Earth Security Brief

EARTH SECURITY GROUP

Indian Insurance and Sustainable Development



The role of insurance companies in India's sustainable energy and agriculture

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FICCI

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Federation of Indian Chambers of Commerce and Industry

India is making rapid economic progress. The policy reforms that the government initiated, under the leadership of Honorable Prime Minister Shri Narendra Modi, since 2014, have helped India emerge as the fastest-growing economy in the world. Building on this success, it is imperative for the future that this growth becomes sustainable. The government of India is committed to a green growth path, having outlined an ambitious plan to source 40% of its electricity from non-fossil energy sources and bring down emissions intensity by up to 35% by 2030.

India is one of the world's most vulnerable countries to climate change. It is estimated that India is incurring losses of about USD 9–10 billion annually due to extreme weather incidents. Nearly 80% of the losses remain uninsured.

Energy and agriculture, two important economic sectors, are exposed to a changing risk landscape. Unprecedented rainfall and droughts can lead to substantial crop failure. The lack of water is a threat to hydro-power generation and thermal power, affecting India's energy production plans. Sustainable investments in both these sectors are critical to the evolving risk scenarios.

Earth Security Group's report is an important contribution to the insurance sector in India. The report projects the future business opportunities for insurance companies to accelerate sustainable energy and agriculture. FICCI is delighted to collaborate with the Earth Security Group in supporting the Indian insurance sector to help meet India's sustainable growth objectives.

Dr A. Didar Singh
Secretary General
Federation of Indian Chambers of Commerce and Industry

Earth Security Group

2016 will be an important year for India's finance innovations in support of sustainable development. The transition to renewable electricity and sustainable food production are critical to India's resource needs and therefore key investment markets for the future. In 2015, a new energy project announced by Adani Group, one of India's leading multinationals, signals things to come. Adani Power, which has a total installed capacity of 10,440 MW (including India's largest private coal-based power plant), plans to build 10,000 MW of solar power by 2022 in India's largest solar park in Rajasthan.

In the agriculture sector, which edges closer to acute levels of water stress, Netafim, a drip-irrigation company is developing the largest drip irrigation project in the country. The USD 62 million Ramthal-Marol project involves thousands of farmers in the southern state of Karnataka.

The momentous development of the insurance and reinsurance markets in India could not come at a better time. Through these and other examples described in this report, we predict the role that insurance companies will play in helping these projects to scale. Through new financing products and capital investments, insurance companies can help transform the Indian economy towards a more sustainable development.

Alejandro Litovsky
Founder & CEO
Earth Security Group

The market: key players

India's insurance market: compete through innovation. India's total insurance market size is projected to reach USD 350–400 billion (bn) by 2020. Its non-life insurance market has more than tripled in a ten-year period, growing from USD 3.4 bn in 2004 to USD 13.55 bn in 2015. The industry has targeted 18% growth in 2016 for premiums collected, aiming to reach USD 16 bn. Since 2007, the market has become increasingly competitive as the public sector's share in business overall has steadily declined from 64.4% to 52.4% in 2015.[1] Despite this, 4 public sector companies still collect 50% of premiums (Table 1).

Private players are expected to take an increasing share in the general insurance market. However, market fragmentation (with 28 companies) makes it difficult for second generation (private) entrants to account for larger market shares within established product categories.[2]

Reinsurance is dominated by the General Insurance Corporation of India (GIC) with 52% share, but new expertise will diversify the market.[3/4] While GIC covers a large portion of traditional risks within the Indian insurance market, there has been limited development of domestic expertise on specialty risks (e.g. liability, credit, political, natural catastrophe), for which companies often need to go to the international markets.[5]

From 2014–15, natural catastrophe (NatCat) losses for Indian insurance companies were estimated at USD 11 bn.[6] Recent extreme events have led to NatCat coverage being capped in certain sectors such as hydropower, and NatCat premiums are set to increase by 10-20% in 2016.[7/8] In general, NatCat protection is a low priority in the region. Innovative products supported by risk models and reinsurance pools can provide huge opportunities to the insurance industry.[9/10]

Table 1

Top 10 general insurance companies in the Indian insurance market

Sources: Towers Watson (2014), Insurance Institute of India (2015) and company financial reports and websites.[11]

Company	Gross written premiums 2014–15 (INR Crore)	Market Share	Ownership	Ownership Share
New India Assurance Company Ltd.	15480.35	15%	Government-owned	100%
National Insurance Company Ltd.	11282.62	13%	Government-owned	100%
United India Company Ltd.	10691.73	13%	Government-owned	100%
Oriental Insurance Company Ltd.	7561.92	9%	Government-owned	100%
ICICI Lombard GIC Ltd.	6677.79	9%	ICICI Bank Limited	73.20%
			Fairfax Financial Holdings Limited	25.72%
Bajaj Allianz GIC Ltd.	5229.84	6%	Bajaj Finserv Ltd.	74%
			Allianz SE	26%
IFFCO-TOKIO GIC Ltd.	3329.96	4%	Indian Farmers Fertilizer Co-operative + Associates	74%
			Tokio Marine and Nichido Fire Group	26%
HDFC Ergo GIC Ltd.	3182.2	4%	HDFC Ltd	74%
			ERGO International AG of Munich Re Group	26%
Agriculture Insurance Company of India Ltd.	2739.69	4%	General Insurance Corporation of India	35%
			National Bank for Agriculture and Rural Development	30%
			New India Assurance Company	8.75%
			National Insurance Company	8.75%
			United India Company	8.75%
			Oriental Insurance Company	8.75%
Reliance GIC Ltd.	2715.83	3%	Reliance GIC	99.46%
			Reliance GIC Employees Benefit Trust	0.54%

1 Policy priorities and regulatory developments

1
Market gaps
India has one of the lowest levels of insurance penetration in the world

Over 80% of total losses following a major natural catastrophe in India are uninsured. From 2004–11, this averaged USD 1.95 bn per catastrophe.[12] For example, while total losses from 2014 Cyclone Hudhud reached USD 11 bn, only USD 650 million (mn) was insured.[13] Insurance penetration and density are ranked amongst the lowest in the world. India's insurance penetration rate of 3.3%, 2.6% of GDP for life insurance and 0.7% of GDP for non-life insurance, is far below the global average of 6.2%.[14]

In the agriculture sector, it is estimated only 19% of farmers make use of crop insurance.[15] The Insurance Regulatory and Development Authority (IRDA) estimates that approximately USD 7.5 bn is needed to increase insurance penetration to 6%, of which USD 3.7 bn will need to be foreign investment.[16]

2
Market signal
The government commits to financial inclusion and low-carbon development

Growth within India's total insurance market is projected to continue as the government addresses India's low financial inclusion and insurance penetration rates. As of January 2016, under the government's Pradhan Mantri Jan-Dhan Yojana (PMJDY) initiative, more than 200 mn bank accounts have been opened and 30 mn low-cost life insurance policies have been issued.[17 / 18 / 19]

India has also committed to reducing CO_2 emissions by 280–486 Mt CO_2e by 2030 and limiting its use of coal.[20] Further investment signals for renewable energy have been outlined in the National Adaptation Plan on Climate Change that set an ambitious target to reach 175 GW of renewable energy by 2022.[21]

3
Market reform
New Insurance Act will increase foreign capital inflows to insurance companies and support the development of the domestic reinsurance sector

The 2015 Insurance Laws Act increased the Foreign Direct Investment (FDI) limit from 26% to 49%, permitted foreign reinsurers to establish reinsurance branches in India, and will facilitate the entry of Lloyd's of London into the Indian market.[22] Increased foreign investment is set to generate capital inflows of USD 1.8 bn into the insurance sector in 2016, as foreign insurance companies increase their stakes in their existing joint ventures (Table 1).[23]

In 2015, FDI more than doubled to USD 341 mn, primarily in life insurance.[24] To date, a number of global reinsurers including Munich Re, Swiss Re and Catlin intend to apply for branch licenses in India.[25] An increased reinsurance presence in India is expected to grow the sector's capacity to effectively price, determine, and manage risks by developing new products and risk modelling capacity.[26 / 27]

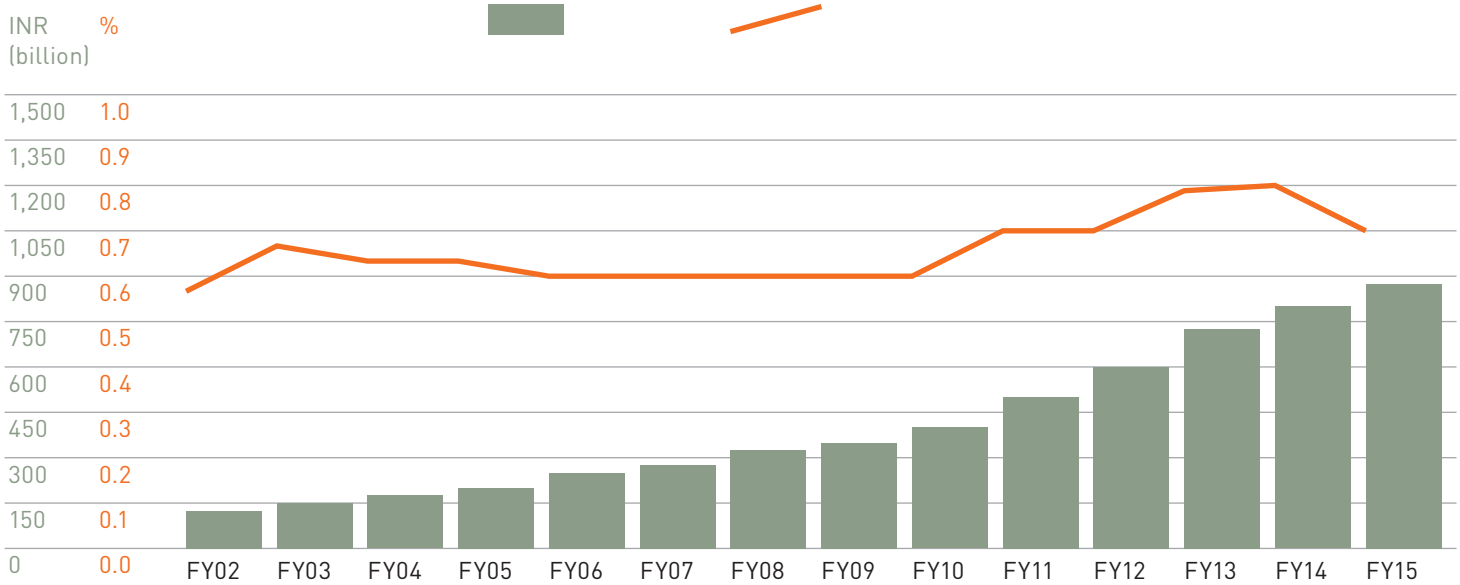
Figure 1

Growth in non-life insurance penetration and premiums

Gross Direct Premium (INR billion)

Penetration Gross Premium / GDP %

Source: EY (2015)[28]



2 How exposed are insurers to climate change in India?

Energy and agriculture sectors are large carbon emitters and exposed to weather risks. India is currently the fourth largest energy consumer globally.[29] In 2014 it was the fourth largest GHG emitter based on total annual emissions and the tenth largest based on per capita emissions.[30] Agriculture directly contributes to 17.6% of the country's emissions.[31] The sector accounts for 17% of Gross Domestic Product (GDP) and almost 50% of employment. At the same time, India ranks in the top ten countries with the highest expected losses due to natural hazards per annum (0.3% of GDP).[32]

Risk exposure to drought is increasing. 2015 marks the second year in a row with rainfall levels more than 10% below average. Within the past 14 years, El Niño has led to lower than average rainfall 8 times and reduced the predictability of the monsoon.[33] Drought events have also increased agricultural energy use by as much as 25% and constricted hydro-electricity production (16% of India's installed capacity).[34/35] In September 2015, the state of Maharashtra was considering a complete stoppage to hydropower generation at three Tata Power stations due to drought.[36]

Overall, India has the largest GDP exposure to flooding in the world at USD 14.3 bn – to increase to USD 154 bn by 2030.[37] Average annual economic loss due to natural hazards is estimated to be USD 9.8 bn.[38] In November 2015, the heaviest rainfall in over a century caused extreme flooding in Tamil Nadu, leading to an estimated USD 710 mn in claims.[39] Lloyd's 'City Risk Index' estimates that storms and floods will put USD 12.52 bn of Kolkata's GDP at risk and USD 11.28 bn of Delhi's GDP at risk.[40]

Table 2

Climate change risks to insurance company portfolios [41]

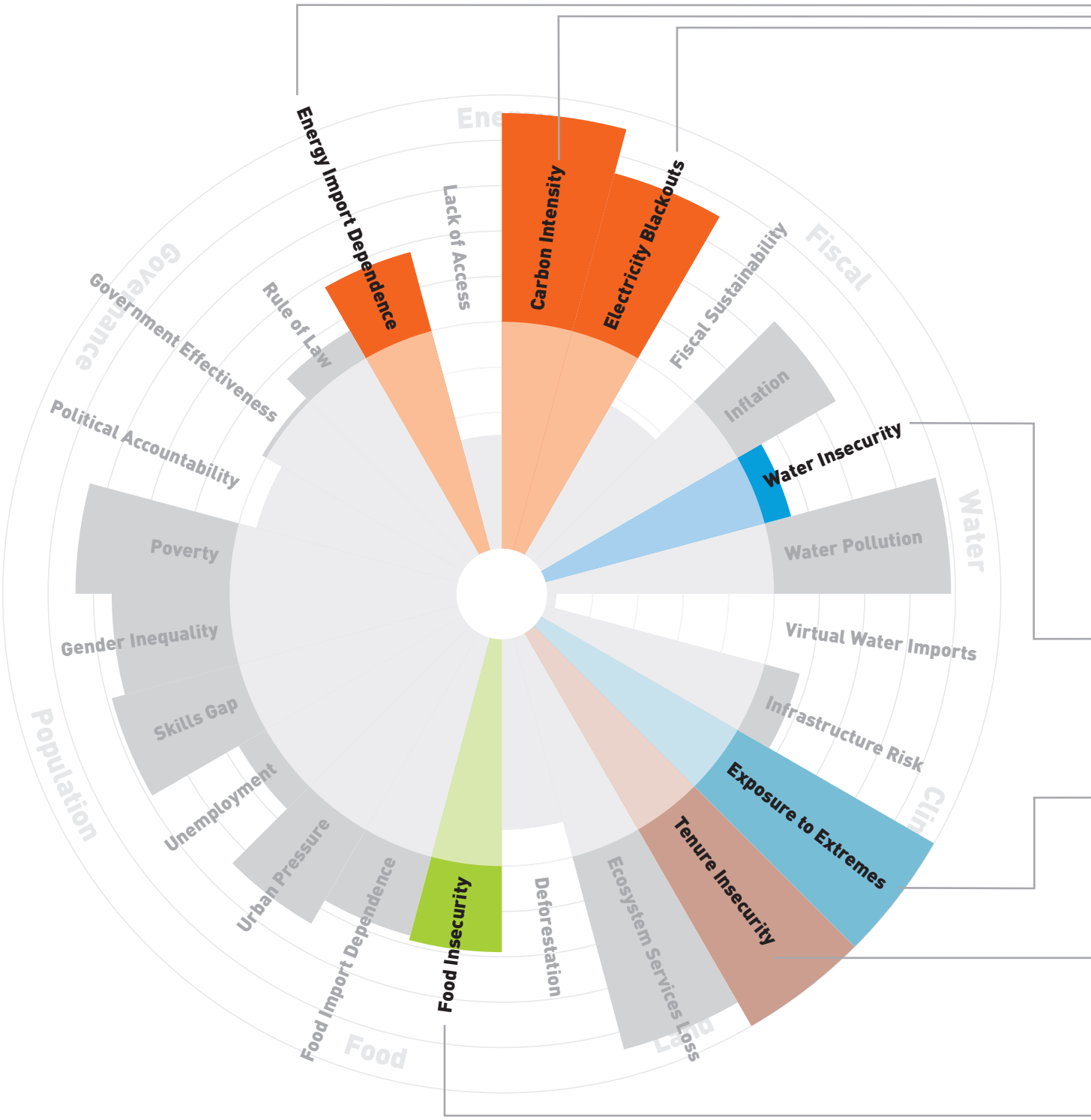
Physical risks	Regulatory risks	Liability risks
Energy Sector		
Extreme weather events increase insurance premiums for energy assets. In Uttarakhand, flash floods shut down six state-run hydropower plants in 2013 that account for 35% of the state's total installed capacity. The North Indian state was short 3,500 MW per day during the critical monsoon period.[42] Hydropower operator NHPC incurred USD 45 mn of losses at its 280 MW Dhauliganga plant alone.[43] High claims costs led the National Insurance Company, United India Insurance and Oriental Insurance, to increase premium rates two to fourfold for hydropower projects.[44]	**Carbon intensive assets expose insurer's investment portfolios to stranded assets.** Life Insurance Corporation (LIC) took a 7.2% stake in Coal India from the Indian government's 10% divestment in February 2015. Its coal reserves account for 57.7 Gt of potential carbon dioxide emissions.[48/49] LIC bought almost half the company's shares, investing an estimated USD 1.5 bn.[50] However, the government could take a more cautious approach to carbon-intensive energy investments, given India's climate commitments to grow non-fossil generation capacity to 40% of installed electric power capacity by 2030.[51]	**Insurance companies exposed to civil liability from nuclear plants and extreme weather.** In June 2015, the Indian Government launched a USD 225 mn insurance pool managed by the national reinsurer, GIC Re, and 11 other general insurers to address third party liability insurance under the Civil Liability of Nuclear Damage Act.[54] The share of nuclear power in the energy mix is set to grow from 3% in 2011 to 15% in 2050.[55] Today, the majority of India's 21 nuclear plants are situated in coastal areas and are exposed to cyclones and rising sea levels.[56]
Agriculture Sector		
More intense droughts increase claims on crop insurance. A 12% rain deficit in India in 2014 led to a 4.7% cut in grain output.[45] In 2015, erratic and insufficient rain during the monsoon season is estimated to have reduced cereal production by 28% in the East Indian state of Odisha.[46] The Agriculture Insurance Company of India, the implementing insurer of the National Agricultural Insurance Scheme in the state, expected crop insurance claims to rise to a new record level of USD 150 mn in 2015.[47]	**Adaptation costs increase the burden on government subsidised insurance programmes.** Since 2000, India has experienced 5 drought years. Crop insurance claims have not covered half the value of the insured agricultural produce. In order to ensure adequate protection to Indian farmers, the government's new crop insurance scheme has capped the premium for key crops to a maximum of 1.5–3.5% of the insured value.[52] The central and state governments will need to cover up to 80% of the premium costs through a subsidy, potentially affecting the viability of the scheme to scale.[53]	**Third party liabilities from agricultural losses.** Liability claims against governments and multinationals are becoming part of a growing trend in developing countries as farmers experience multi-year crop losses. In neighbouring Pakistan as well as Peru, claims have been made against companies and governments for not mitigating climate change.[57/58] Climate-related litigation cases are expected to grow and should be considered by insurers as part of a new operating landscape in countries whose agriculture sector is exposed to extreme weather, as is the case in India.[59]

3 Earth Security Outlook: India

We use the Earth Security Index™ 2016 for India to predict the market scenario and key investments in the energy and agriculture sectors for insurance companies.

Figure 2

The Earth Security Index™ 2016
India Country Profile



Energy Sector

Context

Energy / Import Dependence
India's primary energy consumption increased 5.8% between 2007 and 2011. India has the 5th largest power generation portfolio globally, but must meet 79% of its oil demand through imports.[60]

Energy / Carbon Intensity of Electricity
India's $C0_2$ emissions from electricity generation (912 gr/kWh) is substantially higher than the Asian average (746 gr/kWh) and the global average (565 gr/kWh).[61]

Energy / Blackouts
Blackouts in India are common, affecting industrial output. Electricity provision is weak with 20% of India's generated electricity lost during transmission and distribution.[62]

ESG Market Scenarios

Scenario 1
Energy scenario for insurance
India plans to meet its growing energy needs through an increase in coal-fired generation capacity. However, coal will be under increasing pressure from international investors and India's own international climate commitments. Renewable energy investments will be increasingly featured as a 'triple win': a way to reduce reliance on imported energy, ensure increased access to electricity supplies, and align with the government's climate commitments. Given the inevitable energy bottlenecks, we anticipate a growing place for renewables in the portfolio of insurance companies in underwriting and guarantee products, project finance and investments.

Investment Opportunites

Opportunity 1
Performance guarantees
Performance guarantees that de-risk renewable energy investments.

Opportunity 2
Green bonds
Green bonds that reduce the costs of capital for renewable energy.

Opportunity 3
Yield companies
Yield companies to create investable renewable energy vehicles.

Agriculture Sector

Context

Water / Insecurity
The pressures on water resource in India have increased overtime to unsustainable levels. By 2010, 33.9% of total renewable water resources were withdrawn annually.[63]

Climate / Exposure to Extremes
According to the Climate Risk Index 2013, India is among the top 3 most exposed countries in the world regarding its exposure to extreme weather events.[64]

Land / Tenure Insecurity
Local bureaucracy and informal land rights complicate the process of land investments. 27% of India's total land area is common property and 90% of land is leased informally.[65]

Food / Insecurity
Food insecurity in India is a significant political issue. Despite large cereal reserves, structural inefficiencies rank India at worrying levels (80/117) on the Global Hunger Index.[66]

ESG Market Scenarios

Scenario 2
Agriculture scenario for insurance
Water scarcity is already a major challenge for India. More extreme weather will exacerbate it by increasing the variability of monsoon rains and the intensity of drought. Food security and land governance also remain key challenges. Given the number of people dependent on agriculture for their livelihood, these factors will be of prime concern to the government. In addition to the new crop insurance scheme, the government will therefore favour and probably partly subsidise sustainable agriculture projects. These range from subsidising efficient irrigation technologies, to adopting mobile phone-based information services, to improving transport and logistics. Insurance products can play a central role in facilitating the adoption of these solutions.

Investment Opportunites

Opportunity 1
Equipment insurance
Credit guarantees and equipment insurance on sustainable agriculture products.

Opportunity 2
Weather insurance
Weather index-based crop insurance to accelerate claims-handling times.

Opportunity 3
Mobile solutions
Partnerships with mobile phone providers to improve insurance coverage.

4 **Energy investments**

Opportunities for insurance companies to finance the energy transition

Opportunity 1

Performance guarantees and quality assurance to de-risk renewable investments. Insurers in India currently provide operational and project insurance for renewable energy projects. However, there is appetite for insurance product developments to address the risks associated with energy performance, project quality, uncertainty of the costs, and exposure to natural catastrophes.[67] Longer-term guarantees and quality assurance products reduce uncertainty and create more attractive terms of investment to improve project viability.[68] For example, Allianz, a major global insurer and investor in renewable energy, has developed a comprehensive project risk assessment and certification quality standard for PV power plants during the construction and operational phase. The product improves the bankability and insurability of quality assured projects.[69]

Opportunity 2

Green bonds that reduce the cost of capital for renewable energy projects. Renewable energy investments cost up to 32% more in India due to high interest rates and the short length of bank loans.[70] Debt financing needs are inadequately met, particularly for off-grid projects.[71] Renewable energy companies are increasingly using green bonds to raise lower-cost financing.[72] The green bond market in India is set to grow following a decision by the central bank in 2014 to allow local banks to issue infrastructure and green bonds.[73 / 74] Indian institutional investors could invest up to USD 400 mn to 2019 in refinancing operational infrastructure projects through renewable energy project bonds with partial guarantees that enhance the credit rating to AA. These investments can offer adequately stable returns over maturity periods.[75]

Opportunity 3

YieldCos to create investable renewable energy vehicles. Insurance and reinsurance companies are constrained from investing directly in renewable energy projects due to their illiquidity, small size and high transaction costs.[76] Corporate or pooled investment vehicles, such as publicly traded Yield Companies (YieldCos) can better match insurer's investment requirements for long-term certainty and provide short-term liquidity.[77] Project developers can raise lower-cost capital for more projects and enable more risk-averse investors to finance renewable energy projects. Predictable cash flows can be generated from renewable energy by entering into long-term Power Purchase Agreements with state electricity distributors. On average, these investment vehicles yield 3% to 5% on investment, 10% to 15% on long-term dividend growth, and predict a total return profile of 13% to 20%.[78]

Case Study 1

Munich Re's performance guarantees for wind and solar. Munich Re, which currently holds a 26% stake in Indian non-life insurer HDFC Ergo, has developed new coverage solutions for manufacturers and operators of photovoltaic projects and solar thermal power plants. By extending the performance warranty to up to 25 years, the project's rating and project financing can be improved. The warranty is supplemented with an insurance policy that pays out compensation upon a guarantee trigger, such as a manufacturer becoming insolvent or fluctuations in solar irradiation. Since 2010, Munich Re has insured over 55 solar module manufacturers and projects using this product. A similar range of products that cover guarantee obligations and protection against volatile and extreme weather are offered for the wind energy market.[79]

Case Study 2

ReNew Wind Energy's green bond in Maharashtra. India Life Insurance Corporation, with USD 230 bn in assets under management, has stated its interest in the green bond market.[80] USD 1.1 bn of green bonds have been issued in India since Yes Bank issued the country's first Green Infrastructure Bond in 2015.[81] Indian independent power producer ReNew Wind Energy, issued an AA+ rated USD 68 mn, 5-year bond with a 6.45% yield for its 84.65 MW wind power project in Maharashtra. As institutional investors require AA ratings, Indian issuers are often capped by the government's Baa3/BBB rating.[82] To address this, the ReNew offering included a partial guarantee from the India Infrastructure Finance Company Limited (IIFCL) and counter guarantee by the Asian Development Bank (ADB) that decreased the credit risks to institutional investors.[83]

Case Study 3

SunEdison's TerraForm Global Inc. to purchase renewable assets in India. In 2015, following a successful set up of a YieldCo, TerraForm Power Inc., SunEdison announced the launch of its second publicly traded subsidiary, TerraForm Global Inc. Its purpose is to acquire renewable energy assets in emerging markets, including India, Brazil, South Africa and China. The initial public offering raised USD 675 mn, and projected cash flows are estimated at USD 231 mn by 2016.[84] SunEdison operates solar plants in India with a capacity of 450 MW and has another 800 MW in planning, including a 500 MW tender it won in 2015 in Andhra Pradesh. In November 2015, despite concerns that the company would sell renewable assets to third parties, it announced it would sell projects with 425 MW of solar generating capacity, worth USD 231, to TerraForm Global.[85]

Flag 1

Land ownership. Political deadlock over the Land Acquisition Bill and sensitivity to the use of public land for infrastructure projects requires investors to be proactive in nudging developers to resolve land-right issues fairly.[86 / 87]

Flag 2

Red tape. Investors must consider that at present, financial regulations limit the participation of institutional investors to just 10% of the total offering of a renewable energy project bond with a partial credit guarantee.[88]

Flag 3

Payment defaults. State utilities have accumulated at least USD 66 bn worth of debt. Investors should be aware that these debt-ridden utilities have often not met electricity payments and state-mandated renewable purchase obligations.[89]

Ten reasons why renewable energy investments in India are expected to grow

1
Energy deficits in India. Current peak energy deficit is almost 7% of demand.[90] The government has committed to cut carbon emissions by 35% by 2030, but also plans to double coal output to 1.5 bn tonnes by 2020, which would double annual carbon emissions.[91]

2
Electricity blackouts call for greater reliability. The poor condition of trans-mission and distribution infrastructure, lack of transparency across the electricity value chain and high interest rates mean that approved capital costs of India's coal plants are some of the highest in the world.[92]

3
Extreme weather undermines large projects. Many of the new coal based Ultra Mega Power Projects, which will create an additional 100 GW by 2020, will be on the coast where weather exposure is highest.[93] Additionally, India's Supreme Court has recommended that 23 proposed dams not be built in continuously flooded watersheds in Arunachal Pradesh following persistent flood disruptions.[94]

4
Wind and solar predicted to dominate Indian power generation. The IEA estimates that by 2040, due to urbanisation, rural electrification and technology industry promotion, over half of India's new generation capacity will come from non-fossil sources, primarily wind and solar.[95]

5
The cost of renewables will continue to decline. While the costs of coal have been rising by 8% per year, solar PV systems have fallen by 50% since 2009.[96] Not only is India the fifth largest wind producer in the world,[97] but solar installations are also set to quadruple by 2017 and add an additional 20,000 MW each year after 2020.[98/99]

6
Emission reduction commitments will increase public finance. The bank HSBC anticipates USD 2.5 trillion is needed by 2030 to meet India's emissions reduction targets.[100] A growing interest from public financing institutions to co-invest in renewable energy projects will improve profitability.

7
New infrastructure projects enable the conditions for projects. To overcome insufficient grid capacity, the Power Grid Corporation of India is tendering transmission investment projects in order to support 25 ultra-mega solar power projects at 4 GW each.[101]

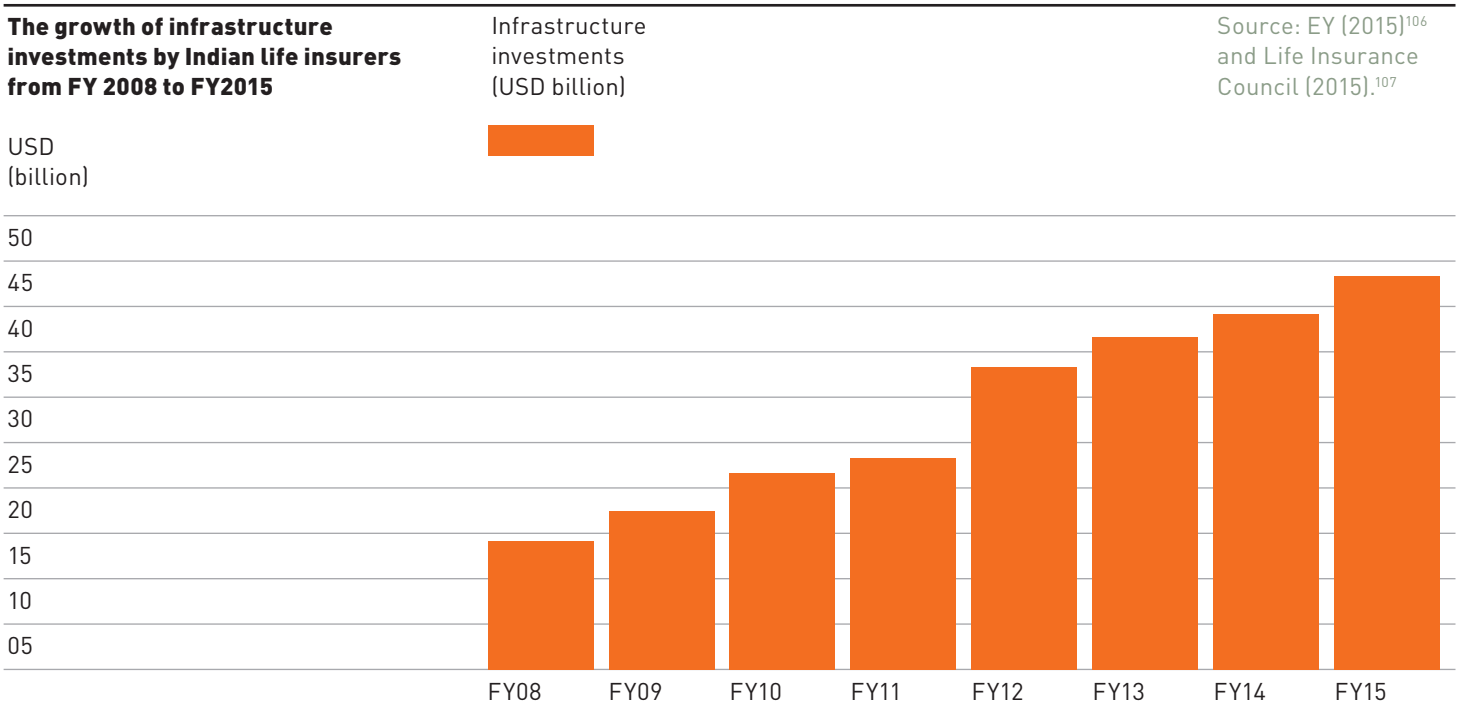
8
International joint ventures to continue to grow. In 2015, Prime Minister Modi and French President Hollande announced the 'International Solar Alliance' at COP 21 in Paris. The alliance will mobilise USD 1 trillion of investment by 2030 to reduce the costs of solar financing and technology globally.[102]

9
Decentralised energy for India's rural communities. In 2015, the Indian solar rooftop market grew by 66%.[103] Of the 311 mn people lacking electricity in India, 93% live in rural areas.[104] The falling costs of off-grid solar systems create enabling conditions for new business models to reach rural markets.

10
Public financial support for utilities to carry renewable objectives. Electricity demand will grow 6% per annum to 2032. A multi-billion 'Integrated Power' scheme for utilities will strengthen distribution as well as provide solar panels.[105]

Figure 3

The growth of infrastructure investments by Indian life insurers from FY 2008 to FY2015



Source: EY (2015)[106] and Life Insurance Council (2015).[107]

5 **Agriculture investments**

Opportunities for insurance companies to finance the agricultural transition

Opportunity 1

Credit guarantees and equipment insurance. Swiss Re, the global reinsurance company, is creating incentives for farmers globally to buy insurance by positioning it as collateral for credit risk.[108] The credit guarantee system partly covers the default risk of loans, absorbing a portion of the loan's risk.[109] In India, there are regulatory limitations to the private provision of credit insurance. In 2013, the Ministry of Agriculture launched a USD 15 mn Credit Guarantee Fund to help 250 farmer organisations, representing 250,000 farmers, invest in modern equipment through collateral free credit.[110] The scheme could also incentivise sustainable farming practices by bundling credit guarantees with incentives to adopt water and energy saving technologies, such as drip irrigation.

Opportunity 2

Parametric weather insurance products to scale. The Weather Based Crop Insurance Scheme has been the fastest growing component of the National Crop Insurance programme. It has grown from less than 1 mn policy holders in 2009 to over 13 mn in 2013.[111] Index-based insurance systems draw on data thresholds to speed up claim handling times: pay-outs are automatically triggered when rainfall and temperature levels cross a pre-established threshold.[112] While pay-out times can take up to two years under the government's yield-based scheme, index or threshold based schemes can settle claims within 45 days.[113 / 114] Allianz Re and Swiss Re are both currently piloting projects in Indian states on remote sensing-based information. These use of remote-sensing, as opposed to weather station data, improves the accuracy of underwriting and speed of claims processing as conditions become more uncertain.[115 / 116]

Opportunity 3

Insurance products bundled with mobile solutions to improve penetration. India's high mobile penetration (77%) makes it a prime market to experiment with alternatives to traditional insurance distribution and processing systems.[117] Mobile phone technology can be used to improve risk management (i.e. early warning systems) and claims handling (i.e. automatic mobile payments).[118] It also has the potential to reduce the size of Insurance Units to farm level to improve accuracy of loss estimation.[119] Legislation now permits non-bank entities such as mobile phone operators to offer financial services.[120] However, to maximise benefits, mobile technology needs to be linked to data platforms that connects insurance details to social security numbers or bank accounts.[121] Product bundling, i.e. linking crop insurance to NatCat insurance or other existing services and networks can also reduce transaction costs.[122]

Case Study 1

Netafim & New India Assurance. Netafim supplies drip-irrigation solutions to over 550,000 farmers across 600,000 hectares in India. Together with New India Assurance, Netafim has implemented a programme to insure drip-irrigation equipment in the state of Gujarat, where equipment insurance is mandatory.[123] 200,000 farmers are currently covered through the scheme in Gujarat. The programme could be scaled if a greater number of states also mandated equipment insurance. The premium rate of the insurance policy is currently estimated at 0.003% of the product value (USD 1000 to 1500), which is covered by a 50% subsidy from the Gujarat state government.[124] Extending mandatory and subsidised equipment insurance would help scale the scheme across other water-stressed states.

Case Study 2

Syngenta Foundation & ICICI Lombard's indexed insurance partnership. During the 2015 monsoon season, Syngenta Foundation piloted a weather index insurance product for high value hybrid corn seeds in collaboration with ICICI Lombard. Seeds sown by farmers are insured for failure of monsoon through a replanting guarantee (RPG). As claims are settled within 1–2 weeks, farmers can replant crops when there is fresh rainfall. The product was piloted with 3,000 farmers over 6,000+ hectares in Rajasthan. By pre-collecting payment information, 482 received pay-outs for insufficient rainfall within 2–3 weeks. Syngenta Foundation is planning to work with seed companies to cover 100,000 to 200,000 farmers for corn, cotton and rice crops in 2016. Premiums could come down to 4–5% as more seed companies opt for RPG, increasing the area and spread across different states.[125]

Case Study 3

Bharti Airtel and Bharti Axa Life's pre-paid insurance scheme. In the life insurance segment, a pre-paid insurance scheme by Bharti Airtel and Bharti Axa Life enables premium collection and payments via mobile phones.[126] The IRDA regards mobile-based, low-cost distribution models as fundamental to expand insurance to currently underserviced low-income populations. Regional governments, such as in Uttar Pradesh, are encouraging linking mobile banking and insurance services.[127] The Indian government also plans to launch a 'Unified Package Insurance Scheme' for farmers that bundles mandatory crop insurance with nine policy features such as health or personal accident insurance and a cover for agricultural equipment such as pumps or tractors.[128]

Flag 1

Lack of credit and collateral. The government has committed to provide credits worth USD 124.7 bn to farmers in 2015–16.[129] However, nearly two-thirds of farmers have little or no access to credit due to the scale of informal land tenure. Private insurers are also limited in providing credit insurance to farmers.[130]

Flag 2

Price distortions. Heavily subsidised energy and water tariffs act as a powerful disincentive for farmers to invest in more efficient energy and water technology and seed varieties. This must be considered in innovation or product-development plans.[131]

Flag 3

Access to finance. The low percentage of the population with access to bank accounts (35% as compared to the world average of 50%) makes it more difficult to scale mobile claims-handling systems. Innovating companies must address financial access as part of the solution.[132]

Ten reasons why sustainable agriculture investments in India are expected to grow

1
India's food insecurity puts agriculture in the spotlight. India is the largest exporter and second largest producer of rice globally. Despite being a global agricultural giant across many cereals, 15.6% of the population, 194 mn people, are undernourished.[133]

2
Sustainable productivity is high on the agenda. The yields of major crops are 45% below their potential[134] while 1/3 of India's agricultural land is degraded, polluted or waterlogged due to the overuse of fertilisers and irrigation.[135]

3
Climate change expected to impact harvests. Changing monsoon patterns have already reduced rice yields by 6%.[136] 4–5 mn tons of wheat, India's second most widely consumed crop, is expected to be lost with each one-degree Celsius rise in temperature.[137]

4
Sustainable food production is vital to the government budget. Food is being subsidised for almost 2/3 of the population through the government's USD 18 bn food security programme.[138] If temperatures rise by 2°C, it is estimated that food-grain imports will have to be doubled by 2050.[139]

5
Water demand is exceeding supply. Agriculture uses over 90% of water in India.[140] Groundwater is already being extracted beyond the rate of replenishment.[141] By 2030, water demand in India is projected to outstrip supply by the equivalent of the water demand for rice, wheat and sugar production.[142]

6
Solar-powered water pumps are a front-runner solution. In a scheme led by the Indian government, SunEdison, Tata Group and Jain Irrigation will replace 200,000 of the 26 mn diesel-powered groundwater pumps with more efficient solar powered ones. This will save the government up to USD 6 bn in diesel subsidies per year.[143]

7
The market for water-saving technologies will grow. Drip irrigation is estimated to raise crop yields by 50–300%, while decreasing water consumption.[144] Market revenues for the sector have increased by 27% from 2008–13 alone, and by 2018, the market could be worth USD 3 bn.[145]

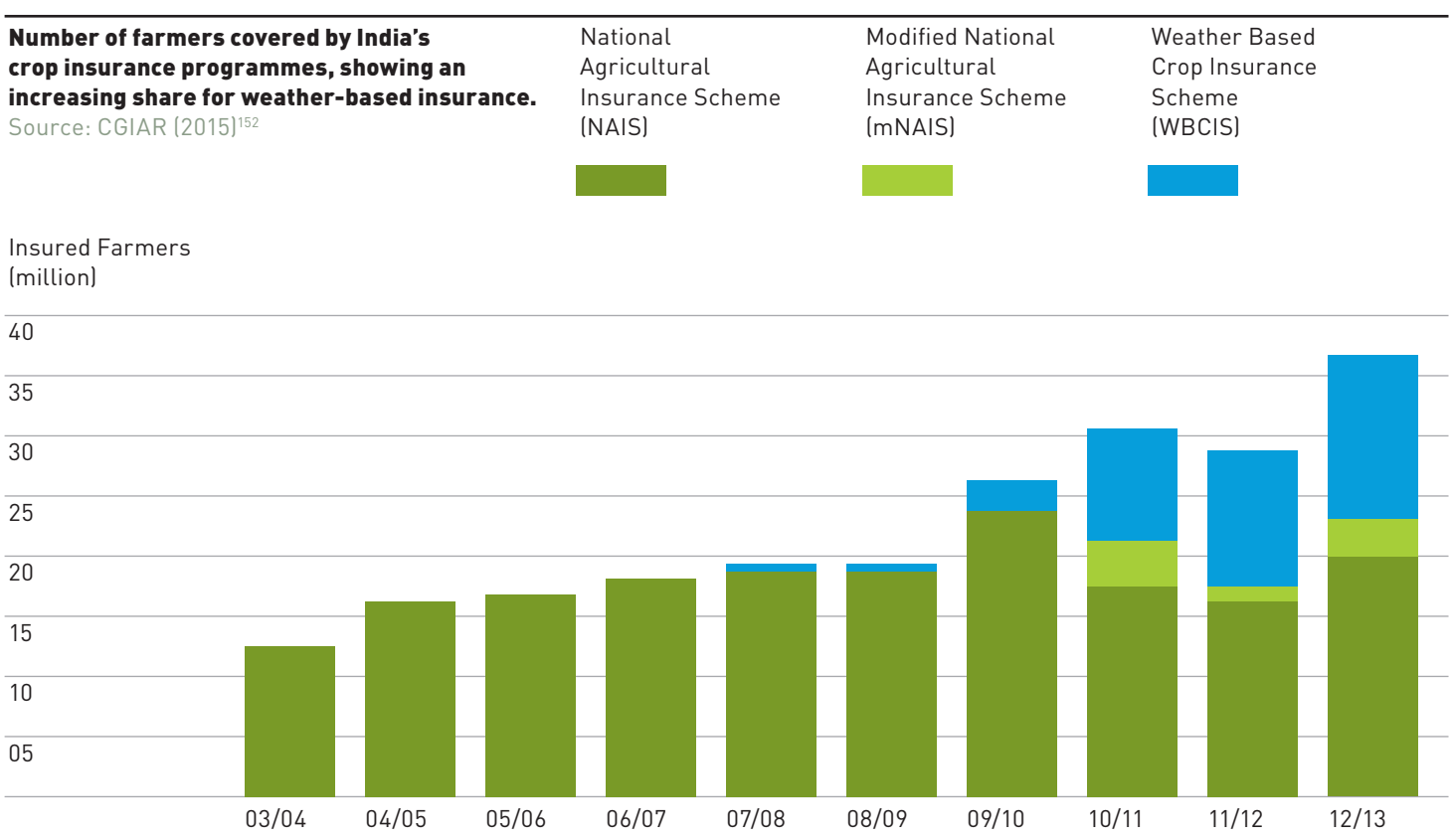
8
Crop insurance programmes are being expanded. The subsidised National Crop Insurance Programme mandates and subsidises weather index and yield-based insurance to farmers borrowing from government banks.[146] The new crop insurance scheme aims to double its reach to 50% of farmers in the next 2–3 years.[147]

9
Weather insurance is expected to grow. Only 19% of farmers currently insure their crops, predominantly due to lack of interest and inadequate insurance coverage.[148] Swiss Re estimates that premiums in the sector could surpass USD 1 bn by 2020.[149] The new crop insurance scheme will subsidise lower premiums for farmers and establish a crop damage scheme.[150]

10
Government to facilitate expansion to financial services. India accounts for 67% of South Asia's unbanked population. A new initiative is driving legislation to allow non-bank entities such as mobile phone operators to offer financial services to overcome the lack of bank accounts and credit cards.[151]

Figure 4

Number of farmers covered by India's crop insurance programmes, showing an increasing share for weather-based insurance.
Source: CGIAR (2015)[152]



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Cover photo © Pravin Aswale / 500px. The image shows a wind farm on the Western Ghats in the state of Maharashtra in India.



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