JAMAICA

Agriculture Weather Risk Management for St. Elizabeth and Portland

PREFEASIBILITY

Draft Report

April 8, 2010

ALL ACP AGRICULTURAL COMMODITIES PROGRAMME

EUROPEAN COMMISSION

ACP GROUP OF STATES

PREPARATORY WORK DONE

- Review of data and literature on weather risks and the agriculture sector of these Parishes.
- Stanmore Farmers Group/ Malvern (St. Elizabeth)
- Pepper Farmers Group / Gutters (St. Elizabeth)
- Comma Pen Farmers' Group (St. Elizabeth)
- Big Woods Farmers'Group (St. Elizabeth)
- Windsor Castle Farmers' Group (Portland)
- Chepstowe Farmers' Group (Portland)

Also visit to financial institutions and RADA offices

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Production Characteristics important for Designing a Risk Management Strategy

- Vast majority small farmers (less than 2 acres)
- Majority produce for the market (commercial farmers)
- Livestock is as important as agriculture (livestock role is as savings)
- Highly diversified (up to 15 crops)
- Short cycle crops (3 months cycle)
- Double purpose crops (cash/food)
- Spread culture of Informal borrowing

Production Characteristics important for Designing a Risk Management Strategy

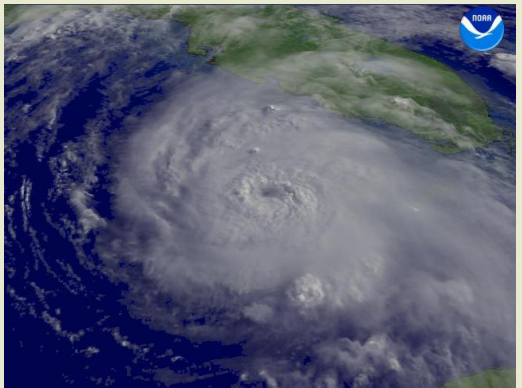
- Farm size lends itself to options of aggregating risks at a regional and/or national level, under an institutional umbrella, either public or private, that can serve as a cost/effective the delivery channel.
- Crop diversification is widespread and is a corner stone of farmers' risk management strategy.
- A product by product risk profiling approach for insurance contract design would prove useful if farmers were mainly mono-cropping or have dedicated significant amount of land to one particular crop.
- In multi-cropping systems by small farmers, in order to reach individuals with a useful, cost-effective mechanism, the risk coverage would need to focus on more catastrophic risks

Production Characteristics important for Designing a Risk Management Strategy

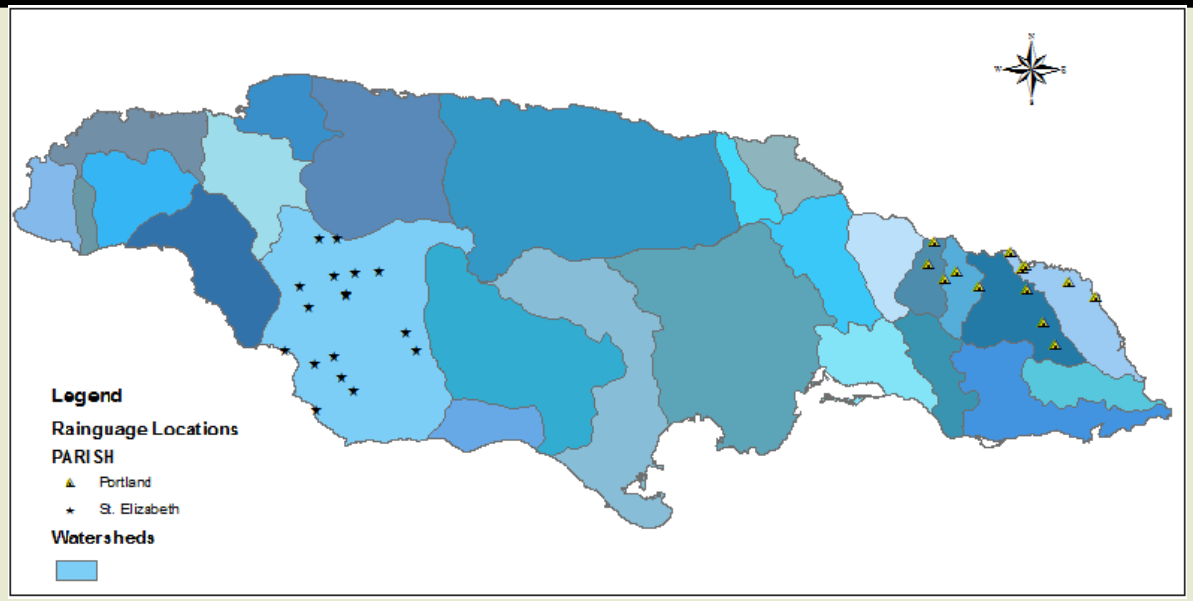
- Livestock and savings play a central role in households risk management strategy in agricultural production.
- A preliminary conclusion from the field visits and focus groups is that there is a willingness to pay by farmers for transferring some of the systemic risks out of their farms.
- The role of an umbrella organization from public or private sector becomes then a sine qua non requisite for the design of an aggregate parametric coverage, and institution that is able to reach to so many small diversified farmers

Identified Weather Risks

- Niño event (severe droughts)
- Excess rainfall / floods
- Strong winds (with /without tropical storms)
- Localized winds (i.e. banana, coffee)



Extreme Rainfall



- **Historical daily rainfall records were obtained for 163 weather stations in Jamaica; however, there are several constraints to these historical records:**
  - it is difficult for some of the records to be used practically: missing values, values recorded as zero
  - an official weather station catalog for active or inactive stations could not be obtained; therefore, it was not possible to determine whether the 30 stations that are located in both Parishes are in operation or not
  - t was noticed that, within the datasets and information obtained, weather stations were identified by its name, which in some cases it was not possible to compare with other information sources given that there were more than one way to called it (i.e. Appleton Climo vs. Appleton 1, Appleton 2 and/or Appleton 3).

Extreme Winds

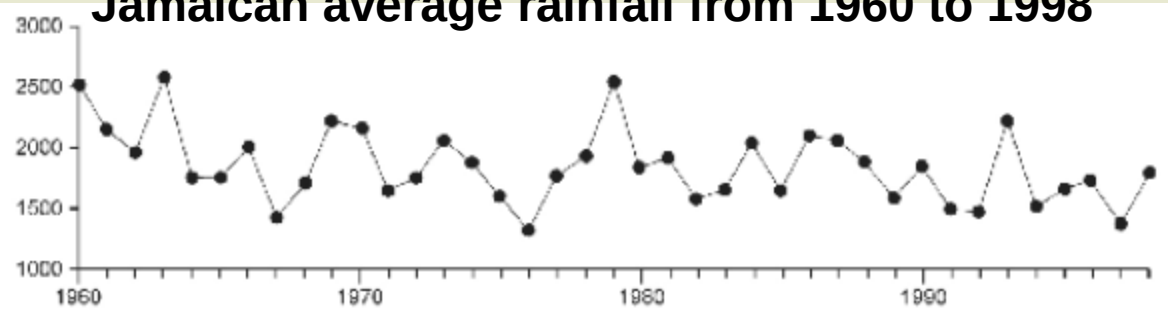
- Station-based weather index insurance for extreme rainfall could be technically feasible (in simple terms of measuring rainfall at stations); however, low weather station density, and adequacy of meteorological data issues are constraints already described.
- Findings indicate that an “extreme rainfall” product for both Parishes could yield positive results during an in-depth feasibility assessment.
- Only seven weather stations measure wind speed. However, wind modelling is a well developed technology, using the database (HURDAT) of over 100 years of Atlantic basin cyclone events as the data source, and models widely used in the property insurance industry.
- The primary concern for major (high severity) wind events are the winds arising from hurricanes and tropical storms (“cyclone events”).
- Findings point out that modelling is the only potential option for development of insurance “payouts” for winds, and this is restricted to events derived from cyclones.

Floods

- Due to its high frequency, flooding is the most common natural disaster in terms of leading loss of life, damage to property and natural assets.
- The hurricane season is the period more susceptible to flooding.
- Whilst some streamflow data exists for the two Parishes and could provide a basis for indexing the occurrence of major events, the definition of areas damaged was problematic, especially for a micro (farmer-level) insurance.
- In Jamaica, as elsewhere, there is no immediate parametric solution for flood insurance.

Drought

Jamaican average rainfall from 1960 to 1998



- In 2002, above 95% of all domestic agricultural production in the island was estimated to be rain-fed
- When the “El Niño” natural phenomenon occurs, drier conditions than normal take place in Jamaica during the later months of the rainfall season El Niño/southern Oscillation (ENSO) is the primary phenomenon associated with disruptions of the seasonal rainfall cycle.
- St. Elizabeth, as the rest of the country, has two periods of high rainfall, but water deficits in the low rainfall periods makes crop production extremely difficult with the exception of farmers who have adopted irrigation systems.
- Insurance is not the primary measure to address the problem recurrent drought in the two parishes.
- Drought lends itself to indexation, and some index insurance is technically feasible to operate, but very challenging to design in Jamaica.

INSITUTIONAL FRAMEWORK FOR AGRICULTURE RISK MANAGEMENT

- Estimated direct damages to the agriculture sector as a whole from 2004 to 2008 were a total of $13 billion. The Jamaican agricultural sector has received an estimated yearly minimum amount of public resources ranging between US$1.5 – US$2 millions for natural disaster responses.

- in St. Elizabeth and Portland RADA has been providing direct farmer supports in the form of distribution of agriculture inputs and subsidies (fertilizer vouchers) after hurricanes such as Ivan (2004).

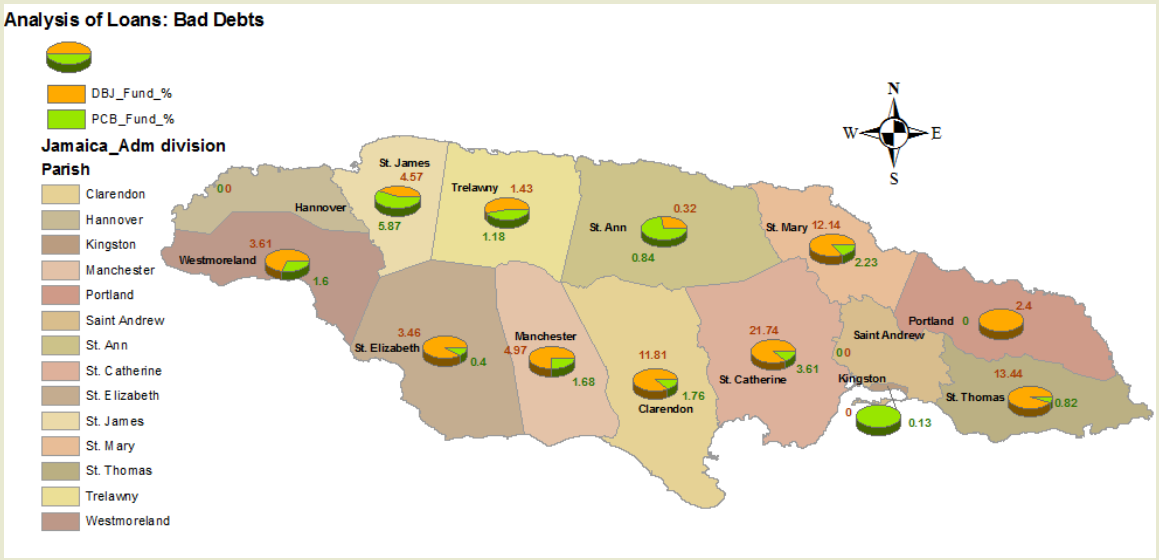
- Post disaster farmer supports in Jamaica is not necessarily financed by the budget of the Ministry of Agriculture. In 2004, such direct farmer support was not financed from the MOA's budget, but directly by the Office of National Reconstruction (ONR).

- After a natural disaster, the public sector response to the agriculture sector begins by RADA extensionists undertaking an assessment of farmer needs at the level of the Parish, but concludes in non-transparent mechanisms to provide farmer compensation.

INSITUTIONAL FRAMEWORK FOR AGRICULTURE RISK MANAGEMENT

- Formal credit and financial instruments are seldom accessed by farmers in St. Elizabeth and Portland
- We observe that default rates in the agriculture sector (below 365 days) is comparable (and often better) than other sectors. In part this could be due to the lack of significant natural disasters during 2009.
- However, looking at NPCB's longer term default rates for outstanding loans above 365 days, the agriculture sector has 67% of the overall bad debt portfolio, with a total of 2,000 farmers in default with NPCB

2009 Assessment of Bad Debts from NPCB



INSITUTIONAL FRAMEWORK FOR AGRICULTURE RISK MANAGEMENT

- In St. Elizabeth, given its different production structure (no coffee production and a large number of small farmers), the level of the formal credit is significantly lower in relative terms.
- At the national level, we observed that agriculture lending has been decreasing, not only in terms of levels, but also as a % of overall lending.
- However, at a national level, the DBJ is *on-lending* significant amount of resources to the agriculture and agri-business sector. In 2008, a total of US$835,000 were given in credit to financial institutions to on-lend to the agriculture

Overall Lending in Jamaica (US$)

Year	Loans All Sectors	Loans Agriculture	%	Avg Loan Size	Avg Loan Size (Agriculture)
2002	18,278,400.00	4,012,164.80	21.95	82,331.20	41,798.40
2003	33,992,000.00	2,950,472.00	8.68	196,481.60	30,732.80
2004	13,921,600.00	2,625,414.40	18.86	108,763.20	25,491.20
2005	27,944,000.00	2,922,640.00	10.46	216,619.20	51,273.60
2006	14,034,462.40	1,643,208.00	11.71	173,264.00	30,430.40

INSITUTIONAL FRAMEWORK FOR AGRICULTURE RISK MANAGEMENT

- Farmers (in particular small farmers in St. Elizabeth) depend mostly on informal sources such as partners, loans from families or friends, and shops or farm store credit.
- Financial institutions operating in St. Elizabeth and Portland did not offer any type of insurance or risk management instrument for covering production risks.
- Although formal lending for small farmers of domestic crops is not envisaged by the current strategies of formal financial institutions in St. Elizabeth, opportunities exist to help them improve their overall agriculture lending portfolio by building-in risk transfer mechanisms, such as insurance, micro-indusrance and micro-credit schemes.

INSITUTIONAL FRAMEWORK FOR AGRICULTURE RISK MANAGEMENT

- The current policy of GOJ is to utilize RADA as the agency for providing rehabilitation and assistance support to farmers affected by natural disasters.
- RADA has recently undertaken a very important task of establishing a farmer registry.
- PMOs are becoming quite useful as a tool for effectively undertaking extension services, however many farmers are not yet part of PMOs
- Both “assistance and compensation” and “insurance” are potential mechanisms within a broader context of an Agricultural Risk Management Strategy,

Identifying Options for Agriculture Weather Risk Management

Severity of Risk

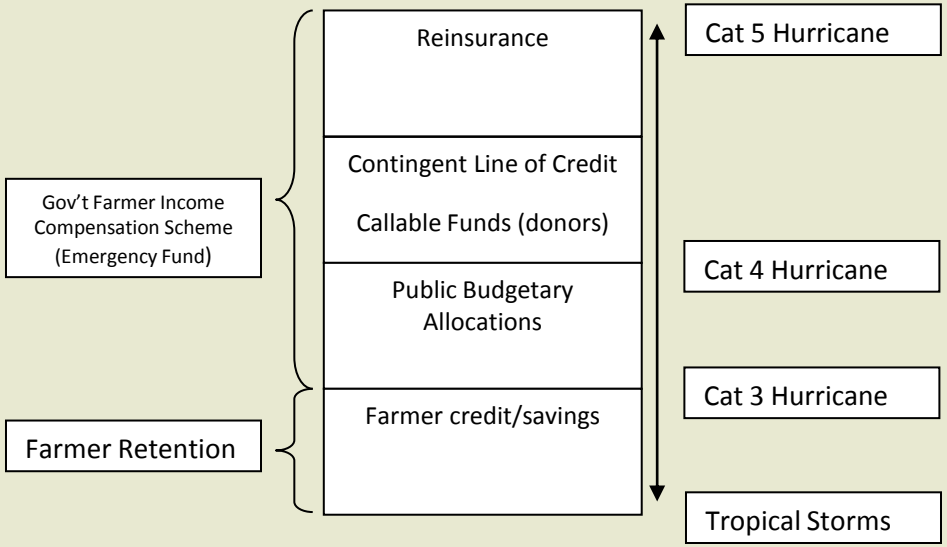
	Potential Risk Management Mechanisms		
	Household/Community	**Markets**	**Governments**
Non-Specific	Sharecropping Farmer self-help groups Water resource mgmt	New technology Improved seed	Irrigation infrastr Extension Agri Research Weather data systems
Low	Crop diversification Savings in livestock Food buffer stocks	Formal savings	
Moderate	Labor Diversification Risk pooling (peers, family members) Moneylenders	Formal lending Risk sharing (input suppliers, wholesalers)	State-sponsored lending
High/ Catastrophic	Sale of assets Migration	Insurance	Disaster relief State-sponsored insurance

Identifying Options for Agriculture Weather Risk Management

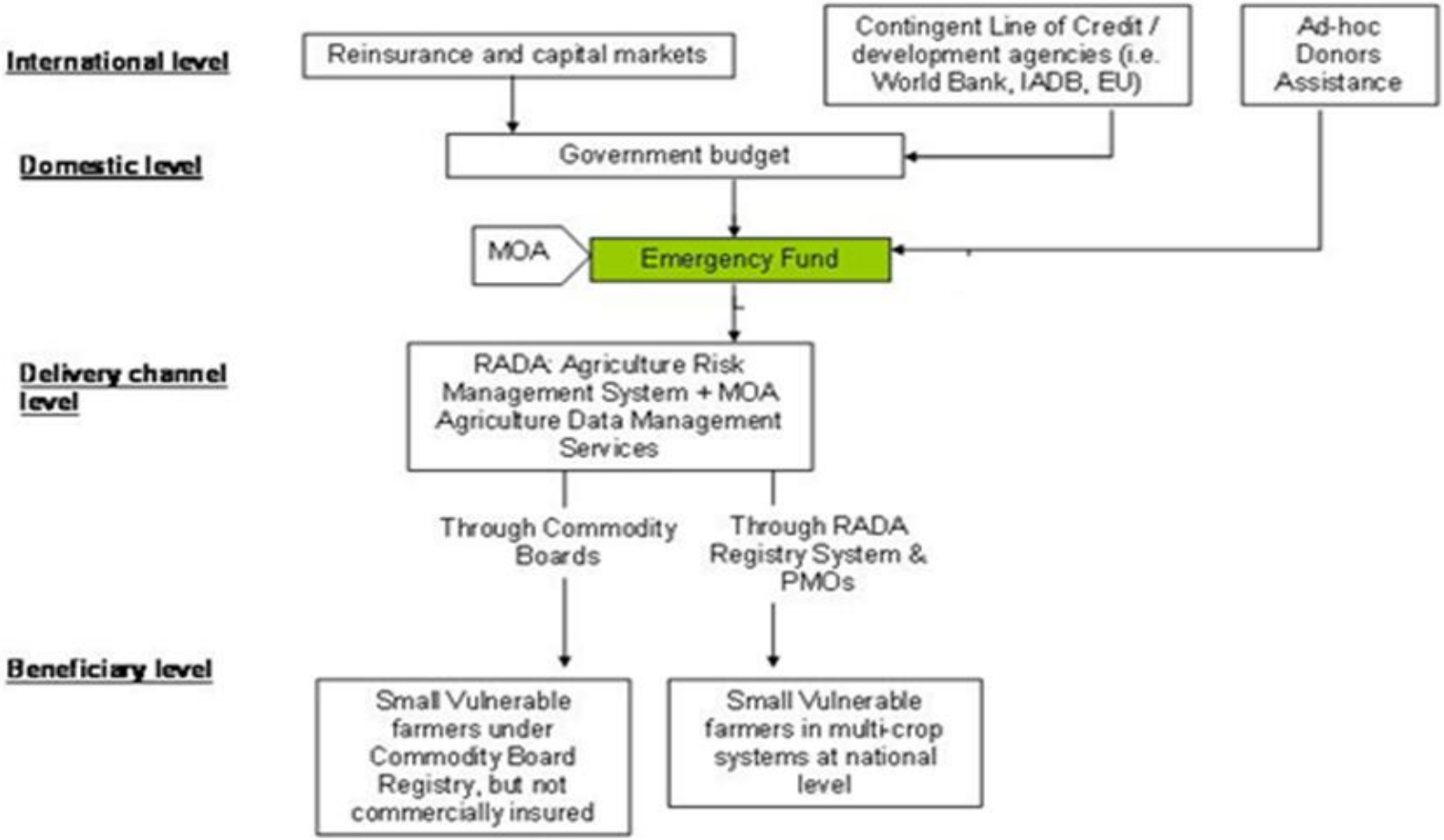
Options considered	Advantages	Disadvantages	Observations
1. ***Improving the public sector farmer Disaster Assistance Program (DAP)***	• Building on the existing system of supporting farmers after a disaster. • Farmer Registry • RADA and PMO institutional infrastructure and delivery system. • Could be fiscally neutral for the Government. • Increased transparency and objectivity.	• Requires political will to move to an ex-ante system of payment rules and transparency in eligibility criteria. • Basis risk	• This option is highly recommended regardless of what additional options are chosen. • High basis risk means that this option needs to be considered as "income supplement" and not "crop insurance".

Identifying Options for Agriculture Weather Risk Management

Options considered	Advantages	Disadvantages	Observations
2. ***Improving the risk financing system for the farmer DAP***	• Same as above, but financially sustainable.	• Requires additional technical assessment to assess sustainable financial needs and sources. • It will likely require additional public ex-ante budgetary commitments.	• This option is recommended if Option 1 is selected.



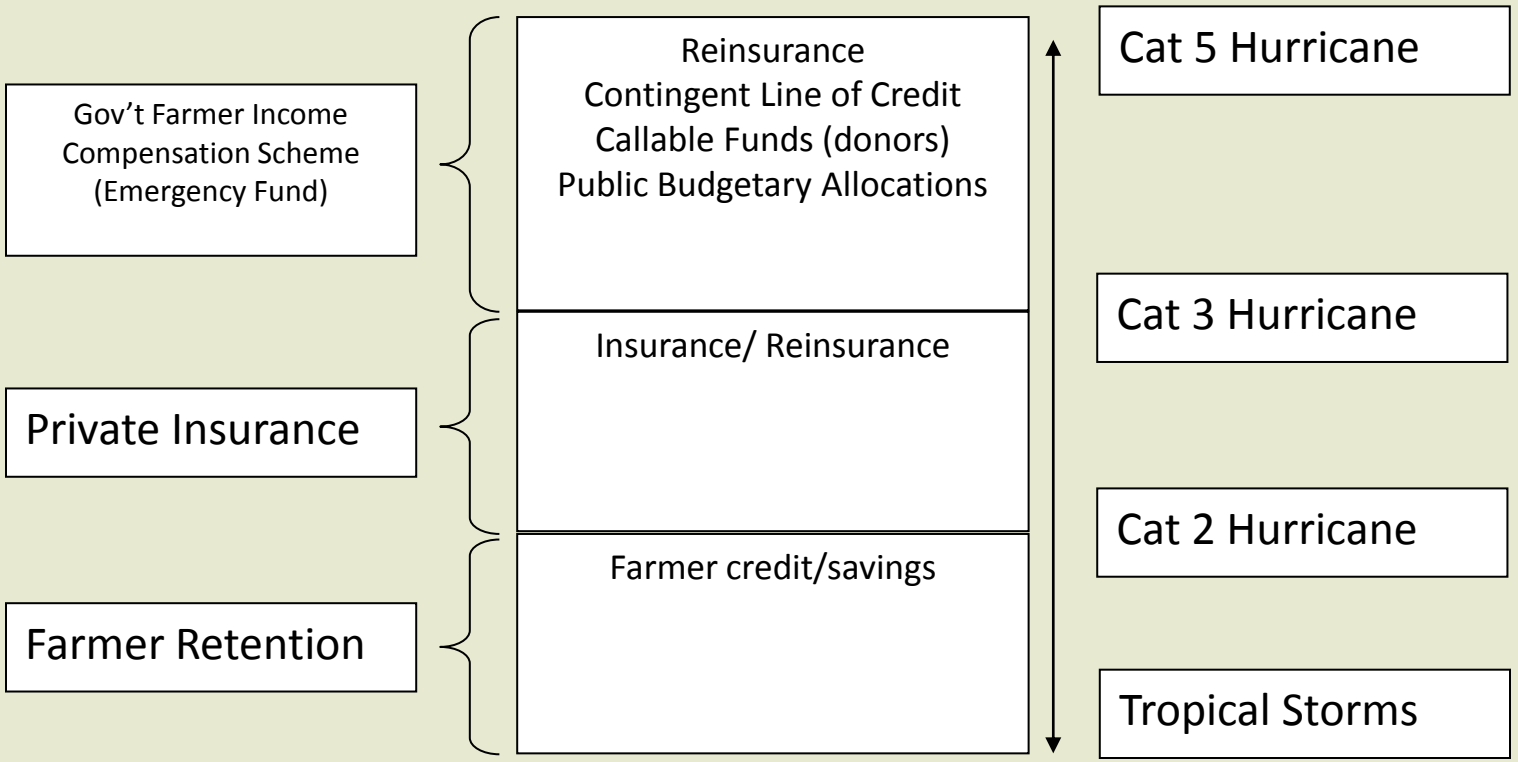
Identifying Options for Agriculture Weather Risk Management



Identifying Options for Agriculture Weather Risk Management

Options considered	Advantages	Disadvantages	Observations
3. ***Micro level insurance products***			
a. Public scheme [not recommended	• Builds on existing public institutional structure	• Requires the Government to act as an insurance company offering complementary products. • May require additional fiscal resources and specialized personnel.	• This option, although facilitating insurance product to farmers, will likely be crowding out the potential private insurance sector.
b. Private scheme	• Builds on the presence of rural financial institutions to deliver income compensation for farmers. • All farmers have a Bank account. • Financial institutions can offer farmers other financial products. • Allows for independence between the public and private sector scheme, but under a coordinated effort. • Allows private sector to develop instruments without necessarily consulting with public sector.	• Requires farmers to physically go to the local Bank to register and/or receive income compensation payments. • Financial institutions may charge a fee for delivery service. • May not produce the level of coverage or service ideal for farmers. • Requires significant technical assistance to financial institutions, insurance companies, and/or the lottery.	• This option relies entirely on the capacity of the local financial institutions, which may not be prepared to accommodate the number of farmers that will be requesting payments at once or registering in the scheme. • Could lead to a more long-term sustainable development of agriculture insurance products for small farmers.

Identifying Options for Agriculture Weather Risk Management



Identifying Options for Agriculture Weather Risk Management

Options considered	Advantages	Disadvantages	Observations
4. **Development of the commercial agriculture insurance market**	• Ensures that the technical capacity needs of the private financial sector will be addressed. • Provide the basis for long-term sustainability and development of private financial instruments.	• Does not guarantee that agriculture insurance products will actually be offered to farmers. • Very mixed experience with agriculture insurance in the past in Jamaica.	• Technical assistance would be demand driven, and could begin by addressing the needs of meso-level institutions such as Banks, credit unions, input suppliers, and/or commodity boards.

Identifying Options for Agriculture Weather Risk Management

Short term steps in support of market development

1. Recovery of the historical weather records that were lost in a fire incident in 1992.
2. Cleaning existing weather datasets. Current available weather datasets from 1992 up to now show gaps. When a dataset has too many gaps, it is not acceptable to the reinsurance market.
3. Investing in expanding the density of weather stations. The higher the density of weather stations the more precise the modeling that can be made, particularly for areas with heterogeneous topography and presence of micro climates.
4. Improving agricultural yield statistics at local level. Historic reliable yield information is needed for designing contracts, since the insurance indexes need to be tested to see whether there is robust correlation between the triggers used in the models and the yields.
5. Mediating an agreement between insurers and JMS. JMS will play an important role not just in becoming the official entity that supplies weather information for designing contracts and for pricing the products.

Identifying Options for Agriculture Weather Risk Management

The options presented are based on the following conclusions:

1. The current system of disaster assistance to farmers needs to be strengthened and made more transparent. The current system encourages political intervention and lobbying, further reducing its credibility.

2. The main weather risks faced by farmers are wind and extreme rainfall, flood and drought.

3. Due to the diversity of farming systems, small farm size, and complexity of risks faced by farmers, a micro-level, individual farmer, index insurance system is not considered feasible. However, a parametric approach can be used as one instrument to deal with risk transfer for major hurricane events. For this reason the mission considers that it is better to strengthen and overhaul the existing system of assistance through RADA, and link it to reinsurance of defined parametric risks.

4. Proper Risk Assessment would lead to proper setting of Assistance Rules and Procedures, proper budgeting for expected payments for assistance (risk financing), and strengthening the overall risk management framework for domestic crops.

Identifying Options for Agriculture Weather Risk Management

5. A formalised farmer Disaster Assistance Program, linked to proper Rules and Procedures, would be budgeted for sustainability, including insurance claims payments from parametric index insurance instruments for major hurricane and extreme rainfall events; and contingent loans for catastrophic events, plus donor contributions.

6. Drought is a risk which is endemic in both Parishes studied and needs to be handled through risk mitigation, investment in irrigation initially, and residual unmanageable risks for very infrequent events may then make drought risk insurable.

7. Flood is not a risk which can be insured via index insurance. Instead, excess rainfall can be developed as an aggregate level (district level) response for the Emergency Fund, but linked to risk mapping and appropriate cultivation in relation to risk return frequencies.

8. As hurricane and associated rainfall are the key risks for which index insurance is of greatest priority, also at an aggregated level, the use of cyclone models to create zoned payouts is technically the only way to index winds (and possibly rainfall) on a widespread scale.

9. The public sector aggregated approach puts a heavy capacity building burden on RADA and the Government in general, linked to technical risk assessment, risk mapping and farmer mapping, all of which could be linked to farmer groups, registration of farmers, and advice.

Options & Costs

	Feasibility		Implementation/Set-up	
	Timing	**Cost (US$)**	**Timing**	**Costs (US$)**
1. ***Improving the public sector farmer Disaster Assistance Program (DAP)***	4-6 months	200,000.-	1-2 years	1 million
2. ***Improving the risk financing system for the farmer DAP***	6-8 months	300,000.-	1-2 years	1-2 million (* depends on thresholds for public support)
3.b ***Micro level insurance products (private scheme)***	10-12 months	200,000 -500,000	2-3 years	100,000
4. **Development of the commercial agriculture insurance market**	3-4 months	200,000	3-5 years	1 million

Next Steps

1. Review the Prefeasibility report
2. Make a decision on options & identify funding sources
3. Piloting + implementation

Thanks for the Feedback