

- During a pilot:
 - Clients should know that the project is in a pilot phase, in particular, that it is possible that the product will not be offered in future depending on the outcomes of the pilot.
- When closing a pilot:
 - There should be no outstanding policy liabilities that are not being carried forward as part of the portfolio of a licensed insurer;
 - Clients should know that the cover has ceased, when that is the case, and that the project is not continuing to a further phase under the current arrangements so no renewals will be offered, if they had been intended.

105. Pilot projects that anticipate products being issued with a term that extends beyond the pilot should give particular attention to having a contingency plan allowing for the pilot to wind up. This contingency plan should be in place before the pilot makes commitments to potential clients. Sponsors should inform the insurance supervisory authority of the arrangements that they have developed.

5.2 Licensing pilots

106. The Application Paper indicates that pilot operations should be licensed. The intention of this recommendation is that pilot projects should be conducted within the formal insurance market rather than in an informal manner. “Informality” can arise when the risk is carried by an insurer that is not licensed. In some cases, pilot projects have been undertaken when the risk is carried by an entity that is either not an insurer or is an insurer that is not licensed in the jurisdiction. Informality can also arise when a licensed insurer is involved but the distribution channel is not licensed. Distribution channels may even be new and innovative to such an extent that they are not recognised under the law at all.

107. The Application Paper strongly favours including pilot schemes within the regulatory perimeter and emphasises the need for a proportionate approach to facilitate such inclusion ...

“1.8.5 pilot schemes should be licensed, at least at the level of registration, and be subject to conditions that protect the interests of policyholders during and, if relevant, beyond the pilot”

And regarding absolute minimum requirements: *“4.31 For example, registration, (Guidance 4.1.6), and its application in either a pilot or in a transitional system (for entities that were previously informal) should include requirements to identify the organisation, its form, and to report to the supervisor after registration.”*

One way that pilots can be facilitated in a formal system is to consider concepts such as a “regulatory sandbox”.

108. Licensing can take a proportionate approach. It may commence with a very limited approach but should include the following minimum elements - during the first phase project sponsors should:

- **Communicate with the insurance supervisory authority before the product is sold to any customers;** Project sponsors should outline the objective of the project phase, and provide an overview of the activities and scope of the project, the product, an assessment of the potential for basis risk, and information on the potential clients. Checklists about the content of this communication may promote an unnecessary and

counterproductive compliance orientation and should be avoided³⁷. However, a list of areas for discussion is included in Annex 2 of this paper as a general guide.

- **Be fully committed to support the project through a defined phase.** As sponsor commitment ends in a decision point (to proceed with further support or to find new support or otherwise) then it is the natural end point of a defined cycle if other aspects of the definition would otherwise define a later point (see definitions of phase above).
- **Communicate with the insurance supervisory authority after each pilot phase and at least annually if the pilot phase extends longer than one year. In particular, project sponsors should:**
 - provide minimal financial information for statistical purposes including, at the end of the pilot phase or for each year (whichever is the lesser): premiums written or collected and claims paid (or payable);
 - consider providing information beyond the minimum identified, such as the numbers of customers covered, numbers of customers with claims paid, expenses associated with the scheme operations, reinsurance premiums ceded, reinsurance recoverables, and the names of the reinsurers;
 - provide information on customer engagement, including any information on complaints received and how they were resolved;
 - provide information on the extent that project objectives were achieved;
 - report on compliance with any other minimum requirements during the pilot phase;
 - as the program develops into new phases, the information requirements should also mature to cover the specific financial elements of the scheme that would approach mature reporting.
- **Provide information on the next phase** of the pilot and the plans to progress toward having all conditions in place for a mature market.

109. Insurance supervisors should be in a position to “register” the pilot in the initial phase. Registration was envisaged under the ICPs until the recent revisions when it was combined with the option of issuing licences with conditions (see Standard 4.5 where it notes that “Where the supervisor issues a licence, it imposes additional requirements, conditions or restrictions on an applicant where appropriate”). Standard 4.6 of the ICPs notes that an insurance licence clearly “states its scope”. To this end, the limited licence provided to pilots should be strictly limited to the scope intended by the pilot itself.

110. Where a supervisor does not have the power to issue a limited licence with conditions, then the regulatory arrangements fall short of the expectations of the ICPs and may represent a barrier to more inclusive insurance markets. In such situations, interim solutions should be considered recognising that the alternative of totally informal pilots with no involvement from the insurance supervisor is less desirable. Interim solutions could include, for example, exchange of letters of understanding between sponsors and the insurance supervisor.

111. The above discussion on formalising an “insurer” pilot may be considered to be a different but related issue to the case where the product’s status under the insurance law may not be clear on commencement. This may mean that the registration considers that the

³⁷ The Drafting Group investigated case studies where sponsors had deliberately avoided communication with insurance supervisors due to concerns that unduly excessive compliance barriers to inclusion might be introduced at an early stage.

solution to the product status will emerge over time subject to interim arrangements that might also be agreed (discussed further elsewhere in this paper).

112. Over time, project sponsors should start to develop necessary elements for a fully licensed operation. The Application Paper envisages that a fully licensed entity may be an insurer with a restricted licence and subject to proportionately lesser requirements in areas where it carries less risk to the achievement of supervisory objectives, such as might be the case when a proposed insurer is not going to write all classes of business. In this context, it would still be fully licensed meaning that it would provide a more complete license application and expect to be more complete in its operational management and reporting.

5.3 Legal certainty

113. Informality can arise when the legal status of an index based insurance product is unclear under the insurance law or under other laws. It may be that the legal status of the product is such that it could be considered to be insurance but this is not certain, or it could be that the legal status is such that it is definite that the product might not be treated as insurance.

114. The relevant section of the ICPs (Standard 4.1) notes that “The insurance legislation: includes a definition of insurance activities which are subject to licensing”. The preferred status of the product is that it should ultimately be formally identified as subject to insurance supervision through legislation (refer “3.1 Preference for formality under the insurance law” on page 13).

115. During the pilot phases, it is important that any limitations arising from the situation that exists during that pilot phase is understood and steps are taken to deal with the uncertainties. Pilot sponsors should, in particular:

- **Ensure that customers can access complaint handling mechanisms:** Sponsors should clarify whether or not the scope of activities of existing complaint mechanisms are able to deal with the product.
 - Initially, pilot projects may need to put in place an alternative complaint handling approach. It is likely that this approach could be quite simple given that the number of customers might start out being quite small.
 - During the subsequent phases of the pilot, sponsors should work with the authorities to put in place fully effective complaint handling arrangements.
- **Understand the implications of uncertainty regarding taxation treatment** of products, clients and providers; the precise implications may be trivial in the case of customers with low incomes or clients who largely operate in the informal economy, or they may be potentially significant.
 - Initially, for aspects of taxation that might be estimated to be immaterial, it may be sufficient to recognise the uncertainty and decide to proceed. In other cases, it might be appropriate to discuss the situation and agree an informal approach with the revenue authorities.
 - During the subsequent phases of the pilot, sponsors should work with the authorities and other stakeholders to develop a policy position and then put in place the appropriate legislation to create certainty regarding taxation treatment.

- **Identify whether or not there are concerns about the definition of index based insurance products that arise because of questions of insurable interest or other product based legal definitions** under insurance contract or prudential laws.
 - Initially, pilot projects may need to identify areas of concern and potential shortcomings.
 - During the subsequent phases of the pilot, sponsors should work with the authorities to develop amendments to laws that would ensure that the products are within the scope of the relevant laws once the project starts to gather scale.

5.4 Security

116. The value of any insurance product is defined, in part, by the fact that it makes promises and these promises need to come with a level of certainty that they will be kept. Usually, a strong contributing factor to keeping promises is the financial security of the entity that makes the promises, and secured by adequate levels of capital and other risk mitigation, especially reinsurance.

117. During the pilot phase, it is important that the confidence of customers and the broader community in the insurance concept generally is not eroded by products that do not provide adequate security. Responsible pilot sponsors should:

- Ensure that customers are not provided with substandard insurance products in terms of the security offered:
 - Initially, pilot projects may be secured through one or more approaches such as local insurer risk coverage, reinsurance, contingent guarantees, or other implicit or explicit guarantees³⁸. Local insurer coverage brings the capital adequacy of the insurer to bear. Reinsurance is most relevant to address variations in coverage but can also take the main proportion of the insured risk. Other guarantees can play a role depending on the size and maturity of the pilot. Very early stage “tests of concept” might be more likely to have less formal arrangements, whereas more developed pilots in later stages should be looking to build up resources and utilise reinsurance in more traditional ways.
 - During the subsequent phases of the pilot, sponsors should expect to see the insurance risk supported by more traditional risk transfer and capital resources to an increasing extent given that the ultimate aim is to transition to full and separately capitalised insurance operations. It may also be necessary to develop capital and valuation regulations through a consultative process that eventually leads to specific regulations.

118. Reinsurance can be a very valuable tool to provide security. It may be that regulations regarding insurance minimum levels of retention could usefully be waived in early stages as the direct insurer builds up capacity. It may also be necessary to even consider whether or not the reinsurer can provide coverage directly to the project for a limited period.

119. Third party guarantees should only be considered to be a short-term solution to addressing the need for adequate security of promises in products. During subsequent phases of the pilot, if progress is to be made toward a mature phase, then some financial resources should be able to be built up. If third party guarantees are the basis for financial promises, then they may be limited and, as a result, they might only provide protection up

³⁸ Some early stages of pilots are guaranteed by a donor who promises to meet all claims in excess of premiums received and is funding the expenses of the pilot in any event.

to an extent if the initial pilot is a numerical success. Consideration might be given to identifying how successful a pilot might be before the amount of cover exceeds the protection provided by any guarantees.

120. It is more likely that guarantees provided by donor agencies and reinsurers would be more acceptable than organisations where their involvement in the project is motivated by other core competencies than insurance. This is because the guarantees rely on a reputational concern about insurance, something that is less critical to the ongoing engagement of non-insurance entities in a jurisdiction.

5.5 Understanding and quantifying risk, pricing, valuation and reinsurance

121. During the pilot phase, it is important that the level of uncertainty in quantifying risk related issues is understood, and risks from shortcomings are managed and mitigated. Responsible pilot sponsors should:

- Have a level of competence regarding risk assessment and quantification:
 - Initially, pilot projects may or may not have a very limited technical backup for their pricing and associated valuation. Others may have done considerable work drawing on a high level of technical expertise. As a result, at a minimum, sponsors should share how they determined their product pricing with supervisors as part of their initial discussions.
 - During the subsequent phases of the pilot, sponsors that have started with a “proof of concept” where the pricing was not particularly technical should then be able to build up and demonstrate a more conventional and scientific approach, working with partners if needed.

122. As the technical capacity to establish prices becomes more robust, it should also become more stable. If prices are particularly unstable, this can have reputational issues for the scheme and for the development of the market, and insurance markets more generally.

123. Reinsurers may be important partners in the early stages of projects. It would be expected that all but the most experimental pilot projects would have a reinsurance partner engaged in the analysis and quantification of risk.

124. In all cases, the expected exposure should be given attention. For embryonic pilots this may involve simply calculating an estimated total sum at risk and giving thought to how it would be handled. For small pilots in research or proof of concept phases, identifying the source of funds to cover the sum at risk may be sufficient³⁹. For larger pilots, it would be expected that a combination of retained risk supported by identified funds and reinsurance type risk transfer would be usual.

³⁹ There have been cases where the sum at risk was matched by research project funds from a government donor agency as part of the project. To illustrate, the product had a small sum insured per policy (S) and a defined number of expected policies (n). The budget to cover potential claims that was available was equal to $n \times S$, so the project had available funds as long as the number of policies did not exceed n. In another case, where reinsurance was not available for a portion of the risks covered by the pilot, then the retained risk was examined and cover up to the capacity to support that retained risk was able to be provided. As sums insured are small in an inclusive insurance context, then this approach can be considered. The nature of risks covered in an index based insurance context suggests that the “worst case scenario” of claims on all contracts that are not reinsured should be considered in the absence of more sophisticated techniques being available.

125. Challenges with limited data is usually but not always a problem. Even if data is available, the models to interpret it are also important.

126. Even if modelling is initially limited, it can be useful to prepare a back-test to show how the product would have performed in the past. Separately, this is noted as being a useful tool for educating potential clients. It is also useful to share this back-test with the supervisory authorities.

5.6 A Credible Index

127. In addition to the comments noted above regarding index credibility, there are special items that are likely to arise in a pilot phase. The index, data, processes and trust in the index may be low before a track record is built up.

128. During the pilot phase, it is important that the credibility of the index is given a high priority. In particular, shortcomings in the credibility of the index should be addressed in earlier pilot phases as it is fundamental to the product itself and it would be dangerous to advance far into scale up phases with a problematic index. Responsible pilot sponsors should:

- Work to understand and improve the credibility of the index to an acceptable level:
 - Initially, pilot projects may commence with a very experimental index. If this is the case, it is useful if project sponsors have discussed how they might deal with a failure event in the production of the index and share this plan with the insurance supervisor. The experimental nature of the index may mean that sponsors should plan for how basis risk issues may be addressed if they arise.
 - During the subsequent phases of the pilot, sponsors that have started with a “proof of concept” and weaknesses in the index should take steps to improve the credibility of the index at least in parallel with the first phase of the project that aims at scaling up.

5.7 Viable operations

129. All new operations by definition will not be viable until they achieve scale. It is not reasonable to expect that a pilot project will be able to demonstrate a sustainable business case at first, otherwise it would not be a pilot. However -

- Initially, pilot projects should be able to demonstrate that the pilot phase itself is able to be delivered. Any commitment beyond that is, by definition, unreasonable. However, to ensure the initial pilot phase is able to be delivered, all relevant sponsors and contributors of services should have committed to deliver the needed services during the pilot itself.
- During the subsequent phases of the pilot, sponsors should expect to see the key parties that are involved in delivering the insurance product (including associated services) are building a viable business case. Sponsors should identify the most critical functions and ensure that they are able to be delivered and, if needed, replaced. Discussions to secure the production and enhancement of the index and associated data should not be left to the later phases. The viability of the proposed approaches for critical distribution and servicing relationships should also be understood, and then subject to agreement between the parties.
- Ultimately, as the pilot approaches maturity, all parties should be able to present a complete business plan showing the viability of the operation.

5.8 Enabling Regulation and Supervision

130. Specific issues raised in this issues paper may need to be resolved through regulatory and supervisory process revisions. Regulatory and supervisory process changes do not occur without resources to develop and consult on proposals and then to support their adoption. It is not reasonable to expect that a pilot project will always commence in a perfect, supporting, enabling and appropriate regulatory regime. However,

- Initially, pilot projects in the proof of concept phase are uncertain as to whether or not they will advance. In such cases, it may be appropriate to make alternative arrangements regarding treating the pilot project to deliver the supervisory objectives and outcomes. In the absence of such an approach, there would be a disproportionate delay and barrier to advancing inclusion that may not be justified by the size of the pilot itself and the consequent limited risk.
- During the subsequent phases of the pilot, supervisors should expect sponsors to be working toward the ultimate aim of functioning and enabled markets. To this end, progress should be made on regulator and supervisory reforms that may be needed. Initial steps may involve stocktaking reviews of regulations and supervisory practices against IAIS core principles, standards and guidance⁴⁰. Subsequent refinement through consultation can then ultimately provide a basis for eventual draft rules that can be adopted in an appropriate legal form to the context of the jurisdiction.

131. The enabling environment should address the range of services required to deliver the product, including both those that would be considered to be relevant to insurers and those relevant to insurance distribution.

132. In addition, an enabling supervisory environment may require some capacity building for supervisors. It is to be expected that local industry participants will also need to build up their technical capacity. With the ultimate objective that a mature market has market participants with the capacity to manage and maintain the product, and that supervisors have the capacity to supervise it, then:

- Initially, pilot projects in most phases before maturity can be expected to be reliant in some way on external expertise. Over time, an appropriate level of knowledge transfer is desirable and it is useful if supervisors are included in the educational sessions that might be included as part of the activities of the project.
- During pilot phases, it is also useful that project sponsors consider, and if necessary take steps to manage risks arising from, the risk that a project participant that is providing necessary technical input was to withdraw or be otherwise unable to continue doing so.⁴¹

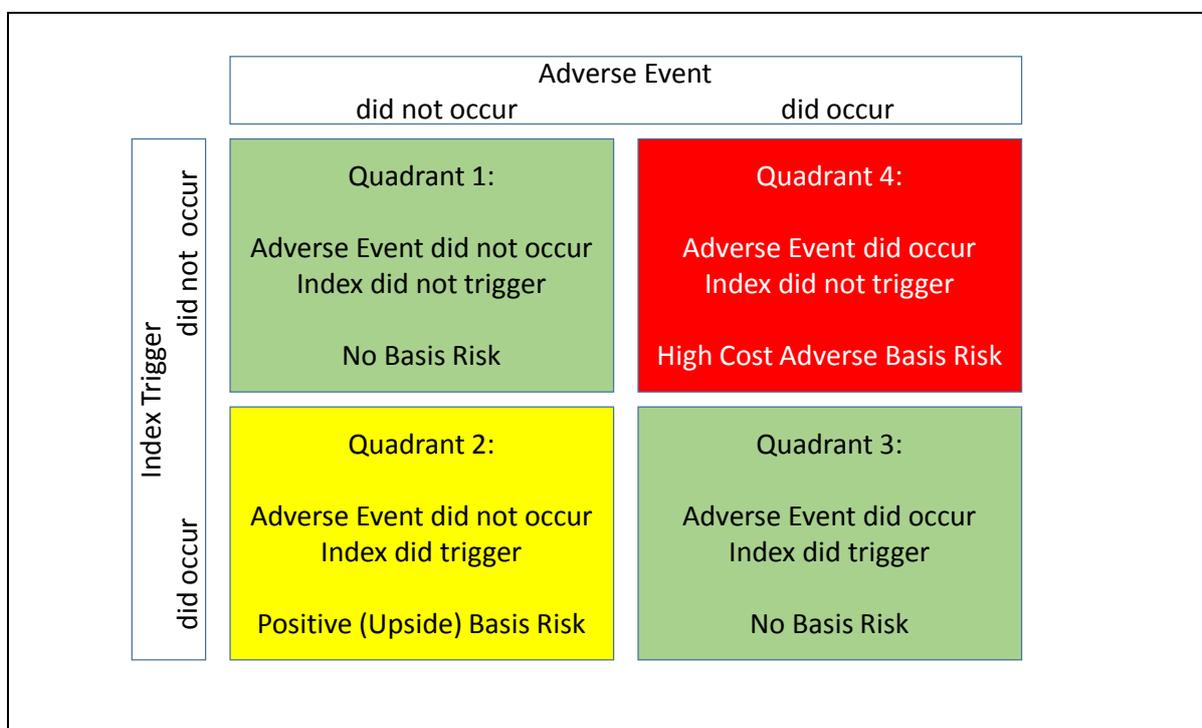
⁴⁰ Although this paper provides some inspiration for such a review, other papers produced by the IAIS regarding regulation and supervision supporting more inclusive insurance markets, and papers on insurance supervision more generally, can form the basis for such reviews. Experts will also be able to draw on a range of country experiences and good practices to inform recommendations.

⁴¹ Readers may wish to review additional technical resources, including the paper released by the A2ii on “Index Insurance: Status and Regulatory Challenges” available at <https://a2ii.org/en/report/thematic-reports-global-agricultural-and-disaster-risk-insurance/index-insurance-status> and on the question of more complex basis risk assessment, for example, Morsink, Clarke, and Mapfumo (2016), *How to Measure Whether Index Insurance Provides Reliable Protection*, World Bank Policy Research Working Paper 7744.

Annex 1: Considering basis risk

133. Conceptually, there are a range of potential outcomes that can be considered by way of a matrix (see Figure 2). On one axis, the concept of a “bad” outcome is the distinguishing feature. On the other axis, the response of the index is the distinguishing feature. Quadrants 1 and 3 of Figure 2 represent the cases where the index triggers in line with the occurrence of adversity and quadrants 2 and 4 reflect the “basis risk” events where there is a mismatch. Notably, however, quadrant 2 represents cases where the basis risk is inefficient for the ultimate risk carrier and, to the extent that it is passed on in costs, to the client and may create a barrier to access and use of the insurance. In contrast, quadrant 4 is more problematic as the failure of the insurance to provide protection against the adverse event can lead to considerable adversity and hardship for clients and to very deep reputational risk for the insurance sector as a whole.

Figure 2: Conceptual Basis Risk Quadrants



134. The first practical challenge to this concept is the need to define what constitutes an “adverse” event at the sufficient level to represent a “bad” outcome. This is an important issue facing project sponsors but is also of great relevance for supervisors. Ultimately, the quadrant approach highlights that basis risk arises from a mismatch between the index trigger and the adverse event *as understood by the client*.

135. Adverse basis risk events will be reduced if clients sufficiently understand the meaning of how the product is meant to perform. This challenge concerns defining the product to align with client needs as well as communicating to clients and is little different to explaining an excess or deductible, or a product exclusion, on a conventional contract. As such, arguably, it is not entirely attributable to or caused by basis risk. Such a realisation points to the potential areas to address this issue:

- Understand what clients consider to be a “bad” outcome; and
- Ensure that the product structure is communicated to clients.

136. Initially, project sponsors may wish to develop an index to match a *preliminary working definition* of a sufficiently adverse event. Project sponsors may consider the relative cost of explaining their working definition to clients or refining it based on an investigation of client views.

137. The measurement of basis risk can be considered in different ways.

138. The least cost prohibitive option to test the level of basis risk may well be to investigate how the product would have performed based on actual past experience. Data constraints may mean that this illustration is prepared on a “best endeavours” basis, but could also draw on the data used to develop the product and the index. Such an analysis could also be useful in discussions with supervisors as well as to help to educate clients. Project sponsors might also expect to see such an approach as part of their due diligence and reputational risk management. The information can be shared with clients regardless of whether the scheme operates at the macro, meso or micro level and the format of the presentation can be adjusted to illustrate both basis risk and product features in each of these levels.

139. For schemes that operate at the micro level, it may be that clients will not fully understand such an illustration of potential basis risk if the preliminary working definition is used and it is at variance with the expectations of clients of a “bad” event. If it is coupled with the results of client feedback then the definition can be expected to be closer to client expectations. Consequently, micro schemes could find that the effort required to investigate client expectations may be less costly than trying to explain a definition with a large potential gap between expectations and the product definition. Project sponsors who are adopting an internally developed definition that is not tested against client expectations should give greater attention to their approach to communication and how they will test whether or not this approach worked and/or needs to be refined in subsequent cycles of a pilot project.

140. The implications and extent of basis risk might be different for meso and macro level schemes. In the case of agricultural risks, the aggregation of farm level risks is one factor that influences this outcome. Also, meso and macro level counterparts may be better able to understand and absorb adverse basis risk events than micro level clients.

Table 1: Minimum suggested guidance regarding measurement and disclosure

	Nascent Pilots	Progressing Pilots	Mature State
Micro	<p>Sponsors should conduct focused studies to inform their understanding of clients’ definitions of adverse events;</p> <p>Sponsors should develop consumer information so that clients understand basis risk implications of</p>		<p>Insurers should conduct ongoing analysis of customer perceptions and product value;</p> <p>Insurers should monitor and maintain customer information that delivers high levels of client understanding of level of cover provided.</p>

	<p>defined “bad” event levels.</p> <p>Especially if using an internal project definition of adverse events, sponsors should plan to validate communication strategies as part of the follow up and refinement for further pilot cycles.</p>		
Meso	<p>Sponsors should develop historic scenario based understanding of basis risk performance (at a minimum) and take steps to encourage clients to be aware of the potential risk they face.</p>	<p>Sponsors should develop scenario based understanding of basis risk performance and take steps to ensure clients are aware of the potential risk they face.</p>	<p>Insurers should develop scenario based understanding of basis risk performance and take steps to ensure clients are aware of the potential risk they face.</p>
Macro	<p>Sponsors should develop historic scenario based understanding of basis risk performance (at a minimum) and share this information with clients.</p>	<p>Sponsors should develop scenario based understanding of basis risk performance and share this information with clients.</p>	<p>Insurers should develop scenario based understanding of basis risk performance and share this information with clients.</p>

Annex 2: Summary of key points for project sponsors

141. When developing products, insurers (and other project sponsors) should focus their efforts on the needs of customers. With respect to index based insurances, this is particularly relevant as a range of product design features may require decisions and these should be informed by client needs.

Table 2

Area	Project sponsors are encouraged to, at a minimum, ...
Understanding clients	Incorporate proportionate levels of research into client needs to inform product design decisions including what clients consider to be an adverse event.
Basis risk	Develop back test scenario based illustrations to share with supervisors and potential clients. Develop scenario based analysis and share with meso and macro level clients and supervisors.
Legal certainty	Understand if there are any potential issues and, initially, develop work around solutions during pilot phases. Plan to support the development of permanent solutions in later stages of pilots.
Client information	Ensure clients are aware of the status of the project as a pilot. Provide summary results of back test information to illustrate product. If pilot closes, advise clients that there will not be a new phase.
Project design	Ensure project pilot phase is aligned to partner objectives and commitments consistent with end point of pilot where consideration to conduct a new phase or to close would be taken. Ensure project plans for both success of pilot as well as closeout if needed.
Communicating with insurance supervisors	Open a dialogue with insurance supervisors early in the process including when considering a pilot study.

142. This paper advocates that sponsors of pilot projects and insurance supervisors should be communicating as early as possible. This annex includes some indication of the areas, scope and basis for discussions.

143. It is expected that these discussions should be at a proportionate level of detail. Much of the information that is suggested to be discussed would be prepared by project sponsors and their partners for other purposes already. It is important that the material presented and discussed in a meeting with supervisory authorities is at an appropriate level and may not be as comprehensive as discussions between a project's parties would require. Detail can always be provided subsequently if requested.

144. During a pilot that is oriented toward proof of concept:

- Project sponsors should understand that a divergence of incentives between partners can become problematic and should work to ensure partners are selected and have incentives that are consistent with the longer term objectives of a project. The terms of

commitment of partners should at least extend to the end of each pilot phase. This work can be shared with the supervisor for information.

- During the “proof of concept” phase, project sponsors should have a view of the characteristics that would represent success and the timeline for the phase before it would be reassessed.
- For each phase in the proof of concept phase, so that statistics can be maintained for the market as a whole, the project sponsors should share their intended premium income and then, after the phase, the actual premium income and claim expenditure.
- An outline of the product terms and conditions should be provided for information to the supervisor.
- Regarding basis risk, a summary of how the product would have hypothetically performed in the past should be prepared and shared with the supervisor.
- Regarding risk levels, sponsors should be able to explain how funds for claims will be met whether it be through reinsurance, insurance or other available funds and what constraints there might be to accepting risk because of available capacity from the combination of sources available.
- Information to be presented to clients, particularly in the case that the project represents a “micro” or “meso” level scheme, should be shared with the insurance supervisor.

Annex 3: IAIS Supervisory and Supporting Papers in respect of Inclusive Insurance

Issues in Regulation and Supervision of Microinsurance (June 2007)

This Issues Paper aims at outlining salient features of microinsurance in general, and of its regulation and supervision as an input for high-level expert discussion among regulators, supervisors and other stakeholders involved in the provision of insurance services for lower-income segments.

Issues Paper on the Regulation and Supervision of Mutuals, Cooperatives and other Community-based Organisations in increasing access to Insurance Markets (October 2010)

As follow-up from the Issues in Regulation and Supervision of Microinsurance (June 2007), this paper discusses the key elements of such organisations that are relevant to considering the approach to their regulation and supervision. This paper is superseded by the Application Paper on Mutuals, Cooperatives and other Community-based Organisations in increasing access to Insurance Markets, published in September 2017.

Application Paper on Regulation and Supervision supporting Inclusive Insurance Markets (October 2012)

This paper provides guidance on the application of regulation and supervision in ways that help support inclusive insurance markets. It provides examples of how relevant principles and standards can be practically applied. Where enhancing inclusive insurance markets is a policy objective, this document elaborates on guidance for supervisors. It is directed at the objectives of implementing the ICPs in a manner that protects policyholders, contributes to local and global financial stability, and enhances inclusive insurance markets.

Paper on Issues in Regulation and Supervision of Microtakāful (Islamic Microinsurance) (November 2015)

This paper was developed as a joint initiative with the Islamic Financial Services Board. Its main objective is to identify the practices and models used for offering Microtakāful products, and the challenges and potential issues arising from Microtakāful transactions for regulation and supervision.

Issues Paper on Conduct of Business in Inclusive Insurance (November 2015)

The objective of this paper is to identify the issues in respect of conduct of business in inclusive insurance markets that affect the extent to which customers are treated fairly, from before a contract is entered into through to the point at which all obligations under a contract have been satisfied.

Application Paper on the Regulation and Supervision of Mutuals, Cooperatives and Community-based Organisations in increasing access to Insurance Markets (September 2017)

The objective of this paper is to provide guidance on ways in which the ICPs could be applied in a proportionate manner recognising the specific features of Mutuals, Cooperatives and

Community-based Organisations. It aims to provide guidance on removing unnecessary barriers created by disproportionate regulation and supervision, while protecting policyholders. In addition, it intends to raise awareness among policymakers, regulators and supervisors of the role these types of organisations could play in enhancing access to insurance.

Application Paper on Product Oversight in Inclusive Insurance (November 2017)

The objective of this paper is to provide guidance to inform supervisors, policymakers and market participants of ways to implement and apply the ICPs relevant to product oversight in inclusive insurance. The paper defines “product oversight” as different sets of regulations, supervisory tools and processes used by supervisors to ensure the fair treatment of customers by insurers when designing, advertising, selling and exercising other rights and obligations arising out of insurance products.