

CREATING A CLIMATE OF CHANGE

IGSSS Journey on Climate Change Adaptation and Mitigation





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and Mitigation



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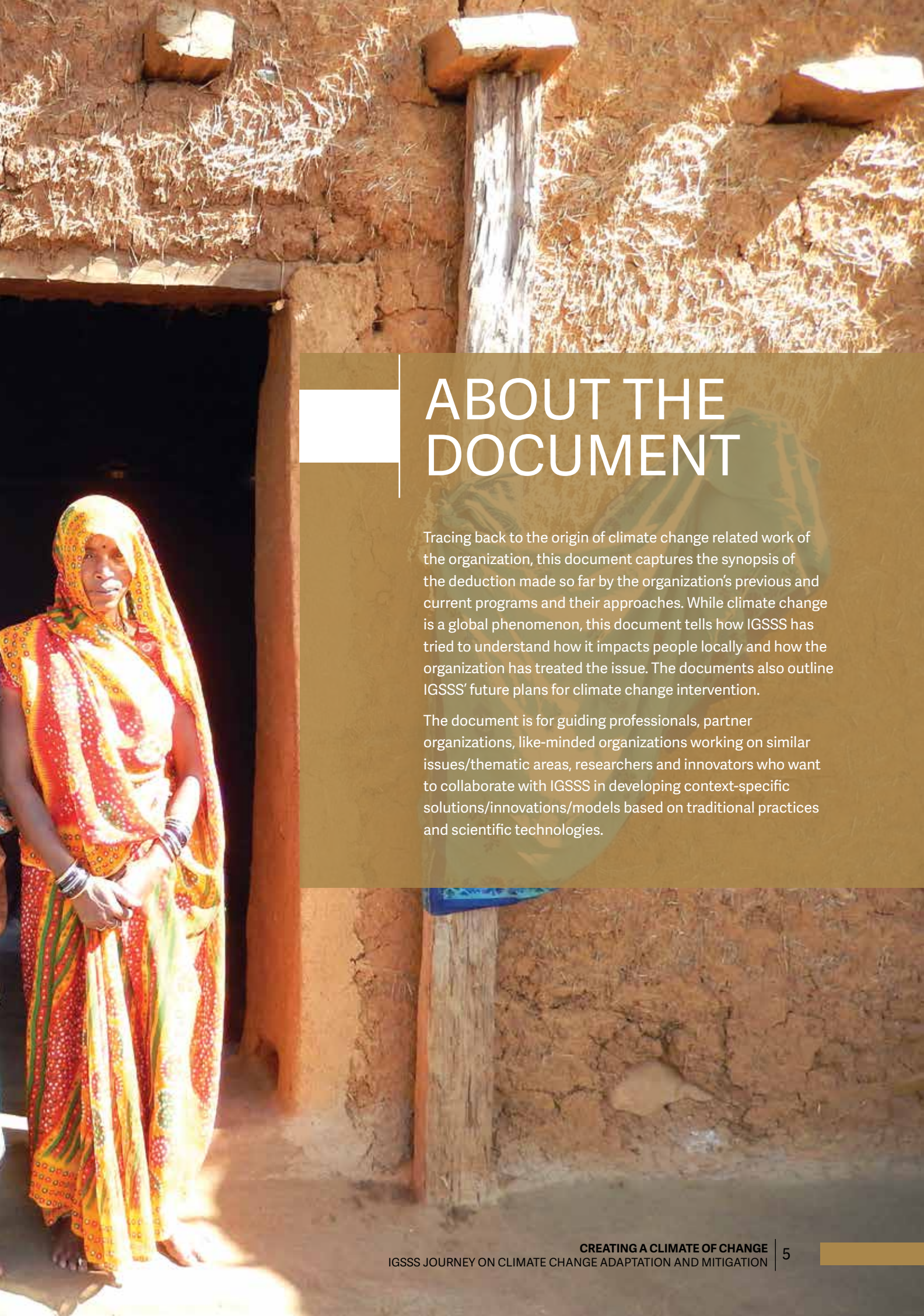
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ABOUT THE DOCUMENT

Tracing back to the origin of climate change related work of the organization, this document captures the synopsis of the deduction made so far by the organization's previous and current programs and their approaches. While climate change is a global phenomenon, this document tells how IGSSS has tried to understand how it impacts people locally and how the organization has treated the issue. The documents also outline IGSSS' future plans for climate change intervention.

The document is for guiding professionals, partner organizations, like-minded organizations working on similar issues/thematic areas, researchers and innovators who want to collaborate with IGSSS in developing context-specific solutions/innovations/models based on traditional practices and scientific technologies.

FOREWORD

“Solutions to the climate crisis are within reach, but in order to capture them, we must take urgent action today across every level of society”

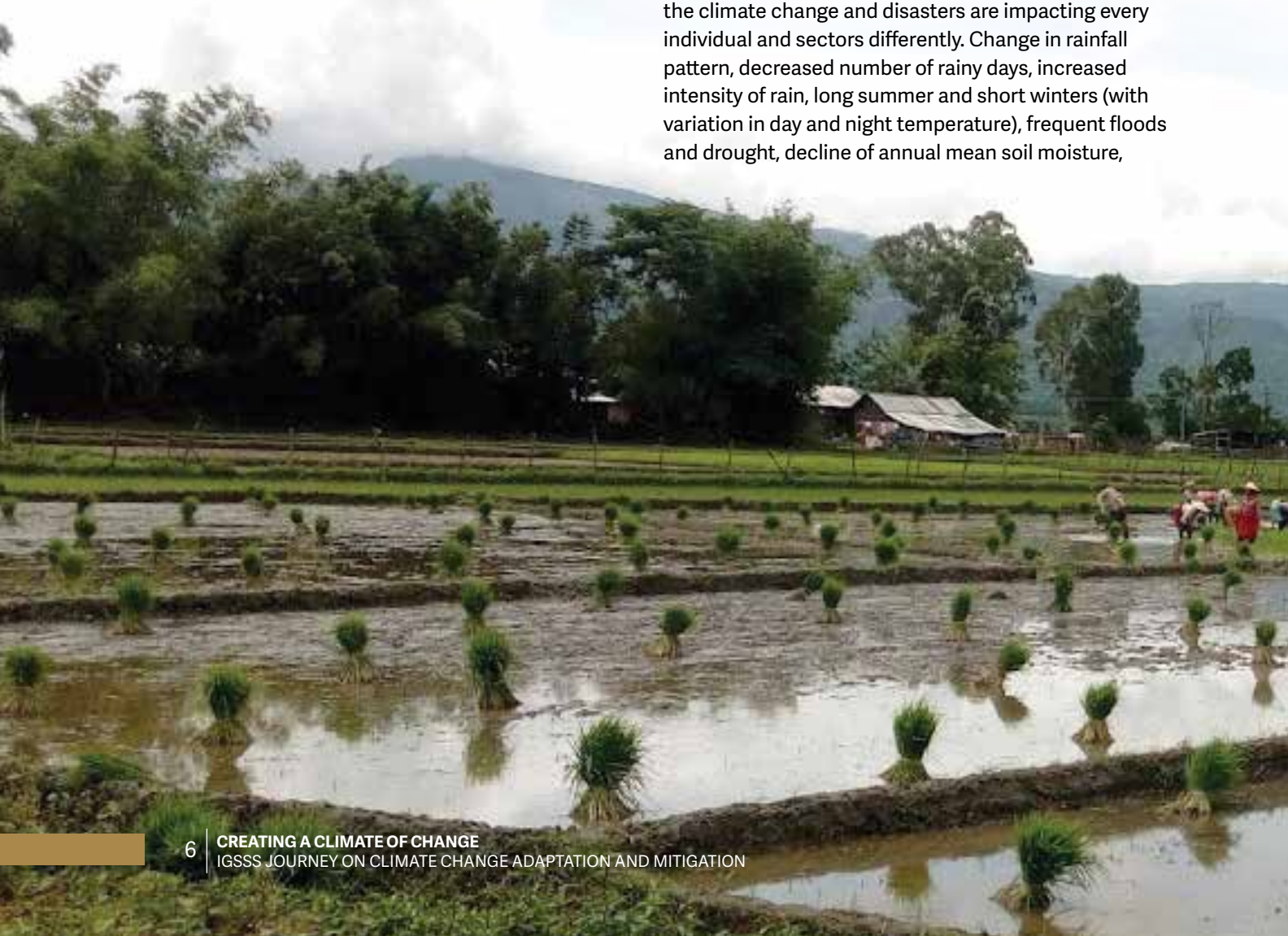
- Al Gore, Environmental Activist

IGSSS has been working on climate change issues for the last five years. While adapting climate change as a mainstream organizational theme of work, it was important to trace back to the origin of the related works and understand the experiences of the people over the period of time.

While extreme weather event is a global phenomenon, its impact on India is much more severe (The Global Climate Risk index 2018) resulting in multiple deaths and huge economic losses over the years. The recent evidence includes record-breaking temperature of 51°C in Rajasthan, (May 2016) and over 2300 death tolls from heat waves especially in Southeast India (May 2015). The persisting drought and heat waves affected more than 330 million people and were

followed by an extreme monsoon season from June to October in eastern, western and central India. The adverse impact of the change in the climate is further aggravated to a wide range of factors including degraded and unsustainable use of natural resources, inadequate infrastructure, low adaptive capacity, a substantial change in people's need and lifestyle and counterproductive policies and programs.

IGSSS has its mandate of inclusive and equitable development of the most marginalized excluded communities in the most vulnerable states of India. Over the course of past 57 years, while working in rural and urban areas on Sustainable Livelihood, Urban Poverty Reduction, Disaster Risk Reduction and Gender and Youth Development, the organization realized how the climate change and disasters are impacting every individual and sectors differently. Change in rainfall pattern, decreased number of rainy days, increased intensity of rain, long summer and short winters (with variation in day and night temperature), frequent floods and drought, decline of annual mean soil moisture,



groundwater depletion, decreased food productivity, increased frequency and intensity of cyclonic storms, and temperature variation led to outbreak of diseases in crops, livestock and human are indicators of local and regional climate variability- at present is accepted as part of the global climate change.

The target groups of IGSSS are most marginalised and excluded communities, who are:

Small and marginal farmers, fishermen and forest dwellers who are dependent on climate-sensitive natural resources and ecosystems. Small and marginal farmers already struggle to get a fair price for their goods, safeguard their produce against weather and pests, and compete with current marketing systems. Effects of climate change on farmers threaten food supplies and security as well as increasing volatility in global food prices. The rural poor are forced to migrate to urban spaces due to crop failure, drought, floods and lack of livelihood opportunities.

Urban poor often live in areas such as urban slums that are the most vulnerable lands within cities, and floodplains as they have a greater exposure to flooding and other hazards. These risks are exaggerated by overcrowded living conditions, the lack of adequate infrastructure and service, unsafe housing, inadequate nutrition, and poor health.

People having unequal capacities are less able to respond to climate change because of limited human, financial, and institutional capacity. Among the marginalized section, women (do not have equal access

to land, capital, and other resources as men), children and the elderly are the most vulnerable because of factors such as heat stroke, malnourishment due to increased strain on food supplies/increased prices, and disease. Furthermore, there are various psychological and physical impacts that have already been witnessed in both men and women due to increased pressure to provide for the family.

The issue of climate change as much economic and social concern as it is an environmental concern. Climate change, demographics, water, food, energy, health and gender are all interconnected. Hence a holistic approach to address all these issues is must for any development organization. This has been the basis of working on climate change with the focus on adaptation and mitigation.

This document is an attempt to track the evolution of climate change adaption works in the organization. It documents all the findings deduced so far in respect to the climate changes and its impact and will serve as a ground rule for shaping the organization's all the future policies. The future outline of climate change intervention will help in collaborating with other like-minded organizations and donors. It is an attempt to give directions to professionals at IGSSS and partner organizations to enhance resilience towards climate change vulnerabilities.

John Peter Nelson
Executive Director





01

Impact of Climate Change in India

India, being the 3rd largest emitter of greenhouse gases, is highly vulnerable to the impacts of climate change-led natural hazards such as droughts, floods, heat waves and cyclones. The adverse impacts of climate change are adding a new and more intractable dimension to development prospects within the country. A large population resides in largely concentrated areas that have a low Human Development Index (HDI) and are also mostly dependent on climate sensitive sectors for their livelihood and subsistence. Hence for India, both adaptation and mitigation are inevitable and imperative for the development process.

60% of India's population is, directly or indirectly, dependent upon agriculture for its livelihood. With high dependency on the monsoon system, projected rainfall, temperature and seasonal variations, Indian agriculture exhibits a high level of vulnerability. Trends in recent years have shown declining production in rain-fed farm land that is vulnerable to climate change induced rising temperatures and irregular rainfall. In past 100 years, earth has not only witnessed a rise in its

mean temperature by 20C but also a rise in other extreme weather events like flash floods, floods and droughts. Going by future projections, climate change will alter the number, severity, frequency and complexity of climate-induced hazards. Researches show that rainfall will increase by 10-12% and mean temperature by 3-50C, with maximum increase in the north Indian states. Overall, temperature increases are likely to be much higher in winter than in the rainy season. Against these trends, the overall risk posed to the country has been delineated below:

Food and Nutrition Security: food security in India is largely dependent upon its wheat and rice production constituting about 75-80% of the total food grain production. A 20C rise in temperature will decrease wheat and rice production by 15-17%. Further, animal husbandry, fisheries and allied activities will also be affected by rising temperatures. Agriculture further relies heavily on groundwater for irrigation, particularly in the dry northern regions, where precipitation is scarce. These factors have consequences on food and nutrition security of the country.

India has put forward the target of reduction of emissions intensity of its GDP (Gross Domestic Product) by 33 to 35 percent by 2030 from levels in 2005, clean energy and creation of an additional carbon sink and adaptation as key priorities. Considering the exceptionally high vulnerability to climate change, a strong focus on adaptation and resilience in sensitive sectors, including agriculture, forestry, fisheries, water resources and ecosystems is given.

Source: Nationally Determined Contributions (INDC) under the UNFCCC (United Nations Framework on Climate Change)

Food and Nutritional Security Scenario in India

With a score of 31.4 of 100 (with 0 being the best and 100 the worst), India is ranked at 100th position among 119 countries. India's 2017 GHI (Global Hunger Index) falls at the high end of the 'serious' category.

- India account for most undernourished people in the world
- **14.5%** of our population is undernourished
- **190.7** MILLION people sleep hungry everyday
- **21.0%** of children under **5** YEARS are underweight
- **38.4%** of children under **5** YEARS of age are stunted
- **1** CHILD in every **4** CHILDREN is malnourished
- Everyday **3,000** children in India die from poor-diet related illness

12 Indian states fall under the 'alarming' category of the GHI. The proportion of children under five years who are underweight is significantly high in states such as **BIHAR (43.9 percent)**, **MADHYA PRADESH (42.8 PERCENT)** and **ANDHRA PRADESH (31.9 PERCENT)**.

Source: www.indiafoodbanking.org/hunger Malancha Chakrabarty (2016), *Climate change and food security in India*, ORF Issue Brief

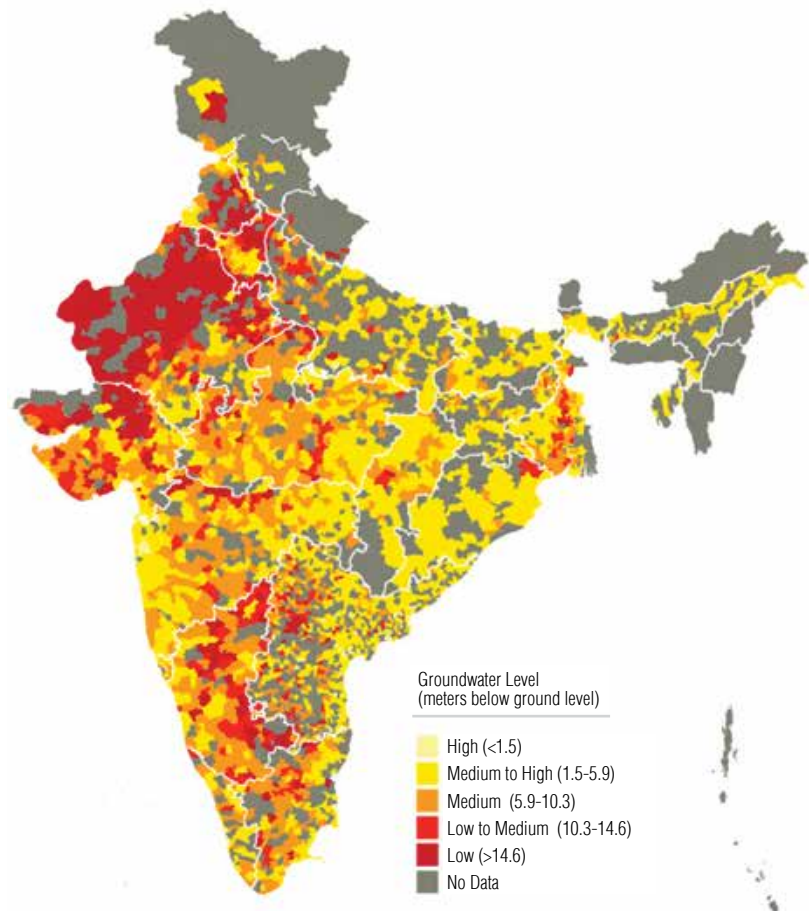
Water Security: Groundwater plays a vital role in impacting food and water security in India. With 54 percent of India's total area facing high to extremely high stress, almost 600 million people are at higher risk of surface-water supply disruptions. Northwestern states of India, also known as India's breadbasket fall under the extremely high stress. The states of Punjab and Haryana alone produce 50 percent of the national government's rice supply and 85 percent of its wheat stocks. Both crops are highly water intensive. Reports indicate that the groundwater has dropped by 54% over the past few years, with 16% of it declining by more than 1 meter (3.2 feet) per year. Farmers in arid areas, or areas with irregular rainfall, depend heavily on groundwater for irrigation. Subsidies on the farmers' electric pumps and minimal control on the volumes of groundwater extracted create a widespread pattern of excessive water use and strained electrical grids.

Depletion of water resources

About 80% of the country's drinking water needs are met by groundwater. Another statistic carried out using India Water Tool (IWT 2.0) reveals that groundwater level is declining across India. Of the 4,000 wells captured, 54% dropped over the past seven years, with 16% declining by more than 1 meter (3.2 feet) per year. While looking into the demand and supply of available surface water and its use by companies, farmers and domestic use, almost 600 million people in India are at higher risk of surface-water supply disruptions. 54 percent of country's total area is facing high to extremely high stress.

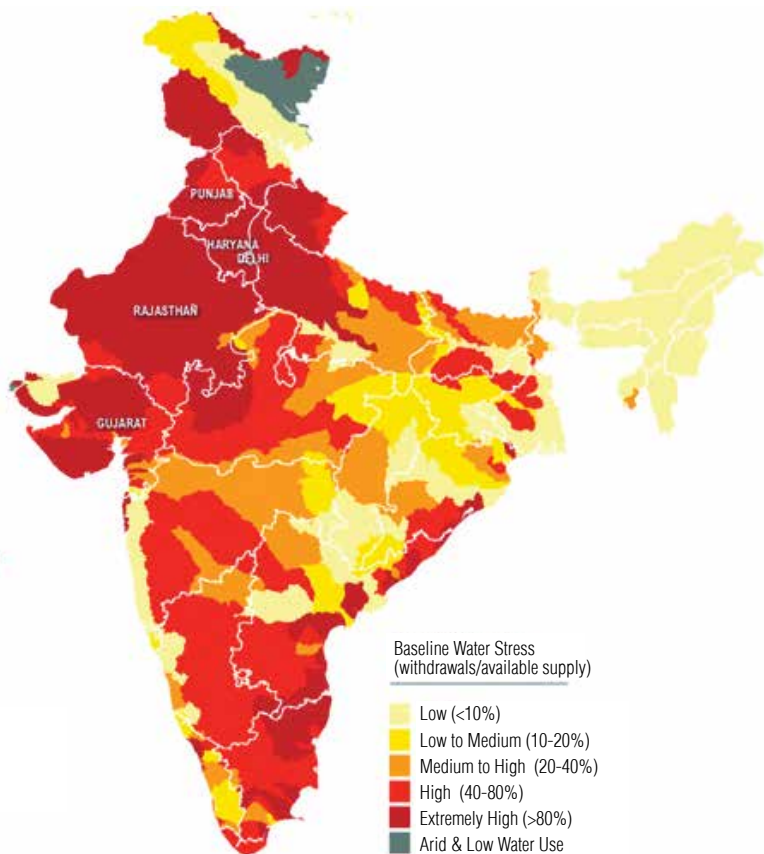
Source: www.wri.org

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Coastal security: India's majority of poor reside on its coastline stretching up to 7500 km and is susceptible to climate change because of the changes in rainfall patterns, increased intensity of cyclones and other hazards.

Livelihood security: 70% of India's population lives in rural areas and directly depend on climate-sensitive sectors (agriculture, forests, and fisheries) and natural resources (such as water, biodiversity, mangroves, coastal zones, grasslands) for their subsistence and livelihoods.

Energy security: Climate change issues are further complicated by India's dependency on coal (50% of total energy mix). This poses issues related to energy security.



02

IGSSS works on Climate Change

IGSSS' main aim has always been an inclusive and equitable development of the people from marginalized groups and excluded communities of the country. Belonging to Schedules tribe to schedules castes and other socio-economically marginalized groups, this people mainly consists of small farmers, fishers, livestock rearer, informal sector workers etc. Since the target groups are living in areas such as floodplains, dry plateau lands, mountain and urban slums, their degree of vulnerability and adaption to it also differs. For livelihood, they are mainly dependent on the climate sensitive natural resources such as the agriculture, forestry, fishing and are at a greater risk due to climate change but are less respondent to climate change because of the limited resources available to them.

Hence Climate Change Adaptation strategy was formed that would help the organization in achieving its mission of an inclusive development of the marginalized community.

2.1. Initiation towards CCA thematic work

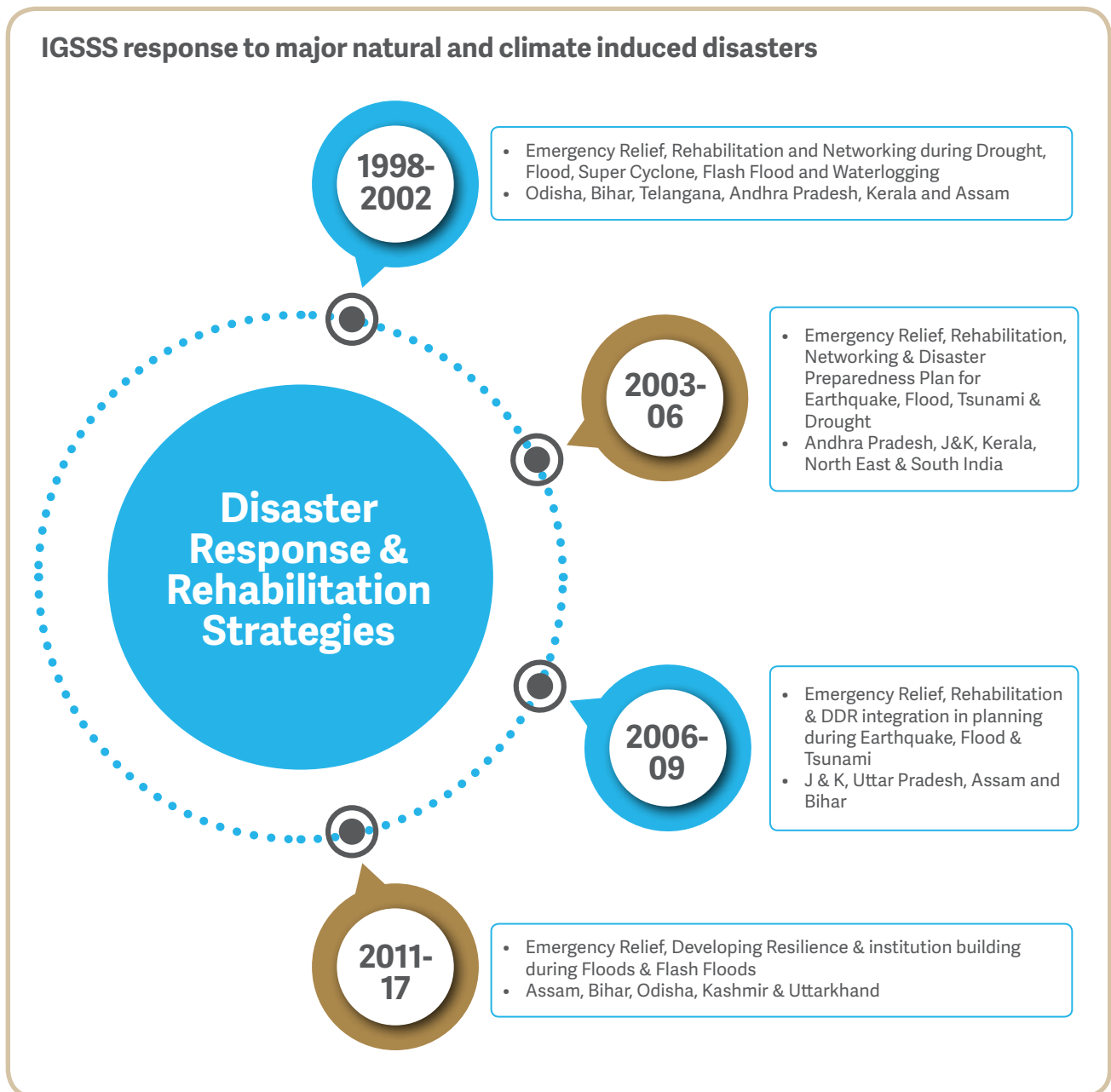
Climate change adaption was not part of the previous strategy of the organization by design. IGSSS has responded to climate induced sudden and slow onset disasters every year across the country. Over the last 20 years, IGSSS has responded to disasters such as floods, droughts, flash floods, cloudbursts and tsunamis in different geographies. Emergency relief, rehabilitation, developing capacities in disaster preparedness, facilitation of disaster mitigation measures, revival of traditional coping and adaptation mechanism of communities were some of the key strategies adopted by the organization in this regard.

Over the years, it has now become a mandate for the organization to be vigilant about responding to the disasters (both man-made and natural) in whatever operations that we undertook either directly or through partnership. This vision gave rise to the development of the thematic vertical

Climate Change and impacts: IGSSS experience

Currently, factors such as change in rainfall pattern, decreased number of rainy days, increased intensity of rain, long summer and short winters (with variation in day and night temperature), frequent floods and drought, decline of annual mean soil moisture, ground water depletion, food productivity, increased frequency and intensity of cyclonic storms, and temperature variation are the indicators of the local impact of global climate change.

IGSSS response to major natural and climate induced disasters



of Disaster Risk Reduction (DRR) to protect the human lives, livelihoods and assets, including natural resources of vulnerable communities from the impact of hazards. It focuses on relief and risk reduction and resilience building. Hence, it is natural proclivity to also integrate it with issues of climate change adaptation.

Above is a record of IGSSS' response to major natural and climate induced disasters over the years. It is also evident that the onus has not merely been on providing relief to affected communities, but also to try and build resilience through livelihood recovery and rehabilitation, awareness building on food security, water and sanitation and pre-emptive longstanding interventions. All of these are linked with the current work on CCA.

Disaster risk continues to increase dramatically, causes of range from a combination of natural hazards, climate change, and environmental degradation to rapid and poorly planned urban development and insecure livelihoods. Working for the cause of resilience building and rehabilitation made us realize that not just the extreme events but the unrecorded events that occur round the year pose different kinds of threats to the communities. Adaptation is interconnected with various factors and cannot be viewed in isolation but instead amplifies existing vulnerabilities and inequalities. This experience has given a strong base for the emergence of Climate Change Adaptation as a specialized intervention strategy within the

organization; with the aim to reduce vulnerability to disasters and assist communities in adaptation to climate change driven processes.

2.2. Climate Change adaptation work: The origin

The sustainable livelihood program- People's Empowerment for Accessing Rights to Livelihood (PEARL) - was implemented in 40 districts in 17 states with the goal of reduce poverty through sustainable livelihood opportunities for 100,000 socially and economically marginalized families from 2009-2013. Poverty in the rural areas, poor agricultural growth, high concentration of landless, lack of food security, limited access to natural resources, lack of sustainable livelihood practices and gender disparity had served as the basis on which the program was build. The key strategy in PEARL was the adoption of the rights-based approach which worked through community-based people's organizations for livelihood enhancement.

The period witnessed continuous impacts of climate variability ranging from slow to extreme events. Delayed arrival of monsoon, below average rainfall and unexpectedly high temperature led to drought – like conditions in various states including Bihar, Jharkhand, Madhya Pradesh and Maharashtra in 2009-10. A drought like situation resulted in extreme dip of the crop production levels in the states of Jharkhand, Madhya Pradesh, Rajasthan and Karnataka. In Assam, heavy annual rainfall that resulted in flooding severely influenced the project. In 2012, Andhra Pradesh and Maharashtra witnessed drought. Changes in the rainfall patterns, (irregular & delayed rain fall, heavy pouring of rain within a short period, decrease in the number of rainy days), affected the entire cropping system in PEARL operational districts in 2011. This had given a clear indication on how the global changes were indeed translating into and affecting communities at the micro level.

Participatory Action Research served as an effective tool to understand the dynamics of climate change and its linkages with livelihood in the villages of Assam, Jharkhand and coastal tracts of Odisha, Andhra Pradesh and West Bengal. The studies captured the perception and felt changes at the community level and assessed the impact (relating to major occupational groups and the livelihood resource base), adaptation measures (how individuals, groups and natural systems were prepared for and responded to changes in climate or their environment) and

coping mechanisms (at community level through self-initiative and extension support). Insight from the action research assisted in identifying opportunities and developing strategies of community engagement, demonstration of actions and policy advocacy.

Some of the trends captured by the participatory action research are as here under:

1. Repeated failure and production loss in farming due to host of factors such as erratic rainfall (late arrival, early cessation, and uneven distribution), increase in small intensity storms (triggered by increase in sea surface temperature, among other things), and inundation by sea (apart from rough sea behavior). There were a host of human centric factors as well - malfunction of sluice gates, breach in weak saline embankments/no embankments, non-responsive line departments, triggering of low investments in land and migration.

2. Costs of agricultural operation have increased due to numerous factors. Climate-change driven rainfall fluctuation has necessitated farming operations to be completed within limited period (use of tractor and labour, pump irrigation) and facilitated the use of chemical inputs to maintain the level of production.

3. Another important livelihood sector, fishing (focus being on fishing in the river mouth region and the offshore region) was badly affected due to the changing climate among many other contributing factors. Fish breeding was affected due to rise in the surface temperature as well as the heavy nets of the big trawlers sweeping the sea floor, therefore movement of economically important fish to the river mouth and offshore region. Other reasons include over exploitation that resulted substantial decrease in economically important species, reduction in fishing days due to rough sea behavior or increase in low intensity storms (coast specific), prolonged government ban on fishing during the breeding season/nestling of Olive Ridley turtles (coast specific). Such conditions make it difficult for the small scale traditional fishing community to earn a livelihood and sustain themselves.

4. Livelihood resources are also negatively affected due to various factors triggered by the changing climate like increase in soil and ground water salinity, heavy depletion in offshore and mouth region among others.

5. Housing and habitations are becoming increasingly depending on the seas, its tidal aggression and the bank erosion cause thereafter.

Lessons learnt

1. Livelihood practices, which might have functioned well in the past, with the climate and the needs prevalent then, need to be recalibrated to the changing climate and the socio-economic realities of the present times. This transition might not be easy for all sections of the occupational groups, particularly those who are already struggling with less resources/capacities for coping and survival.

2. Expansion of livelihood options available for the more vulnerable communities is important to reduce their risk and impact of present and future uncertainties. For future programming, the focus areas include integrated farming (adaptive trial on crop/livestock management, Introduction/reintroduction of traditional crop varieties, crop rotation), soil and water conservation systems, additional income generation (lac cultivation, fisheries, non-timber forest product), management of Common Property Resources (CPR), disaster proofing and institutional strengthening/human resource development.

3. The increasing population of educated and semi-educated youth lack critical awareness of the livelihood issues in respect of the changing climate and alternative ways to live sustainably. This calls for strategies for the engagement of youth in climate change discourses and educate them to be better adapted to the changing climatic conditions.

4. Undertaking of assessment of vulnerability context or the participatory assessment of availability and accessibility of households to livelihood assets is key in identifying the capacities and vulnerabilities to climate change adaptation planning and action.

2.3. Understanding the links between Climate Change and Livelihood

These learnings of PEARL were transferred to the subsequent flagship livelihood program- Sustainable Options for Uplifting Livelihood (SOUL). Coping and adaptation with changing climate was adopted as a central theme for this program. Besides this, the program also aimed to enhance food security of marginalized communities through farm and non-farm-based livelihood and improved access to safe and nutritious food.



The climate change related objective of SOUL is to enhance resilience and better adaptation models to climate change - reducing climate change vulnerabilities by promoting judicious management of natural resources and developing models based on best practices for adaptation. The objective was proposed for addressing the climate change vulnerability of coastal, hilly/undulated and mountainous communities and ecosystem of the country.

Understanding of climate vulnerability and its linkages with livelihood

The participatory Capacity and Vulnerability Assessment (PCVA) conducted in project area highlighted following perception of the community about linkages of climate variability and livelihood practices.

Climate change is linked with various sectors that are sensitive to climatic conditions and that communities are not homogeneous and hence some parts within

Climate Events	Observed Impacts
<p>Long dry spell and unusually high temperature during summer session</p> <p>Variation in rainfall pattern</p>	<ul style="list-style-type: none"> • Delayed sowing due to late rainfall • Instability in the crop yield, loss of production and quality • Decreased water availability for crop production • Increased risk of extinction of already threatened crop species (traditional crop varieties) • Loss of soil fertility due to erosion of top soil and runoff • Drinking water shortage • Low productivity of horticultural crops (pineapple, lemon, and banana) • Heatstroke in humans and livestock • Damage to crops by sudden early rain (paddy) and late spring (potato) frost • Drought
<p>Flash floods and land slides</p>	<ul style="list-style-type: none"> • Loss of agricultural fields, rill and gully formations • Soil nutrient loss through seepage • Damages to road infrastructures risking food security
<p>Short winters with fluctuation in day and night temperature</p>	<ul style="list-style-type: none"> • Impact on winter crops and vegetables
<p>Untimely rains during harvesting time (in March-April for winter crops and October-November for monsoon crops)</p>	<ul style="list-style-type: none"> • Loss of crops (agriculture and horticulture), inputs, decreased availability of non-timber forest products.
<p>High intensity hailstorm, thunderstorm in March - April and September-October and incessant heavy rains</p>	<ul style="list-style-type: none"> • Destruction of standing crops, especially flowers and fruits in the north east • Deteriorated produce quality (fruits and vegetables)
<p>Increased frequency of cyclones</p>	<ul style="list-style-type: none"> • Loss of life, livelihood and assets
<p>Increasing number of low pressure</p>	<ul style="list-style-type: none"> • Low fish catch, reduced fishing days, saline water intrusion, breach in embankments, salinity of surface water bodies and land, flooded agriculture field, loss of crops
<p>Other variability</p>	<ul style="list-style-type: none"> • Insect and pest outbreak in standing crops and during storage • Increased instance of water and vector borne diseases in livestock • Change in traditional food habits due to change in cropping pattern – pulses, millets have been replaced by paddy and cash crops

Vulnerability Framework

Component	Sectors	Indicator
Exposure to climate variation is primarily a function of geography	Temperature	Average consecutive dry days Drought Heat waves
	Rainfall	Heavy rainfall frequency Maximum one day rainfall Precipitation intensity: total number of rain day in year
Coastal communities will have higher exposure to sea level rise and cyclones, while communities in semi-arid areas may be most exposed to drought		
Sensitivity degree to which the community is affected by climatic stresses	Geography	Drought vulnerable area
	Demography Livelihood Water resources Human health	Flood risk area Low-lying coastal area Old age population
A community dependent on rain-fed agriculture is much more sensitive than one where the main livelihood strategy is labor in a mining facility		
Adaptive Capacity The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.	Human	Knowledge of climate risks, conservation agriculture skills, good health to enable labor
	Social	Women's savings and loans groups, farmer-based organizations
	Natural	Reliable water source, productive land
	Physical	Irrigation infrastructure, seed and grain storage facilities
	Financial	Micro-insurance, diversified income sources
The community having access to these resources are less vulnerable than those who do not have access		

the community may have differing degrees of vulnerability and adaptive capacities. PCVA served as a tool to understand the existing livelihood practices, present vulnerabilities and coping/adaptation measures and helped in understanding exposure, sensitivity and adaptive capacities of the communities. The exercise set the tone to make communities realize the impact of micro climate variability and its linkages with livelihood practices and resources. Records of communities' perceptions on climate variability, and felt impacts on livelihood, coping mechanisms and triggers which contribute to vulnerability helped in identifying adaptation opportunities.

The impacts have been noticed across all the regions with variation from location to location. To address the issue of climatic variability in the project areas, following strategies were adopted:

- 1.** Livelihoods diversification: Diversify the livelihood options available and reduce the loss of marginal/landless farmers and fishers owing to climate variability
- 2.** Increase soil organic content to improve water retention and drainage. Composting and mulching to enhance soil fertility, reduce moisture loss through evaporation, keeping the soil cooler and thus protect crops from extreme temperatures, shield the soil surface from strong winds and rain and reduce soil erosion and the risk of flooding
- 3.** Crop diversification, crop rotation and inter-cropping- to reduce the risk of crop failure due to climate uncertainties and bring stability in soil fertility through cultivating legumes with cereals in rotation or intercropping systems



4. Climate resilient crops/varieties cultivation (drought/flood/waterlogged) that can withstand drought/flood/waterlogged

5. Use of saline/brackish water for alternate livelihood generation

6. Integrated farming: integration of various agricultural practices like cropping, animal husbandry, fisheries, forestry together to make sustainable use of resources and enhance productivity and supplement income of the farmers

7. Use of community fellow's land for raising food forest to enhance nutritional security, regeneration of land and carbon sequestration as adaptation and mitigation options

8. Utilization of small/unused spaces for cultivation such as ridges along the agricultural fields as an alternative to reduce soil and water loss, river beds, community fellow land etc.

9. Soil and water conservation/harvesting and rejuvenation of common water points

10. Youth and student participation in climate change adaptation and mitigation practices

2.4. Integration of Climate Change Adaptation into Disaster Risk Reduction programs

Another important context for IGSSS is responding and rehabilitation of communities after sudden disaster, floods in North east, for instance. Over the years, not only the floods but also the micro-climatic variations have affected the livelihood of communities. Majority of the population in flood prone areas now live below the poverty line, especially the people living in interior rural areas. Areas inhabited by Scheduled Caste and Scheduled Tribe population, particularly vulnerable areas like tea gardens and far flung "char" (riverine) areas

additionally lack facilities of safe drinking water and sanitation.

The emerging trends of rainfall indicate that the number of rainy days is decreasing and extreme rainfall days are increasing. In such circumstances runoff will increase and ground water recharge will go down - making irrigated agriculture vulnerable especially during summer and in winters. Exploitation of ground water continuously has resulted into soil health problems (acidity, alkalinity and elemental toxicity). Iron and arsenic toxicities have already been reported in areas worked. Not only do floods wreak annual havoc, but the accompanying weather uncertainty and emergence of new pests and pathogens challenge the farmers round the year.

Under such a scenario, the strategy is not limited to emergency and post disaster response but also to integrate climate change adaptation into DRR so that round the year climate uncertainty can be worked out. A few strategies to mainstream climate change adaptation are as follows:

1. Reduce multi-hazard vulnerabilities by implying convergence approaches in government program on disaster risk reduction and climate adaptation

2. Skills on climate change adaptation to practice sustainable livelihood of the community through linkages with resource and technical organizations

3. New and innovative resilience models based on soil and water conservation, integrated farming system, climate smart agriculture practices and flood proofing mechanisms. This has been done through tapping available resources and skills built through effective communication with extension services and progressive farmers

4. Use of weather forecast and agro-advisories to take precautionary measures

2.5. Resilience building towards the slow onset disasters (drought)

With the onset of disasters such as hunger and droughts in the areas of Bundelkhand (Uttar Pradesh and Madhya Pradesh) Santhal Pargana and Chotanagpur of Jharkhand has given rise to the need of resilience building among the people. Fluctuating climate variables has resulted in increasing frequency of drought, which in turn affects the recovery process of the hunger-prone communities of the areas and

long term- food insecurities. For this, a method of resilience building has been worked out.

A community's ability to recover or bounce back from the shocks is defined as Resilience. Dedicated efforts have been made to enhance a community's resilience toward drought by educating them about how to anticipate risk, limiting the impact and utilizing the resources better to recover from the disaster better. Resilience building strategies not only includes developing communities' knowledge regarding climate change adaptation and disaster risk reduction but also includes technology transfer, natural resource conservation and more importantly, developing alternative livelihood options. Government linkage and coping mechanism of the community to better deal with the cyclic drought has also been established.

For strategizing an effective plan of action, the communities affected and the stakeholders should be empowered with techniques to analyze their vulnerabilities and have knowledge of building a locally feasible and scientifically backed adaptation options. For this Climate Change Vulnerability Assessment programs spin off program called PCVA was developed with the aim of orienting and preparing the stakeholders on how to identify the impact of drought, understanding community perceptions on climate change impacts and the existing adaptation plans and ultimately finding the solutions.

It was also assessed that the community's perception about drought differs with the severity of the calamity and their ability to cope with the situation. This also represents the micro perceptions derived from various factors such as land-soil profile, land development stage and its degradation, crop pattern adopted etc. The community has also worked towards identifying the triggers and hence made changes in their system of livelihood. Based on various combinations of technology developed and traditional systems, the assessment made also suggests of both short term and long plan of actions.

Following strategies were delineated from the assessment:

- **Sustainable livelihood through farm integration:** Adoption of drought resistant crops, agroforestry-horticulture inclusive models of working, practices such as relay cropping and mix cropping, use of organic products to improve soil fertility, crop



rotation and intercropping are some techniques can be used as climate smart techniques.

- **Soil and water conservation:** Micro-watershed identification, rain water harvesting, earth work, multi-story cultivation, repairing and maintenance of traditional water structures, fodder grass cultivation, use of fallow land for woodlot and fodder farm, multipurpose plantation of available spaces especially on farm ridges
- **Strengthening social mechanisms and village resource management:** Common Property Resource Management (CPRM), group-based activities for developing woodlots, fodder farms and food forests on community fellow land, regulation of cattle grazing, conservation and percolation of traditional knowledge

- **Generating additional income sources:** development of alternate income generating sources such as mushroom and lac cultivation, livestock rearing, forest-based enterprises (bamboo craft, rope making etc.)
- **Drought proofing mechanism:** community grain/seed banks
- Nutrition, health and hygiene, institutional strengthening, capacity building and skill development of the community people

The learnings from PCVA will now serve as a base for the drought resilience to be strategized by the organization henceforth. It would act as Standard Operating Procedure (SOP) for integrating CCA and DRR into livelihood programs of the organization.



Future perspective of Climate Change interventions

Keeping in mind the organization's goal of an inclusive and equitable development of the marginalized and excluded communities, IGSSS will continue to take up climate change adaptation and mitigation as a mainstream target through its programs. Also, in respect to the country's problems like a threat to the food and nutritional security, water security (both ground water and surface water), people migrating from rural areas to urban areas etc; climate change adaptation strategy by IGSSS aims to further India's Intended Nationally Determined Contributions (INDC) and Sustainable Development Goals (SDG).

IGSSS's future climate change adaptation and mitigation intervention strategy is envisaged on the following premises/learnings:

- Communities that depend on multiple sectors (agriculture, livestock, fisheries, forestry, health etc.) are sensitive to climatic change
- Different households of different communities have a varying degree of vulnerability towards climate change. Climate variability is of varying degree and has diverse and homogeneous impacts.
- Extent of vulnerability also depends upon factors like community's control over the resources and social economic conditions.
- Changing the current unsustainable use of resources to a more sustainable system will help in building resilience.

- Approaches such as rain water harvesting and development of drought resistant crop is important to minimize the vulnerability of the rain-fed agricultural to low rainfall and high drought incidence.
- Development of non-farm employment will help reduce the pressure on land.
- Since there is not much that can be done to influence the external climate effecting factors, an integrated multi-sectoral approach encompassing the diverse sectors of education, health, environment, roads, irrigation, agriculture, water, poverty alleviation, skill development and non-farm employment is essential.

Marking these deductions as guidelines, the CCA strategy will build a framework and guiding principles that is in line with the organization's goals.

Objectives

1. Building resilience of communities against climate change vulnerability.
2. Mainstream climate change adaptation and mitigation across thematic verticals
3. Position IGSSS as a key technical resource for action and public engagement in the development discourse in the country

3.2. Organizational Strategies

- Building resilient communities and livelihood systems – Focus on diversified and integrated agricultural systems, assessment of vulnerability and capacity and contextual community-based adaptation measures.
- Promote environment sustainability in urban settings - concentrated efforts towards climate change mitigation through sustainable energy, increasing green spaces, waste management and integration of disaster risk reduction into urban planning through coalition building.
- Youth ambassador against climate change - mobilize youth leadership to build resilience against the climate change through trainings and support at school, campus and community level to promote positive actions on localized context of climate issues.
- Research, networking and policy engagement: Evidence building through conducting research, identifying areas of advocacy and highlighting good practices on ground will feed into other thematic areas.

Program strategies

Sustainable Livelihood

- Enable the communities to critically understand the link between livelihood and climate change, teaching about vulnerability to climate variability, extremes and climate change and the potential ways to address it.
- Establish diverse and integrated agricultural systems with focus on appropriate low carbon emission technologies, soil and water conservation and management techniques and Climate Smart Agricultural natural resource management and sustainable technologies (clean energy).
- Management of commons i.e. grasslands, forest, water bodies, to enhance livelihoods and increase resilience to drought and flooding
- Enhance capacity of stakeholders to support integrated approaches to adaptive, preparative and preventive measures to reduce the impact of natural hazards
- Research/review and participatory analysis of State and District level plans, policies and schemes from the perspective of resilience building





- Energy and livelihood: Harnessing the potential of renewable energy to support livelihood enterprises, promotion of energy efficacy, family level energy planning and skill transfer among youth as a strategy to develop entrepreneurship skills

Urban Poverty Reduction

- Promotion of low carbon emission pathways (sustainable energy, increasing green spaces, waste management and integrating disaster risk reduction into urban planning)
- Networking with like-minded organisations to integrate DRR and CCA into urban development plans

Disaster Risk Reduction

- Assessing vulnerability and capacities of climate change and integration in DRR plans
- Developing and promoting climate resilient models in disaster prone areas with upscaling and replicating it effectively

Gender Equity

- Addressing gender differentiated impacts of CCA and promotion of adaptation and mitigation measures
- Involving groups in Common Property Resource Management (CPRM) and biodiversity conservation

Youth Development

- Spreading awareness and popularizing low carbon emission pathways—inducing behavior change
- Youth-led biodiversity conservation and climate ambassador

Building Evidence through Research and Public Engagement

- Networking with local, regional and national organizations, technical experts and research institutions, networks and alliances for innovative solutions and policy engagement for building better resilience.
- Continue to build an impressive repository of researches so that informed development strategies and practices can be followed.
- Map and monitor the contribution of organization led climate change actions as per the Sustainable Development Goals



04

Research and Publications on Climate Change

- Participatory Capacity and Vulnerability Assessment Uttar Pradesh, Madhya Pradesh and Jharkhand-2017
- Why Farmers Quit? A study on Farmer Suicides in Odisha-2016
- Perspective we are in drought-2016
- Impact of Climate Change on Agriculture & Allied Sectors In Khasi Hills Districts of Meghalaya-2015
- Climate Change and Non-Timber Forest Produce Roles and Potential in Jharkhand, Chhattisgarh and Odisha- 2015
- Contextualizing climate change for communities-2014
- Changing Climate Impact on the livelihoods of the communities living along the coastal tract of Odisha, Andhra Pradesh & West Bengal- 2013
- Dynamics of 'Climate Change' and Impact on Rural Livelihood in Assam and Jharkhand, India- 2013



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Abbreviations

- DRR: Disaster Risk Reduction
CCA: Climate Change Adaptation
CPRM: Common Property Resource Management
IGSSS: Indo-Global Social Service Society
PEARL: People's Empowerment for Accessing Rights to Livelihood
CPR: Common Property Resources
SOUL: Sustainable Options for Uplifting Livelihood
PCVA: Participatory Capacity and Vulnerability Assessment





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