



**Workshop on**  
**SUPPORTING RICE FARMERS IN ODISHA TO ADAPT TO CLIMATE CHANGE:**  
**STI Pathways and their alignment to SDGs**  
**05 October 2021, Bhubaneswar, Odisha, India**

**Background Note**

**STRINGS**

STRINGS<sup>1</sup> is a research project working to improve our understanding of how science, technology and innovation (STI) contribute, or not, to meeting the UN SDGs. STI plays a crucial role in providing new knowledge, artefacts and evidence-based guidelines on how to tackle the SDGs. However, the strong and constantly changing relationships between SDGs, development agencies, research councils, companies, researchers and other actors involved in research, innovation and the SDGs make it difficult to assess the contribution STI can make. Synergies, trade-offs and misalignments arise in every dimension.

STRINGS aims to provide an empirically based, globally produced analysis that accounts for these synergies, trade-offs and misalignments, and to provide decision makers with evidence and tools to help align STI with the SDGs.

Our research involves:

- Systemic data analysis, to map and visualise research and innovation activity through time and across countries, in relation to SDGs.
- **Case studies in India**, Kenya and Argentina to study micro and institutional mechanisms.
- Engagement with a diverse range of international experts and stakeholders to identify key areas of STI, and their past and future relations with SDGs.
- The development of policy pathways to align investments in STI to contribute to SDGs.

The result will be an unprecedented mapping of how different areas of STI relate, positively or negatively, to different SDGs and their complex interlinkages. We will publish a full report in November 2021. STRINGS is led by the Science Policy Research Unit at the University of Sussex, UCL and UNDP. It is working in partnership with several leading universities and organisations including CRISP<sup>2</sup>.

**Case Studies**

Central to our STRINGS case studies is the question of mapping of (mis) alignments between relevant SDGs and the STI Pathway being considered. Therefore understanding which pathway may better contribute to which SDGs and addressing questions about how STIs can be better steered to SDGs on the ground, in different contexts is important. It will be also crucial therefore to appraise which pathway is better aligned than another, to addressing a particular SDGs. To explore these ideas, we decided to undertake a case study in India focusing on the pathways that support rice farmers in Odisha to adapt to climate change.

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<sup>1</sup> <http://strings.org.uk/>

<sup>2</sup> <https://www.crispindia.org/>

Arora, S, Vijayabaskar, M, Vidya Sharma and Andy Stirling 2019. Sustainable Development through Diversifying Pathways in India, Economic and Political Weekly, Vol. 54, Issue No. 46, 23

## THE INDIA CASE STUDY (Rice, Climate Change, Access to Seeds)

Rice farming in India is characterized by increasing incidence of abiotic stresses, such as droughts, floods and salinity, making the enterprise risky and thereby adversely affecting the livelihoods of poor, smallholder farming households. Farmers need access to seeds of rice varieties that can tolerate droughts, floods and salinity.

### Pathways

Our literature review revealed the existence of two distinct pathways for promoting seeds of climate resilient rice varieties.

The first pathway is about breeding and promoting new high-yielding rice varieties that can tolerate abiotic stress and having other desirable characteristics using advanced science. In recent years, a number of stress tolerant rice varieties (STRVs) have been developed and promoted with subsidies from various government agencies. While both men and women farmers have expressed preference for STRVs and see these as a major risk management strategy to reduce crop losses<sup>3</sup>, ongoing research has indicated the non-availability of seed as a major constraint for continued use of these varieties by these vulnerable smallholder farmers<sup>4</sup>. This pathway has several actors engaged in ex situ conservation, breeding, testing, release, multiplication, certification, distribution and promotion and is funded by a range of global, national and state actors. Private sector also support and benefit from this pathway.

The second pathway is about in situ conservation and promotion of seeds of traditional rice varieties that can tolerate abiotic stress and having other inherent desirable characteristics. Most of these 'traditional' or 'indigenous' landraces have adjusted over long periods to regional ecosystems including environmental and climatic variations (from undulating lands to increasingly unpredictable weather). Many of these varieties are hardier to problems such as pests and drought and have other desirable characteristics such as taste and nutrition<sup>5, 6</sup>. Thanks to the efforts of the Civil Society Organisations (CSOs), many farmers now grow heirloom varieties and circulate their seeds to help safeguard these varieties from extinction. In the process, they reduce their dependency on external agencies for seeds and agro-chemicals and subsidies from the government. Though they are less dominant in the formal STI discourse, there are many CSOs, especially in Odisha (Pragati, Living Farms, MSSRF, etc), and other parts of India that are trying to identify 'indigenous' (heirloom) varieties, conserving them in situ (on farms) and making them available to all interested farmers. Their activities are also supported by several seed conservationists/seed champions<sup>7</sup>.

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<sup>3</sup> Anchal Arora, Sangeeta Bansal and Patrick S Ward. 2017. Do farmers value rice varieties tolerant to droughts and floods? Evidence from a discrete choice experiment in Odisha, India, *Water Resources and Economics*, 1-15

<sup>4</sup> Puskur R and Mathide Thonon. 2018. Understanding gendered modalities for sustainable adoption of stress-tolerant rice varieties in Odisha  
<https://sites.google.com/a/irri.org/strasa/resources/gender/understandinggenderedmodalitiesforsustainableadoptionofstress-tolerantricevarietiesinodisha>

<sup>5</sup> Deb D. 2009. Valuing Folk Crop Varieties for Agroecology and Food Security, *Independent Science News* <https://www.independentsciencenews.org/un-sustainable-farming/valuing-folk-crop-varieties/>

<sup>6</sup> Shylaraj, K S, Soumya G. Nadh and Shimi K. Chandran. 2018. Comparative analysis of grain quality and nutraceutical properties of selected rice varieties from Kerala *Current Science* VOL. 114, NO. 5, 10 MARCH 2018 <https://www.currentscience.ac.in/Volumes/114/05/1088.pdf>

<sup>7</sup> Sulaiman R V and Mittal, N. 2021. Conserving India's Rice Diversity, *Agricultural Extension in South Asia (AESAs)* <https://www.aesanetwork.org/conserving-indias-rice-diversity/>

## **STUDY DESIGN AND OBJECTIVES**

In our research we adopted a case study method which helped in providing detailed insight on the multiple perspectives of actors performing varied roles in these two pathways (breeding and in situ conservation) and how the STIs that are deployed are contributing to SDGs. The research started with an intensive review of historical and current initiatives around supporting rice farmers to enhance their productivity and adapt to varied biotic and abiotic stress conditions. We also reviewed the concept of framing, pathways and alignment that are at the core of the STRINGS project. We reviewed several documents including peer reviewed journal papers and the grey literature such as research reports, annual reports and project completion reports in this process.

The key case study research questions of the STRINGS project were as follows:

1. What are the different visible pathways and the problem framings associated with these pathways?
2. Which actors are associated with the different framings and which STIs are prioritized (by directing resources and enhancing production)?
3. Which pathways are perceived as dominant by different stakeholders?
4. What are the perceived (mis)alignments between the pathways and the relevant SDGs to be achieved? How might the alignment be improved (steering)?
5. What actors and relations are relevant to work with (for steering the STIs towards addressing the SDGs)?
6. What are the policy implications of the above analysis, particularly in terms of steering?

Key Informant Interviews based on a semi-structured checklist were conducted with actors associated with these pathways. Focus groups Discussions (FGDs) with farmers were also organised in 12 villages in and around Koraput to understand their perspectives on conservation and use of seeds. We also interviewed 20 key stakeholders in the rice sector (belonging to the 4 stakeholder groups) as part of the Multi-Criteria Mapping (MCM) exercise to appraise the two pathways.

### **WORKSHOP (5 October 2021, Bhubaneswar)**

Through this workshop, we are keen to:

- a. Share the findings and recommendations from this study focusing on these alternative pathways including their framings and alignment to SDGs, and
- b. Engage in a multi-stakeholder dialogue to fully understand the implications of these findings on promoting alternative pathways and for steering STI policies to better align with SDGs through funding, prioritisation and evaluation.

We have only invited 30 select participants to this workshop so that every participant will have opportunities to respond to the findings and we are keen to hear from each one of you.

Looking forward to meeting with you.

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