Governing Natural Resources for Climate Resilient Development

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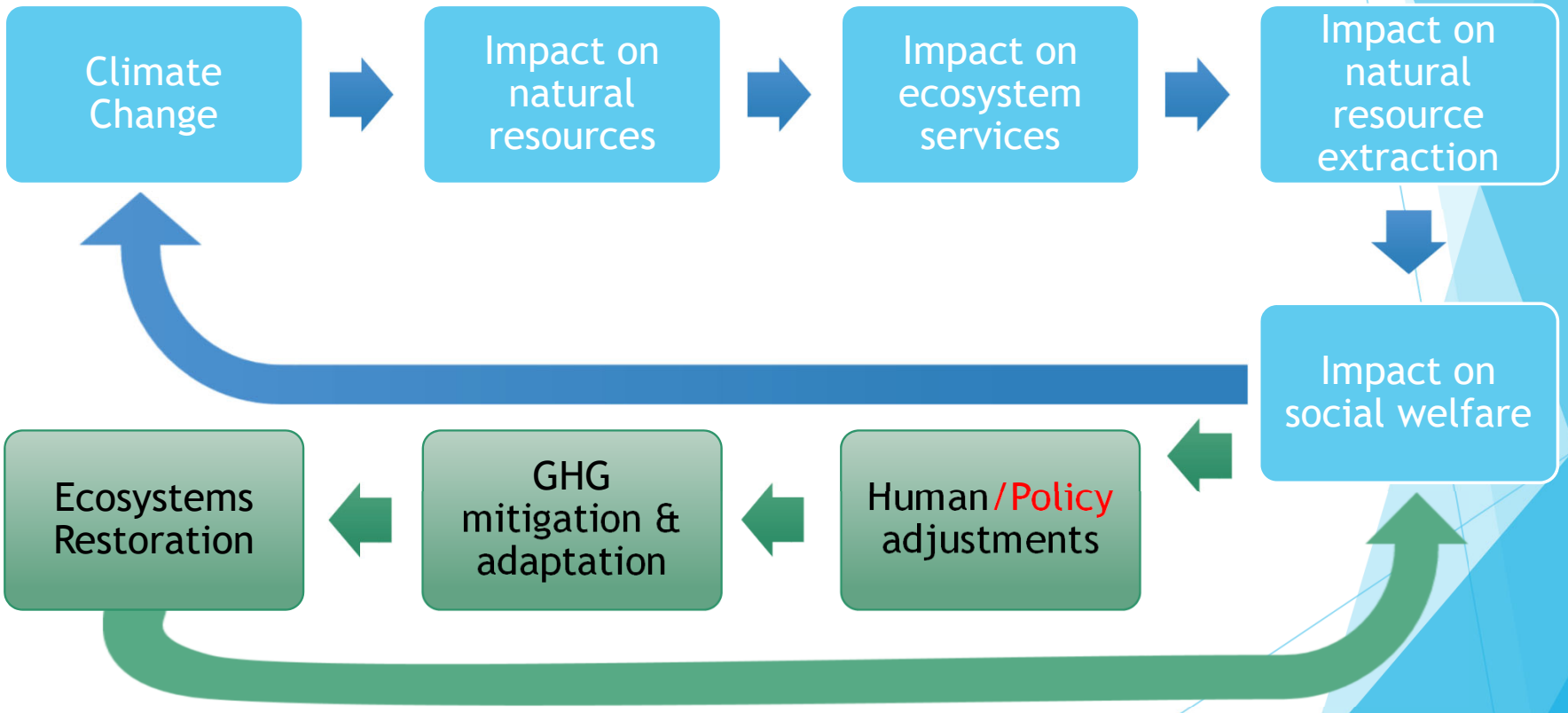
Outline

- The climate change conundrum
- We must address perverse incentives
- Provide a buffer to shocks
- Resilience through re-building ecosystems base
- Climate-informed consumer choices
- Conclusion

The Climate Change Conundrum

- "Warming of the climate system is unequivocal…" (IPCC, 2007)
- We need to limit temperature rise to 2^{O}C this century from pre-industrialized levels, and preferably at 1.5^{O}C (Paris Agreement, 2015) (preindustrial levels).
- This requires bringing down net GHG emissions to zero within the 21st century (Net Zero), preferably by 2050.
- Natural resources sector account for 24% of GHG (2010) emissions globally.
- Meanwhile, we also need to adapt to climate change impacts.

Time to Reverse the Cycle of Doom to Cycle of Boom!

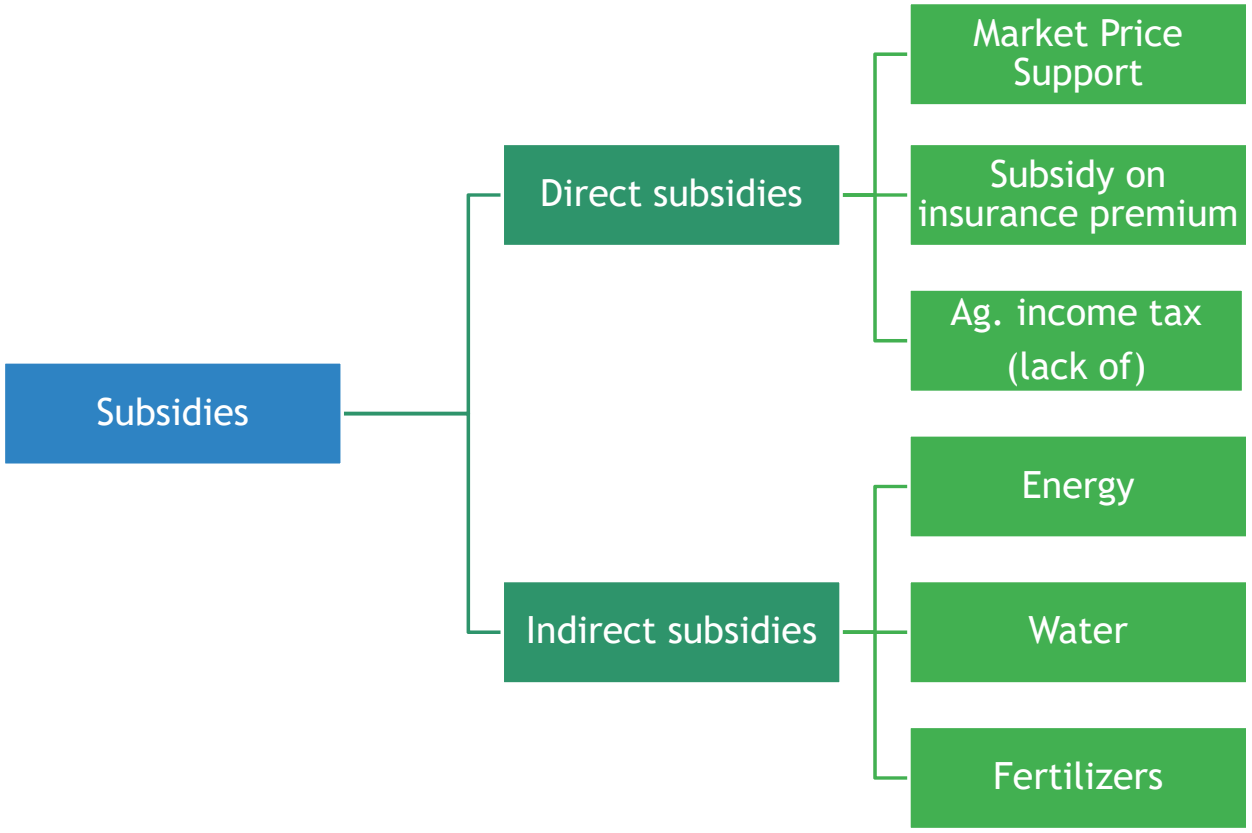


Major Policy Instruments for Natural resource Governance

Four Musts for Reversing the Cycle of Doom

- Addressing perverse incentives: Restructuring subsidies
- Inculcating risk aware decision making: Strengthening risk insurance
- Rebuilding ecosystems base through market solutions: Payment for ecosystem services and C sequestration
- Building consumer awareness: Certification, labelling and related policies

1. The Balancing Act: Subsidies & Climate Change



+Food security
-Farming where not profitable/unsustainable

+Loss coverage
- Promotes risky investments

+Rural economy
- Loss to exchequer/lost opportunities

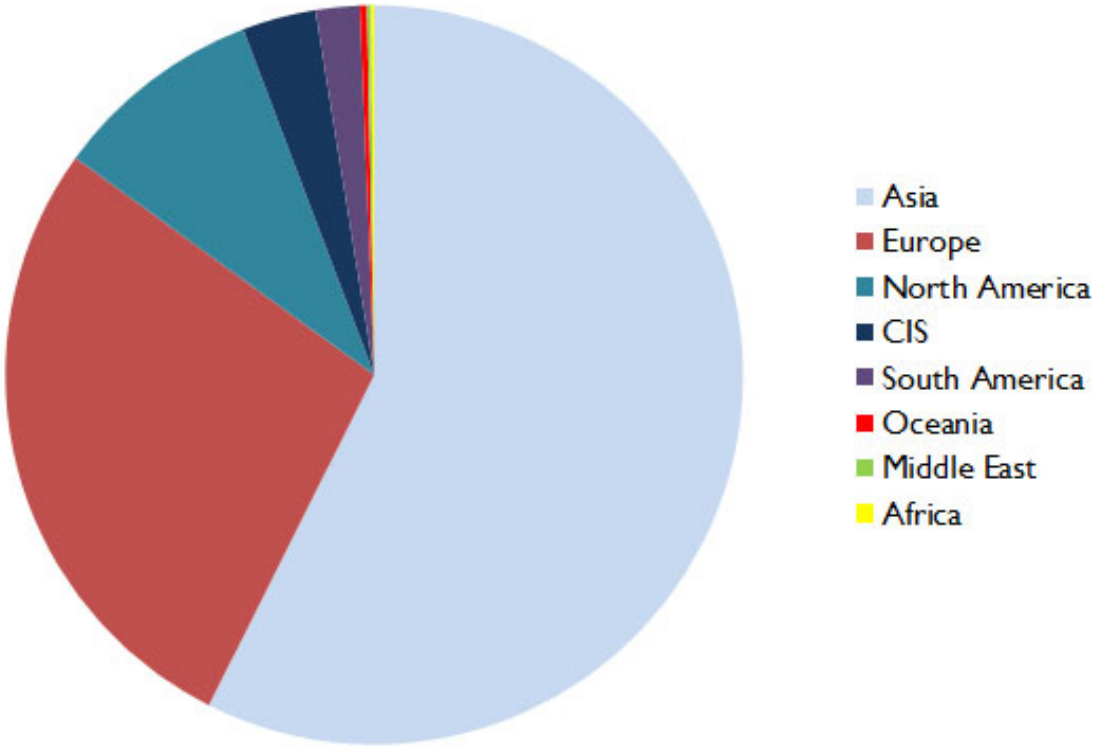
+Food security
- Energy demand, GHG

+Food security
- Water demand, GHG

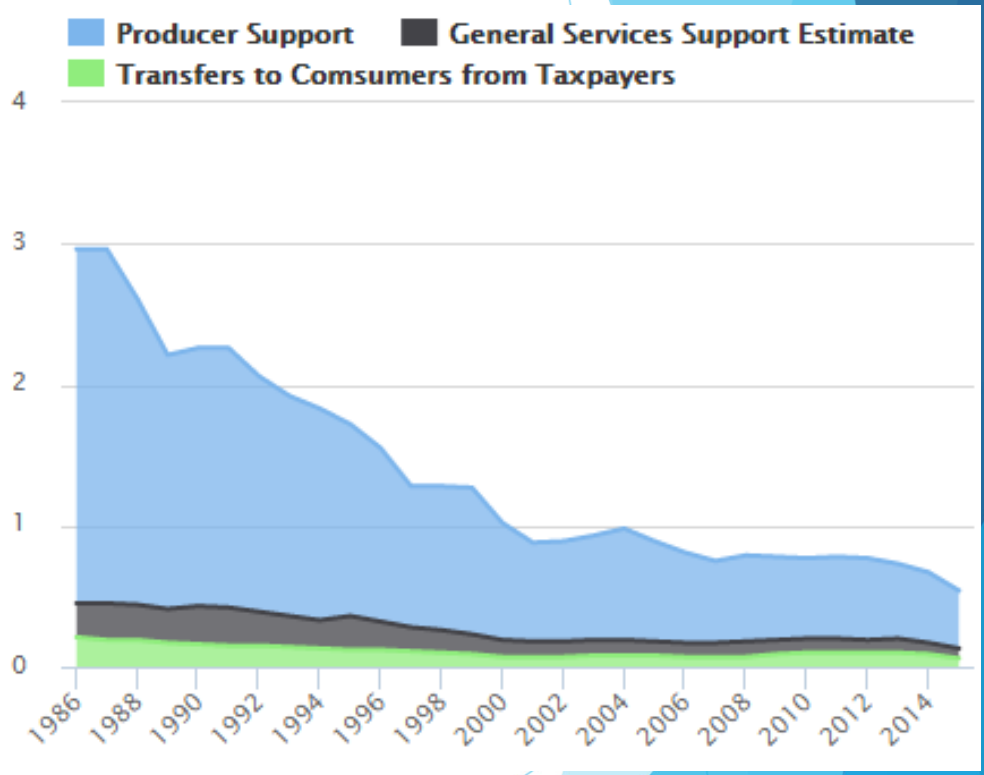
+Food security
- Soil & water pollution, GHG

Subsidies increased GHG emissions from agriculture by 34,420 kt of CO_2 eq (an increase of 0.6%) than they would be without subsidies in the same year (Laborde et al., 2021, based on study of 54 countries)

Trends in Agricultural Subsidies

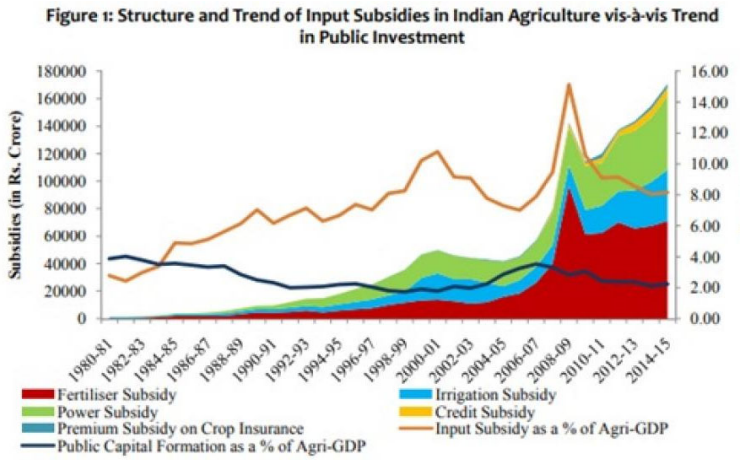


Regional distribution of agriculture subsidies (World Watch Institute and OECD)



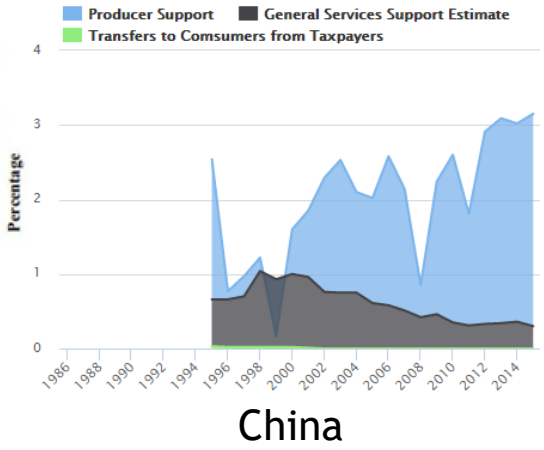
Decline in total support for agriculture in OECD countries

Subsidy situation in Asian Countries

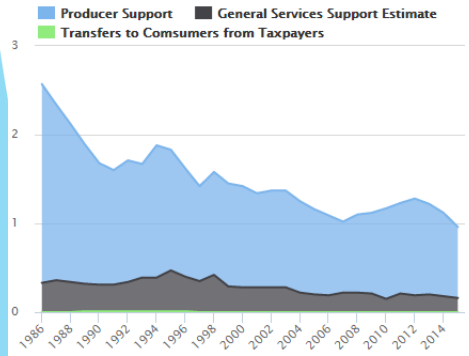


DownToEarth

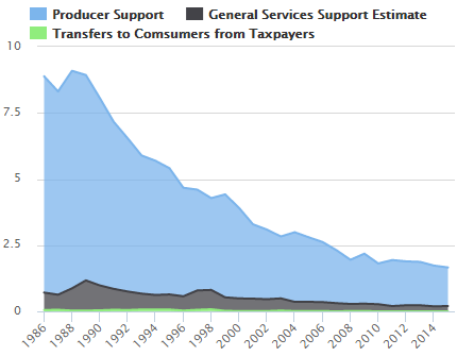
India



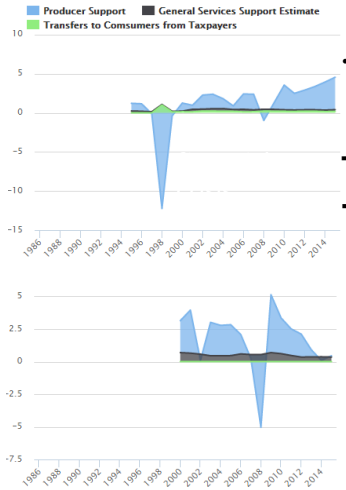
China



Japan



Korea



Indonesia

Vietnam

(OECD)

- Developed countries in Asia have continuously reduced the producer and other forms of support.
- Developing countries continue to increase support for agriculture while Vietnam case can provide an example (as a result of Doi Moi reforms?)

Emergence of New Forms of Subsidies

Country	Example and nature of subsidy
India	• Organic agriculture, subsidy for organic and bio fertilizer and pesticide manufacturers under National Project on Organic Farming for capital investments (e.g. compost production units) • Insurance premium subsidy under national crop insurance program • Establishing scientific storage capacity under Integrated Scheme on Agricultural Marketing • Sustainable agriculture investments under National Mission on Sustainable Agriculture (e.g. soil testing labs)
China	Private sector subsidize the transition to organic agriculture by input subsidies (nearly 57%) (ADB 2015)
ASEAN	GAP certification is fully subsidized by national governments

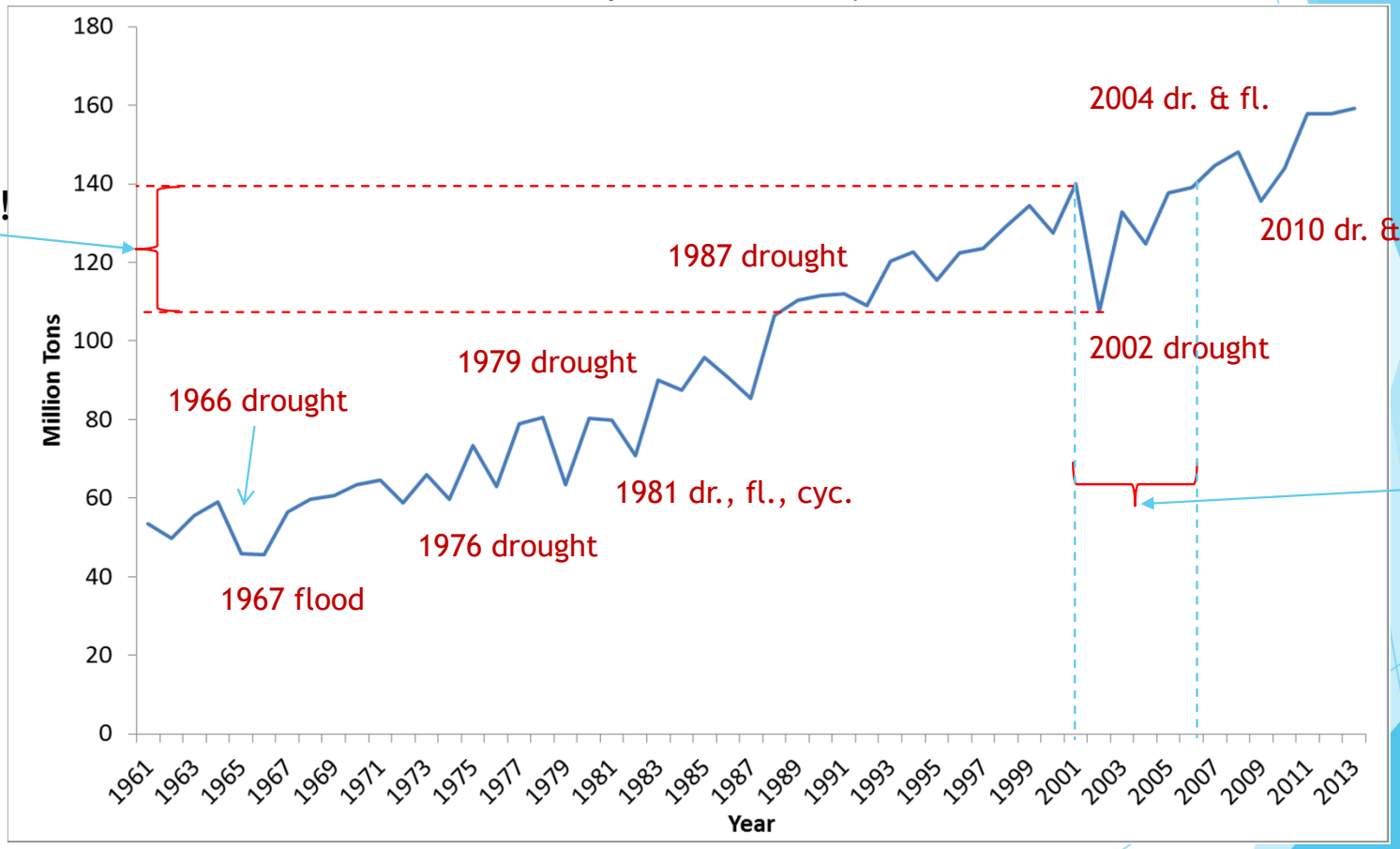
- Subsidies are increasingly been targeted to promote sustainable agriculture but the progress is slow and is not sufficient to fully incentivize the transition.
- However, they are still blanket subsidies and leading to leakages and other imperfections affecting the agriculture negatively than benefiting.

Alternatives to Current form of Subsidies

- Investment in capacity building of farmers including extension services
- Investment in risk mitigation instruments including irrigation facilities, better crop varieties, risk insurance and weather services
- Targeted subsidies instead of blanket subsidies
- Conditional cash transfers to targeted farmers

2. Buffering the Shocks: Insurance for Resilience

Climate impacts on Paddy in India



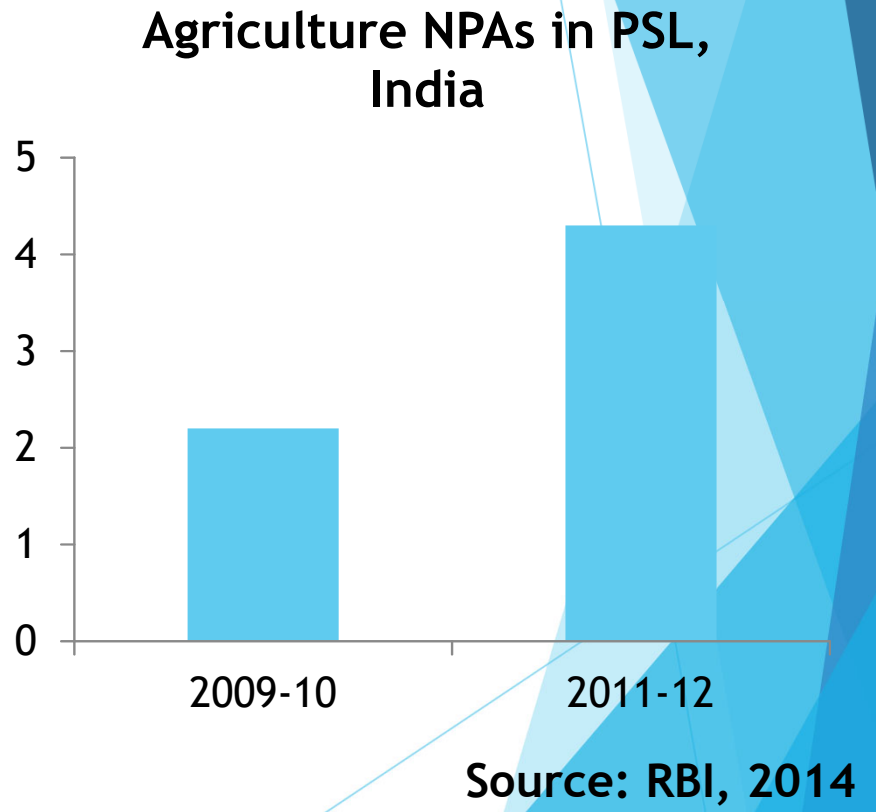
FAO-STAT

Agriculture being primary input provider, such a shock will have rippling effects on the entire economy!

Impact on Farm Income: Impact of 2010 Drought on NPA of Banks in India

- Farm loan defaults doubled in a year (figure on the right).

[Farm loan waivers to the tune of **14.4 billion US$ in 2008** by GOI. In comparison GOI spent only ~**163 million USD on insurance in 2008.**]



Source: RBI, 2014

Means of Buffering Impacts and Issues

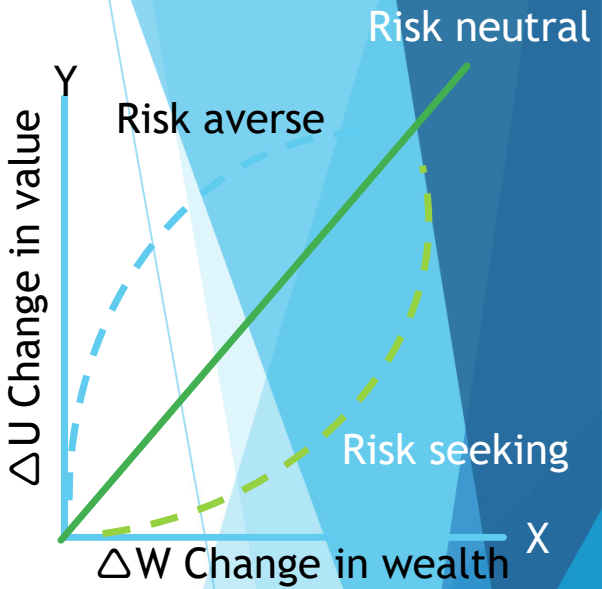
Means	Issues
Better crop varieties	Often costly, spurious seeds, IPR and need to buy every year
Loan waivers	Costly on national budget, political influence, no-proper scrutiny of loss differentiation, mostly rich gets benefited and corruption
Expand irrigation facilities	High investment costs, declining rainfall and increasing rainfall variation may not buffer especially for the tail-end farmers
Livelihood diversification	Poor rural economy with low demand especially during drought and flood times; may promote migration
Input subsidies	Often rich gets benefited; high cost to the government; not useful when conditions are not congenial for cropping

- **Costly and time consuming to affect!**
- **We need a market instrument to stabilize financial loss in the event of the failure of the above.**

Prabhakar, 2018

Agriculture Insurance

- **In agriculture sector, primarily introduced as a means of buffering economic shocks from natural hazards**
- If designed well, insurance can provide several benefits
  - Emphasis on **risk mitigation** compared to response
  - Provides a **cost-effective** way of coping financial impacts
  - Covers the **residual risks** uncovered by other risk mitigation mechanisms.
  - Provides opportunities for **public-private partnerships**.
  - Helps communities and individuals to **quickly renew and restore the livelihood** activity.
  - Depending on the way the insurance is designed, the insurance mechanism can **address a variety of risks** of climatic and non-climatic nature.
  - **Reduced burden on government**



Arnold, 2008; Siamwalla and Valdes, 1986; Swiss Re, 2010

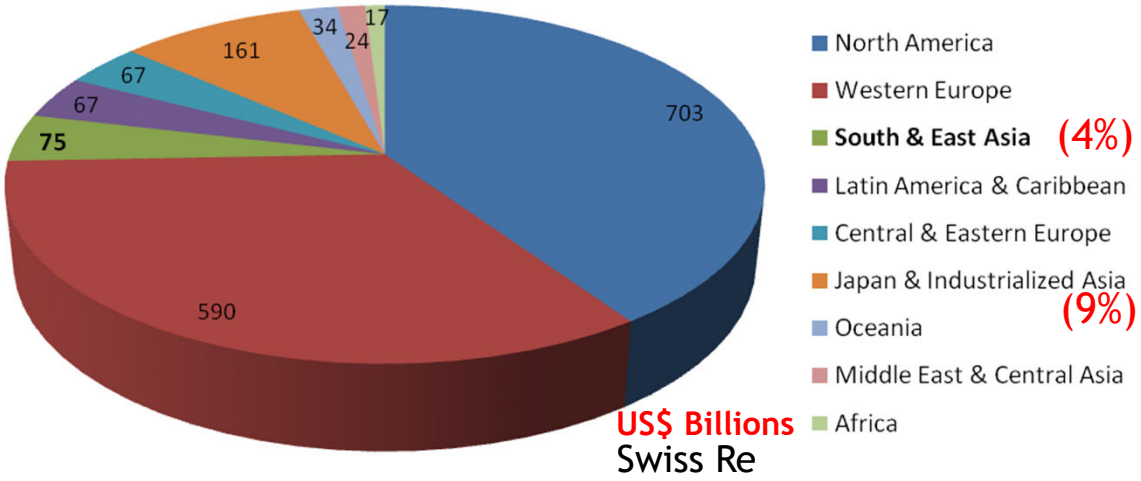
Ways in which Insurance can promote sustainable agriculture

- Change in the behaviour of farmers: By making adoption of best practices obligatory/accompanying agricultural insurance
- Reduced economic impacts can be redirected to invest in better management practices
- Capacity building farmers who enrolled into insurance by the collaboration between insurance delivery agencies and agriculture extension agencies, farmer cooperatives and self-help groups
- Incentivizing reduced insurance premium prices for the farmers adopting BMPs.

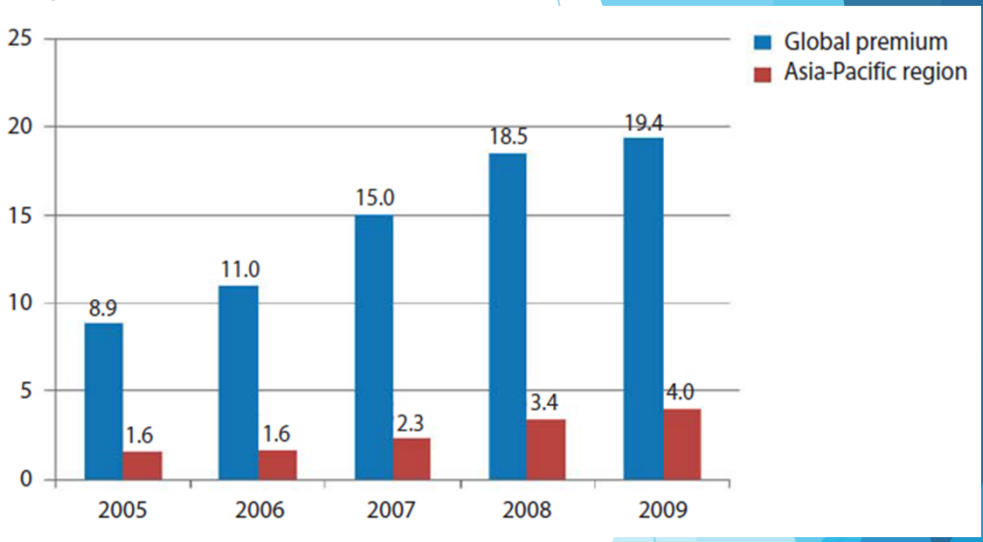
We don’t have evidence for these happening yet!

Current Insurance Coverage

Non-life Insurance Premiums



US$ Billions



Source: Global Premiums Iturrioz,2010

- In contrast, Asia and Africa have one of the highest agricultural populations in the world
- The rural areas in these regions are reported to have highest poverty and seasonal unemployment where buffering income fluctuations will have significant socio-economic impacts

Why Insurance has not Scaled Up?

- **High residual risks in agriculture:** Only 35-40% of agriculture is irrigated in Asia; low expansion of drought and flood-tolerant varieties; poor extension systems
- Inefficiencies attributable to **adverse selection** and **moral hazard**
- **High insurance costs**: Costs to whom and compared to what alternative risk management strategy?
- **Poor availability of data** to assess risks for designing effective risk insurance systems (e.g. weather data and data on crop loss)
- **Willingness to pay:** Economic, cultural and perceptional issues with both people at risk and policy makers
- Lack of **trust** among the insured on insurance providers
- Poorly developed re-insurance industry

How to overcome these limitations?

Addressing High Insurance Costs

Subsidy on Premium

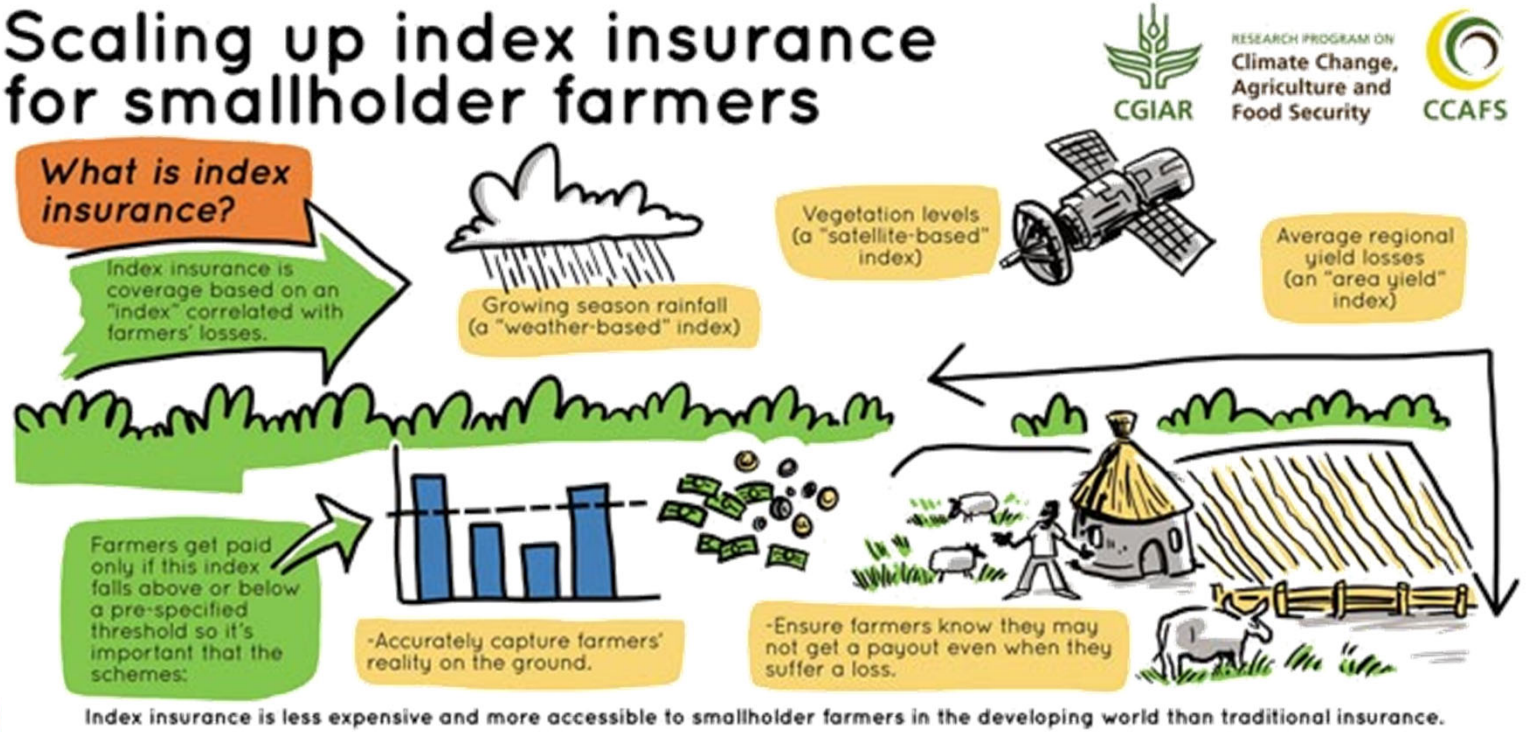
Country	% Premium Subsidy
China	60%
Japan	49%
India (PMFBY)	95-98%
Pakistan	70%
Philippines	100%*
ROK	50%

*for subsistence farmers only
FAO 2011

- Most governments address the insurance costs through subsidy on premium. Premium subsidies **rose 250 percent** over 2007 subsidy levels in the Asia Pacific region.
- Advantages
  - Easy to implement
  - High political impact
- Disadvantages
  - The real cost of risk is not conveyed to farmer
  - Possibility of high risk seeking behaviour
  - Disproportionately benefits rich farmers
  - Overall insurance costs remain same or even higher

Addressing High Insurance Costs

Technological Solution: Weather Index Insurance



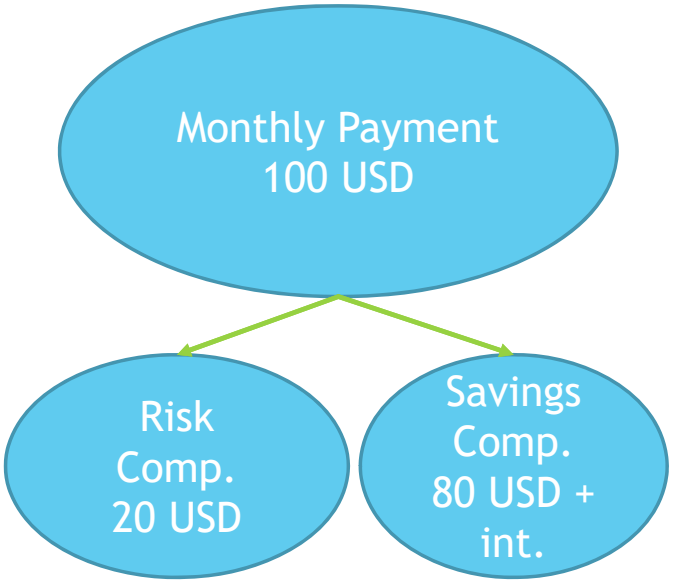
Index insurance is less expensive and more accessible to smallholder farmers in the developing world than traditional insurance.

CCAFS 2015

- Reduction in transaction costs
- Greater reach to all size of farms (greater coverage)
- Reduces moral hazard and adverse selection problems
- Reduces distress sales due to quick insurance payouts

Willingness to Pay

Savings-Linked Insurance (Unit Linked Insurance Plan)



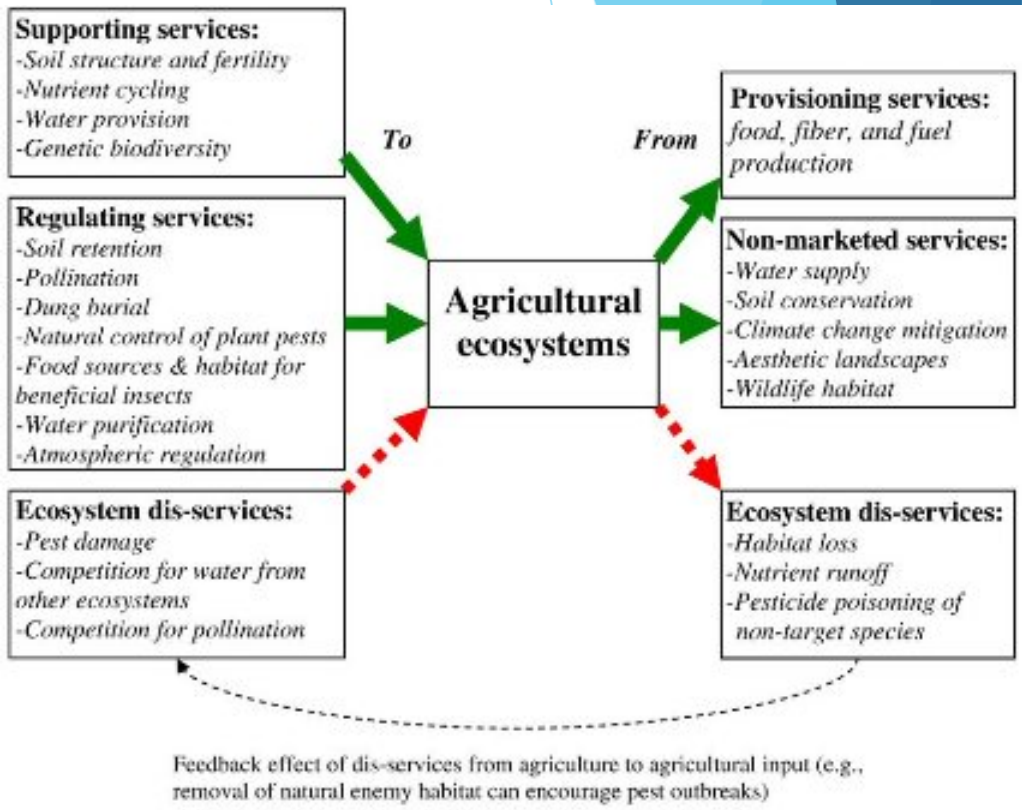
- Cheaper premium
- Poor households can have quick access to finances (overdraft with withdrawal on premium) and hence will not feel deprived of money for long periods of time
- Interest earned on savings can provide additional advantage: Promotes savings
- Help build assets in the long-term while protection against catastrophic risks
- Innovations in savings-linked insurance include designing insurance products based on interest earned on savings could substantially reduce the premium burden on insurance holders

Some Innovative Solutions

- **Combining Insurance with Payment of Ecosystem Services**
  - Payment of ecosystem services and carbon capture and sequestration proceeds could be linked to insurance premiums and or investments made on risk mitigation options that can generate substantial PES proceeds.
  - E.g. certain types of intensive row-cropping systems and ecological farm scapes can promote ecosystem services such as a clean and well-regulated water supply, biodiversity, natural habitats for conservation and recreation, climate stabilization, and aesthetic and cultural amenities such as vibrant farm scapes etc. (Robertson et al. 2014).
- **Combining insurance with social security programs**
  - 40% of global population is not protected and 75% are inadequately protected
  - Combining social security and insurance can help extend social protection to under-served populations and can reduce the overall costs of insurance for the vulnerable sections of the population while extending financial inclusion benefits

3. Payment for Ecosystem Services & C Sequestration

- To recognize and reward ecosystem services in various forms.
- There is a large potential for expanding these tools to wider agricultural areas recognizing the multiple functions of agriculture.
- These tools are yet to be applied in conventional agriculture but have successfully been applied in scenarios of upstream and downstream scenarios and where natural ecosystems and agriculture are in close interaction such as in agro-ecological farming systems (e.g. Sato Yama).



Zhang et al., 2007

Carbon sequestration potential of Asian Soils and Accrued Revenue for farmers from carbon markets

- Carbon market demand is projected to grow 5-10 times in the next ten years and up to 30 times my 2050 (Liebreich Associates, 2021)
- Usually tropical soils offer limited potential for carbon sequestration.
- However, soils in Asia are highly depleted of soil carbon due to intensive cultivation (1% to 0.3% in 70 years).
- Zero and reduced tillage systems can provide carbon capture opportunity.

- Global carbon sequestration potential of agricultural soils = 0.4-1.2 Gt/yr (Lal, 2004)
- Global technical potential of CO2 until 2030 = 5500-6000 Mt CO2/yr (Smith et al., 2008 i.e. IPCC)
- Highest potential = 0.8-1.0 Gt/yr (Hansen et al, 2013)
- Per hectare potential in Asia: 0.1-0.5 t C/ha/y (Lal, 2004)
- Total revenue at current carbon exchange prices = **85-200 USD/ha/yr**

For realizing this income, we need to radically transform carbon sequestration potential in tropical lands

4. Educated Choices Through Certification & Labelling

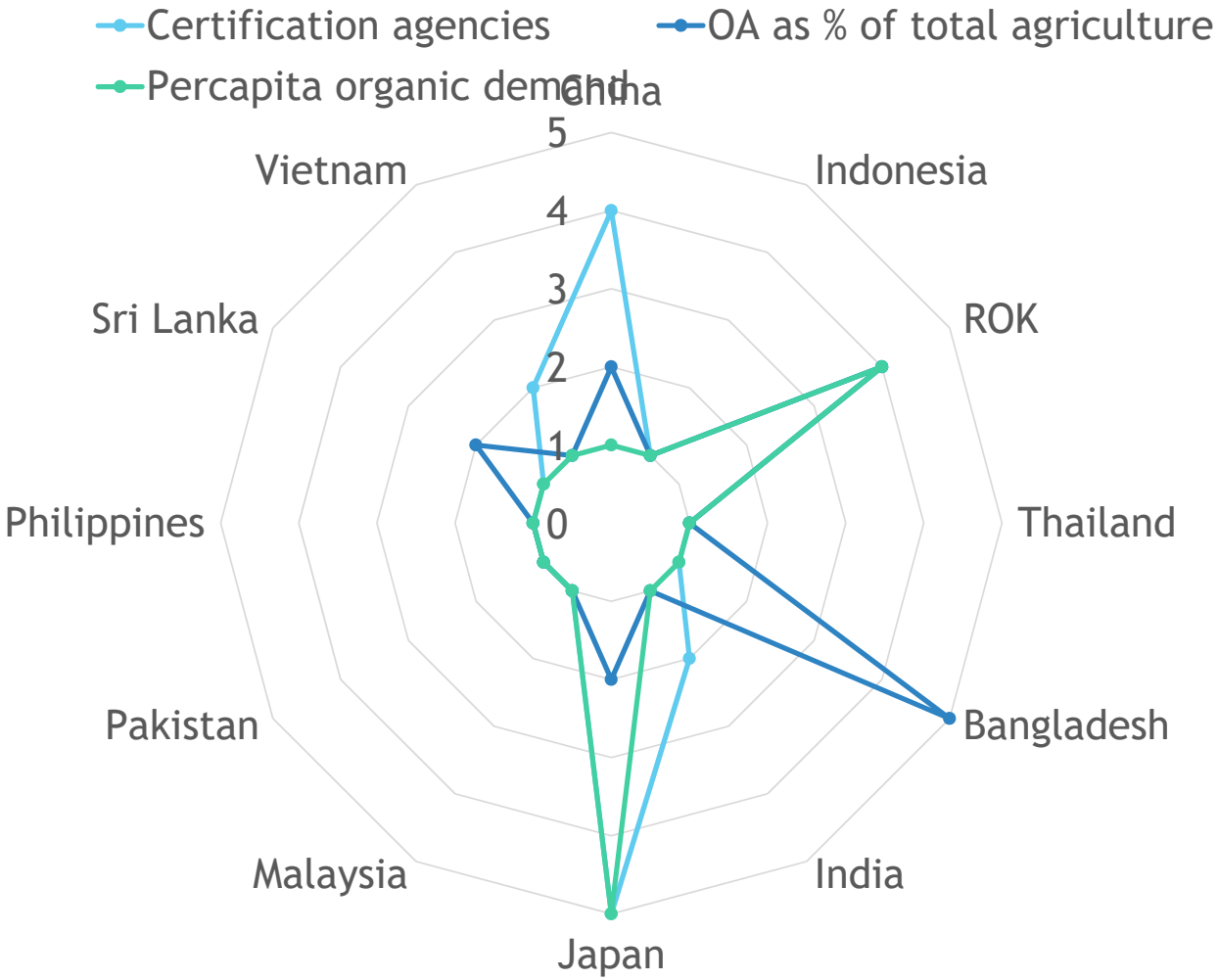
- For producers:
  - Access markets where such standards are enforced
  - Price premiums and higher income
  - Capacity-building in the supply chain in aspects of food quality
  - Reduction in food loss due to improved capacity and support services
  - Increased consumer confidence and a better ability to create brand equity.
  - Could alienate small and marginal producers who cannot afford or technically comply.
- For consumers:
  - Exert pressure on producers for sustainable products
  - Build competition among producers with positive effect on the product cost
  - Informed choices leading to good health
  - Reduced waste (informed purchase)

The Focus is Largely on Organic Certification

	Governmental regulations/standards	Government certification	Affiliation/basis for national standards*	Other certifications available *
Bangladesh	None	None	Mostly by foreign certifiers	SGS certification
China	China National Organic Product Standard (2005)	Organic Food Development Center of China (OFDC)	International Foundation for Organic Agriculture (IFOAM)	NOP, OCIA, JAS, EU
India	Indian national standards for organic products (2001-05)	APEDA (National Programme for Organic Production, National Project on Organic Farming)	IFOAM and EU	EU, NOP, CODEX, DAP Germany
Indonesia	Indonesia National Standard number 01-6729-2002	Badan Standardisasi Nasional (BSN) (the national standard agency), Otoritas Kompeten Pangan Organik (Organic Food Competent Authority, OKPO)	CODEX. Also refers to IFOAM, JAS, EU	IFOAM, JAS, EU
Japan	Japan Agricultural Standards of Organic Agricultural Products	Japan Agricultural Standards (JAS)	CODEX	
Malaysia	Skim Organik Malaysia SOM (national organic standard, MS 1529:2001)	SOM, Department of Agriculture Sarawak	IFOAM and CODEX	EU, NOP, JAS
Pakistan	None	None	Mostly by foreign certifiers	
Philippines	Philippine National Organic Standards for Crop and Livestock Production	Organic Certification Center of the Philippines, Bureau of Agriculture, Fisheries and Product Standards (BAFS)	Based on IFOAM and EU	
Republic of Korea	Yes	National Agricultural Products Quality Management Service (NAQS), Korean Food and Drug Administration (Transaction Certificate for Processed Organic Products)	CODEX	
Sri Lanka	None	None	Mostly by foreign certifiers	
Thailand	National Organic Standard Guideline for Crop Production	Organic Agriculture Certification Thailand (ACT)	IFOAM	EU, JAS, CODEX, NOP
Vietnam	Organic Agricultural Production Standards	Ministry of Agriculture and Rural Development	None	

Source: Prabhakar et al., 2018

Sustainable Agriculture capacity (Organic)



There is a poor capacity for organic certification in most developing countries in Asia.

Legend:

Certification agencies: 1=10-20: 2=20-30: 3=30-40: 4=40-50; 5=>50.

Organic agriculture (OA) as percentage of total agriculture: 1=0-0.4; 2=0.4-0.8; 3=0.8-1.2; 3=1.2-1.6; 4=1.6-2.0; 5=>2.0.

Per capita organic demand (million US$): 1=0-5; 2=5-10; 3=10-15; 4=15-20; 5=>20.

Source: Prabhakar et al., 2018

Making Certified products Accessible

Issues	Solutions and limitations
High cost of certification for producers	Nationally funded programs, participatory Guarantee System, capacity building of cooperatives
Fragmented certification systems	Unified certification system based on the common principles underlying the existing certifications (e.g. EU Organic farming Logo); however, there is no consensus on the possibility of implementing such unified certification system
Monitoring and evaluation costs	Participatory Guarantee System (India, PGS-Green and PGS Organic), Vietnam etc), automation of certain verification processes; visitation by certification officer is a major bottleneck
Transition time from conventional to organic	Support services (e.g. extension and other information based support services) and subsidies on organic inputs

Integrate social, environmental, and economic standards: Fairtrade is helping by organizing small-scale farmers into groups, building their capacity to produce quality goods and linking them with the markets through the marketing of Fairtrade certified produce (Fairtrade, 2016). Through this initiative, in 2015, Fairtrade was able to link nearly 40,000 smallholder farmers in the Pacific region.

Removing market barriers

Country	Market access examples
Cambodia	Farmer–supermarket linkages, community cooperatives, training and capacity-building
China	Farmer–supermarket linkages, farmer associations, training and capacity-building
India	Contract farming, self-help groups, cooperatives, farmers markets, subsidies for investment in market infrastructure, information technology
Indonesia	Farmer field schools, participatory market chain approaches, contracts between farmers and market chain partners, capacity-building of farmers, farmer groups and farmer-private sector partnerships
Papua New Guinea	Farmer–private sector linkages, CODEX marketing standards, infrastructure improvement, Fairtrade certification schemes (also applicable in many other Pacific countries)
Philippines	Developing enterprises around special food produce, capacity-building, technological infusion, farmers cooperatives, farmer–trader linkages
Samoa	Fairtrade certification, capacity-building, market linkages
Thailand	Farmer to trader linkages, private sector linkages, and leadership of lead farmers

Prabhakar et al., 2018

Conclusions: Achieving the Scale & Speed

- Asia has a rich policy experience limited by scale (policy islands). It is yet to see these micro-scale innovations impacting the macro-scale.
- There is no silver bullet: No single measure but an ideal combination of measures to achieve the speed and scale of climate resilience.
- Important challenge is overcoming policy conflicts within the mix.
- Policies needs to be well targeted to achieve the full effectiveness.
- Building the institutional capacity is of paramount importance for successful policy formulation and targeted implementation.

Thank You!

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