



# FACILITATING CLIMATE CHANGE ADAPTATION ON SMALLHOLDER FARMS THROUGH FARMERS' COLLECTIVE LED ON-FARM ADAPTIVE RESEARCH – THE SAF-BIN PROJECT

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## South Asia

- 1/5<sup>th</sup> of the world population.
- Agriculture main livelihood for 50% of the population
- India, Bangladesh and Nepal: **70 percent of farms < 2 ha**

## Climate change

- among most vulnerable regions to climate change
- agriculture , one of the most effected sector
- smallholder farmers most affected



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## Farmers' perceptions on climate change

- Temperature
  - Increasing in all season
  - More warm days in winter
- Rainfall
  - Delayed onset of monsoon
  - Erratic rainfall patterns in monsoon season
  - Decrease in winter rainfall
  - Less water availability
- Other impacts
  - Floods and Hailstorms
  - New and more insect pests, diseases and weed infestations
  - Increase in frequency of drought



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## Agricultural challenges in the region

- Small fragmented farms
- Restricted input access (quality seeds, adequate fertilizers, irrigation)
- Lack of information (good agriculture practices, technical information, markets)
- Low mechanization rate (labor intensity)
- Lack of trust in traditional and innovative practices
- Climate change
- National Agriculture Research System (NARS) not able to create that much of outputs that fit smallholder farms



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## The SAF-BIN project:

- Strengthening Adaptive Farming in Bangladesh, India and Nepal
- Research and development project funded by EU Global Programme on Agricultural Research for Development



European Union



## Objective:

Promote local food and nutritional security through adaptive small scale farming in four rain-fed agro-ecosystems in South Asia in the context of climate change:

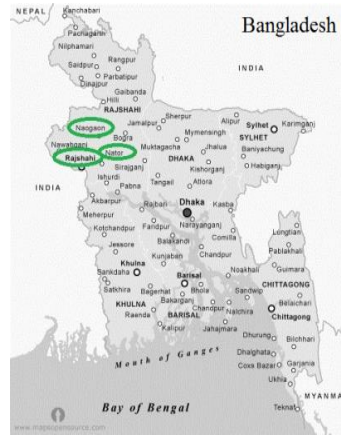
## Specific objectives:

1. Screen and document innovations in traditional food production, distribution and consumption system (FPDCS)
2. Blend traditional practices and innovations into FPDCS models and test their abilities to adapt and mitigate climate change and ensure nutritional security
3. Collectivize and/or strengthen smallholder farmer institutions
4. Multi-stakeholder monitoring mechanisms for enhancing efficiency of FPDCS models
5. Influence national research and policy agendas for promotion of collectivized SHF-FPDCS to adapt to and mitigate climate change and nutritional security



## Location

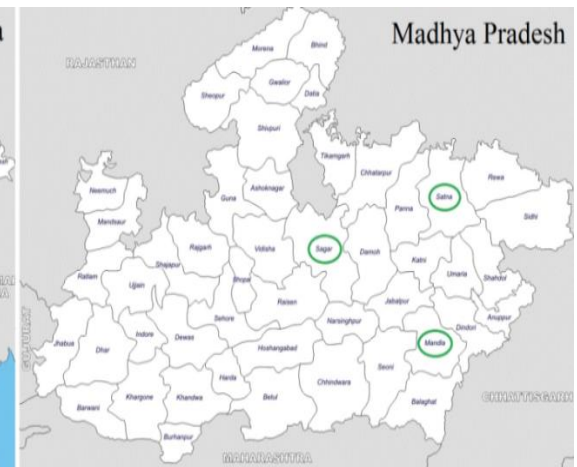
- 10 districts, 90 villages; 274 smallholders farmers collectives (SHFCs)
- 4 Agro ecological zones
- > 4300 smallholders



(adapted from Dmaps.com, 2015)



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## On-farm adaptive research: smallholder farmers as main drivers



- Capacity building of the farmers
- Screening workshop on local innovations and problem matrix
- Setting up the trial objectives
- Farmers' led on farm action research (OFAR)
- Monitoring visit by the different stakeholders
- Result sharing and dissemination
- Refining and up scale up of the successful varieties/ practices



## Scope of on-farm adaptive research in SAF-BIN

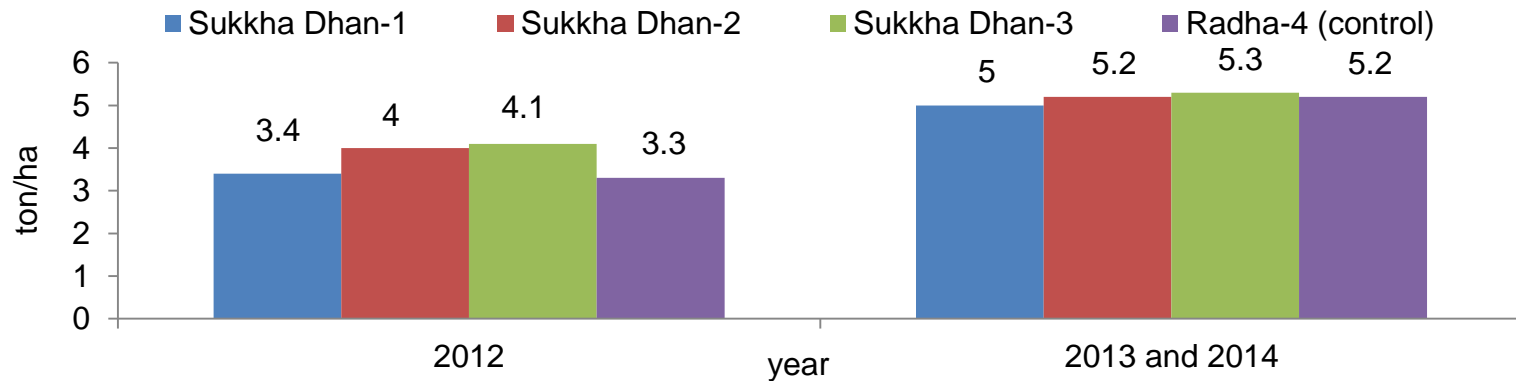
local practises and innovations documented e.g.:

- Crushed larvae and local botanicals as insect repellent
- Used engine oil in irrigation water to control termites (detrimental effects explained)
- Dew harvesting to foster the germination of wheat

Project Country	Number of SHFCs	Number of smallholders active in SHFCs	On-farm adaptive trials conducted	Crop varieties used in on-farm adaptive trials
Bangladesh	90	1400	894	23
India	94	1433	543	11
Nepal	89	1335	302	34
<b>Total</b>	<b>273</b>	<b>4386</b>	<b>1739</b>	<b>68</b>

## An example for farmers' led on-farm trial

Performance of different introduced drought tolerant rice varieties with comparison to resident variety in Bardiya district, Nepal in different years



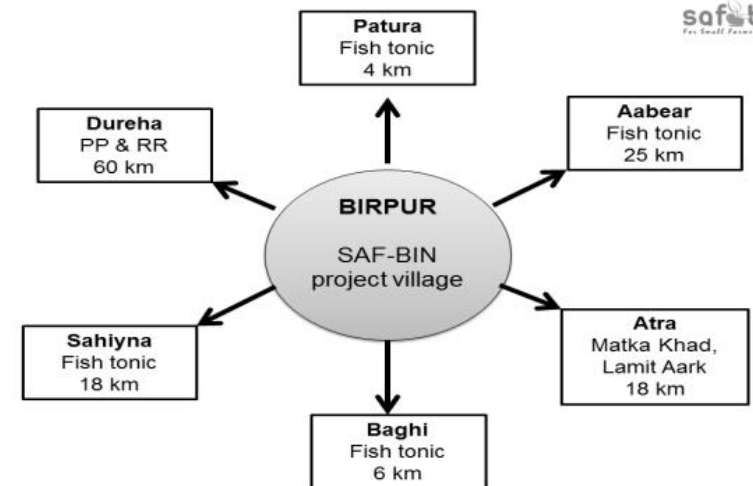
- 2012 marked as moderately dry year by near by research station
- 2013 and 2014 had normal rainfall during monsoon season
- Yield of introduced newly released varieties was substantially higher in year 2012 while in normal weather condition all the varieties did well.

## Selected impacts of SAF-BIN

Country	Items in local food basket before SAF-BIN	Items in local food basket after SAF-BIN	Food secure days/year before SAF-BIN	Food secure days/year after SAF-BIN
Bangladesh	9	10	178	211
India	5	10	200	330
Nepal	18	30	150	240
<b>Total</b>	<b>Ø 10.6</b>	<b>Ø16.6</b>	<b>179</b>	<b>260</b>

## Up-scaling and spread of SAF-BIN activities

Technology	First trial year (2012)	Last available data
Drought tolerant rice varieties (Nepal)	0.33 ha	81.3 ha (2014)
Management of sheath blight of rice (Bangladesh)	45 plots	93 plots (2013)
Yellow Mosaic Virus Resistant Black gram	0.015 ha	36.4 ha (2015)



Dissemination of different successful technologies to neighbor villages in Birpur, Satna, India

## Conclusions

- SAF-BIN supported smallholders to improve their food and nutritional security through adaptive small scale farming
- effective research and development approach: importance of local knowledge and local ownership /decision power
- farmer institutions strengthened entailing further positive developments
- additional options for smallholders to mitigate climate change effects
- multi-stakeholder collaboration enhance the capacity of all actors to approach food production, distribution and consumption in a multidisciplinary and participatory manner
- Sustainability still needs to be ensured





# THANK YOU VERY MUCH FOR YOUR ATTENTION!

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