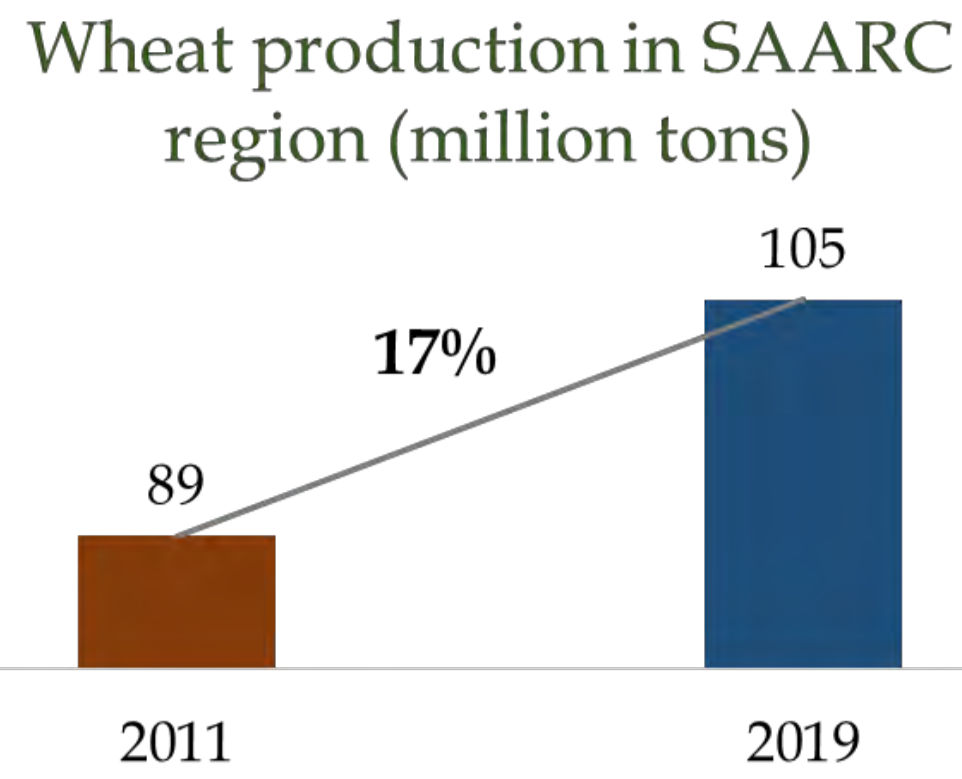


## Background

- \* South Asia has witnessed yield increase from 2.97 tons/ha to 3.5 tons/ha.
- \* India surpassed the remarkable milestone of 100 million tons of wheat production in 2018-19 (FAOSTAT).



## Key interventions contributing to the success of decade-long DRRW and DGGW projects

**Regional collaboration and synergistic efforts contributed towards genetic gains in wheat**  
Through cooperation in disease detection, collaborative breeding and seamless exchange of bio resources

**Building self-sufficiency of national centers in tracking pathogen movement**  
Through surveillance capacity building & promoting maintenance of data centers for national and global visibility of data

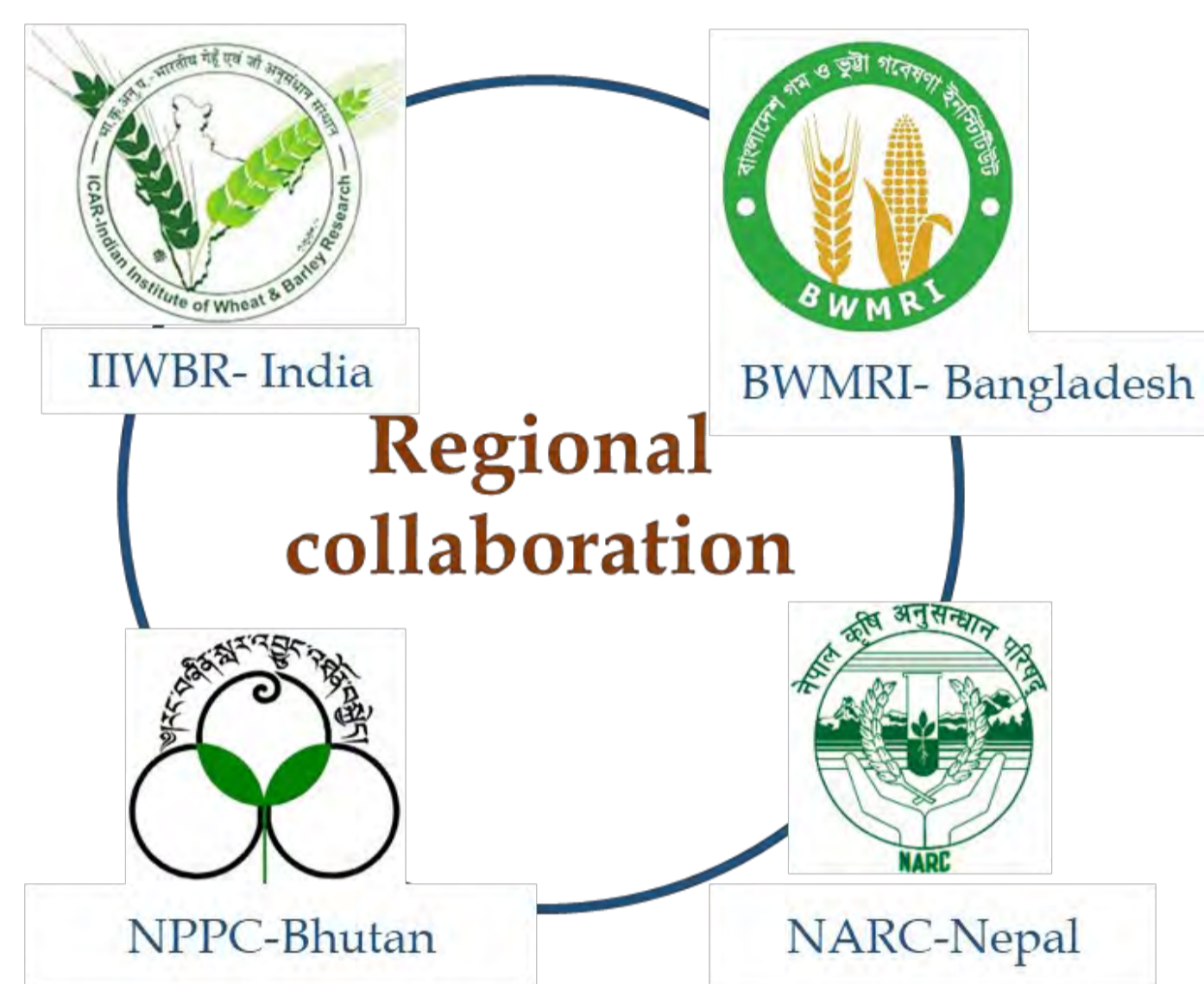
**Robust germplasm pool and pipeline development**  
Through regular screening of lines against rust and successful release of rust resistant varieties

**Building an innovative seed system**  
Through establishing seed village model for creating accessibility to quality certified wheat seed for smallholder farmers

## Regional collaboration and synergistic efforts contributed towards genetic gains in wheat

Through cooperation in disease detection, collaborative breeding and seamless exchange of bio resources

- Unparalleled and remarkable convergence of inter-disciplinary scientific effort in the SAARC region and continual exchange of information
- Bridged country gaps through pooled and responsive engagement of high level capacity
- Convergence of intra-country policy planners under BGRI/DRRW promoting continual engagement and synergised efforts
- ~300 scientists collaborated for improving wheat varieties and controlling deadly diseases.
- **Seamless exchange of seeds of resistant varieties**  
Towards overcoming the threat rapidly and in the process early delivery of superior varieties to farmers



- **India emerged as the hub of wheat research in the Subcontinent**  
Referral point for identifying resistant varieties through introduction of SAARC wheat disease monitoring nursery (WDMN)

## Building self-sufficiency of national centers in tracking pathogen movement

Through surveillance capacity building & promoting data centers for national & global data visibility

### Conceptualized and introduced the ICT-enabled SAARC Surveillance Toolbox application through web, mobile and tablet based platforms

#### Seamless exchange of surveillance data and information

- \* National, regional and global visibility (Rust tracker-CIMMYT) of data
- \* Strengthened national infrastructure

#### Developed human and institutional capacities across partner national research institutes

- \* Hands on training on art and science of wheat rust surveillance and methodology to early and mid-career scientists
- \* >350 scientists and researchers trained by global experts

#### Tool used by 95% of rust surveillance teams

- \* Standardized rust surveillance methodologies across the SAARC region

#### Additional regional investment

- \* Annual regional investment of ~US \$ 1.2 million by national partners
- \* Towards deployment of human resource for in-season surveillance

#### Tool customized for systematic Wheat Blast surveillance

- \* Early detection of Wheat blast in Bangladesh

#### Surveillance data repository created

- \* Data repository of >6000 records is created ensuring the global visibility of surveillance data of the region

## Robust germplasm pool and pipeline development

Through regular screening of lines against rust and successful release of rust resistant varieties

### Crop breeding focus extended from being limited to yield gains to multiple disease resistance, nutrition improvement, and abiotic factors

- ~2500 advanced wheat lines from SAARC region screened in international nurseries at Kenya and Ethiopia (hotspots)
- >35 rust resistant wheat lines released including 28 Ug99 resistant varieties  
Additional characteristics like climate smart, bio-fortified, resistance to other economically important diseases and abiotic factors
- SAARC Wheat disease monitoring nursery by ICAR-IIWBR regional station-Shimla
- **Human and institutional research capacity enhancement**  
~50 scientists have been trained on rust scoring, Marker assisted selection and advanced breeding practices for multiple wheat resistance

- \* **Successful withdrawal of the popular rust susceptible wheat variety PBW343 from India**
- \* **Release of blast resistant wheat variety (BARI GOM 33) in Bangladesh in a record period of 2 years**
- \* **Release of breakthrough Ug99 resistant variety (Vijay) in Nepal in 2010**
- \* **Bhutan released the variety after a period of 20 years Gumasokha ka and Bajosokha ka**

A recent study conducted to determine farm level varietal adoption using DNA fingerprinting to analyse the wheat varieties in vogue in the region:

**Nepal-** 'Gautam' and 'Vijay' are the most popular varieties used mainly in the plain areas of Nepal and their adoption in 2018 was 20.3% and 19.5% respectively and 'WK1204' is mostly used at hills of Nepal

**Bangladesh-** Among the cultivated varieties in the farmer fields, BARI Gom 25 represented 29% of the total collected samples followed by BARI Gom 24 (Prodid) 23% and BARI Gom 26 (16%)

## Building an innovative seed system at AFU, Chitwan, Nepal

Through establishing seed village model for creating accessibility to quality certified wheat seed for smallholder farmers

### First of its kind for end to end wheat seed processing unit in the region, now nationally recognized

- **Resulted in economic gains for small holder farmers in Chitwan area of Nepal**
  - **Build capacity for wheat seed systems for the private and public sector entities**
  - **AFU, now a knowledge and business hub for small holder farmers, companies and distributors**
  - **Many grain growing farmers are now gradually shifting to wheat seed production as their primary source of income**
  - **Encouraging adoption of new wheat seed released by NARC suitable for the region, increasing yield and disease resistance**
  - **University support for expansion and continuing the unit beyond project period through scaling up and transforming into a self sustainable unit**
- ~6500 wheat grain growers benefited by quality seed production and are a part of formal seed system
- ~250 farmers are actively associated with the program
- ~1.5-fold increase observed in the yields in 2019-20 compared to 2018-19
- ~Average year on year increase per farmer ~\$190 per hectare

## Awards and Recognitions

**BGRI Gene Stewardship Award Nepal (2012); India (2018)**  
To honor their efforts in national breeding programs, promoting durable wheat varieties and enhancing food security

~15 women scientists from the SAARC region received the **Jeanie Borlaug Laube Women in Triticum (WIT) Early Career Award**

To recognize the efforts of the most progressive farmers involved in the project, **AFU celebrated the success of 7 farmers at the first nationally recognized farmers' fair** with former prime minister honoring them

Wheat research centers in India and Bangladesh elevated to National Level Crop specific Research Institutes

**DWR to IIWBR, India (Wheat & Barley)**  
**WRC to BWMRI, Bangladesh (Wheat & Maize)**

## Acknowledgment



BILL & MELINDA GATES foundation

