



Silver Springs of Sustainability

Three decades of partnership with farming communities
in India for sustainability of natural resources
and livelihoods

Development Support Centre & DSC Foundation

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Three decades of partnership with farming communities in India for sustainable natural resource management and livelihoods

Development Support Centre

And

DSC Foundation

Ahmedabad

March 2025

Silver Springs of Sustainability: Three decades of partnership with farming communities for sustainable natural resource management and livelihoods

Astad Pastakia and Sachin Oza

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Shri Anil Shah

Founder Chairman, Development Support Centre

OUR MISSION

To provide knowledge-based support to institutions, policies and programmes involved in promoting sustainable livelihoods and participatory natural resource management.

OUR VALUES

Participation, Equity, Efficiency, Cost-effectiveness, Sustainability, Honesty and Transparency

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development and
livelihood promotion



Shri Mohan Sharma

Member

Executive Director with
28 years experience in
Participatory Natural
Resource Management
and Livelihoods

List of Past Chairmen and Board Members of DSC

Shri Anil Shah (1994-2006)

Founder Chairman of DSC. Retired Civil Servant who served in various positions in the Government of Gujarat. He was Secretary and Commissioner Rural Development. He was also the first Chief Executive Officer of the Aga Khan Rural Support Programme (India). He is known in the country for his pioneering working in promoting participatory natural resource management programmes at the policy and practice level. He was actively contributing to the mission of serving marginal farmers until he passed away in 2007.



Shri Vijay Mahajan (2006-2017)

Social Entrepreneur and one of the pioneers of the micro-finance sector. He has promoted organisations such as PRADAN and BASIX. He served on the Rangarajan Committee on Financial Inclusion and the Raghuram Rajan Committee on Financial Sector Reforms. He was Chair of the Consultative Group to Assist the Poor (CGAP), a global micro-finance forum, comprising of nearly 40 bilateral and multilateral institutions and foundations in development. He is currently the Chairman of Rajiv Gandhi Foundation, New Delhi.



Shri V.B. Patel (2017-2019)

He served as Secretary Water Resources, Govt. of Gujarat and was the Chairman of the Central Water Commission. He is known for his expertise at the State and national levels and was invited as a member in several policy making forums. He was involved in the construction of several major and medium irrigation schemes in state and has played a major role in developing the water resources of Gujarat.



Past Board Members

- Shri Anita Karwal
- Shri Arvind Gupta
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- Shri Raju Shroff
- Dr Sudershan Iyengar
- Shri Sudhir Mankad

Chairman's Note

As a former civil servant, I was pleasantly surprised to be invited to serve as Chairman of DSC shortly after completing my tenure as the 22nd Chief Election Commissioner of India in 2018. My association with DSC began in 2009 during my time at the Narmada Valley Development Authority (NVDA), where I witnessed firsthand the dedication and resilience of its workers. Founded by Shri Anil Shah, a retired civil servant himself, DSC impressed me with its commitment to Participatory Irrigation Management (PIM), particularly in Gujarat, as I served on the Board of Sardar Sarovar Narmada Nigam Limited.

The organisation's work helped me appreciate the transformative power of community-driven natural resource management. So impactful was this experience that I could effectively brief NVDA's legal team during the Supreme Court case, which the government won in May 2011, paving the way for continued development of the Narmada projects that became a lifeline, especially for Gujarat and Madhya Pradesh. This reinforced my belief in participatory approaches as a powerful tool for addressing developmental challenges.

DSC's legacy, shaped by Shri Anil Shah and other founder members, is grounded in its focus on people, processes, outcomes, and lasting impact. I extend my heartfelt thanks to all Board members, staff, donors, government officers, partners, farmers and the rural community who have contributed to this remarkable journey. I hope the 30-year celebrations inspire DSC to continue building on this foundation with renewed vigour, furthering its mission in India and beyond.

O.P. Rawat, IAS (Retd.)

Chairman, DSC

Foreword

I am delighted to join the celebrations of DSC completing 30 years of working with rural communities in the western states of Gujarat, Maharashtra, Madhya Pradesh and Rajasthan, although its work has influenced policy and practice all over India. During the 11 years that I had the honour to serve as the Chairman of its Board, and even later, I have visited a number of field locations where DSC works and witnessed the impact of DSC.

As it started with surface water and participatory irrigation management in Dharoi, DSC has retained its leadership in this field at the level of practice and of policy. Later it broadened its approach to include groundwater through a watershed management approach in Meghraj. Learning from these projects, DSC then moved to an integrated surface and groundwater management approach to help farmers make optimum use of water, their most precious resource. Not forgetting other uses of water, for domestic and livestock purposes, DSC also integrated these dimensions in its work, thereby responding to women's concerns.

When Anilbhai asked me to join the DSC Board I was surprised as it had been a while since I had moved on from water resources work to microfinance and livelihood promotion. He told me he had done what he could for water, but for agriculture to be remunerative to farmers, they needed access to many other things, including credit, inputs and output markets. Thus he wanted me to use my experience in dealing with the agricultural value chain to help DSC's farmers earn more from agriculture. Towards this, DSC arranged for services like soil testing, bulk purchase of inputs, and collective marketing of produce through Farmers' Producer Companies.

DSC helped farmers facing the ravages of climate change to adopt resilient practices. Today they are approaching sustainability with profitability – *takau kheti, kamau kheti*. In every step, DSC worked participatively with the farmers and earned their trust in multiple locations. The credit for this

goes entirely to the DSC field staff who are very ably guided by the senior team members like Mohan and Sachin.

Anilbhai saw to it that DSC would not rest with just its direct work with communities in its project areas but reach out in various ways – by offering training programs and documents – both print and video – sharing its experiences with other development agencies, and academic and research institutions. DSC also convenes an NGO capacity-building forum called Sajjata Sangh which in due time spawned a state-level federation of Farmer Producer Organisations in Gujarat called GUJPRO. Most importantly, DSC shares its experience with state and central government agencies by sending its senior staff to sit on numerous committees and working groups. DSC is an outstanding example of a learning and contributing organisation.

I convey my best wishes to DSC's Donors, Board members, staff, and of course, the community members it works with on DSC's 30th anniversary. I am sure they will continue to do great work in the coming decades as well, thereby fulfilling the vision of DSC's founder, the late Anilbhai Shah.

Vijay Mahajan

Former Chairman, DSC

Executive Director's Note

Time flies—it feels like yesterday I joined DSC in 2001, with a brief gap in 2003 before rejoining in 2004. As DSC celebrates its 30th anniversary in 2025, I quietly mark 25 years with this remarkable institution. When I became Executive Director, Shri R.K. Sama, IFS (Retd.), Gujarat cadre told me, “Becoming the Executive Director of DSC is no ordinary achievement—it’s a unique and significant milestone...” It truly has been the most meaningful chapter of my professional journey.

I’ve had the privilege of working under the visionary leadership of our Chairpersons—Anilbhai, Shri Vijay Mahajan, Shri V.B. Patel, and Shri O.P. Rawat—and alongside our esteemed and dedicated Board members. I also acknowledge former Executive Directors Shri E.M. Shashidharan and Shri Sachin Oza, whose contributions continue to inspire us. Their collective guidance has been vital to shaping DSC’s mission.

After scaling Participatory Irrigation Management (PIM) and watershed development in Gujarat by 2008, we expanded to Madhya Pradesh, adapting our model to new socio-cultural and ecological contexts. Our success there led to initiatives in Rajasthan (2012–13), focusing on climate-smart agriculture, and Maharashtra (2015–16), promoting water stewardship in high water-use regions. These experiences proved that effective implementation could influence policy. They also enhanced our ability to scale programmes with speed, impact, and quality.

As Professor Robert Chambers noted, DSC is unique in its approach, centred on empowerment, equity, transparency, and community ownership. We’ve grown into a hybrid institution: part grassroots implementer, part research and advocacy platform, and part network builder.

This book traces that evolution, including the rise of allied institutions like Sajjata Sangh and the DSC Foundation. It captures voices from communities, staff, and sector leaders, highlighting how policies in natural resource management evolved through grounded experience. It

documents how community-based organisations nurtured by DSC still manage their resources sustainably after 20+ years.

A key strength has been our team—220 professionals and 500 community resource persons, many of whom have dedicated decades to DSC. Trained individuals continue to shape development work across India, embodying the spirit of our mission.

This book offers readers a glimpse into that vision, mission, and DSC's approach to people-centric development and community empowerment through participatory natural resource management. The book also explores the evolution of Participatory Irrigation Management, and Participatory Watershed Management—how they took root in Gujarat and were adapted elsewhere. It offers insights for practitioners, researchers, policymakers, and students alike.

Beyond celebrating the past, this compilation looks forward. It addresses today's challenges, such as climate change, and offers community-based, agroecological solutions rooted in experience and resilience. What began in one village in 1994 has now reached over 1,200. This growth is thanks to thousands of villagers, professionals, donors, and partners who have walked this journey with us.

Creating this book took nearly three years, and I'm deeply grateful to everyone involved—especially Dr Astad Pastakia and Shri Sachin Oza, whose thoughtful authorship brings our story to life. A special thanks to Shri Chitra Nair, Senior Journalist, Ahmedabad, Shri Himanshu Kikani (Aalekhan), Ahmedabad and all our supporters.

DSC's journey has been one of humility, hope, and shared learning. As we look ahead, we remain committed to co-creating solutions that uplift rural communities with integrity, passion, and purpose.

Mohan Sharma

Executive Director, DSC

Preface

In 2024, DSC completed three decades of working intensively with farming communities – more specifically marginal and small farmers – in western India. The board of directors were keen on celebrating this event in various ways. One of these was to come out with a document that would capture the journey in an insightful way, covering major challenges, innovations, achievements, learnings and conceptual advances. The publication would do justice to three decades of dedicated efforts, where DSC partnered with farming communities in Gujarat and neighbouring states to tackle a variety of issues that affected farming and farm-based livelihoods.

We set about the task by asking a few critical questions:

1. *What makes DSC the unique organisation that it has become over time?*
2. *What kind of impacts did DSC make on the farming community and associated stakeholders? How useful and lasting have these impacts been?*
3. *How were these impacts created?*
4. *How can DSC continue working in this direction with positive outcomes?*
5. *How can it inspire others to do what it has done?*

As we travelled the journey of rediscovering DSC, we kept the above questions in mind, which stayed with us as a guide throughout the process.

DSC's approach was highly participative and as it moved from one issue to another, a *certain kind of bonding* took place with the farming communities, *based on trust and mutual respect*. Over time it made various initiatives through partnerships with government and non-government agencies, CSR foundations, donor agencies, academic institutions and other research organisations. It also mobilized funds and took the initiative to learn about the grassroots realities and develop its own approach to tackle practical problems.

This work would not have been possible if DSC had not itself become a 'learning organisation'. The wealth of information, including published and unpublished documents available became a major source of information to summarize the key elements of success in each sub-sector. Its ability to help other stakeholders through training, developing and disseminating Information Education and Communication (IEC) material, capacity building, hand-holding, networking and advocacy can be attributed largely to its investment in research and documentation. As it has grown beyond the boundaries of its home state of Gujarat to three other states, it has realized the importance of maintaining this strength. The birth of the DSC Foundation as a separate institution focusing on research and documentation in 2012 was a manifestation of its need to retain this important feature of the organisation.

While there are a lot of successful civil society organisations in India that have made valuable contributions to the development of rural and farming sectors, DSC is certainly one which has done things in a way which is both unique and impactful. Not surprisingly, the effort made in writing about its experiences and achievements itself has been an educational experience.

By design, the authors represent a partnership between an insider and an outsider, a practitioner and a researcher. The balancing of perspectives was considered vital in delivering a product which would be of value to all stakeholder groups. The independent recollections and reflections of key stakeholders is an additional measure, which would provide a well-rounded perspective to DSC's work. However, in case of certain omissions and commissions, the onus lies entirely on us as authors and not on the organisation.

This documentation shows how DSC has been able to respond to the multiple challenges faced by rural communities by collaborating with them and several stakeholders. We would like to believe that we have delivered a knowledge product of value for practitioners, donors, policymakers and academicians and sincerely hope that they will find it useful.

Astad Pastakia, Sachin Oza

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List of Abbreviations

Acronym	Full Form
ABC	Attitude, Behaviour, Change
ACT	Arid Communities Technology
AGPCL	Adimjati Gramoday Producer Co. Ltd
AIC	Agriculture Insurance Company
AKRSPI	Aga Khan Rural Support Programme (India)
ATMA	Agricultural Technology Management Agency
BAIF	Bharatiya Agro Industries Foundation
BCI	Better Cotton Initiative
CADP	Command Area Development Programme
CAPART	Council for Advancement of People's Action and Rural Technology
CEO	Chief Executive Officer
CGAP	Consultative Group to Assist the Poor
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
CWC	Central Water Commission
DKVPCL	Dhari Krishak Vikas Producer Company Limited
DRDA	District Rural Development Agency
DSC	Development Support Centre
DSCF	DSC Foundation
DWDU	District Watershed Development Unit

FICCI	Federation of Indian Chambers of Commerce & Industry
FPC	Farmer Producer Company
FPO	Farmer Producer Organisation
GHG	Greenhouse Gas
GIDR	Gujarat Institute of Development Research
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
GIS	Geographic Information System
GRKM	Gujarat Rajya Krushak Manch
GUJPRO	Gujarat-based federation of FPOs
HDFC	Housing Development Finance Corporation
IAS	Indian Administrative Service
ICA	Irrigable Command Area
IEC	Information, Education, Communication
IIED	International Institute for Environment and Development
IFS	Indian Forest Service
IPCL	Indian Petrochemicals Corporation Ltd
IRMA	Institute of Rural Management Anand
IWRM	Integrated Water Resources Management
IWMI	International Water Management Institute
IWMP	Integrated Watershed Management Programme
KPCL	Krushidhan Producer Company Limited
KVK	Krishi Vigyan Kendra
LEEMP	Local Empowerment and Environmental Management Project (Nigeria)

LEISA	Low External Input Sustainable Agriculture
LEPNRM	Livelihoods Enhancement Program – Natural Resource Management
LRP	Local Resource Person
MARVI	Managing Aquifer Recharge and Village Level Intervention
MGNERGA	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	Management Information System
MPRLP	Madhya Pradesh Rural Livelihoods Project
MSP	Minimum Support Price
NABARD	National Bank for Agriculture and Rural Development
NCNF	National Consortium of Natural Farming
NDDB	National Dairy Development Board
NF	Natural Farming
NGO	Non-Governmental Organisation
NRLM	National Rural Livelihoods Mission
NRM	Natural Resource Management
NTFP	Non-Timber Forest Produce
NVDA	Narmada Valley Development Authority
NVKPCL	Narmada Valley Kisan Producer Company Limited
OBC	Other Backward Class
PGWM	Participatory Groundwater Management
PIA	Project Implementing Agency
PIM	Participatory Irrigation Management
PLA	Participatory Learning and Action

PMFBY	Pradhan Mantri Fasal Bima Yojana
PNMR	Participatory Natural Resource Management
PRA	Participatory Rural Appraisal
PRADAN	Professional Assistance for Development Action
PRI	Panchayati Raj Institution
PWDP	Participatory Watershed Development Programme
RRA	Rapid Rural Appraisal
SFAC	Small Farmers Agribusiness Consortium
SHG	Self Help Group
SMS	Short Message Service
SOAS	School of Oriental and African Studies (University of London)
SS	Sajjata Sangh
SSNNL	Sardar Sarovar Narmada Nigam Limited
UNDP	United Nations Development Programme
VGC	Village Groundwater Cooperatives
VIKSAT	Vikram Sarabhai Centre for Development Interaction
WALMI	Water and Land Management Institute
WASMO	Water and Sanitation Management Organisation (Gujarat)
WASH	Water, Sanitation and Hygiene
WASSAN	Watershed Support Services and Activities Network
WBCIS	Weather Based Crop Insurance Scheme
WRD	Water Resources Department
WUA	Water Users Association

Chapter-1

Pursuing Sustainability: Partnerships, Processes and Policies for Sustainable Natural Resource Management and Livelihoods



**“Unique is not a word to be used lightly, yet to my mind
DSC is an organisation that is unique.”**

- Robert Chambers, *Development Scholar*

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1.1 Introduction

The primary stakeholders of DSC's interventions are farmers—mainly small and marginal, who now constitute almost 80% of the total farming population in India. The other important stakeholders include development workers from both government and non-government organisations, technology institutions, extension agencies, donors and policymakers. The idea of yet another knowledge product was to create a landmark document that all its stakeholders could relate to a product that both practitioners as well as academicians would find useful because of the insights gained from three decades of action, reflection, documentation, research and advocacy.

Based on the needs articulated by farming communities, it straddled several sub-sectors involving participatory management of natural resources like water, land and forests. The proper management of these resources was critical for ensuring, healthy soils, healthy micro-climates and sustainable agriculture. In addition, farmers needed help in accessing new technologies and dealing with markets without being exploited. A range of projects were implemented which were designed to:

- Build capacities of rural communities for integrated and effective management, equitable distribution and sustainable development of their water resources (both surface and ground).
- Promote sustainable and profitable agriculture by demonstrating climate change adaptable methods of farming, harnessing new low cost and user-friendly technologies that would improve productivity as well as the economics of farming without compromising on the ecology.
- Empower women, especially those from the marginalised section of the community through the self-help group movement.
- Facilitate collective organisations of marginal farmers to deal

with markets effectively through both backward and forward linkages to eliminate their exploitation by inefficient supply chains and unscrupulous traders.

- Build the capacities of other stakeholders on participatory management of natural resources, sustainable agriculture and collective enterprise development.
- Create an enabling environment at the state and national levels for the effective participation of communities and civil society through research, documentation, networking and policy advocacy.

We tried to retrace the steps of DSC's journey from one sub-sector to another—canal irrigation management, watershed development, groundwater and integrated water resource management and sustainable agriculture—all of which culminated in the formation of farmer producer organisations (FPOs). FPOs are seen as change agents that transform natural resource management and agriculture within a target area and lead farming communities to the path of sustainability.

This book is not a summary of all the work done by DSC over three decades. Rather, it is an effort to document the growth and evolution of an institution in terms of the ideas, innovations, initiatives, institutions and working approach that it has promoted. Wherever data is provided, it is mostly from internal studies and documents. This data is used sparingly to either provide a sense of the scale of operations or to bring out innovative aspects of the initiative. Readers interested in knowing more about a particular initiative or project may refer to DSC's annual reports and/or specific reports/studies, accessible from its head office in Ahmedabad or its website (www.dscindia.org).

Structure of presentation:

The next two chapters cover the sub-sectors of participatory canal water management (Chapter 2) and watershed development (Chapter 3). DSC was very active and impactful in these during the first decade-and-a-half, working closely with the state governments and other key stakeholders.

Chapter 4 continues with the theme of water management, taking it to the next level where groundwater depletion becomes a major issue, leading to an even more important issue of integrated water resource management. A parallel development was the movement into the agricultural sector and pushing the agenda of making it ecologically sustainable as well as economically viable at the same time (Chapter 5). A natural extension of making agriculture economically viable, especially for marginal farmers, was to get them organised in order to deal with markets more effectively. Chapter 6 examines what it takes to organise Farmer Producer Companies in different cultural and agro-ecological conditions. The next two chapters deal with institutional extensions. Chapter 7 describes the evolution of *Sajjata Sangh*, initiated by DSC as a common purpose network of civil society organisations in Gujarat, in order to create larger social impacts. Chapter 8 briefly describes the emergence of DSC Foundation during the last decade and its critical role in keeping alive the legacy of DSC as a learning organisation. Generating knowledge from the field and leveraging it for policy advocacy as well as capacity building of other institutions has been one of the hallmarks of DSC's journey. The concluding chapter provides a few thoughts of the authors after reflecting on this unique journey of both grassroots workers as well as eminent board members and leaders over a period of three decades.

We have attempted to cover the six main sub-sectors mentioned above with a common structure. Each chapter is preceded by an abstract. The chapter is presented in three parts. Part A provides a summary of the context, the nature of interventions and their outcomes. Part B includes recollections and reflections of individuals representing a spectrum of stakeholder groups. Part C concludes with a brief assessment of the path covered, challenges ahead and futuristic trends including, where relevant, a few exciting ideas being tested by the organisation.

In addition, there are two chapters that cover the institutional growth over time. The first one is on *Sajjata Sangh*, a network of NGOs promoted by DSC, which share a common goal of promoting sustainable natural resource management and livelihoods in rural Gujarat. *Sajjata Sangh* itself has promoted a state-level institution called GUJPRO, which supports

FPOs in Gujarat. The second one is on *DSC Foundation*, which has taken up the role of documentation, research, outreach and advocacy at the sectoral level during the past decade.

1.2 Genesis and Early Days

To answer the question, “What makes DSC unique?”, one must retrospect on the genesis and formative years of the organisation. What was the need for such an organisation during the early 90s? What kind of institution was needed to meet that need? What kind of leadership was needed and where did it come from? We have relied mainly on the recollections and reflections of the first Executive Director E. M. Shashidharan and Sachin Oza who followed him and is currently the Executive Director of the DSC Foundation. While Shashidharan, or ‘Shashi’ for the team, talks about the genesis of DSC, Sachin provides a panoramic view of the early days. These accounts are supplemented by Nafisa Barot, a founder member and also a current member of the Board of Directors. The later years are reflected upon by Mohan Sharma, the present Executive Director of DSC, in the concluding chapter.

1.2.1 Genesis

In 1993, Shashi who had been working in Aga Khan Rural Support Programme (India) AKRSPI for several years, took a brief sabbatical from his work to understand policy issues related to water and land resources development. Joined by Nafisa Barot and some colleagues in Utthan, Shashi met a group of individuals and civil society organisations of Gujarat that had been working for rural development for long. They were active in the areas of health and education but were keen on initiating work in the field of natural resources management. During those days, development and management of natural resources was largely the prerogative of the government and there was little involvement of rural communities in the planning, implementation and management of watersheds or canal irrigation systems.

It became evident from the interactions that there was an acute need,

and indeed an expressed demand, for an intermediary agency (between funders and implementers) mandated to build capacities among NGOs and CBOs to design, implement and manage sustainable and equitable natural resource management programmes. Since there were no “support organisations” at that time, there was a dilemma on the nature, design and functions of such an organisation.

As recalled by Shashi:

“When I discussed with Barry¹ the idea of AKRSP providing support to these NGOs, he was quite supportive. He said he was even toying with the idea of starting a consulting service within AKRSP.”

“... After the initial enthusiasm, Barry had second thoughts. He, however, offered another idea. If I was willing to get a separate outfit going, he was willing to make AKRSP’s resources available to such an outfit. So, a few of us—Nafisa from Utthan, Vivek Khadpekar from VIKSAT, Raju Purohit (a Gandhian) and I—made the first attempt at the idea of a support organisation. The name *Development Support Centre* was coined around November or December of 1993.”

“... I was the only full-timer. Others had their hands full with their own NGOs/ jobs or pursuits. Getting them together for the first three meetings was, mildly put, a challenge. By January 1994, I was broken and angry... I all but gave up the idea!”

Nafisaben recalled that around that time Shashi, Vivek and she used to think about a possible network (later called *PRAVAH*) which would focus on drinking water issues in Gujarat. Anil Shah (known to most colleagues, farmers and friends as “Anilbhai”) also used to join the discussions which took place at Utthan. Since he had completed his term as Chief Executive Officer of AKRSP, he was relatively free. As they did not want to let his experience be wasted in retirement, they approached him with the idea of DSC, to which he responded positively.

To continue the narrative in Shashi’s words,

“... He thought the idea was good. He offered to be the Chairman if I was

willing to take up the role of Executive Director. He asked me to promise that I would be around for at least five years (we youngsters in AKRSP were notorious snowflakes those days—handing in resignations for the flimsiest of reasons!). A new “trustee mandal” was constituted, comprising Anilbhai, Hasmukh Shah (ex-IPCL chair), Harnath Jagawat (Director, NM Sadguru Foundation), Nafisa Barot and I. We then invited two or three more to be on the first Board of Governors. The unofficial launch of DSC happened on 1st April 1994, April Fools’ Day!

“Anilbhai’s wife Induben contributed Rs 2,000 towards office administration and within a month or two we got a pledge of Rs 1,50,000 from HDFC thanks to Nasser Munjee, and a loan of Rs 1,00,000 from Hasmukh Shah’s son². The organisation was registered with the Registrar of Societies and Charity Commissioner. Sachin Oza was loaned from Utthan, and our first recruit was Arvind Prajapati, a typist who was until then working for a lawyer who paid him slavish wages. I remember the interview... he asked me sheepishly “Will you at least give me Rs 600 per month?”, the amount that his lawyer-boss was paying him then. He was a happy man when he eventually learnt that his salary would be Rs 900!

As recounted by Nafisaben,

“DSC was initially seen as an organisation that would provide technological support to small voluntary organisations working on natural resource management. However, it was soon evident that it would also need someone who had experience working with communities. So, we (Utthan) “lent” Sachin to them for one year. Sachin liked it so much that he eventually remained with DSC!”

As concluded by Shashi,

“... That is how DSC survived its second avatar and got going! By the end of the first year, we had a team of seven programme and office staff. By 1997, I think we were close to 40!”

1.2.2 Early Days

Nafisaben recounts:

“... We used to discuss a lot about our approach at that time. We then decided that DSC should be doing what others were not. We saw a big gap in the canal irrigation sector where, except for AKRSPI, no civil society organisation was involved. So, we started direct implementation in the area of Participatory Irrigation Management.”

“I had a strong inclination towards building a gender-sensitive organisation. We would discuss concepts of equity and justice and how we could incorporate people’s empowerment and gender sensitivity within the organisation itself. This resulted in inducting several women members in the organisation.

In one of our field trips, we were talking to bankers. We noted that all the men there were talking about irrigation, but no one was concerned about drinking water, which was predominantly seen as a woman’s responsibility. Anilbhai took a keen interest in understanding the issue of gender equity. He acknowledged that it was not his expertise, and he did not know how to go about it. But he was willing to learn and take steps to achieve it.”

“One thing I admired about Anilbhai was the way he went about building institutions. He believed in a few principles which made DSC a truly professional organisation working in the social sector. For example:

- i. He believed in creating strong systems so that tasks would get done on time simply by following established protocols.
- ii. He created an organisational culture that was participatory, in which members could express themselves freely.
- iii. He emphasised the need to be a “master in what we do”, hence the importance of studying the issues threadbare, looking for evidence from the ground and strengthening one’s understanding before making plans for action or advocacy.
- iv. He knew that dialogue with the government was essential to influence policy.”

Sachin's reflections on the formative years:

“Through the concerted efforts of several NGOs in the country, the Central Government launched the Integrated Watershed Management Programme (IWMP) in 1994, and the Government of Gujarat introduced Participatory Irrigation Management (PIM) in 1995. These programmes emphasised a bottom-up, decentralised approach through the active participation of the community in developing and managing the water resources. However, there were very few examples of community-led management of canals or watersheds, and these were all being implemented on an experimental/pilot scale. Hence, neither the community and civil society nor the bureaucracy were clear about the processes for translating these policies into practice. DSC's main mandate at that time was to:

- i. Play an intermediary role by working with the government department on one hand and farming communities and small NGOs on the other.
- ii. Bridge the trust deficit among the bureaucracy, NGOs and the community and build a common vision for participatory natural resource management programmes such as watershed management and PIM.
- iii. Build the capacities of the stakeholders—NGO staff, government officers and rural communities.
- iv. Successfully demonstrate participatory NRM practices at the ground level.
- v. Create an enabling environment for scaling up and sustaining such practices through objective feedback to the government.

“... When the DSC team visited different regions of Gujarat and interacted with rural communities, NGOs and government departments, it was evident that water availability and its management was a major problem in both rainfed and irrigated areas. Many canal networks were in a dilapidated condition and caused water-logging in the head-reach and high deprivation in the tail-end regions. As a result, the actual irrigated area was much

less than the designed potential. Similarly, in rainfed areas, farmers could grow only Kharif crops. There was heavy soil erosion and hardly any water harvesting structures existed. Production risks for crops were high and productivity was low. To derive sustainable solutions to these problems, DSC collaborated with the Government of Gujarat to promote and upscale Participatory Irrigation Management (PIM) in Mehsana and Sabarkantha districts and Participatory Watershed Management in Amreli and Sabarkantha districts.”

“... Thus, the journey of the newly formed organisation began in right earnest, with an important mission, which was:

To provide knowledge-based support to institutions, policies and programmes involved in promoting sustainable livelihoods through participatory natural resource management.

It consciously adopted the ‘*Practice* → *Knowledge* → *Policy*’ framework to make impacts simultaneously at the community and policy levels. DSC had the advantage of a highly competent chairperson who, being a past government officer, was able to build bridges between the government machinery and the farming community with relative ease.”

1.3 Participatory Approach

1.3.1 Partnership with Farming Communities

DSC was one of the few agencies in India that internalised the practice of Participatory Rural Appraisal (PRA) while dealing with rural communities. One of the main reasons was the Founder Chairman’s background. As a youth, Anilbhai was greatly influenced and inspired by Mahatma Gandhi and his ideology. Even during his early days as a Block Development Officer with the state government, he had started participatory approaches while working with farmers and other rural people. He had a great belief in people’s capacities and strengths. However, he felt that they needed to be facilitated by an external agency such as DSC to make realistic assessments of their common problems and to explore possible solutions.

Anilbhai's subsequent interaction (during the early eighties) with Robert Chambers, an eminent social scientist from IDS Sussex and pioneer of PRA, further strengthened his ideals about participatory natural resource management and led to collaborative trials in rural Gujarat resulting in the validation of its principles. These principles soon became part of DSC's entire approach to working with farming communities. The principal idea with which both Anilbhai and Robert resonated was of "*putting the last first*", which also happened to be the title of a popular book written by the latter in 1983³. The method and practice of PRA was clarified by him in a paper published in *World Development* in 1994 as follows:

"PRA describes a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions."

"...Dominant behaviour of outsiders may explain why it has taken until 1990s for the analytical capabilities of local people to be better recognised and for PRA to emerge, grow and spread." (Chambers, 1994)⁴

He further clarifies that information in PRA is more shared and owned by local people, unlike in Rapid Rural Appraisal (RRA), its predecessor, where information is more elicited and extracted by outsiders.

DSC's staff soon became conversant with these participatory methods, such as mapping and modeling of natural resources by community, village transect walks, matrix scoring of local problems and their solutions as well as seasonal calendars and chose the ones best suited to local conditions. But more than the methods and tools, it was the attitude of approaching the community with respect both for their local and traditional knowledge and for their contribution in feeding the world that led to the bonding and partnership so necessary to make all interventions work. DSC had brought out a small booklet written by Anilbhai, providing "sequential steps for empowering communities". In June 2007, soon after Anilbhai passed away, the IIED⁵ published this article in his memory in *Participatory Learning and Action*.⁶ It outlined 13 steps which serve as a process guideline to practitioners for effective community mobilisation and development of self-reliant community. It is valued and practised by

development practitioners both within and outside DSC even today (for details see Chapter 2).

1.3.2 Partnership with Government for Implementation of Projects

The state government machinery also accepted DSC as an important partner in government schemes and projects like Participatory Irrigation Management (PIM), Integrated Watershed Management Project (IWMP) and NABARD's scheme for watershed management and FPO promotion, where they were expected to work closely with farming communities. DSC has been playing an important role in providing evidence-based inputs to the government departments for designing and piloting such schemes. As a Project Implementing Agency (PIA), DSC could understand the community's needs and build their capacities to plan, implement and manage their natural resources and irrigation schemes. It created the much-needed social capital and simplified technical procedures, without which the entire investment in creating water harvesting structures and canals would have been wasted.

It facilitated vibrant Water Users Associations (WUAs) that could regularly carry out operation and maintenance of canals, ensure equitable distribution of water, resolve conflicts, ensure timely payment of water charges and liaison with the Water Resources Department (WRD). These WUAs in the Dharoi Irrigation Project in Gujarat and Maan and Jobat Irrigation Projects in Madhya Pradesh have been a major source of inspiration for other WUAs in the country.

Since 2023, DSC is an implementing partner for the *Atal Bhujal Yojana* in Mehsana district of Gujarat. With its slogan of "More crop per drop" it has created awareness on groundwater amongst the rural communities and enabled them to prepare participatory water-budget plans. These plans are now being implemented by village-level Groundwater Committees and Local Resource Persons (LRPs) known as *Bhujal Jankars*. The committee is mobilising resources through various government schemes. As in PIM,

the *Bhujal Jankars* and the committee members are motivating others with their deep understanding of groundwater issues.

1.4 DSC as a Grassroots Facilitator

Over a time-span of three decades, DSC found itself spreading out geographically from Gujarat to other neighbouring states in western India. It also realised the need to spawn new institutions under changing circumstances. Finally, but most importantly, its evolution must be understood in terms of the thought process which led to new ideas, innovations and interventions resulting in thematic shifts.

While Figures 1 and 2 provide an overview of this growth and evolution, the process by which these changes took place is discussed briefly. DSC's role as a resource agency and policy influencer has continued all through, as discussed in the subsequent sections.

1.4.1 Geographical Spread

DSC soon realised that working only in Gujarat was not enough to influence national policy and making them more people-centric. Since water and agriculture are state subjects, the rules and regulations vary from state to state. Also, the nature of agriculture varied a lot depending on the terrain, rainfall patterns, micro-climates and available natural, human and social capital. Hence, there was a need to engage with different climates and cultures.

At the same time, DSC's success in making desirable impacts at the field level led to a growing demand from government agencies, donor agencies and others to extend its work in other geographies and contexts. It therefore gradually extended its area of work to the neighbouring states of Madhya Pradesh, Maharashtra and Rajasthan. As of 2023, DSC's engagement for direct implementation was in four states, covering more than 1,000 villages in 15 districts (Figures 1 and 2).

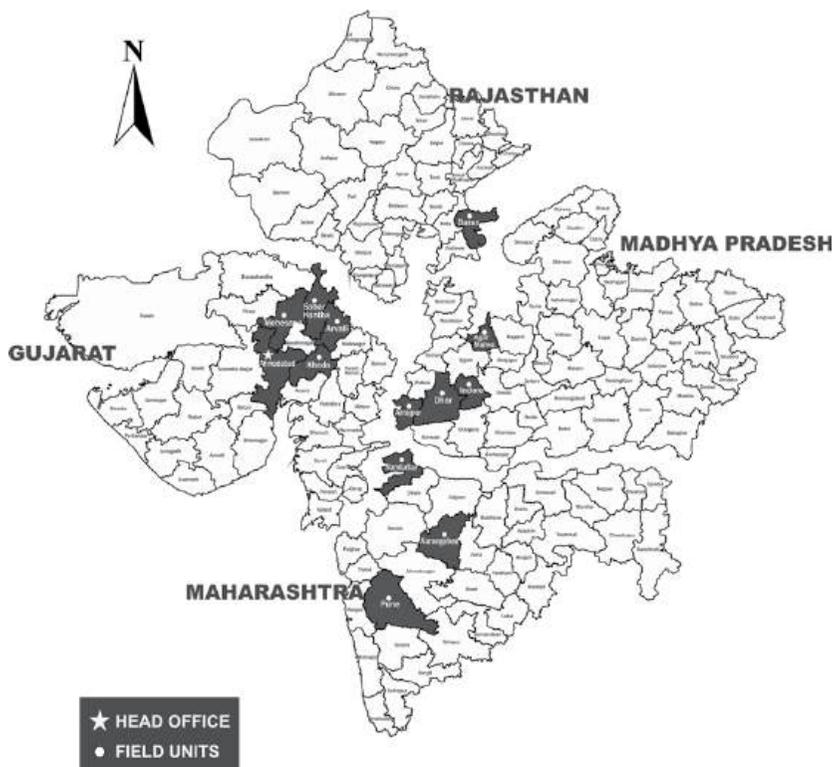


Figure 1: Areas of direct implementation

1.4.2 Thematic Shifts

DSC's initial years were spent as a support agency in the water sector to bridge the gap between government departments and small agencies implementing projects at the grassroots level. Long after the projects on canal management in irrigated areas and watershed management in dryland areas were over in 2008, DSC continued to work with farmers. Frequent dialogue with the communities in various geographical areas and cultures ensured that it could find its bearings and work towards the emerging challenges of farmers. Figure 2 tries to capture the major thematic shifts over time.

Water availability and management of this crucial resource equitably and sustainably began to be practiced in DSC's project areas. This, however, impacted productivity only marginally since a wide range of

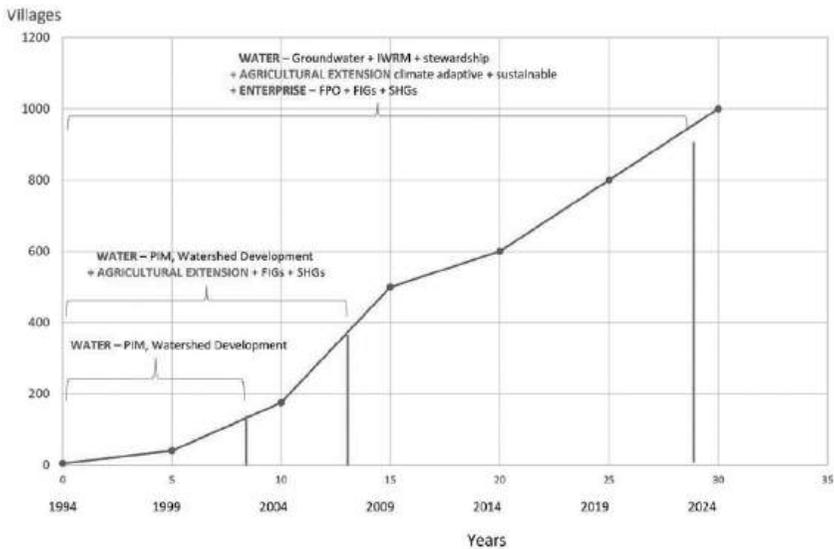


Figure 2: Mapping of thematic shifts over time

issues adversely affected it. The question of making agriculture both sustainable and economically viable again now became a preoccupation with the leadership at DSC. DSC was among the first in Gujarat to promote a Farmer Producer Company (FPO), when an amendment in The Companies Act (2003) offered this opportunity. Water management continued to be a major issue since excessive withdrawal of groundwater had led to its depletion over time, making water security the next major problem for the development sector.

Water to Wealth

DSC realised that enhancing water management alone was not enough, as agriculture was plagued by several problems. Indiscriminate use of chemical fertilisers and pesticides affected soil health, micro-climates and farmers' health. Uncertain weather conditions exacerbated by climate change have made it riskier. The lack of market information left marginal farmers at the mercy of traders. These issues were compounded by the near absence of an agri-extension system that could guide marginal farmers, constituting 70% of the farming population.

In 2008, under the leadership of Shri Vijay Mahajan, Chairman of DSC, the organisation developed the “Water to Wealth” approach i.e. a systematic plan for promoting sustainable and profitable agriculture beyond water interventions with the following key objectives: *productivity enhancement, cost reduction, risk mitigation and increased price realisation through value addition and market linkages*. Collective action and enterprise were necessary to make its initiatives sustainable. It therefore visualised three types of community institutions for the three verticals which were being created:

- i. Water and land management
- ii. Sustainable agriculture and
- iii. Collective enterprise development

For promoting sustainable agriculture and enterprise development, a three-tier organisation comprising Farmers’ Clubs and SHGs at the hamlet level, organising committees at the cluster level and a Farmer Producer Company at the regional level was needed. The FPO would be supported on one side by the savings and credit federations and by the water users’ associations on the other. Chapter 5 spells out the details of this strategy.

DSC has always believed that women have an important role to play in the management of natural resources, including agriculture. It has tried to ensure that they effectively participate in the decision making at the village level through the formation of SHGs, Farmers’ Clubs, Enterprise Groups and Federations. It has also developed a cadre of women leaders such as Laxmiben in Meghraj taluka, Gujarat, Shantadidi in Manawar and Ujwala Ghadge in Narayangoan, Pune, Maharashtra. These women have played a pioneering role in ensuring that women’s voices are heard by PRI members and Government Officers.

Although the water sector has been the major focus connecting sustainable agriculture and livelihoods, DSC has also worked on other related issues such as horticulture development, social forestry, dairy development, women’s SHGs, drinking water and sanitation, nutrition security, alternative energy systems (solar-based irrigation, biogas from agricultural waste), etc. Details of such interventions are available in the annual reports. These are implemented with the same ethos as in the water sector and represent

the entire gamut of interventions related to participative natural resource management.

Recent shifts and futuristic ideas

Current interventions in the states of Maharashtra, Rajasthan and Madhya Pradesh are proving to be new learning grounds using the latest technologies such as:

- Use of GIS Informatics in Planning of Natural Resource management
- Robotics (Drone) for planning and monitoring of field interventions
- Disruptive technologies for improving productivity and reducing drudgery
- Low carbon agriculture, organic farming and carbon financing
- Climate-smart agriculture among others
- Non-Conventional Energy
- Landscape Approach to Natural Resource Management
- Participatory Livestock Management

On the organisational front, carbon financing has been taken up on a pilot basis by a group of institutions, which may turn out to be path-breaking. The idea of watershed development has been taken to river basin level for larger impacts on natural resources. Much of this is discussed in Chapter 5 which deals with the critical issue of managing the transition to climate resilient holistic/ inclusive and sustainable agriculture.

In addition, DSC has initiated pilot projects for improving biodiversity conservation. This suggests a need/scope to look at ecosystem services in a more robust manner using internationally accepted parameters for all its NRM-related projects.

For a more detailed mapping of the thematic shifts over three decades of DSC's existence, see Table 1.

Table 1: Mapping of thematic shifts over time

Theme	State and Year of Initiation	Replication in Other States
Water and Land Management		
Participatory Irrigation Management	Gujarat 1994	MP (2009), Maharashtra (2016)
Watershed and Rainwater Harvesting	Gujarat 1994	MP (2012) Rajasthan (2015) Maharashtra (2017)
Participatory Drinking Water	Gujarat 2002	MP (2012) Maharashtra (2020)
Groundwater Management	Gujarat 2012	Maharashtra (2018) MP (2023)
IWRM and Water Stewardship	Gujarat 2015	Maharashtra (2018) MP (2023)
Landscape Development	Maharashtra 2020	MP (2024) Rajasthan (2019)
Spring-shed Development	Maharashtra 2023	-
Agri-extension		
Extension of Sustainable Agriculture Practices (through LRPs, FIGs, SHGs)	Gujarat 2008	MP 2014 Rajasthan 2015 Maharashtra 2018
Extension of Climate Smart Agriculture	MP 2012	Rajasthan 2015 Maharashtra 2017
Women's SHG	Gujarat 1994	MP 2009, Rajasthan 2015 Maharashtra 2016
WADI Development Program	Rajasthan 2017	Maharashtra 2020
Biodiversity Promotion in Crops and Varieties	Gujarat 2021	Maharashtra 2018
Supporting Innovative Organic Farmers/ Natural Farming	Gujarat 2012	MP and Maharashtra 2020 Rajasthan 2022
Livestock Development	Maharashtra 2020	Gujarat and MP 2023 Maharashtra
Securing Nutrition, Enhancing Resilience through Participatory Learning and Action and Promoting Millet Value Chain	Maharashtra 2021	MP 2023

Theme	State and Year of Initiation	Replication in Other States
Entrepreneurship		
Promotion of Three-Tier FPOs	Gujarat 2004	MP 2014 Maharashtra 2022 Rajasthan 2023
Promoting On Farm, Off Farm and Non-Farm Collective enterprises	Gujarat 2012	MP 2016 Rajasthan 2018 Maharashtra 2019
"Gramin Sushasan" by GPs—for enhancing access of government schemes for the marginalised and better governance	Gujarat 2015 and MP 2015	Maharashtra 2018
Leveraging Finance for carbon Sequestering in Agriculture.	Maharashtra 2022	

1.4.3 Institutional Evolution

'Purpose-driven networks' are known to create larger social impacts, especially when they collectively implement projects of common interest. In 2002, DSC was instrumental in promoting a network of NGOs in Gujarat called *Sajjata Sangh*, which had a common focus on sustainable natural resource management and agriculture. Details of this network are provided separately in Chapter 7. Over the past two decades of its existence, it has been successful in creating a separate identity for NGOs in the western and northern regions of the state as credible organisations in the social sector. It has also successfully promoted a state-level FPO in order to support FPOs within the state of Gujarat and give them a voice of their own. GUJPRO has been trying to link member FPOs with markets and financial institutions. It is also active in representing them at various forums, so that their concerns may be heard and addressed by various government and non-government agencies.

One of the main reasons for DSC's success as a resource agency and policy influencer has been its effort to become a 'learning organisation'. It made special efforts to document events and processes that were meaningful for state or national-level discussions. It relied on 'evidence-

based research' to make its points at important review meetings held by the state and national governments. On more than one occasion, it carried out multi-state thematic research which brought out certain findings about government schemes which could not be negated and had to be addressed through suitable modifications in policies and procedures. This greatly enhanced its credibility and, therefore, its participation was sought in state and national-level working / expert groups. Over the three decades of its work, it has produced more than 100 publications of different types, addressing the needs of different stakeholders.

In 2012, DSC realised that the projects of direct implementation had extended to such an extent that it would be difficult to do justice to the important aspect of documentation and research. This prompted it to establish DSC Foundation, which would be devoted exclusively to this function. Chapter 8 provides information on the functioning of DSC Foundation, which includes a conceptual understanding of a learning organisation within the social sector. Currently, most of the available research on learning organisations is located in the corporate sector. Organisations like DSC provide an opportunity to examine if learning organisations in the social sector are different and, if so, in what ways.

1.5 DSC as a Resource Agency

DSC's influence extends beyond the four states where it is engaged in direct implementation. The watershed guidelines and PIM advocated active participation of the rural communities in the planning, implementation and management of the programme. However, this was easier said than done. DSC, through its field implementation, communication material, training programmes and research and documentation, demonstrated and communicated the proven and successful practices, technologies and processes that enabled such participation to a range of stakeholders. This enabled the translation of "participation" as a concept to field-level action on a large scale.

As a resource agency, it has conducted outreach programmes and provided capacity-building inputs to agencies in various states all over the country,

but more specifically in Andhra Pradesh, Madhya Pradesh, Maharashtra, Uttar Pradesh, Odisha and West Bengal. DSC's unique contribution in all this has been the value of involving farming communities as partners in the development process. Hence, "participatory management of natural resources" is now being practised in all its project areas. In the recent past, it has been appointed as a resource agency for the *Jal Jeevan Mission* and the *Atal Bhujal Yojana*, Ministry of Jal Shakti, for participatory drinking water schemes and groundwater management respectively. The Small Farmers Agribusiness Consortium (SFAC) and NABARD have engaged DSC as a resource agency for promotion and capacity building of FPOs in various states.

A few of the impactful training programmes in the past are mentioned here:

- *Training for government officers from African countries:* DSC hosted an exposure visit and conducted six Basic Training Courses for senior government officers from the World Bank-supported Local Empowerment and Environmental Management Programme (LEEMP) programme in Nigeria. It also hosted a one-month exposure and learning programme for officers from the World Bank-supported Ghana Commercial Agriculture Project. This was followed by a visit to strengthen PIM in Ghana.
- *Exposure visits for government officers from other countries:* DSC has also hosted exposure visits for government officers from China, the Netherlands, South Africa, Kenya, Sudan Ethiopia and Bangladesh.
- *Training on Watershed Development in Gujarat and Madhya Pradesh:* Functionaries from more than 100 NGOs, 500 government functionaries from seven states and 447 WUAs in Gujarat and Madhya Pradesh were provided this training. It hosted a series of exposure visits for senior officials, CBO leaders and NGO staff from Andhra Pradesh, Uttar Pradesh, Maharashtra, Orissa, Rajasthan and Madhya Pradesh to pioneer PIM projects in Gujarat. The delegates initiated

several policies and procedural changes in the respective states to make PIM more people-centric.

- In recent years, the Management of Aquifer through Village-level Recharge Initiative (MARVI) Living Laboratory in Gujarat is providing training to NGOs and CBOs on PGWM.

Resource Materials for Information, Education and Communication:

The organisation develops and disseminates IEC material such as booklets, manuals and video films in Gujarati, Hindi, Marathi and English. These materials are widely used by training agencies in various states. Some of the important materials are available at DSC's website (www.dscindia.org) and social media platforms such as YouTube, Facebook, Instagram, LinkedIn, etc. DSC also has a large repository of books, articles and research reports carried out or commissioned by it (www.dscindia.org).

1.6 DSC as a Policy Influencer

DSC is regarded as a resource institute at the national level in sub-sectors like PIM, watershed development and groundwater, where it has worked closely with state governments and influenced project design and implementation through action research-based lessons. Insights collected from the field were used to dialogue in various expert committees and advisory positions at district, state and national levels. Its influence through policy advocacy varies from sector to sector and is discussed separately in related chapters. A few illustrations are given below:

- ***Issue of drinking water in watershed villages:*** Besides contributing to knowledge generation, research studies in watershed development have led to policy reforms. The study on drinking water security in 50 villages in Gujarat showed that hardly any attention was being given to drinking water issues even in watershed villages. The findings were sent to the Ministry of Rural Development which then issued a special circular emphasising that drinking water

security should be a priority while implementing the Hariyali Watershed Programme. A special committee for drinking water, consisting of a majority of women, should be formed at the Gram Panchayat level to ensure mitigation of the drinking water problem. These additions in the *Hariyali Watershed Guidelines* led to modifications in the watershed plans developed by states such as Gujarat and Rajasthan, leading to augmentation / repairing of local sources for drinking water.

- ***Bopal Declarations:*** The Principles of Development and Management of Natural Resources in Sustainable Manner, more famously known as the '*Bopal Declarations*', brought out by DSC were incorporated in the *Common Guidelines for Watershed Development Project in 2008*. This has ensured that people's institutions, equity, capacity building and livelihoods are reflected in the planning, implementation and management of the watershed programme (See Chapter 3 for more).

"It is a matter of great pride that seven out of eight principles (developed for NRM by DSC) have been accepted by the Government of India."

- Prof Y.K. Alagh, Former Member, Planning Commission

- ***PIM guidelines in Gujarat:*** DSC worked closely with the Irrigation Department in developing guidelines for PIM programme by facilitating Water Users' Associations (WUAs) at the farmers' level and providing feedback to the department through policy review meetings. The impact is also spreading to other states like Andhra Pradesh, Madhya Pradesh and Maharashtra, where some of the special features of the *Gujarat PIM Act*, such as autonomy to WUAs for deciding and collecting water charges, and giving rebate are being adopted by them. (See Chapter 2 for more)

- ***DSC's contribution to state-level PIM task force in Gujarat:***
Today, almost every state in India that has been implementing PIM is experiencing difficulties in achieving actual farmers' participation in irrigation management due to technical, social and managerial issues. The report of PIM task force in Gujarat offers solutions to make PIM a real success, explaining 13 supporting measures which can be considered as pre-requisites for the success of PIM.
- In February 2023, the research work on "Building informed and scalable water security solutions for Gujarat" was brought out jointly by DSC and DSC Foundation. Focusing on integrated water management, the study showed how *water stewardship* could be practised at the community level by maintaining "water balance" with the help of panchayat and village leaders. This involves maintaining groundwater levels and practising integrated water management through community-level consultations. The research was presented before a large group of NGO, GO and CBO leaders across Gujarat.

Postscript

In the Epilogue, we have paid tributes to Anilbhai, a visionary leader and multi-faceted person who founded this institution. Anilbhai is fondly remembered by farmers, field workers and change makers for his wide range of contributions to the farming community. He has been and continues to be a source of inspiration to a large number of development workers, both in government and non-government institutions, who are interested in the welfare of the farming community, forest-dependent communities and other vulnerable sections of rural society.

End-notes

1. *Barry Underwood succeeded Anilbhai as the CEO of AKRSPI when Shashi was working there.*
2. *Hasmukh Shah was a Board Member of DSC and a former CMD of India Petrochemicals Corporation Ltd.*
3. *Chambers R. (1983) Putting the Last First. Longman, London.*
4. *Chambers R. (1994) "The Origins and Practice of Participatory Rural Appraisal," World Development Elsevier, vol. 22(7), pages 953-969, July.*
5. *The International Institute of Environment and Development (IIED) is one of the world's leading independent policy and action research organisations based in London and Edinburgh.*
6. *Shah Anil, (2007) "Sequential Steps for Empowering Rural communities for Local Development." IIED Journal, Participatory Learning and Action (PLA) 56. He was a valued member of the International Editorial Board of the PLA series.*

Chapter-2

Participatory Irrigation Management (PIM): Partnering with Government in Transfer of Canal Management to Farmers



“Gujarat has been a role model for the White Revolution. Now it can lead the country in blue revolution through Dharoi model of PIM.”

- Kirit Parikh, *Former Member, Planning Commission*

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PART - B

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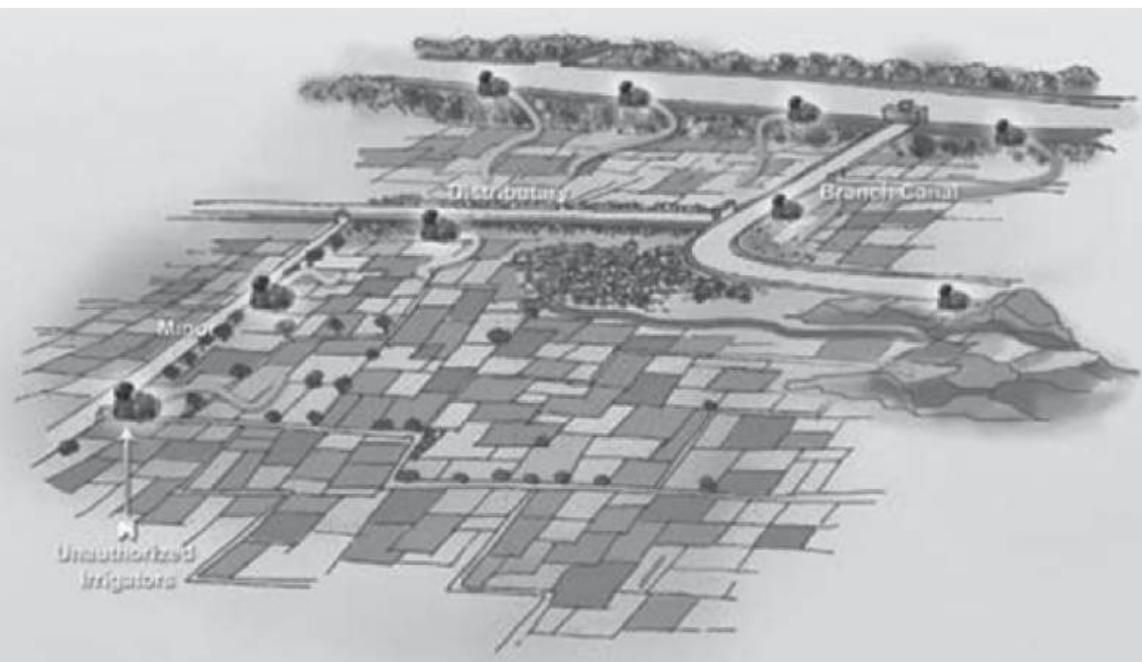
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Participatory Irrigation Management (PIM) was among the first projects DSC got involved in, soon after being established in 1994. DSC is probably the largest NGO in India directly working in the irrigation sector with its PIM projects in three states, covering more than 1,00,000 hectares of three major, three medium and three minor irrigation projects. Cumulatively, it has facilitated PIM support activities in a 6,13,056 ha area, including direct implementation in about 60,000 ha. Irrigable Command Area (ICA) and capacity-building support in 5,53,056 ha through 290 and 198 WUAs respectively in collaboration with government departments and CSR partners in Gujarat and Maharashtra. It is now considered one of the key resource agencies of the irrigation sector in India, with its PIM projects in Gujarat and Madhya Pradesh being cited as models. Over three decades of involvement in the irrigation sector has provided rich experience in implementation and policy advocacy, making this perhaps the most important subsector in its portfolio. The chapter also tries to assess the current scenario, the urgent need to rejuvenate systems of PIM and the associated challenges under the prevailing policy environment.



Typical layout of a canal irrigation system

Summary of Interventions and Outcomes

2.1 The Irrigation Water Challenge

The created irrigation potential till the end of 11th Five-Year Plan was 46.24 million hectare (mha) and the potential utilisation was 35.10 mha (76%), according to the report of the working group on major and medium irrigation in command area development for the 12th Five-Year Plan 2012–17. Major problems in Indian water sector include low irrigation project efficiency (34%).

During the 1960s and 1970s, a major preoccupation of the Indian government was to make the country self-sufficient in food grain production. Over the next four to five decades, a cumulative investment of about Rs 1,00,106 crore was made in irrigation infrastructure (Gol, 2002)¹, which was vindicated when India achieved self-sufficiency in food grains. However, stagnation of productivity in the command areas of major irrigation projects became a cause of worry and there was a growing consensus that community management of water resources could address the issue.

DSC's attention was drawn first towards the *issue of equity* as it noticed the widespread problem of tail-end deprivation and associated loss of livelihoods. A closer look also brought out the issues of *efficiency* and *sustainability* in the management of irrigation water. Research by Central Water Commission (CWC), DSC and others showed significant gaps in the range of 30–40% between the command areas planned and the actual area irrigated. This gap was also rising over time. By the end of the 11th Five-Year Plan, it was about 25.6 mha (27.15%), while the average water use efficiency of the canal irrigation projects in the country was only

about 36%, according to CWC (2020) Annual Report (2019–20), New Delhi. Many canal networks were dilapidated and caused waterlogging, salinisation and soil degradation in the head-reach and *high deprivation at the tail-end*. Water would not reach the fields of tail-end farmers due to a variety of reasons, such as design defects, poor construction, inadequate operation and maintenance, lack of farmers' involvement in irrigation management, and inefficient management. In addition, other farmers did not get their share of water due to system failure.

During the early 1990s, policymakers, NGOs and academics were all speaking the same language. The government was convinced of the need to devolve control of irrigation management to the end-users by creating community-level institutions called Water Users Associations (WUAs). These institutions could be integrated at higher levels (branch, distributary or main canal) under Participatory Irrigation Management (PIM), thus ushering in an era of decentralised irrigation management. While many initiatives were taken jointly by the stakeholders during the decade of the 1990s, and Gujarat, in particular, had demonstrated replicable models with the active support of agencies like AKRSPI and DSC, scaling up (with functional WUAs and not just on paper) remained a distant dream.

Nature of Problem: Vicious Cycle of Public Irrigation System

Underutilisation of the irrigation infrastructure could be traced to issues related to equity in water distribution, viability of irrigation management and sustainability of the canal system. As shown in Figure 1, both the government department (Water Resource Department–WRD) and farming communities contributed equally to the state of affairs. The issues were not being addressed, largely due to a lack of communication and trust between the two parties, which was exacerbated by the shortage of funds available to the department. But there were also other reasons as shown in the diagram, such as reluctance to devolve power to farmers on the part of government officials and reluctance to pay water fees on the part of farmers. Conflicts often occurred both within the farming community and between them and government officials. In the process, both were paying a heavy price.

WATER RESOURCE DEPARTMENT

- Low financial allocations
- Under-utilization of irrigation infrastructure
- Untimely and inadequate operation
- Poor maintenance
- Low collection of water charges
- Inability to devolve power to farmers
- Weak communication channels with farmers
- Lack of mutual trust

Communication mostly through frontline Employees

Rehabilitation work by Contractors

Reinforcement leading to vicious cycle

- Excessive use of water by head-reach farmers
- Non-availability to tail-end & other farmers resulting in crop loss
- Conflicts between head-reach and tail-end farmers and between farmers and WRD officials
- Sub-optimal and inequitable use of water
- Poor condition of channels due to siltation, under-growth and/or blockages, diversions
- Water not seen as a right of farmers
- Lack of proper communication from WRD
- Lack of confidence about assured supply
- Lack of mutual trust

FARMING COMMUNITIES

Figure 1: Situation of canal irrigation before PIM

Most of the communication took place through grassroots-level workers like watchmen and clerks employed by the department. By nature, this was mostly one-sided, as opposed to direct interaction between senior officers and farmer leaders. Regular repair and deferred maintenance (rehabilitation) work was carried out largely by contractors. Farmers were generally not satisfied with the quality of construction and their irrigation performance as the irrigation network did not last long—presumably due to inadequate regular maintenance and, in some cases, design flaws, poor workmanship, cutting corners and not using the best available materials. Excessive use of water by head-reach farmers, obstruction / physical barriers created or damage done by farmers in the canal system, inadequate and untimely maintenance leading to clogging of distribution chambers, aqueducts and channels, etc. were major reasons for the deprivation of tail-end and other farmers. There was also a lack of confidence in getting adequate quantity of water required for a particular crop and untimely supply of water due to one or more of the above cited reasons, exacerbated by poor communication. This in turn led to poor collection of water charges from the farmers who were deprived of satisfactory irrigation services. The net result was availability of financial resources for Operations and Maintenance with the Irrigation Department on one hand and underutilisation of the irrigation infrastructure with associated production losses on the other.

Hence, the problem comprised both hardware and software components. While canals needed investment in rehabilitation and better operations and maintenance, these could only be taken care of if the software component (effective communication, participatory planning, execution and participatory performance monitoring) was sufficiently strong.

2.2 Nature of Intervention

Organisations like DSC were in a unique position to bridge the gap between the two primary stakeholders viz. WRD and the farming community. On one side, it facilitated the creation of Water Users' Associations (WUAs) through an intensive process that ensured inclusive decision making

at the community level. Over time, this process had been standardised and articulated as a set of “sequential steps” considered essential for “community mobilising and empowerment”². (see Box 1). The process was effective in conveying to both the farmers as well as the facilitators that the people’s agenda should be considered first, and aligned with the development agency’s agenda. Indeed, in some cases the agency’s agenda for development could also be influenced and modified through

Box 1: Sequential steps for empowering Community Organisations

Step 1: Meet people in a casual manner.

Step 2: Meet local leaders. Don’t get into the details of the scheme.

Step 3: Understand the local situation by visiting different parts of the village. Ask simple questions and listen intently to people.

Step 4:

- Use Participatory Rural Appraisal (PRA) methods to understand how the communities perceive their own problems. Genuinely learn from the people by reversing the role from “we know” to “they know”.
- Try to put money value to the problems they face – loss incurred due to non-development.

Step 5:

- Take special care, initiative and trouble to go out and meet marginalised groups such as the poor, women, illiterate, minority communities, etc.
- Encourage them to express themselves and to articulate their problems.

Step 6:

- Hold a meeting with the larger community. Make sure that the disadvantaged know, attend and present their problems and views.
- Present stories and audio visuals of other villages that have faced similar problems and dealt with them satisfactorily.

Step 7: Conduct exposure visits and facilitate as much learning as

possible by encouraging the villagers to ask questions.

Step 8:

- After returning make sure that the villagers who had participated in the exposure visit share their experiences with the entire community.
- Move carefully and steadily towards solutions. Not your solution, not your scheme, but people's solutions and people's decision to avail the programme.

Step 9:

- If demanded by villagers, provide information about the programme and the role and responsibilities expected from them.
- Quote the figures of the loss due to non-development and, in comparison, the small contribution required for availing of the scheme.

Step 10: Clearly lay out more responsibilities that the village community has to undertake—conditions regarding equity, participation of women and the marginalised, contribution, maintenance and benefit sharing.

Step 11:

- Organise the community to develop, carry out and then manage its own programme—the structure of the community-based organisation (CBO), its functions, roles and responsibilities of different functionaries, the systems, the culture and type of leadership needed to ensure equity, efficiency and sustainability.
- Provide technical, administrative and financial support until the work is properly organised and implemented.

Step 12: If the agency/programme has become the programme of the community, there would be new leaders who are now in a position to provide leadership and it will slowly develop into a model village.

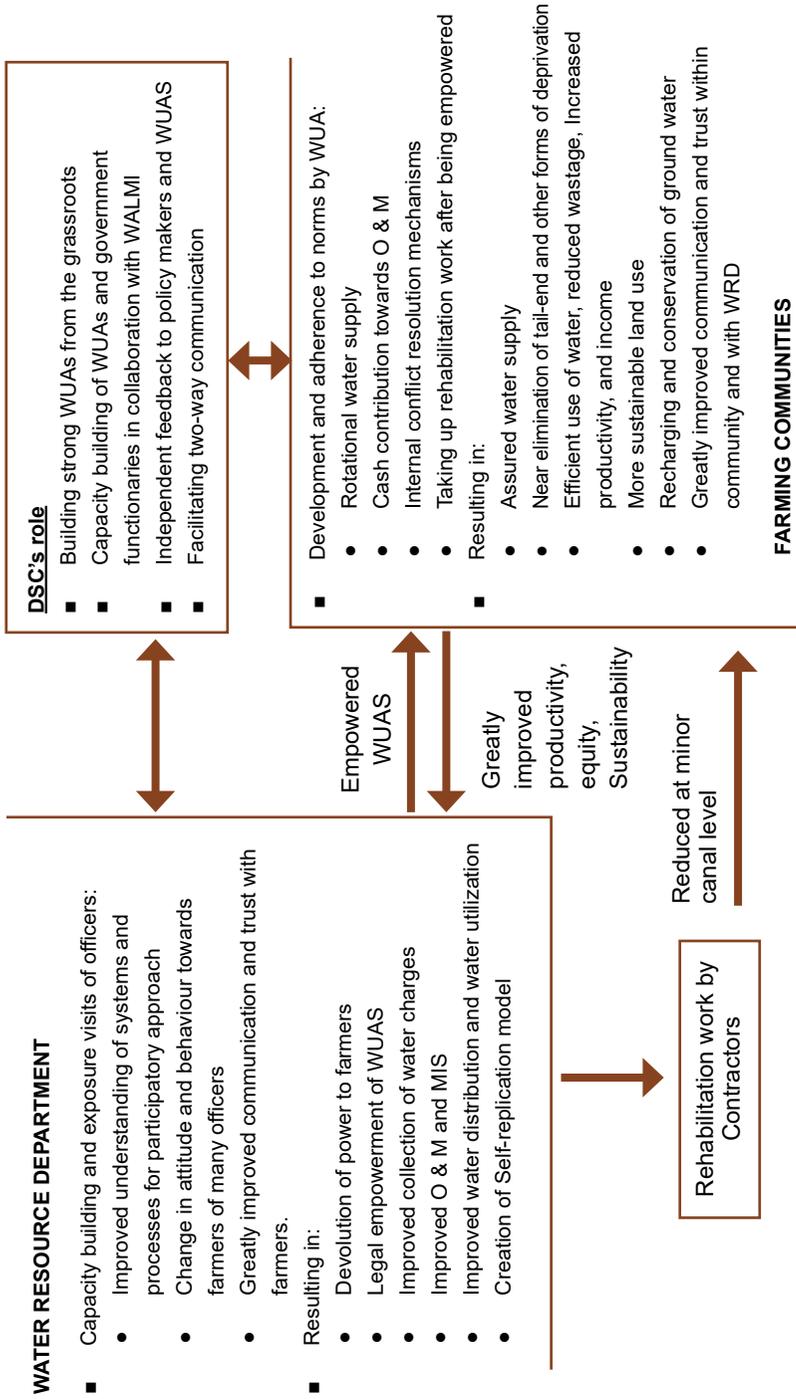
Step 13: Empower the community not through lure of subsidy but benefit of development—not through “*lobh*” but “*labh*”.

the dialogue that took place in the sequential steps of engagement.

On the other side, it interacted with the government at the highest level to bring about changes in policy directives and procedures which would facilitate rather than alienate farmers' participation. It also worked with the department to reorient officers through ABC (attitude-behaviour-change) sensitisation workshops, which brought them closer to farmers and helped them to jointly resolve the problems.

Under this new approach, with the leadership of government officials in Gujarat, such as the then Secretaries Shri VB Patel, Shri BJ Parmar, Shri AB Mandavia and Shri OT Gulati, Chief Engineer and Additional Secretary, WRD and civil society leaders such as Shri Anil Shah, Shri Apoorva Oza, Shri Harnath Jagawat among others, the scenario characterised by trust deficit was turned around to a large extent. Organisations like DSC, AKRSP(I) and N.M. Sadguru Foundation were instrumental in building WUAs, such that leaders in the farming community came forward to collaborate actively with WRD. Government officials responsible for implementation also became more sensitive to the needs of the farmers and became more pro-active. Top officials of WRD-Gujarat were sent for an exposure visit to Philippines, Mexico and Andhra Pradesh, which impacted their thinking and helped to create an enabling environment for working closely with farming communities in the state. DSC was assigned the responsibility to implement PIM in Thalota village of Dharoi project, Mehsana district, on a pilot basis.

The main functions of the WUAs were water distribution, operation and maintenance and water cess collection and conflict resolution. For the first time, WUAs were empowered and entrusted with the task of canal rehabilitation by the government. They demonstrated that they were worthy of that trust. In this way, confidence and respect were built up. Slowly, the dependence on contractors for the renovation of canals began to come down (Figure 2). These changes were restricted to the minor canal in the Dharoi Canal system in Gujarat, where the new approach was being tested under a pilot PIM project in 1994-95. More than a decade later, Babubhai M Patel of Kansa village, Visnagar block, recalled that in 2007 they had



Note: At the minor canal, WUAs are empowered for regular repair and maintenance and rehabilitation in Gujarat.

Figure 2: Situation after adopting PIM in Gujarat

carried out renovation of their canal system with state government funding of Rs 13 million and had been managing water distribution since then. When they got the contract, WRD asked them to pay 10% of people's contribution in advance, amounting to Rs 1.5 million. As they did not have the cash, they carried out the work of cleaning the canals through their labour, instead of the advance amount.

During early 2000s, when WRD was expecting DSC to upscale the success of PIM in a few villages by developing three irrigation schemes of North Gujarat as models for the whole state, DSC approached Ms Amrita Patel, the then chairperson of National Dairy Development Board (NDDB) for financial support in replicating the model quickly. NDDB extended its support willingly because studies had already shown the high co-relation between improved irrigation efficiency and milk production.

A unique feature of this initiative was the deployment of a multidisciplinary team of professionals with social, agriculture and engineering backgrounds. DSC also developed Farmer Spearhead Teams (FSTs), appointing experienced leaders of old WUAs to utilise their skills and capacities to form new WUAs with minimal inputs from DSC. These FSTs went to neighbouring villages and motivated farmers to set WUAs similar to their own. Out of the 175 new WUAs established through the project, 22 were formed exclusively by FSTs. DSC provided financial compensation to them for their community-mobilising services. On an average, it took a team of two leaders about six months of facilitation to set up a WUA. Reportedly, majority of these WUAs are functioning well even today, according to the annual progress report of the branch canal federation-2, Dharoi RBMC Project. This provided WRD and DSC the confidence that the model would be self-replicating.

Much of the initial work was done with the Gujarat government, which was keen on developing a self-replicating model through active participation and ownership of farmers. In contrast to Gujarat's approach, states like Andhra Pradesh and Madhya Pradesh among others decided to make participation mandatory by enactment of State PIM Act. The lessons learnt by DSC soon became relevant in these states also, as participation can

never take place unless farmers own the project and see the benefits for their development. DSC's experience in Madhya Pradesh showed that a similar approach could be adopted in such states as well but with modifications to meet the differences in local contexts—sociocultural, agricultural, economic and legislative. There were also financial limitations that called for frugal investments in hardware components. The processes adopted in the two states, therefore, were different in some ways while being similar in the basic premises and principles, as discussed below.

Promoting WUAs in Gujarat

Between 1992 and 1995 WRD implemented 13 pilot projects in various command areas of Gujarat. A multi-disciplinary steering committee at the level of the Chief Secretary was established, which met quarterly to review the situation. Gujarat Institute of Development Research GIDR had taken up process documentation in five pilots. Its reports were discussed in these meetings and circulars were brought out on the issues discussed. Hence, the process-intensive method used by Gujarat to promote WUAs from below became the hallmark of the Gujarat model. This was also reflected at the field level, where NGOs like DSC helped the farming community to build WUAs from below through a package of software support (training, exposures, hand-holding of WUAs by a multidisciplinary team of professionals for a minimum of three working irrigation seasons).

In 2003, the capacity of farmer leaders of Dharoi, Guhai and Mazum projects were built to work as the FSTs, which were involved in promoting more than 175 WUAs along with DSC in North Gujarat. (For recollections and reflections of a few spearhead team leaders from the Dharoi command area, see Part B.)

In 1993, a policy document was brought out, focusing on the need to provide training to engineers, office-bearers and farmers. An important aspect of this training was that *chowkidars* (watchmen), *karkoons* (clerks) and assistant engineers, who were the ones who constantly dealt with farmers, were given special training. This was followed by a spate of Government Resolutions (GRs), which were drafted and fine-tuned by WRD. The GR

of June 1, 1995, presents the essence of these and represents a landmark policy resolution. A major departure from the past was that of treating farmers and civil society institutions as partners in development. An effort was made to create a structure that would sustain over the years. GRs were created that gave due respect to the knowledge and expertise of farmers. For instance, farmers who had their own methods of testing the strength of construction materials like cement, bricks, etc. were allowed to do so and complaints made by them were taken up seriously.

The formation and functioning of WUAs was facilitated through a set of simple rules and norms. Farmers of a minor canal command area were allowed to form their WUA voluntarily by adopting the Irrigation Cooperative By-laws under The Cooperative Act, provided a minimum of 50% were willing to become members. As the construction structures were simple, farmers were given the first option to take up the rehabilitation work. The identification of repair works was decided based on the “joint walk-through survey” conducted by Irrigation Department officials and farmer leaders. Simple MoUs of three pages were drafted for such work, where farmers agreed to meet 10% of the cost of rehabilitation. Post-rehabilitation of canal, the WUAs were invited to sign an MoU with the executive engineer, WRD, for taking up irrigation management in their hands. For revenue collection, farmers were authorised to decide their own water charges over and above government rates. The WUAs could collect the revenue from farmers under their jurisdiction and retain 50% (instead of submitting all and then waiting for their share to be processed by the bureaucracy). If deposited later than an agreed date, the farmers were to pay a fine of 5%.

The entire system was created based on mutual accountability and trust. When farmers were given responsibilities, they were also given their rights, which normally did not happen in earlier projects. In one of the last incidents of working with Anilbhai, one of the WUAs in South Gujarat had not received repayments for work done to the tune of Rs 5 million. The department examined the case and found it genuine. The WUA was given its due with retrospective effect. Such incidents helped in strengthening relations and building mutual trust.

The Process Adopted While Working in Madhya Pradesh

In 2008, DSC also started working in Madhya Pradesh state, where PIM had been initiated under the PIM Act. The proven and tested pedagogy of Gujarat for formation and facilitating WUAs was deployed to mobilise farmers and build WUAs from below.

As in the case of Gujarat, DSC's involvement was made possible due to the presence of a few forward-looking officers in senior positions. Shri Pradeep Bhargava was the Additional Chief Secretary and Vice Chairman of Narmada Valley Development Department when he visited the field and saw a waste of water on account of canal leakages and significant deprivation of tail-end villages from receiving canal water. He initiated a national-level bid to identify a suitable agency to work with their WUAs. Shri Jitendra Agrawal, the then CEO of Madhya Pradesh Rural Livelihood Programme (MPRLP), invited DSC to promote PIM in the Maan and Jobat irrigation systems covering a total command area of 25,000 hectares located in Kukshi and Manavar blocks of Dhar district.

The area already had 16 WUAs registered, but they needed to be supported through proper guidance and handholding. In order to build the required enabling environment at the system level, DSC brought Narmada Valley Development Authority (NVDA) officers to visit their counterparts in Gujarat and meet selected officers. Among them was one officer who was not at all convinced about PIM. He felt there was no benefit for the officers in engaging in it. By the end of the discussion, he realised that PIM would actually be helpful in improving his service performance and reducing the difficulties and work-load in irrigation management. He was a changed person. He got convinced that if PIM was made to work properly and in the right spirit, the department had everything to gain: a) there would be no complaints from farmers as they would have taken up water distribution themselves and there would be no need for intensive patrolling; b) that would release time for them to concentrate on their main work as engineers, i.e. construction of dams; c) the revenue collections would go up substantially improving their performance and in turn the financial situation of the department. In due course, he became one of the most

ardent supporters of PIM in Madhya Pradesh.

Similar exposure visits were organised for the local staff of CBOs and WUA leaders to Gujarat to learn from the experiences of their counterparts. They got highly motivated from these visits to take over control of day-to-day irrigation management in Madhya Pradesh as they had seen the effectiveness of simple techniques and best practices of farmer-managed irrigation with their own eyes.

The MP PIM ACT and Rules authorise WUAs to mobilise financial resources from farmers in order to improve their management and provide better services. Accordingly, at the village level, DSC initiated WUAs with a nominal membership fee of Rs 10 with the understanding that if and when the farmer gets water, he would pay an irrigation service charge of Rs 100, which would be taken as a contribution to their resource fund for future. In due course, this fund grew to about Rs 2 million in 16 WUAs. In consultation with the canal officer of WRD, DSC's resource person was made a joint signatory to avoid misuse of the fund.

As in Gujarat, canal operators were appointed by WUAs. Youths from the village were trained to maintain registers that documented the area covered and the members participating within the command area. This made it possible to make realistic measurement of the actual command area.

After five years, although the supply of water had increased, some tail-end farmers still got left out. They became angrier and tensions began to rise. In consultation with Shri Om Prakash Rawat, the then Vice Chairman of NVDA, it was decided to apply for the central government funding through the Accelerated Irrigation Benefit Programme (AIBP) grant for lining the main canal to prevent losses due to seepage and ensure that enough water reaches the tail-end. DSC supported NVDA to put together the data of gains over the past two years on increased coverage; voluntary labour contribution of farmers, which was worth about Rs 10 million; increase in food grain production; and reduction in crime rate, as collected from the local APMCs and the police department. The effort resulted in securing a grant of Rs 700 million to the NVDA for repairing and lining the main canal.

The WUA was designated as the main authority to check the quality of construction work.

While the water supply till the tail-end improved further, certain hilly areas got left out from the command area. To address this issue, farmers were allowed to lift water from the canal which was used to irrigate the upper reaches. The WUAs were facilitated to actively participate in the joint irrigation planning and review meetings. A system of rotational water supply at the main distributary and minor canals was adopted. The WUAs' governance was activated through formation and activation of sub-committees like *Nyay Samiti*, *Sinchayee Samiti*, *Lekha Jokha Samiti* and *Women Farmers Samiti*. Thus, potential utilisation crossed 25,000 ha from the pre-PIM level of 7,000 ha and *these projects became unique in Madhya Pradesh where 100% of the designed irrigation was achieved.*

Outreach

DSC is recognised as a resource centre for PIM at the state, regional and national levels. It has collaborated with the Water and Land Management Institute (WALMI) in Gujarat to provide capacity-building inputs to functionaries from WUAs, NGOs, CSR agencies and officers from the Water Resources Department.

It was invited by the World Bank to develop training modules and IEC materials on PIM in Uttar Pradesh. It has trained more than 500 government functionaries from seven states and 447 WUAs in Gujarat and Maharashtra. It was engaged with the Shiv Nadar University for taking a short-term course on PIM for MSc students. It has hosted visits from several states and countries such as Afghanistan, Bangladesh, Egypt, Ethiopia, Ghana and Iraq on PIM. DSC also hosted a series of exposure visits for government officers, NGO-staff and CBO leaders from other states to its model PIM projects in Gujarat. These visits proved helpful in improving the processes, procedures and performance of WUAs in those states.

Research and documentation are an integral part of DSC's strategy for improving practices and influencing policies related to water management

and PIM in particular. It has conducted several research studies, documented best practices and brought out several research papers on PIM, such as the “Impact of PIM on Economic Growth” (DSC, 2012) and Benefit-Cost of PIM (DSC, 2003). The list of research studies conducted on PIM is provided in the DSC website.

The organisation develops and disseminates IEC material in the form of booklets, manuals and video films in Gujarati, Hindi, Marathi and English as well as a pictorial manual on PIM, which are widely used by WALMIs in various states. The list of IEC material on PIM is provided in the DSC website.

2.3 Achievements and Impacts

2.3.1 Achievements

By 2021, DSC had promoted PIM in three major, three medium and three minor irrigation schemes in Gujarat, Madhya Pradesh and Maharashtra. The organisation had directly formed 224 Water Users’ Associations covering 1,13,056 ha. Of these, about 200 were self-reliant as they could meet all their expenses through water charges and service fees. A cadre of about 200 para-professionals for various aspects of water management, such as *bhujal jankars*, canal operators and technical supervisors who work closely with the community has been created.

Canal rehabilitation work worth Rs 55 million from the state government’s grants in Gujarat and Rs 10 million through MGNREGA in Madhya Pradesh was accomplished. Contributions by WUAs in cash and kind were mobilised—Rs 10 million in cash and donation of land worth Rs 50 million for canal construction in the Sardar Sarovar project (SSNNL) command area in Gujarat.

DSC’s grassroots-level work has been instrumental in influencing policy at the state and national levels and in developing standard operating procedures (SOPs) for promoting and facilitating Water User Associations (WUAs).

In 2010, honourable Chief Minister of Madhya Pradesh Shri Shivraj Singh Chauhan recognised the WUA leaders, the DSC staff and the government staff on World Water Day for their excellent contribution and achievement in irrigation in Maan and Jobat.

Some of DSC's unique achievements can be summarised as follows:

- It led the farming community from despondency and high dependency on the government to active involvement and initiative through collective action
- Brought a change in perspective of the community from short-term individual gain to long-term collective benefits
- Saw a period of unprecedented collaboration between community and government through a process of dialogue facilitated by it, resulting in solving local problems on one hand and addressing policy issues on the other
- Sensitised government officers to participatory approaches in irrigation management and belief in farmers' capacities
- Offered a unique approach to building user groups from below. The incentive system for WUAs implemented by it under the Gujarat model was adopted by several other states
- Brought about dramatic improvements in water use efficiency and agricultural productivity (crops and animal husbandry) by solving the issue of equity and efficiency in canal water distribution

All through its interventions, DSC focused on the identification of local problems and low-cost solutions by stakeholders through mutual agreements. It developed replicable principles, which enabled it to adapt to local conditions and build *location-specific models*.

2.3.2 Impacts

Impacts through Direct Implementation

Impact assessment studies carried out by DSC and Arid Communities and Technologies (ACT) in Gujarat and professors Harekrishna Misra and KV

Raju of the Institute of Rural Management Anand (IRMA) at Maan and Jobat of Madhya Pradesh in 2012 showed exceptional improvements in efficiency, equity and sustainability:

- Access to water was enhanced for more than 2,000 tail-end farmers in Mehsana and undivided Sabarkantha district in Gujarat and 7,000 farmers in the Dhar district of Madhya Pradesh
- The irrigated area in the canal command area increased by 20–60% due to the improved efficiency in supply and water use
- Productivity of crops such as wheat, cotton, sorghum and maize increased by 20-70%, resulting in an additional average annual income of about Rs 7,000 to 10,000 per ha. An additional increase of Rs 19,000 per hectare was achieved through the PIM Plus programmes which focused on improving agricultural practices through extension services and supply of better agri-inputs. The sum of PIM and PIM Plus impacts was Rs 29,000 per ha.

An internal study of the Dharoi project examined the benefit-cost ratio using time series data from 1997 to 2003 (DSC, 2003). Farmers reported an increase in productivity and additional areas brought under cultivation after PIM. Other benefits included additional employment, increased milk production and time saved on account of timely water availability and water surety. The costs included the cost of administration and maintenance by the Irrigation Cooperative, and the rehabilitation cost, of which 80% was borne by the Irrigation Department and 20% by the cooperative. It also included the organisation cost of the facilitating agency (DSC).

The results showed that the benefit-cost ratio ranged from 4.5 in the head-reach village to 1.3 in the tail-end village. Groundwater recharge was higher in the upper reaches, making it possible for farmers there to adopt cropping patterns which included water-intensive cash crops. It also enabled them to extend cultivation during the winter season, if not summer. Hence, this could also be seen as a case of '*secondary deprivation*' of the tail-end farmers resulting from the shifting of cropping pattern in the upper reaches.

According to the project report submitted by DSC to NDDDB and the Government of Gujarat in 2007, PIM also benefited the WRD immensely in North Gujarat projects. In Dharoi alone, 127 WUAs participated in Rabi irrigation management of 279 minor and sub-minor canals covering 11,000 hectares of land. They witnessed an average increase in irrigation efficiency of 65% leading to unprecedented collection of revenue of about Rs 9.1 million. Out of 17,000 member farmers, 3,000 received it for the first time. The occurrence of conflicts between farmers was greatly reduced.

A study conducted by Shri Pratul Ahuja in 2023 highlighted that the benefit of Rs 5.1 million has been realised by 339 households from 820-acre command area within two years against an investment of Rs 2.5 million in 4 minor Tank Irrigation projects of Nandurbar district, Maharashtra.

Hence, one of the important functions of WUAs at the distributary level would be to ensure that such deprivation is avoided through a *volumetric supply of water*. Although, this has been tested in five villages of the Dharoi Irrigation system in Gujarat and six villages of Maan and Jobat in Madhya Pradesh., adoption has remained an enigma as the water supply is not within the control of WUAs in these two states.

Impact through Training, Documentation and Research

The training programmes and exposure visits for policy makers, senior government officials, CSO leaders and community leaders like Shri Harinarayan (Principal Secretary, MoWR, GoI), Dr Raymond Peter (Director, International, Network of PIM, Washington), Shri Kirit Parikh, (Member, Planning Commission), and others hosted by DSC have had a lasting impact. Many of the successful examples in the country like Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, Odisha and Maharashtra have been inspired by visits to WUAs promoted by DSC in Gujarat and Madhya Pradesh.

The IEC material such as the PIM manual and video films in Gujarati and Hindi are used extensively by NGOs, CSR agencies and training institutes, including WALMI. The ITC and WRD-UP hired DSC's services to prepare customised training materials to cater the local needs. This has led to

increased awareness and sensitivity towards developing community-driven technologies, practices and effective involvement of the community in the management of irrigation systems.

Impacts through Policy Advocacy

As a member of the Working Group on Major and Medium Irrigation schemes and Command Area Development of the 11th and 12th Five-Year Plan, DSC has made a major contribution to the national-level policy on PIM. Among its specific contributions, the following are noteworthy:

- Model by-laws of WUAs and their federation
- Evolution of a package of incentives to the WUAs for higher-level participation
- Service and Accountability agreement between WUA and the Water Resources Department
- Simplification of technical procedures for operations and management of canals
- Development of training modules by WALMI for PIM stakeholders
- Promoting 13 supportive measures suggested by the Task Force for accelerating PIM in Gujarat

The Government of Gujarat invited DSC as a member of several committees for formulating draft policies and procedures of PIM, and for promoting, scaling up and capacity building of stakeholders. DSC was instrumental in introducing PIM in the state through the landmark policy resolution of June 1, 1995, wherein farmers and NGOs were considered partners with the government. It contributed to the reflection process, leading the state government to issue a series of government orders authorising WUAs to take irrigation management in their hands by signing an MoU with WRD.

The state government's order providing a 50% rebate on government water charges to WUAs, 20% to distributary-level committees, 10% to branch committees and 10% to project committees is unique in the country. States such as Andhra Pradesh and Maharashtra have adopted some of these incentives. Responding to DSC's pilot initiatives, the GoG also made

provisions for the construction of washing *ghats*, if women expressed a need for these, to include their priorities in the use of canal water.

Some of its research studies, such as “Tail-enders and Other Deprived in the Command Area of 11 Major and Medium Irrigation Systems in Six States” (DSC, 2003) have led to modifications in guidelines, procedures and policies on PIM at the state and the Centre. Similarly, the best practices documentation on “MGNREGS-Assisted Canal Rehabilitation Under Participatory Irrigation Management in Dhar, Madhya Pradesh” (DSC, 2011) resulted in including desilting of canals as permissible works under MGNREGA. Table 2, provides a timeline of the main efforts at influencing policies both at the state and central government levels.

2.4 Present Situation and Emerging Challenges

Based on interaction with a few stakeholders, it appears that after the attainment of food security, the enthusiasm and vigour with which PIM was implemented earlier seem to have steadily declined. On the part of public representatives and state governments, there is a general loss of interest in PIM. The communication and trust gap issue has reared its head once again—with a few exceptions. Wherever officers are keen on serving the farmers, they reach out and make sure that farmers get water on time. They break the ranks and visit the villages personally. In such cases, farmers respond positively and respect the efforts put in by the officer. One such case reported by farmers from MP was that of Shri PN Sharma, the then Executive Engineer, NVDA in the Maan and Jobat irrigation projects.

Canal rehabilitation works through contractors have become the norm once again, even on minor canals where WUAs were once actively involved. While some of the WUAs have built up significant reserves through the water charges collected over the years (to the tune of Rs 0.5–2.5 million), this may help them only in case of emergencies. Farmers are expected to pay Rs 300 per ha as water charge but many do not pay. Informal interviews with farmer leaders in Madhya Pradesh have shown that the collection of water charges has been adversely affected.

Table 2: Policy Influencing at the State and National Levels

Policy milestones – Central Govt.	DSC impacts	Policy milestones – State govt
Irrigation Inquiry Committee—1938 Irrigation commissions—1947, 1960, 1972 Command Area Development Programme (CADP)—1974; National Water Policy—1987; World Bank Review on Indian Irrigation System—1991;	<p style="text-align: center;">Pre-PIM</p>	
Committee on Pricing Water—1992; reviewed PIM progress and found coverage was < 1%	<p style="text-align: center;">1992</p>	Workshop on PIM in WALMI in the presence of renowned international expert on PIM, Shri Benjamin of the Philippines
	<p style="text-align: center;">1993</p>	State-Level Working Group and Standing Committee at Secretary, WRD level that included NGOs, academics and leaders of irrigation cooperatives
Working Group on Major and Minor Irrigation Schemes for CADP	<p style="text-align: center;">1994</p>	Launching of 13 pilot projects for PIM (DSC took 5 PPs)
	<p style="text-align: center;">1995</p>	Landmark policy resolution welcoming the participation of farmers' organisations and NGOs in the management of government irrigation systems

Andhra Pradesh was one of the first states to enact the PIM Act in 1997	1997	
	1998	Model Act in 1998 for facilitating Participatory Irrigation Management.
	2001	Task force for accelerating PIM in Gujarat and suggesting a legislative framework for supporting PIM
	2006	Chintan Shibir at Bharuch under the leadership of the Hon. CM of Gujarat which emphasised scaling up PIM in the state through an Act
Working Group on Major and Medium Irrigation and Command Area Development for 11th Five-Year Plan.	2007	Enactment of the Gujarat Water Users Participatory Irrigation Management Act
	2010	Govt notified rules and regulations for implementing the PIM Act
Working Group on Major and Medium Irrigation and Command Area Development for 12th Five-Year Plan (2012-2017).	2011	-WALMI-NGO collaboration for accelerating PIM capacity building
	2012	(DSC-WALMI partnership for 5 years)
	2013	Scaling up of PIM by WRD, SSNNL directly and in collaboration with NGOs
	2022	Scaling up to date

About a fourth of the WUAs in the Dharoi Irrigation project in Gujarat are registered cooperatives. The remaining WUAs are registered with the WRD but not as cooperatives. In the case of registered cooperatives, the cooperative values are still being preserved to some extent due to regular audit and proper compliance by the State Cooperative Department.

This is also partly because 27 of the WUAs have been federated at the branch level of the Dharoi Irrigation System. The *branch-level federation* has its internal physical and financial audit system in place. If needed, the federation also takes a stand with its member WUAs and officers of the WRD. There have been instances where the federation has rightfully demanded the timely release of water from the WRD. The farmers were of the view that there was a growing communication gap between them and the officers as the old officers have retired. However, they feel empowered enough to deal with those officers whose behaviour went against the spirit of PIM.

Even within the registered cooperative WUAs, the *processes have started weakening*. Earlier, there used to be two meetings with the government officers—one for irrigation planning and another for review at the end of the irrigation season. Now, only one meeting is held—that of planning. Hence, there is hardly any scope for learning from the previous season and taking it forward to the next season. Earlier, the schedule for the release of water was planned and communicated well in advance. Now, water may be released on very short notice, resulting in great inconvenience to the farmers. Given the above situation, farmer leaders felt that the WRD was losing interest while they were losing their voice in PIM.

This weakening of the participatory approach in canal irrigation has made the current situation of surface irrigation even more critical, with poor operations and maintenance leading to higher rates of depreciation. In 2000 itself, it was estimated by the Planning Commission that 21 million ha of irrigated land from major and medium projects required renovation/up-gradation or restoration. As early as 1988, BD Dhawan had cautioned that if we do not take care of the “leaking canals”, we may end up facing another food security crisis (Dhawan, 1988). While this may not entirely be

true (because leaking canals also play a role in recharging groundwater-tables), the warning is worth taking seriously as inefficiency in irrigation systems can prove prohibitive to both the government as well as farmers.

End-notes

1. The expenditure on irrigation has increased from Rs.4418 million in the 1st Five Year Plan to Rs 100,1060 million in the Xth Five Year Plan, however, the share in the total plan expenditure decreased from 23% in the 1st Plan to 6% in the Xth Plan (GoI, 2002).

2. Refers to a pedagogy developed and popularized by DSC over the first few years of its existence, particularly while working for PIM and watershed development.

PART - B

Reflections and Recollections by Key Stakeholders

DSC's Contribution to Participatory Irrigation Management

“DSC is a pioneer institution at the national level for supporting policy on sustainable natural resource management. It believes in the participation of users in the management of natural resources and equips them to shoulder this responsibility while working with them at the ground level.

In PIM, both Maharashtra and Gujarat adopted a similar approach of building from below. Therefore, we used to visit each other during the early part of the 1990s . After visiting the Dharoi project and interacting with the WUAs there, I was greatly inspired by the ownership and motivation of the farmers and their ability to articulate their issues.

I had the privilege to meet Anilbhai Shah during 2002–03 to understand how Government Resolutions were being prepared to empower the WUAs, which was very useful for us. In 2005, the Maharashtra PIM Act was passed. I was deeply involved in setting up a one-stop centre that enabled farmers to set up their WUA and make it operational.”

- Dr Sanjay Belsare,

Chief Engineer and Joint Secretary,

Water Resources Department,

Government of Maharashtra, Mumbai

“DSC had developed context-specific and excellent IEC (Information Education and Communication) material and training manuals for motivating farmers and WUAs in Uttar Pradesh. In addition to providing technical support, it would have been better if DSC had set up its own

office in different locations of the state and directly provided handholding support to the WUAs.”

- Rajesh Shukla,

Superintending Engineer, PIM Cell, Lucknow, Uttar Pradesh

Stakeholder Partnerships

“The period between 1995 and 2000 was the best for PIM in Gujarat. The leadership on both sides (government and civil society) became so enthusiastic that it began harbouring very large dreams! It felt that with the aggregation of WUAs up to the project level, farmers could be allowed to manage 90% of the distribution systems in the case of minor and medium irrigation systems.

... During those five years, WRD, Gujarat, received 12 out of 15 awards given by the National Productivity Council, New Delhi. This became possible only because of the intense involvement of civil society organisations, farmers and concerned academicians.”

- OT Gulati,

*Chief Engineer and Additional Secretary (Retd),
Water Resources Department, Gujarat*

Socio-Economic Impacts

“WUAs built from below brought about dramatic increases in the areas covered under irrigation. For example, farmers from Dedasan village claimed that their area had increased from a mere 35 ha to 225 ha. Similarly, in Kansa village, it had moved from 150 ha to 600 ha. To ensure proper distribution, they employed their watchmen, using the fees collected from farmers.

Looking back, the successful implementation of PIM has made major socio-economic impacts in these villages. Most of the people in Visnagar have now built concrete houses to replace mud-wall houses. Many have bought motorcycles and other vehicles. The level of education among children has gone up, leading to better flow of incomes from the educated

employed who had taken up jobs outside the village.”

**- Dineshbhai Patel, Babubhai Moortidas Patel,
Dahyabhai Patel, Praveenbhai Patel**
*(Farmer leaders, Water Users Associations
of Dharoi Irrigation Scheme, Gujarat)*

“In 2008, before DSC came to our area, water wastage in the upper reaches was commonplace and tail-end villages did not get their share. After DSC’s intervention, this scenario changed and water distribution took place equitably. This resulted in better farming. We were able to cultivate wheat as a food crop for the first time during the Rabi season. During Kharif, we cultivate cotton and/or Soybean. We have also started cultivating chilli. The resultant prosperity has led to the conversion of mud-walled huts into proper concrete houses. We now work first in our fields and then go for additional employment in other’s fields.”

- Dhyansinh Muvel, Mohan Pawar, Bapu Ukar, Tantu Mohan
(Farmer leaders, Water Users Associations of Madhya Pradesh)

“The northern part of the Dharoi area was notorious for its crime rate, and officers seldom ventured into those villages. Significant changes have taken place now—people have been able to carry out regular farming and crime rates have come down. Women SHGs promoted by DSC led to other developments, like attracting banks to their area.”

- Natwarsinh Parmar,
Farmer Leader, Gujarat

The Trust Factor

“Once, the dam had only enough water for one irrigation. So the officers decided that it was not worth giving water that season, as any crop would need at least two irrigations. We went to them and said that we would reduce the total area under cultivation so that all farmers could get at least two irrigations in smaller plots. The idea appealed to them and was implemented. This was enough to cultivate a food crop and avoid food

shortage that year. *Such solutions are possible when the channels of communication are open between farmers and officers.*”

- Dhyansinh Muvel, Mohan Pawar, Bapu Ukar, Tantu Mohan
(Farmer leaders, Water Users Associations of Madhya Pradesh)

Creation of New WUAs by Farmer Spearhead Team Leaders

“We told them (farmers from prospective villages) that we are your brothers from neighbouring villages. You can come and take a look at what we have done and how it can benefit you as well. We gave them our guarantee that if they took the initiative, the Gujarat’s Water Resource Department would supply them with the water.

We made full use of the knowledge, skills and tools that we have learnt from training sessions at DSC. For instance, we spent an entire day carrying out Participatory Rural Appraisal (PRA) to understand the location of water and other resources in the context of settlements of different caste groups.

During the formation of WUA, we went through an elaborate process, ensuring all castes were represented. We promoted “bara committees” (outlet groups) with about 20 members each. Later, one representative from each of these committees was taken to the WUA’s board. Even here, we ensured that members from the head, middle and tail portions of the canal, were in the ratio of 3:3:5. This helped in maintaining equity and participation of all caste groups in every small decision of the association.

For a team of two leaders, it often took six months to establish one WUA. We were provided a stipend of Rs 150 a day along with transport facilities. This ensured that our time was compensated and our families did not suffer. Government officials and DSC made regular visits and organised meetings to address village-level and canal-level issues. This created the right environment for the participation of all farmers in the command area.”

**- Dineshbhai Patel, Babubhai Moortidas Patel,
Dahyabhai Patel, Praveenbhai Patel, Natwarsingh Parmar**
(Members of Farmer Spearhead Teams)

Adapting to Local Differences in the Policy Environment

“In Gujarat, the emphasis was on rehabilitation of minor canals before water distribution by farmers. This required capital investment, which was about Rs 5,000 per ha then and would now be around Rs 10,000. An annual maintenance expenditure was needed to ensure that the concrete structures which were created were maintained well. In contrast, Madhya Pradesh did not have a major emphasis on capital investment mainly because the canals were not lined. For instance, in Jobat and Maan, polythene sheets were used to facilitate the flow of water in the canals and field channels, costing only Rs 100 per ha. per year.

In Madhya Pradesh, elections were held once in five years for WUAs. Hence, new leaders had to be trained all over again. This was not the case in Gujarat. Irrigation fees were collected by the WUA committee in Gujarat on behalf of the department. In Madhya Pradesh, the state did not collect fees, but WUAs collected fees on their own to create a fund for future exigencies. Hence, our efforts were to identify replicable principles and develop local models.”

- Mohan Sharma,

Executive Director, Development Support Centre

“We had loaded it (PIM) with too many objectives. The WUAs were expected to develop a capacity to manage collectively a key resource—water—effectively, equitably and sustainably. The development of such a capacity involves a process that needs synthesis of several theoretical ideas such as decentralisation, community participation, equity, rights, common property resource management, work and productivity, environmental impact, community and individual empowerment and institutionalisation!

... For a water system to work effectively, what is needed is for the farmers to know how to access the water and how to distribute it. Traditionally, farmers had this knowledge. For instance, in the Grand Anicut of Mettur dam, which is 1,000 years old, created by the Chola kings, norms for sharing water during drought years were well-established and followed. When the water in the dam was very low, they shared it on a rotational

basis with one river bank taking it during one scarcity year and the other bank taking it during the next. PIM itself represents an attempt to adapt the tradition of community participation to a modern need.

... There are a few issues at the policy level that are yet to be sorted out. Water is held in trust by the government like many other natural and man-made resources. But there are also native rights that are customary and have to be respected. What is the nature of these rights and how can farmers assert the same? ... An equitable allocation of water among cultivators in a command area is a question of more than addressing tail-end problems. A systematic way of addressing it is by recognising the differences in water rights among different landowners.”

- Dr R Parthasarathy,

Former Director, Gujarat Institute of Development Research (GIDR)

Future Directions and Possibilities

New Issues and Challenges

Many farmers on their part have turned to open wells and tube wells and are no longer keen on taking the canal water. The regular irrigation of large command areas from canals gradually recharges the sub-surface groundwater. In addition, dams have had a positive externality of recharging shallow and deep-water aquifers. Some rivers have also been revived. Many check dams and tanks have been created. This has changed the water supply scenario, such that farmers now prefer to use these alternative sources of sub-surface water which provide self-controlled and assured supply.

On the cost front, the WRD in Gujarat has been increasing the charges for canal water by 7.5% each year. In addition, a subsidised power supply for agriculture has made groundwater cheaper than canal water. With the coming of solar pumps, this balance could shift further in favour of groundwater, leading to unprecedented mining, endangering water security for the entire region. In this way, they have expanded their cropping season and crop diversity to make agriculture more profitable. For such farmers, water distribution from canals has become less important than before. Involving them will prove to be a greater challenge than before as their economic condition has improved manifold. The focus will now have to shift to sustainable use of water through conjunctive use of ground and surface water, which calls for an “integrated water management” approach.

The tribal and other farmers in Maan and Jobat projects have also started shifting to the use of bore-wells due to rising water table in the command areas. In certain pockets, the water is being used from up to a depth of

400–500 feet, which is saline and unfit for irrigation. Another issue is that farmers have started to deploy lift irrigation on the main canal. This has accentuated the problem of tail-enders once again!

In Gujarat, farmer leaders reflected on a major issue viz. lack of financial reporting, account keeping and audit of the book of accounts in WUAs—other than registered Irrigation Cooperatives. This has led to a lack of accountability among the WUA leaders. Over a while, the cooperative principles are compromised and the institution is run practically by only four to five leaders, while the large majority have no idea about the decisions taken by them. In many cases, the members are indifferent about the decisions taken by them. If these institutions are not audited regularly, as in the case of Irrigation Cooperatives, then they are bound to become weak over time and lose the cooperative ethos. This problem may apply to other states as well and therefore needs to be taken up at the policy level.

New Opportunities and Future Directions

The above discussion suggests that DSC may like to focus its attention on the following areas in future:

- i. Policy advocacy at central and state levels:* The last decade-and-a-half has witnessed a weakening of PIM processes, resulting in increasing gaps in communication and trust between the department and the farming community. DSC's valuable experience, since the formative years of the programme, places it in an eminent position to dialogue with the government and bring all the key stakeholders together to develop appropriate strategies. Ideally, the best way out would be to create platforms at different levels (state, district, block) where action research-based data and insights are shared and reflected upon by key stakeholders—even as this was practised in the early days of PIM and watershed development. But for that to happen, the state governments must first be convinced about the deteriorating state of water availability in their respective states, the reasons for the

same, the urgency of taking action and the new strategies which must be adopted without much delay. The PIM Acts in various states need policy advocacy to allow competent NGOs to participate and strengthen WUAs where needed. They are also needed to make policies and procedures more pro-farmer, drawing upon some of the experiences in Gujarat, Madhya Pradesh, Maharashtra and other states. Although processes of collaboration proven in the past should be built upon, the current issues and their solutions are seen to be different. A quick wish-list includes: i) pricing aligned with water budgeting and audit, ii) redefining structure, objectives and functions of WUAs, iii) redefining the command areas iv) delineation of the service area of WUA and v) recognising the new reality of water scarcity which will call for conjunctive use of water and incentivising farmers for improving on-farm water use efficiency, leveraging finance for water saving and water credit among others.

ii. Leveraging social capital built in the past: DSC's work in the past has led to the creation of social capital, because of which WUAs are still functioning, many of which have savings of Rs 0.5 to 2 million, which can help them in facing emergencies or in upgrading infrastructure and technology. In Gujarat, there is a cadre of farmer leaders who were part of the spearhead team. They are still willing to give their time and energy to the revival and spread of PIM in its true spirit provided they get the necessary support and guidance. This social capital needs to be leveraged in future. The susceptibility of WUA to water availability is partly due to a lack of emphasis on federating laterally. For effective water management, PIM must address the issue of federations and their roles.

iii. Promoting the idea of water rights among farmers: The idea of water rights for farmers in different locations within a command area needs to be introduced in the PIM Act. Various measures of ensuring water rights, such as

volumetric distribution of water, may need to be piloted and institutionalised.

- iv. Promoting integrated water management:** Cropping patterns, agriculture and irrigation practices and the aspirations of the communities have changed considerably over the last two decades. Areas are increasingly being irrigated through underground pipelines rather than open canals. Farmers use the canal water to fill their wells or '*khet talavdis*' (farm ponds) to use when needed. Simultaneously, farmers in the command area use groundwater, so there are several wells and tube wells, which impact and are impacted by canal irrigation. Thus, there is a need for making PIM more holistically integrated with water management, especially groundwater.
- v. Promoting the use of community-friendly technologies:** New technology, such as GIS informatics tools and drone technologies for smart planning and monitoring, would help with water governance and also develop trust between the government and the community. DSC has piloted technologies for improving water efficiency in canal commands and enhancing groundwater recharge, which can be scaled up for other areas too. Similarly, one could promote drip irrigation in the command area by storing canal and rain water in a village tank and connect it with pressurised pipeline with drip / sprinkler system.

During the COVID-19 pandemic, when face-to-face meetings with the community were not possible, DSC developed and piloted online modules for creating awareness and capacity building in the community. This approach will be helpful in future as well, as it enables the agency to reach a larger audience in a shorter time and at a lower cost. In addition, DSC may also like to work on water quality, water recycling, and on-farm and off-farm water use efficiency in collaboration with farmers and relevant partner institutions.

- vi. Making PIM more inclusive:** There is considerable scope for making PIM processes more inclusive for women and tenant farmers. Gender participation should move from tokenism to participation in decision making at various levels. Collaboration with the Working Group for Women and Land Ownership (WGWLO network) and modifications in policies and processes will pave the way for making PIM more inclusive.
- vii. Mobilising funds:** All key stakeholders will need to pool their energies to try and mobilise funds for investment in both hardware and software of PIM. Convergence with government schemes is an important source of funding. As demonstrated by DSC in Madhya Pradesh, funds from MGNREGA can be effectively used by WUAs in collaboration with the Gram Panchayat for de-silting and repairing the canals.
- viii. Strengthening WALMI:** The state-level water and land management institute, WALMI, should be strengthened to play a major role in the transformation of PIM. Apart from its usual capacity-building activities, WALMI could take up preparing virtual training modules, and generating feedback for on-going process-intensive programmes like PIM through action research.

The Committee for Accelerating PIM in Gujarat, chaired by VB Buch, has published a two-volume book which provides 13 conditions that need to be met for PIM to succeed and be accelerated. These conditions relate to work that must be done before, during and after the commissioning of an irrigation project. It is worth noting that DSC played a major role in the articulation of many of these conditions. The volume can serve as a useful guide for all future work in PIM.

Chapter-3

Participatory Watershed Management (PWM): The Integrated Route to Development of Rainfed Areas



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“We live in a drought-prone semi-arid region. For us, watershed development is like our battery charger!” said Rambhai, a farmer from Navaghara village of Meghraj block, Aravalli district, in our interview with him and other leaders of his area. The metaphor captures what the watershed development approach has come to mean to his community over the past decade and a half. DSC contributed to the evolution of watershed development in India significantly through a variety of interventions since 1994. During the early years, it was through close interaction with the Ministry of Rural Development (GoI) and the Department of Agriculture (both at central and state levels) to evolve policies and procedures. Simultaneously, it was engaged in capacity building and creation of extension materials keeping the needs of grassroots workers and district-level teams in mind. A little later, it also engaged in direct implementation in the field, which it continues to excel in.

Summary of Interventions and Outcomes

3.1 Introduction

Challenges of Farming in Rainfed Regions

Rainfed areas are typically regions that are entirely dependent on the vagaries of nature, since the farmers do not have access to any controlled source of irrigation. For the same reason, farming is restricted to only one season, which is the monsoon (Kharif). Those who have access to groundwater through open wells or bore-wells can take a second crop during winter (Rabi) season. The very fortunate few can cultivate their land for all three seasons, but they constitute a small minority in rainfed regions, which are mostly arid or semi-arid—where rainfall levels are less than 600 mm on an average. Often, they may suffer drought, leading to distress selling of cattle and other assets and/or distress migration in search of labour. Most communities in such regions suffered from severe water scarcity, degradation of top soils, low productivity and poor net-income from agriculture and allied activities.

With the introduction of watershed development concepts in the early 1990s by Dryland Development Board of Karnataka, it was realised that this suffering could be averted to a great extent. Watershed development can help entire villages in “drought proofing”, thereby averting the need to migrate and sell property out of distress. Indeed, when watershed development is scaled up and covers an entire river basin, a totally dried up river can be revived to its former state. This can transform the lives of all the people living in those river basins. The early work done by Rajendra Singh, through Tarun Bharat Sangh, in Tilonia, Rajasthan, bears testimony to the success of watershed approach in rainfed areas. His work inspired

many more development agencies to replicate this success in other river basins, either fully or partly, depending upon the availability of funds and human resources.

Concept and Purpose of Watershed Management

Rain, falling on the opposite sides of a 'drainage divide', falls into two different watersheds. Hence, the boundary of a watershed is provided by the ridgeline and the domain of Participatory Watershed Management (PWM) stretches from the ridge to the valley. The purely physical objectives of watershed projects are to a) arrest the flow of the rainwater so that it percolates into the soil rather than running off quickly to the lower reaches and b) protect the top soils from erosion and valuable land from degradation during precipitation.

The redistribution of water and moisture through a range of physical and biological interventions makes it possible to rejuvenate different categories of land, including forest lands, pasture lands, private farmlands and wastelands. This is the first step in restoring water and nutrient cycles, leading to improved biomass production. Recycling biomass and restricting

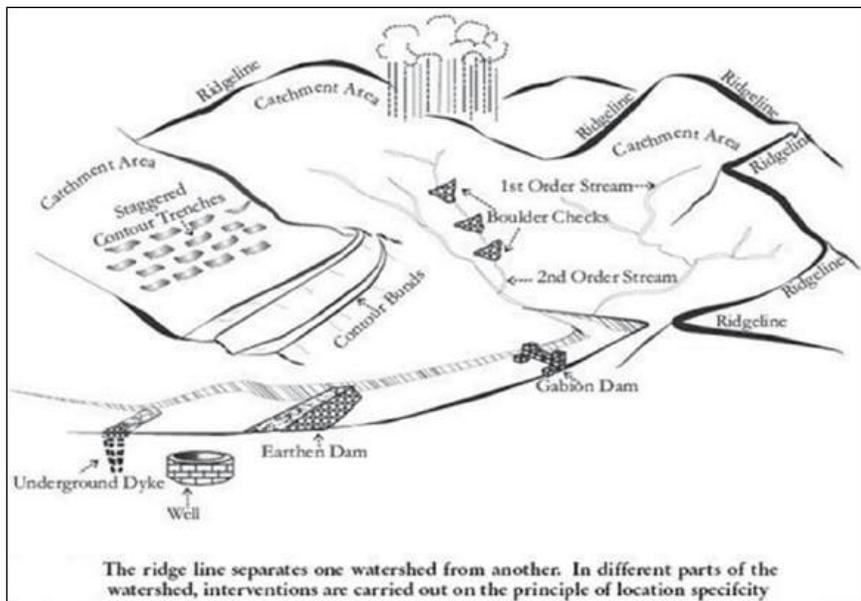


Figure 1: Conceptual representation of a micro-watershed

extraction within the carrying capacity of the micro-watershed will ensure the upward spiral of soil health, animal health and human health.

There are hierarchies in watersheds starting from a micro-watershed (100–1,000 ha) and moving up to an entire river basin, which could be anything from 3 to 30 million ha in size. The treatment of contiguous sets of micro-watersheds or the treatment of an entire river basin can generate a far bigger impact than a few micro-watersheds that are scattered and disconnected. The dramatic revival of river Aravari in the Alwar region of Rajasthan, promoted by Tarun Bharat Sangh during the late 1990s, or more recently of the Meghal river basin in Gujarat by AKRSP(I), bears testimony to this principle¹.

Micro-watershed development² is the most appropriate strategy for integrated natural resource management, leading to livelihood augmentation and socio-economic development of rainfed regions. It can be applied equally in arid, semi-arid and sub-humid regions, with a few differences in choice of treatment and design of water harvesting structures.

Social Capital as the Critical Component of Success

The creation of People's Institutions (PIs) is crucial not only for protecting the newly developed structures and resources but also for serving as effective governance mechanisms. Hence, social capital designed for watershed management is critical for ensuring sustainable use of resources and inclusive development of the community. User groups serve as custodians of common property assets like check dams and group wells and are effective in ensuring sustainable management of such resources. User groups and affinity groups (which carry out self-help activities including savings and inter-loaning) form the building blocks of larger watershed-level institutions such as the Watershed Association, Farmer Producer Company and Women's Federation of SHGs.

People's Institutions have become indispensable in NRM projects because they represent an important means of development. However, promoting effective grassroots-level PIs calls for investment in capacity building over an extended period. It also calls for competent capacity-building institutions

with the relevant expertise. During the early 1990s, only a handful of such institutions were available in the non-government sector (such as AKRSPI, PRAXIS, MYRADA, BAIF, NM Sadguru Foundation, etc.). DSC joined them in 1994 to take an active part in building the capacities of not only PIs but also the designated implementing agencies.

3.2 DSC's Interventions

DSC's initial interventions focused mainly on capacity building for various players in major government projects. Its presence in major forums at the district and state levels in Gujarat made it possible to raise issues related to implementation and to suggest suitable amendments in policy and procedures. It also engaged in direct implementation to stay connected with the grassroots on the invitation of District Rural Development Agencies. As a learning organisation, DSC also invested in independent research that strengthened its efforts in policy advocacy and capacity building. Hence, this review is presented in three parts: a) capacity building, b) policy advocacy and research, and c) direct implementation.

3.2.1 Capacity Building

By the mid-1990s, DSC was already a recognised training institution, having been designated by:

- Government of Gujarat, as one of the three state-level training institutes for Watershed Management Programmes
- CAPART, a GoI undertaking, as one of the seven national Training and Support Voluntary Organisations (TSVOs) for Watershed Development Programme
- Ministry of Agriculture, for its watershed programme called Watershed Areas Rainfed Agricultural Systems Approach (WARASA)—*Jan Sahbhagita*
- Ministry of Rural Development, GoI, for natural resource management training

In addition, the State Institute of Rural Development (SIRD) collaborated

with DSC as a major resource agency for its training programmes on watershed development. By 2004, DSC had started its training centre at Bopal in Ahmedabad with basic infrastructure and in-house accommodation facilities.

In 1994, the Hanumantha Rao Committee, constituted to evaluate watershed programmes implemented during the 1980s, recommended the need for a “Community–Based Watershed Management (CBWM) approach”. This recommendation led to the formulation of The National Policy Guidelines on Watershed Development (1994), which made way for a radical shift in the watershed approach and placed community participation as central to all the planning and management. This required a different way of thinking, behaving and acting. For bureaucrats, it meant a change in roles from doer to facilitator and recognising rural communities as partners rather than beneficiaries. This was easier said than done! It required all those involved in the planning, implementation and management of the programme to trust rural communities to effectively manage their natural resources. The Watershed Association and its Committee were expected to implement the programme and 75% of the funds were directly provided to them for the implementation of the various watershed activities. The guidelines also provided funds for intensive capacity building of the community and also those who were facilitating the People’s Institutions, i.e. the Project Implementing Agency (PIA) and the Watershed Development Team (WDT).

The watershed guidelines allocated 5% of the total budget of watershed management for training and capacity building of various functionaries from the state level to the village level. However, in 1997, it was seen that many of the states had under-utilised the training budget and there was considerable variation in its design and delivery across different states. Thus, a committee under the Chairmanship of Shri VB Easwaran was constituted by Shri BN Yugandhar, the then Secretary, Rural Development, to standardise the training modules for the different functionaries. DSC’s experience in training was considered by the committee and some of the recommendations made by Anilbhai were incorporated in the same.

The Rural Development Commissionerate, Gujarat, selected the State Institute of Rural Development, Agriculture Universities and two NGOs—NM Sadguru Foundation and DSC—as training institutes for the state. MANAGE, Hyderabad, conducted a training of trainers for the training institutes. A Training Committee was formed by the state government to develop a comprehensive training plan and review mechanism for the state, including the curriculum for the Basic Training Course (BTC).

DSC developed a variety of training programmes for the Watershed Development Team (WDT) comprising Community Mobilisers, Agriculture Specialists and Agri/Civil Engineers, Watershed Committee members and functionaries such as the President, Secretary and Village level volunteers involved in implementing watershed programmes, of which, the BTC became the most popular. The first BTC was carried out in Kutch in 1998. The training involved a mix of pedagogies, which included lectures to provide conceptual understanding and exposure to the best available watershed projects in the country such as at AKRSP(I), BAIF and Ralegaon Siddhi. The training programme focused on participatory methods that would help the WDT seek the participation of the community so that they would get involved in designing the intervention and later take charge of the delivery and management. The course not only looked at the programmatic issues but also touched on aspects related to behavioural change in the individuals within their social and environmental contexts. It motivated individuals to become change agents.

DSC was also engaged by Rajiv Gandhi Jal Grahani Mission in Bhopal in Madhya Pradesh to provide Watershed Committee training covering some districts of Malwa and Bundelkhand regions. The Watershed Development Department, Rajasthan government and GIZ (a German donor agency) engaged DSC in developing the state's Watershed Capacity-Building Plan.

Till 2010, DSC had conducted 31 BTCs of one-month duration, benefiting 801 participants. From 2011 to 2015, DSC conducted 22 BTCs of two weeks' duration, benefitting 431 participants. Shorter programmes of three to five days duration were targeted at people with specialised roles in watersheds. These included training for engineers, gender sensitivity

training, agriculture development and productivity enhancement training, and training of trainers, among others. These programmes were supported by the government and other donors.

Since 2015–16 there has been a steady decline in the capacity building of functionaries for watershed management. It is no longer a priority and therefore the training of WDT and Watershed Committee members has been discontinued by the government.

3.2.2 Policy Advocacy and Research

Interestingly, capacity building became an entry point for participating in policy-making forums at various levels. Monitoring the performance of the trainees and implementing agencies provided valuable insights from the field, which were then used to influence policy at the various district and state-level committees, of which DSC was an integral part. This is better explained by looking at the implementation hierarchy created by the state and DSC's presence in it.

1. State-Level Nodal Agency
2. District Watershed Development Unit (DWDU)
3. Project Implementation Agency (PIA)
4. Watershed Development Team (WDT)
5. Watershed Association (or Watershed Committee (WC) under Gram Panchayat after implementation of *Hariyali Guidelines* in 2003, which made Gram Panchayat the main implementing organisation at the village level)
6. User Groups, SHGs, etc. under WC

DSC was largely involved in capacity building for players from Levels 3 to 6 and also conducted a programme for the DWDU. The experience gained helped to identify practical issues and insights for effective implementation at Levels 2 and 1. DSC was a member of the advisory committees of eight District Rural Development Agencies (DRDAs). It helped the DRDA in evolving mechanisms for planning and reviewing the programme,

developing a capacity-building plan and also providing feedback for issues at the ground level. Two examples of this process of influencing policies and procedures are given below:

- i. Gender equity:* DSC was able to push the gender agenda when it got the government of Gujarat to issue an order making it compulsory to involve women as members of the Watershed Development Team. Those who did not follow the order and did not recruit at least one woman in the team and did not send her for the training were subject to penal provisions in the form of reduced administrative expenses.
- ii. Appropriate time for WDT's training:* Many PIAs were found to be sending WDT members for training after implementation was already halfway through. This was brought to the notice of the government. It was then made compulsory for all PIAs to send the WDT members for training within six months.

On certain issues, DSC decided to commission empirical research through its resources before coming out with recommendations at the policy level. A longitudinal research study covering the period 2000 to 2004 focused on the effect of watershed treatment on drought-proofing when Gujarat experienced three consecutive years of drought. Comparing watershed and control villages, the study reported significant benefits of watershed treatment, that lasted for two consecutive years of drought. In December 2001, DSC, in collaboration with the Gujarat Institute of Development Research (GIDR) and Centre for Development Alternatives (CfDA), published two volumes of *In the Hands of the People*. Compiled by Dr Sudarshan Iyengar and Dr Indira Hirway, these volumes are documentation of Anilbhai's rich experiences in rural development, participatory watershed management, JFM and PIM.

Other studies examined the cost-benefit of investments in watershed treatment (DSC, 2005); maintenance of physical assets (DSC 2005); equity in benefit distribution (DSC 2005); policy changes that did not work—the case of forestland in watershed (DSC, 2003); and the issue of convergence of watershed and MGNREGA programmes to ensure

drinking water security (DSC, 2011). In 2010, DSC led a four-state study on post-project management and use of watershed development funds, which made several recommendations for strengthening the New Common Guidelines of 2008. The study also brought out the importance of post-project monitoring of watershed projects. For a more complete list of studies conducted by DSC, please visit www.dscindia.org.

3.2.3 Direct Implementation

During the 1990s, DSC implemented the watershed programme in two drought-prone districts of Gujarat (one tribal—Sabarkantha—and one non-tribal—Amreli), covering about 10,000 ha in 20 villages. Subsequently, it continued to implement watershed projects to stay connected with the grassroots realities. Between 2007 and 2014, it completed a WS project in four villages of Meghraj taluka in Sabarkantha district with funding from the Indo-German Watershed Development Programme through NABARD.

Since 2017, it has undertaken WS development in the Marathwada region of Maharashtra, which was under great water stress and had become a hotspot for farmer suicides. Many villages had to import water through tankers to meet their drinking water needs. The work was carried out in a 6,300 ha. watershed in collaboration with Jankidevi Bajaj Gram Vikas Sansthan (JBGVS), the CSR arm of Bajaj Auto Company. The project was designed to arrest a minimum of 70% of surface runoff and increase groundwater level by the end of September 2022, benefitting about 3230 households.

Currently, DSC is implementing the WS programme in about 37,000 ha in 73 villages in the states outside of Gujarat viz. Madhya Pradesh, Maharashtra and Rajasthan. These programmes are being supported by the State Governments and other donors. The local communities and donor agencies have rated the construction quality of physical structures very high, as these are functioning well even after more than 15 years of their construction.

To ensure the quality of masonry and concrete structures, a rebound hammer test and an Ultrasonic Pulse Velocity test were conducted by the

expert team and all the structures successfully passed the quality test in the year 2021.

This would not have been possible without developing the necessary social capital at the village level. Institutions such as Village Development Committees (VDC), Self-Help Groups (SHGs) and Water User Groups (WUG) were formed and capacitated and they were facilitated to plan, implement and monitor the physical interventions that would develop true ownership among beneficiaries for post-construction maintenance and sustainability.

Cumulatively, DSC has developed 1,208 structures creating 6.4 million cubic metre storage potential, leading to increased access to water and 10–22% growth in crop yields. The village communities have also restored 19,627 ha of critical habitat for endangered flora and fauna through the regeneration and protection of indigenous plants.

3.3 Outcomes and Impacts

3.3.1 Capacity Building

An independent evaluation conducted by the Dhan Foundation in 2006 found that the Basic Training Course (BTC) for watershed development designed and conducted by DSC had led to an increased knowledge of the concept and principles of watershed and related technical aspects. Better design and implementation of projects resulted in quality water-harvesting structures and robust processes for developing village institutions.

The BTC developed for Gujarat was much appreciated by other agencies and states as well. Western Orissa Rural Livelihood Project (WORLP) in Orissa adopted the module of BTC in its project. The GIZ and the government of Rajasthan invited DSC to develop a capacity-building plan for the state. The government of Rajasthan asked for a shorter version of two weeks. The World Bank invited DSC to conduct a two-week BTC for its officials in the Local Empowerment and Environmental Management Programme (LEEMP) in Nigeria (2004).

Extension Material

The rich experience in direct implementation as well as supporting government for implementation resulted in the development of valuable extension materials. Among these, the video film “*Lalak*” which focuses on community-organising and institution development, and “*Jal Jivan no Dhabkar*” which looked at the design of physical interventions in watershed management were well-received and shared widely in Gujarat and other states. A handbook on watershed development in Hindi was prepared in collaboration with ITC. The list of IEC material developed by DSC is provided in its website.

The extension material brought out the importance of adopting an integrated approach embodied in the five Js, viz. *Jal* (water), *Jameen* (land), *Jungle* (forest), *Janwar* (animals) and *Jan* (human beings). The newsletter “*Divadandi*”, meaning the lighthouse, for promoting sustainable agriculture in rainfed and irrigated areas of the state was supplied to village libraries, offices and communication centres of FOs, government departments and agriculture universities from where it was disseminated to farmers. A farmer-managed Mobile Agriculture Extension Van was successful in creating awareness and promoting soil and water testing with more than 10,000 farmers.

Hand-holding support led to the establishment of Sajjata Sangh.

DSC realised that several small organisations needed hands-on support, besides structured training programmes, for effective implementation of the watershed programme. Between 1994 and 2008, DSC supported about 24 organisations in Gujarat to enable them to implement the programme equitably and sustainably. Some of these organisations are now recognised as resource organisations for their respective districts. They in turn provide support to other organisations and conduct training for village-level functionaries. This initiative ultimately led to the formation of a network of NGOs in 2000, called *Sajjata Sangh* (see Chapter 7).

Outreach services of DSC and Sajjata Sangh were supported by the Aga Khan Foundation for a full decade from 2002 to 2012 under the Sustainable Community-Based Approaches to Livelihood Enhancement (SCALE)

programme. Thereafter, the approach of donors, especially CSR agencies, shifted more to supporting direct field-level implementation. Funding support for research and documentation, capacity building, development and dissemination of IEC material and networks was considerably reduced. As a result, DSC had to discontinue many successful initiatives such as the Radio Programme, *Avaj Otalo* (mobile-based extension service) and the publication of the *Divadandi* newsletter.

3.3.2 Influences and Impacts on Policies and Procedures

DSC has played a critical role in influencing policies and procedures at the state and national levels for promoting participatory watershed management. It has made a significant contribution to the formulation of the watershed guidelines of the Ministry of Rural Development and CAPART. Looking at the impact of DSC's role as a Training and Support Voluntary Organisation (TSVO) in capacity building and quality enhancement of watershed programmes, CAPART, the Ministry of Agriculture, included a similar role for TSVOs in their guidelines on watershed management.

DSC made a critical contribution as a member of the working group on rainfed areas for the 11th Five-Year Plan and also for formulating the New Common Guidelines for Watershed Management (2008). The section on capacity building reflects the experience of DSC and other organisations and underlines the importance of having a capacity-building plan at the district level.

A study entitled "Drinking Water Security in Watershed Villages of Gujarat" (2011) brought out findings that led to modifications of the Hariyali Watershed Guidelines of the Ministry of Rural Development, Government of India.

The four volumes of *A Strategy Handbook for Practitioners on Livelihood Augmentation in Rainfed Areas*, published in 2011 with support from the SCALE programme of the Aga Khan Foundation, received wide recognition at the state and national levels. These have been distributed by the Gujarat State Watershed Management Agency and the Gujarat

Livelihood Promotion Company to their District Managers. The livelihood framework and strategies indicated in the volumes served as a base for conducting a national workshop organised by the UNDP and the National Rural Livelihood Mission. The two volumes, *In the Hands of the People* by Shri Anil Shah, were also widely read and appreciated by practitioners and policymakers. These volumes edited by Dr Sudarshan Iyengar and Dr Indira Hirway include several articles on watershed management, PIM, Joint Forest Management and Rural Development.

Workshops on ensuring drinking water security in watershed villages at the block, district and state level (2008–2010) resulted in recommendations for convergence between the GSWMA and WASMO. The plans of the Integrated Watershed Management Programme (IWMP) reflected the convergence between the watershed programme and drinking water supply.

The Principles of Development and Management of Natural Resources (nick-named “*Bopal Declarations*”), as developed and proposed by DSC along with other development organisations, was incorporated in the new common guidelines for Integrated Watershed Management Programme-IWMP (2008) and the Approach Paper on Rainfed Areas in the 11th Five-Year Plan (2007–2012).

3.3.3 Impact of Direct Implementation

The watershed development work in Dhari (Amreli district) and Meghraj (Aravalli) in Gujarat, Mhow (Indore) and Sonkatch (Dewas) in Madhya Pradesh and Gangapur in Aurangabad district in Maharashtra, implemented by DSC directly, made significant impacts at the grassroots level. These interventions inspired the communities (mostly tribal and OBCs) to improve their socio-economic condition, improve nutrition through vegetable cultivation in the backyard and empower their women folk. The communities also took keen interest in monitoring their groundwater use and ensured availability through participatory monitoring techniques that are now paving way for more intensive integrated water management at the village level.

Box 1

Principles of Development and Management of Natural Resources in a Sustainable Manner (Bopal Declarations)

The decade of 1990s saw a paradigm shift in the design and implementation of natural resource management programmes in India. The rural communities were given the power to decide and prioritise their requirements and accordingly prepare and implement micro-plans appropriate to local conditions and needs. Joint Forest Management (1990), Watershed Development (1995), Participatory Irrigation Management (1997) and Swajaldhara (2003) are some of the major programmes formulated on these principles.

Those working for participatory management of natural resources were hoping for strengthening and carrying forward of the participatory approach in 2000–2001 at the time of formulation of the 10th Plan. However, the trends of 10th Five-Year Plan pointed towards distortions and reversals of healthy trends initiated in the Golden Decade of 1990s. This was forcefully brought out in the paper “*The Fading Shine of the Golden Decade*” by Shri Anil C Shah, Founder Chairman of DSC. When this paper was presented to eminent scientists and thought leaders Dr MS Swaminathan and Prof YK Alagh, they encouraged DSC to organise national-level deliberations to voice concern at the dilution and near reversal of the participatory approach. At the same time, it was necessary to present basic principles that would guide the formulation and modification of schemes of natural resources management by Centre, states or donors in future. The following principles, generally referred to as the ‘*Bopal Declarations*’, were an outcome of the national-level workshop conducted by DSC on January 16, 2005, at its head-office in Bopal. These were largely targeted at government departments dealing with natural resource management in rural areas.

Principle 1: Centrality of Community-Based Organisations (CBOs)

- CBOs should be the centre of planning, budgeting, implementation and management of all natural resources

development programmes so that they have incremental ownership of the programme.

Principle 2: Equity

- Natural resource development and management programmes should be considered as levers for achieving greater economic, social and political equity.

Principle 3: Decentralisation

- Flexibility in technical, social and financial norms to suit varying local conditions should be facilitated through the process of decentralisation embodied in a broad-based organisation at the district level

Principle 4: Importance of Facilitating Agencies

- Facilitating agencies, preferably competent NGOs, should be selected through a rigorous and transparent process by the government

Principle 5: Monitoring and Evaluation

- A participatory, outcome/impact-oriented and user-focused monitoring and evaluation (M & E) system should be put in place to obtain concurrent feedback and undertake mid-course improvements in the programme design and implementation systems.

Principle 6: Training and Software Inputs

- For each major programme of natural resource management, an Empowered National Committee (ENC), appointed by the concerned national board should develop strategies and lay down guidelines for effective capacity building through awareness creation, communication and training of key functionaries in the programme.

Principle 7: Sustained Momentum of Development

- Since the goal of NRM is raising incomes and creating wealth for all sections of rural community, it is essential that facilitating agencies should be mandated and supported to initiate productivity enhancement and value addition during the project period and for a few years beyond.

Principle 8: Organisational Restructuring

NRM programmes require highly autonomous organisations at district, state and national level with performance accountability, accountability for service delivery to their stakeholders and multi-disciplinary competencies to enable them to design, modify, operationalise and implement as appropriate the NRM programmes within their respective mandates.

The five years of targeted watershed development project interventions in the Marathwada region of Maharashtra resulted in dramatic impacts as shown below:

- A total of 5.02 million cubic metres of water storage capacity was created that increased the water table in open wells by 7.0-7.5 metres
- 0.38 million cubic metres of silt from ponds was deposited by farmers in their field which improved the fertility of farmland
- The harvested runoff water is sufficient for providing two supplementary irrigations during the late Kharif and Rabi seasons in more than 5500 ha. An additional 290 ha of barren land was developed for cultivation by farmers
- The productivity of cotton increased by 80% and maize by 52% per hectares
- The 15 villages of the project area have become “Tanker Supply-free” villages and local administration could save huge amounts of money because of the rejuvenation of local resources
- The intervention brought down the number of farmer suicides from 32 cases before 2017 to five, representing a reduction of 85% (till 2021)

In addition, 200 acre land spreading in more than 10 villages in a Lodhri Nadi River basin in Sonkatch block of Dewas district greatly benefited from a combination of ridge area treatment under the government’s IWMP project and construction of series of water harvesting structures. Similarly,

in Gadaghat and Kaligiray villages in Manpur, more than 100-acre rainfed land was transformed to productive land with perennial irrigation facilities because of bringing additional land under irrigation.

DSC is replicating the project learning and best practices in similar geographies in Maharashtra with the support of CSR and government agencies. In recognition of this work, DSC was conferred the Americare Excellence Social Impact Award for its work in the Aurangabad district in May 2022.

3.4 DSC's Contribution to the Trajectory of Watershed Development in India

The idea of watershed development captured the imagination of both state and central governments during the decade of the 1990s, which was maintained during the first half of the following decade as well, although the momentum had started slowing down. By around 2015, it had run out of steam. Projects carried out after that time are mainly through support of NABARD, CSR or private donor organisations.

DSC played a major role in the evolution of Watershed Development Programmes in India. In Table 1, we have tried to capture in summary its role vis-à-vis landmark events and programmes related to watershed development. During the early stages, when the whole idea was new to both government and civil society institutions, DSC contributed a lot in conceptualising and giving shape to the programme. This can be attributed to Anilbhai's stature and acceptance in the bureaucracy as well as the professional approach of the DSC team both for technical inputs as well as promoting social capital with strong building blocks and leadership. From the later part of the 1990s, the focus shifted more to capacity building and IEC products. DSC's role in policy-influencing weakened after the first two decades, but it continued its engagement in the field through the direct implementation of projects.

End-notes

1. For more on this, interested readers may refer to Volume 1 of *Livelihood Augmentation in Rainfed Areas (LARA)*, published by DSC in 2011, with the support of Aga Khan Foundation, through the European Union-funded SCALE Programme

2. A micro-watershed can be defined as “a unit of area that includes all land and water areas that contribute runoff to a common point or single outlet” (Intel Cooperation and SDC, 2003).

Table 1: Timeline of major events and DSC's contribution to the watershed sub-sector

Year	Policy Milestones	New changes/initiatives	DSC's Contributions
1994	Hanumantha Rao Committee	Major initiative drawing best practices of good NGOs.	Close interaction of Anilbhai with Shri BN Yugandhar, Secretary of Rural Development, who drafted the committee report
1994	First WS guidelines by MoRD, central government	Water harvesting project initiated for the first time by the government; integrated approach on all lands from ridge to valley.	Anilbhai's contribution to guidelines through workshops at MANAGE, Hyderabad; Supported Gujarat government in three districts: Bhavnagar, Rajkot and Amreli; Member of <i>District Advisory Committees</i> ; and <i>state-level Committee</i> ; Provided training to small NGOs
1997	VB Eswaran Committee	This was established to standardise training modules	Anilbhai and Shri Yugandhar collaborated to come out with the recommendations which were adopted
August 2001	Revised WS guidelines	Drew mainly from Hanumantha Rao committee report; WASSAN, Hyderabad, designed and launched with a similar mandate to DSC	WASSAN was designed by Shri Yugandhar and Anilbhai jointly
1st April 2003	Hariyali Guidelines (first Rev) by MoRD	Panchayat given the mandate to implement WS programme; the role of NGOs minimised	Representation to the government to create space for credible NGOs
2005	Parthasarathy Committee	The committee formulated guidelines for the Integrated Watershed Management Programme	DSC and Sajjata Sangh hosted the committee members during the formulation stage and conducted field visits to Meghraj and Sayla

1st April 2008	Common guidelines for all departments and projects, by the Planning Commission	As above; No space for credible NGOs even after representation, leading to a downward spiral; WS project reserved only for dryland areas; WASSAN retained in new guidelines but enabling conditions not addressed, absence of role clarification	DSC's contribution reduced to providing training for WS and carrying out research studies to influence governments
May 2009	Convergence Guidelines between MGNREGA and Integrated Watershed Management Programme	Convergence with WS for the labour component recommended (failed due to mismatch of priorities and lack of capacity at Panchayat level and inherent problems at NREGA)	Change in approach—networking of NGOs; Demand management strategy for water; Start-ups for specific issues like RO plants—drinking water; Water management tools
2010	Committee on convergence	21 aspirational districts—Collectors responsible for convergence; Niti Ayog WS monitoring body; village action plans, Project management committee formed	DSC among other NGOs represented on the committee
2013, (Enforced April 2015)	14th Finance Commission report	The recommendation is that state governments provide 40% of the cost of the WS programme; (Led to degeneration of processes and became target-driven; by 2014 hardly any WS projects were in operation)	DSC made representations to the Commission
2014	Revitalising Rainfed Area Network (RRAN)	Formed by like-minded NGOs and individuals interested in WS and water conservation issues	Breaking bigger problems into smaller components—like WASSAN taking up the support of millet crops; Several pilots in collaboration with governments

PART - B

Reflections and Recollections by Key Stakeholders

Support Extended to Smaller NGOs

“In 1997–98, when we started work on watershed development, we got connected to DSC and came to know Anilbhai, its founder. The staff at DSC was very enthusiastic and this rubbed off on us as well. We were engaged with the people at the grassroots level but we had limited resources. We lacked the necessary knowledge, finance and capacity to implement watershed projects. DSC and Sajjata Sangh, the network promoted by it, stepped in to provide us with all that was lacking. The one-month training I received at Vadodara provided me with the vision and built my capacity to write projects. Subsequent hand-holding enabled us to implement such projects successfully.

We implemented 16 DRDA projects over 5 to 6 years, which were well-received. During this period, Anilbhai and Sajjata Sangh helped to solve many issues with government.”

- Dhirubhai Vagadia,
SSKK (Shikshan and Samaj Kalyan Kendra)
and member of Sajjata Sangh

“We started working on the watershed programme in 1996 with the help of DSC and Sajjata Sangh as they were working with good intentions. As it was a new programme, there were a lot of challenges. They understood these challenges and tried to address them. Anilbhai wanted to reduce the hurdles and take every good organisation with them. When faced with adverse policies and procedures, DSC knew how to sort these issues out

During the watershed implementation of MORD, Anilbhai took many NGOs and did supportive work giving momentum to watershed development in Gujarat

and other states. DSC provided handholding right from the stage of proposal writing. He wrote a recommendation letter for our project with CAPART. He understood the problems we faced and tried to help out in every way possible...”

- Rajendra Jaiswal,

Prakriti Foundation, Member-Sajjata Sangh

The Experience of Learning from Anilbhai

“I joined DSC in August 1994, about four months after it was registered as a trust. DSC was involved in training programmes for NGOs on watershed development at that time. It was part of the State-Level Committee. I worked with Anilbhai and prepared notes. It was very engaging work. I developed Excel sheets with basic data from the field to capture the picture of the entire watershed. A year later, I was posted at Dhari watershed in Amreli district, which was very enriching. I was attached to Lok Bharati, Sanosra and Sri Kundla Taluka Gram Sewa Mandal (SKTGSM) Charitable Trusts. We had a young team and were enthusiastic. In one year, several nalla bunds and gully plugs were prepared. However, that monsoon saw heavy rains and the bunds got washed away. The lower gully plugs also got breached. Earlier, Vakharia Saheb (a senior retired civil engineer) had visited and advised us to create waste-weirs, but we had not done that. I felt very guilty. However, Anilbhai was very supportive. After some time, I prepared a short film of 15 minutes on our mistake so that others could also learn from it. Next year, we ensured that the work was properly done!”

- MV Ramchandrudu,

Founder Director, WASSAN

Impact on Farming Community—Meghraj block, Gujarat

“When DSC initiated watershed development work in our villages, they wanted us to sign a document giving consent to the soil and water treatment in our lands. Many of our farmers became suspicious and refused to sign! They felt that once they signed, they would lose their land. Later they agreed to join the project when they saw that it was in their interest and there was nothing to fear from an agency like DSC.”

“At that time, 50% of the farmers used to go out in search of labour. Thanks to WS treatment, now that has stopped. The productivity of the Kharif season crop went up due to soil and water conservation. We also started growing Rabi season crops. The supply of green fodder resulted in greater milk production. Due to improved income, now about 50% have converted mud huts into proper houses. Almost every house has a motorcycle”.

“We live in a drought-prone semi-arid region. For us, watershed development is like our battery charger!”

“In the very first village meeting with Anilbhai, he told us that DSC had been created to improve the lives of farmers. We hold DSC in very high esteem.”

- **Rambhai**, *Watershed Association Navaghra*; **Kanubhai**, *Watershed Association Gay Vacharda*; **Kantibhai**, *Watershed Association Valuna*;
Rameshbhai, *Watershed Association Bhatkota*

“The status of women has changed quite a lot. Earlier, we could not come out of the village. Now we feel liberated to go out. Earlier, we owned ordinary cattle. After exposure visits and training, we have adopted good breeds of cattle and improved milk production. In agriculture too, we have started using certified seed with a lot of benefit in productivity. Earlier, many families had their land mortgaged. They were able to free their lands by taking loans from our women’s federation. Farmers can now take loans for housing, school fees, health and delivery cases, among other needs. All this was possible because of the financial independence that we could achieve through our women’s SHGs and their federation.”

- **Laxmiben Khokhariya**, *Secretary, Sangam Women’s Federation*

Impacts on Farming Community—Madhya Pradesh

“We learnt to make small check dams and use them effectively for growing remunerative crops. To prevent leakages from the dams, we used polythene bags. The availability of water in the fields improved by one to one-and-a-half months. We can now cultivate potatoes and onions apart from wheat. Onion is a new cash crop for us.”

“We learnt that organic farming could save us from possible sickness due

to the reduction in the use of harmful chemicals. Now, five to six farmers have shifted to organic farming. We are shifting gradually to avoid a sudden drop in productivity. From two bags of chemical fertilisers, we have now brought it down to only one bag.”

- **Sardaben**, *President, Parvatiben and other members from Janapav Women’s Federation, Mhow*; **Rajeshbhai**, *President and other members from Watershed Association, Tincha village*; **Parasrambhai**, *President, Watershed Association, Melandi village*

DSC as a Knowledge Partner

“DSC was very strong in a participatory approach to natural resource management. We therefore approached them in 2009 for support in the implementation of IWMP. We sought their input in two main areas—a) planning and monitoring for better implementation and b) as a resource institution for training. In IWMP, we had 6,000 watershed committees covering 2.2 million ha of land. DSC developed training modules for our WS teams. It was also actively involved in drafting a water policy, viz. *Right to Water Act*, which however could not be brought out due to reasons beyond our control.

The Guidelines of 1995 had a major focus on soil and water conservation. Now the focus has shifted to biological rather than engineering measures. This implies improving agriculture and animal husbandry production systems along with landscaping. More specifically, we are expected to scale up efforts in agri-extension, promotion of SHGs and FPOs. The challenge in agri-extension is to promote crop diversification for marginal farmers so that they may shift from soybean and wheat to other crops like fruits and vegetables. We need to also build climate resilience in agriculture. For FPOs that are being promoted in a big way, they will need help in preparing and operationalising business plans. This pre-supposes knowledge of market analysis and helps in building market linkages. We need DSC as a ‘knowledge partner’ which has vast experience in this kind of work.”

- **Vivek Dave**, *Director, Rajiv Gandhi Mission on Watershed Management, Bhopal*

PART - C

Future Directions and Possibilities

WS initiatives have proved beyond any doubt that these are invaluable for farming communities in arid, semi-arid and dryland regions. Since some state governments are not collaborating with NGOs any longer for the implementation of watershed programme, many NGOs have started thinking of alternative ways to support the same.

More than 40% of farming continues to be dependent on rainfall, suffering the vagaries of monsoon and is prone to frequent crop failure on account of droughts. According to Shri MV Ramchandrudu, founder director of WASSAN, in the absence of adequate funding to undertake a comprehensive and integrated programme, they have adopted the strategy of breaking up the problem and undertaking components through multiple avenues of funding. Hence, in some places which are undulating, projects of check dams are taken up, which directly help small and marginal farmers to stabilise their production. In other geographies, farm ponds and village tanks are promoted that help in both agriculture as well as inland fisheries.

Of late, the concepts of “green watershed” and “spring watershed” have also been piloted by NABARD and other agencies for focused and targeted treatment. Hence, treatment of ridge areas and fringe areas in the periphery of dense forest land through vegetative cover and agroforestry are referred to as green watershed. In some places like Bundelkhand in Madhya Pradesh and Kutch in Gujarat, projects of groundwater recharge are taken up, which directly help small and marginal farmers to stabilise groundwater sources. These are referred to as spring watershed.

An attempt at promoting social and corporate entities to address the water problem through new technology and corporate services has shown promise (e.g., promoting drip irrigation to improve water use productivity and RO systems for drinking water in arid regions).

Till 2007, DSC used to focus on water supply and management in irrigated and rainfed areas. There was an urgent need to intervene in the demand-side management of water without compromising on the livelihood needs of the rural communities. Thus, DSC promotes sustainable agriculture practices in its operational areas. Till 2011, DSC concentrated on the development and management of surface water structures through WS and PIM programmes. Since groundwater depletion was a major problem in rainfed and irrigated areas, it initiated pilots on the Integrated Water Resource Management Programme (IWRM) and Managed Aquifer Recharge through Village-level Interventions (MARVI) in Meghraj and the command area of three irrigation systems in North Gujarat. The organisation built its capacities to integrate groundwater management with the mainstream WS and PIM programmes. The details of its intervention in IWRM and Participatory Ground Water Management (PGWM) are provided in the following chapter.

Agencies like DSC and networks like Revitalizing Rainfed Area Network (RRAN) and Sajjata Sangh could try to influence the government to revive WS programmes in order not to push dryland farmers back into pre-watershed days. Efforts could also be made to mobilise CSR funding in a big way. Until then, the strategy of piece-meal implementation of components critical to a given watershed would continue to serve as the default strategy.

Chapter-4

Towards a More Holistic Approach to Water Management in Rural Areas



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Groundwater in a given region represents the stock of water that would ensure the future viability of agriculture and food security. The mining of this precious resource over the last two to three decades has resulted in pushing many regions of India into the dark zone. The critical question now is “How do we bring together cross-disciplinary aspects to achieve sustainable groundwater use without compromising livelihood outcomes for village communities?” DSC realised the importance of addressing this question both from the supply side as well as the demand side. Hence, efforts were made to develop water literacy, while various tools and technologies were placed in the hands of the community to better manage their water tables. Efforts were also made to put into practice the concepts of water balance, water budgeting and resource-use efficiency at the community level to ensure overall water security. These initiatives are still in their nascent form, being guided by research projects and community-level pilot projects. The research project MARVI in collaboration with Western Sydney University helped in piloting the Integrated Water Resources Management (IWRM) Programme in six watershed villages of Meghraj block in Aravalli district Eastern Tribal Belt of Gujarat, followed by three pilot projects in the canal command areas of North Gujarat during 2012–2018. Another pilot project—Participatory Ground Water Management (PGWM)—was implemented in 2020–2022 in five canal areas of Mehsana district. All these efforts prompted the government of Gujarat to invite DSC to implement the Atal Bhujal Yojana (ABhY) in 111 villages of Mehsana district in 2019–20. Achieving success in the integrated management of water is critical for the future survival of mankind. DSC is at the forefront of these initiatives, having collaborated with several organisations at the national and international levels.

PART - A

Summary of Interventions and Outcomes

4.1 Introduction

About 60% of irrigation water for crop production and 80% of drinking water in India is sourced from groundwater supplies. The easy availability of submersible pumps and subsidised electricity has led to groundwater use far more than the average annual monsoon recharge. As a result, the average depth to water table in many parts of India has dropped from 5–15 m during the 1960s to 25–60 m in the 2020s, representing a drop of about 40% (CGWB, 2020)¹.

The DSC and DSC Foundation carried out an in-depth study for Gujarat, comparing rainfall patterns with groundwater levels over the past 25 years. It was found that in central and northern Gujarat, where DSC was working,

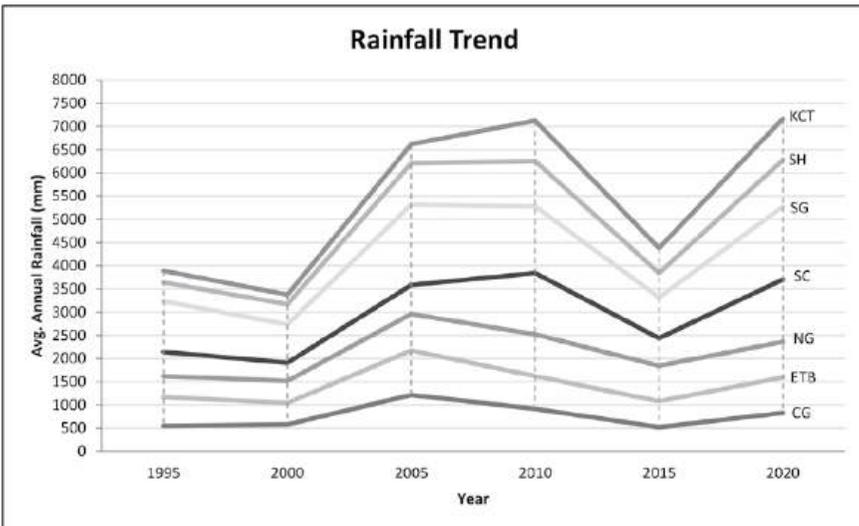


Figure 1: Trends in rainfall patterns in different regions of Gujarat

water levels were showing trends of depletion despite a moderate increase in rainfall pattern (Figure 1 and Table 1)².

Table 1: Trends in groundwater in different regions of Gujarat

Region	Rainfall trend	Groundwater Level fluctuation
North Gujarat (NG)	Increasing	Decreasing
Kutch (KCT)	Increasing	Decreasing
Central Gujarat (CG)	Increasing	Decreasing
Eastern Tribal Belt (ETB)	Constant	Constant
South Gujarat (SG)	Increasing	Constant
Saurashtra Hinterland (SH)	Increasing	Increasing
Saurashtra Coastal (SC)	Increasing	Increasing

- **North Gujarat:** While rainfall increased from 547 mm to 657mm (20% increase), groundwater levels declined from 23 metres to 35 metres (52% decrease).
- **Central Gujarat:** Rainfall increased from 685 mm to 825 mm (**20% increase**), but groundwater level decreased from 21 metres to 25 metres (20% decrease).

Apart from the above, the quality of groundwater in Gujarat is a major issue. The study reported that:

- All the districts except two have high Electrical Conductivity (EC) and contamination of nitrate—mainly due to excessive use of chemical fertilisers
- All districts except four have arsenic, fluoride or iron contamination
- All these contaminations are seen in the Kutch, Patan, Amreli, Bharuch and Dahod districts

DSC became aware of this issue when PIM and watershed development initiatives were being implemented on a large scale. These programmes triggered the overall demand for water in both rainfed and command areas within a few years. Dialogue with the communities resulted in greater awareness about the need to conserve and replenish groundwater resources. Farming communities realised the need to optimise water use in agriculture through collective management and conjunctive use of groundwater and surface-water at all levels—from micro-watershed to river water-basin.

The challenges here cannot be resolved only through technical solutions, as they have important social, economic, institutional and policy dimensions. Groundwater is a hidden, common pool resource and practices to promote collective action to ensure sustainable management are critical but poorly understood.

Groundwater literacy is important for meaningful dialogue and to build the capacity of future local leaders to deal with water issues. An important social dimension of the problem was the growing negative impact on women, especially schoolgirls, who were being deprived of education simply because they now had to spend long hours fetching water for drinking and domestic use³. DSC was not the only institution concerned about this problem and soon found like-minded partners to work with.

In 2015, DSC participated in a research study to assess the causes of school absenteeism of female students in two watersheds in India (one in Gujarat and another in Rajasthan). The study brought out clearly that groundwater scarcity has a serious negative impact on inclusiveness and women's empowerment. In both watersheds, more than 90% of students in a sample of 500 identified groundwater scarcity as a major issue. Female students missing school for five or more days a month was on an average two to 10 times greater than that for males. The findings were published in a paper in the *International Journal of Inclusive Education* (2016) but also served as an impetus to start working on the issue of managing groundwater systematically.

4.2 Interventions

4.2.1 Community Management of Groundwater: The MARVI Project

Between 2012 and 2016, DSC participated actively in a collective action research project called “Management of Aquifer Recharge through Village-level Interventions” (MARVI). The project, which had many international and Indian partners⁴, focused on developing village-level participatory approaches, models and tools to assist in improving groundwater supplies and reducing its demand through the direct involvement of farmers and other affected stakeholders. A unique feature of MARVI was the use of scientific measurements by citizens through the engagement of *Bhujal Jankars* (BJs), or ‘groundwater-informed’ volunteers. With appropriate training and capacity building, BJs monitor groundwater (levels and quality) from a village perspective, making the community aware of the state of groundwater in its locality. The project attempted to demonstrate the capture and recharge of rainwater at the village and Gram Panchayat levels for sustainable use, leading to improved livelihoods while keeping in view regional and basin-level sustainability.

The research in the MARVI project focused on two multi-village watersheds, the Dharta watershed in Rajasthan and the Meghraj watershed in Gujarat. Both watersheds have hard-rock aquifers.

The specific objectives were to:

- i. Enable local villagers to monitor groundwater
- ii. Design participatory processes to assist village-level discovery and implementation of solutions for sustaining groundwater use and improved livelihoods
- iii. Establish a comprehensive database—groundwater levels and riverbed structures to augment recharge at the community level

- iv. Advance groundwater knowledge and understanding of farmers, local communities (including schools) and decision-makers
- v. Provide tools for estimating annual groundwater recharge, water availability and crop demand by a team of experts

The above components were designed to improve collective decision making for sustainable groundwater use.

Water table fluctuations in 250 dug wells in the Dharta watershed and 110 wells in the Meghraj watershed were monitored by BJs using groundwater sensors over four years. Several check dams were monitored to understand their recharge performance and effects on groundwater availability in nearby wells. An SMS-based data collection system and a smartphone App called My Well, for both Android and iOS platforms, were developed to assist in the easy collection of water table depth and rainfall data and to visualise data and make them available on the web. A detailed socio-economic study, along with crop demonstrations as well as engagement through Photo Voice and community forums, was conducted to understand farmers' needs and capacities and explore what changes would work for future groundwater management strategies.

In 2018–19, the ground and surface water user groups in Navaghara village registered the “Vasundhara Groundwater Cooperative” (VGC) to evolve and implement common water use and sharing protocols for recharge and use of groundwater. The 19 farmer families of the cooperative carried out micro-planning of their land and water resources and prepared a physical and financial plan for integrated management of groundwater resources in 66 acres of agricultural land. A five-year work plan has been developed for the artificial recharge of groundwater sources, covering 100% area under efficient irrigation techniques and the construction of a pressurised irrigation network for sharing groundwater from the 15 functional borewells among all farmers. The VGC has also formally resolved not to drill any groundwater source from now onwards. A comprehensive proposal for developing a model Participatory Ground Water Management (PGWM) village cooperative has been submitted to the Atal Bhujal Yojana, Ministry

of Jal Shakti, and other domestic and international donors for financial support. NABARD has shown willingness to support this unique pilot project. Demonstration of this work plan will provide useful learning to the stakeholders to manage groundwater sources in an efficient, equitable and sustainable manner. In 2021, a village-level “living laboratory”⁵ was established in the same village to disseminate MARVI’s experiences to the other stakeholders in Gujarat.

4.2.2 From Groundwater to Integrated Water Management: The IWRM Project

A CSR-funded project on Integrated Water Resource Management (IWRM) was implemented from 2012 to 2019. It was implemented in 22 command villages of Dharoi, Guhai and Mazum irrigation projects in Aravalli, Mehsana and Sabarkantha districts of Gujarat respectively. Conceptually, IWRM sought to manage water holistically and sustainably by balancing demand and supply in ways that did not erode the stock of groundwater. A team of 20 *Bhujal Jankars* was developed to monitor the water resources so that this information could be considered for collective decision-making by the community.

The *Bhujal Jankars* were trained to provide the necessary data on demand and availability of water in their village. This data was considered, among other social and economic issues, as part of an annual exercise of water budgeting. The WUAs were facilitated to prepare water budgets using primary data with focus on water security at the community level. Figure 2 shows the water balance of village Lolasan in Himmatnagar block of Sabarkantha district as an illustration. In this case, as in many such villages in north Gujarat, the net balance is negative. Hence, the village community would have to discuss and see how it could manage its demands or increase supply to ensure that the balance remains positive.

The demand and supply side activities/interventions (see Table 2) were designed to achieve the following:

- Increase in surface water storage and groundwater recharge potential

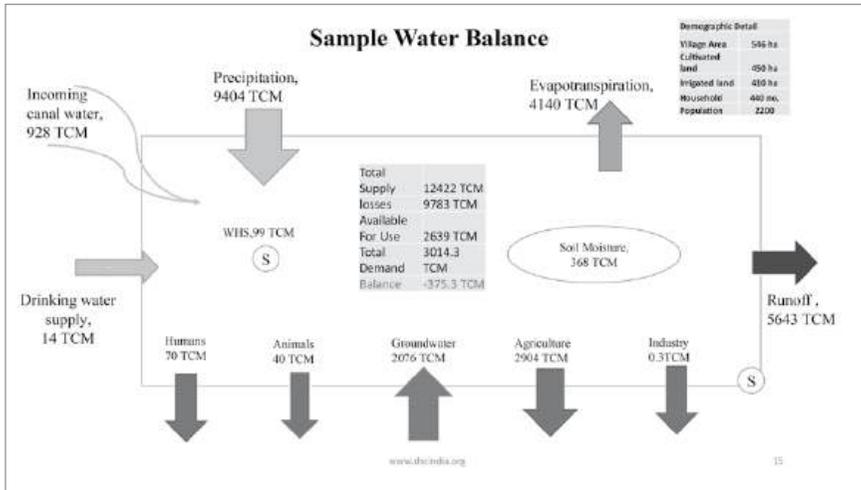


Figure 2: Illustration of water balance exercise in a village in Gujarat

- Optimise / rationalise use of water by aiming for “more crop per drop”
- Reduction in input cost and improved soil health
- Increase in crop yield
- Stabilise and net increase in farm income
- Sensitise farmers for conjunctive use of groundwater and surface water

Sujal Samitis, socially inclusive village-level institutions with participation from a variety of stakeholders, were created to facilitate community-level decisions related to water use. These samitis proved pivotal in promoting water governance, preparation of water resources inventory, water budgeting and creating awareness on judicious use of water. It is an apex body at the village level, that takes a holistic view of water use for different purposes and different sources. This inclusive committee of nine to 15 members is formed by the Gram Sabha with representation from different socio-economic strata of the village.

Table 2: Design of IWRM: Balancing demand and supply interventions

Supply side interventions	Demand side interventions
<ul style="list-style-type: none">■ Water harvesting through check dams, village ponds, line farm ponds, gully plugs, etc.■ Drainage line treatment■ Lining of canals and field channels■ Groundwater recharge■ Regular desilting of canals, village ponds and other water harvesting structures■ <i>In situ</i> water harvesting such as contour bunding and farm ponds■ Improving access and equitable distribution of water through PIM	<ul style="list-style-type: none">■ Sustainable agricultural practices that maintain soil health, soil water-holding capacity, humus content and micro-environment■ Soil moisture conservation practices like mulching; two-three tier cropping■ Changing cropping pattern to include less water-guzzling crops and seed varieties■ Adopting farming technology that reduces water consumption such as the system of root intensification (SRI)■ More efficient watering practices such as sprinklers and drip systems■ Reuse of excess canal water seeping into wells and groundwater system■ AI-based precise irrigation application techniques.

4.2.3 Water Security through Community Management: The Atal Bhujal Yojana

The successful demonstration of participatory groundwater management and concepts like water balance and water security through integrated water management had a positive outcome. In 2019, the government of India launched Atal Bhujal Yojana (ABhY) in 78 districts of seven states, namely Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. The main goal of the project is to improve the management of groundwater resources in select water-stressed areas

through community-led sustainable groundwater management practices.

The ABhY programme is being implemented in six districts of Gujarat. In 2021, the government of Gujarat invited DSC as a district implementation partner in 92 Gram Panchayats of Mehsana block, Mehsana district. The first year was seen as a preparatory year in which the panchayats were assisted in preparing water security plans. In light of the successful completion of this phase, DSC was allotted 31 Gram Panchayats of Unjha block in the same district. An agreement was signed with the Gujarat Groundwater Resource Development Corporation for the implementation of ABhY from 2022–23 onwards. To enhance the implementation of such a challenging programme, DSC mobilised additional CSR funding from private donors, which would allow it to build the capacities of the community and effectively implement the water security plans in 25 villages. The major objective of the collaboration is to add value to ABhY by adopting the principles of PGWM.

DSC has collaborated with Arid Communities & Technologies (ACT)⁶, Bhuj, and ARGHYAM⁷ to strengthen the ABhY capacity-building initiatives using digital technology. Digital platforms like the Participatory Digital Attestation (PDA) mobile application to give digital access to training content to the trainees and trainers have been developed to help enhance the efficiency, effectiveness and delivery of training to the community and field facilitators. About 2,300 participants were engaged on the digital platform. As many as 130 *Bhujal Jankars (BJs)* and PGWM leaders registered for access to digital training content.

In a related development, DSC has been invited by WASMO (a state-level special purpose vehicle for implementing water and sanitation schemes) to strengthen village drinking water supply schemes in 100 villages of Ahmedabad district through information education and communication activities. DSC also has an MoU with the Ministry of *Jal Shakti* for capacity building of middle-level managers and *Pani Samiti* members.

4.3 Outcomes and Impacts

4.3.1 Key Achievements of the MARVI Project

An approach for community-based participatory groundwater management was developed through close collaboration with research and development agencies.

Water table data monitored by BJs either manually or with electronic sensors formed the basis for estimating groundwater stocks. The monitoring of rainfall and water levels in check dams led to segregated data of aquifer recharge due to check dams and natural recharge. Such data enabled the community to take decisions regarding use of groundwater to achieve a desirable water balance.

The SMS system and MyWell App developed will help in the easy collection of water table, rainfall and check dam water level data from any location in India and make those data available on the web.

BJs proved to be significant change agents through their scientific measurement, understanding and communication in the two watersheds engaged in the participatory research. They became an important interface between researchers and village communities. There is an indication that farmers have now started to understand their local groundwater system, accept that groundwater is limited and that the falling water table is a village-level issue that needs to be tackled at their level. Hence, individual effort alone will not work to solve their groundwater problem. They have begun to understand that deepening wells or installing deeper tube wells is like snatching each other's groundwater and, overall, no extra water is to be gained by drilling deeper. Some of the immediate measures taken are to:

- Stop deeper drilling
- Remove sediment from recharge structures
- Plan Rabi crops based on post-monsoon groundwater levels

- Improve mulching and water use efficiency and
- Diversify cropping pattern

The farming community in Meghraj watershed is now debating the concept of sharing groundwater through 'village groundwater cooperatives' (VGC). The concept of water productivity, rather than crop productivity alone, is gaining momentum. These were some of the important outcomes from MARVI.

4.3.2 Impacts of the IWRM project

A third-party evaluation of the project⁸ was appreciative of the impacts being created as indicated below:

- Based on well-monitoring data maintained by DSC over the four years of the project, it is evident that groundwater tables have remained stable or shown a moderate increase, even after fluctuating rainfall and an increase in area under irrigation. Survey data of 53 farmers indicated an increase of 3.5 m during Kharif, 4.5 m during Rabi and 5 m during summer. This rise was attributed largely to increased recharging and changes in irrigation methods.
- About 40% of the farmers still abstain from using canal water due to false beliefs about its quality as compared to groundwater. About 13% have started using canal water after the project, indicating a significant change in attitude towards it.
- On an average, there was a reduction of about 23% (range of 12–33%) in the use of water for important crops on account of water optimisation measures such as the use of alternate furrow, short furrow and micro irrigation methods, and drip and sprinkler systems in place of flood irrigation method. This was also attributed partly to a shift in cropping patterns towards shorter-duration crops and crops/methods requiring less irrigation.

- Crop productivity in all major crops was found to be moderately higher in project villages as compared to non-project villages e.g., 12–25% in cotton, 13% in pearl millet and 5–12% in wheat.
- The above factors led to an increase in net annual income, which was very significant. Out of a sample of 163 farmers, 40% reported an increase of about Rs 0.50 million and 22% upto Rs 0.1 million.
- *Sujal Samiti* was found to have played a pivotal role in the smooth implementation of the project. About 75% of the farmers surveyed endorsed its effectiveness in the village for water management and reduction in conflicts related to water sources and canal water distribution.

4.3.3 Early Impact of Atal Bhujal Yojana (2021–2023)

The two years of implementation of the AbHY programme in collaboration with government agencies and other donors have shown encouraging results, according to project monitoring data:

- Pilots of water harvesting and recharge structures led to recharge of 152 million litres of water and increased storage of 25 million litres, benefitting 778 farmers. (Source—project monitoring data)
- Water Security Plans (WSPs) of 122 villages of Mehsana and Unjha blocks were prepared
- 119 youths from the project villages have been trained as *Bhujal Jankars*

While the facts listed above indicate good progress in implementation, the real impacts in terms of environmental, social and economic benefits to the local communities will become clear only after a few years of successful implementation.

End-notes

1. Central Ground-water Board, accessed at cgwb.gov.in on 16.04.20
2. *Building Informed and Scalable Water Security Solutions for Gujarat. (2023) Researched and published by DSC and DSC Foundation with financial support of Hindustan Unilever Foundation.*
3. Rai S Kookana et. al. (2016): *Groundwater scarcity impact on inclusiveness and women empowerment: Insights from school absenteeism of female students in two watersheds in India, International Journal of Inclusive Education*
4. *The key international partners included Western Sydney University, CSIRO Land and Water, International Water Management Institute Mekong Region Futures Institute. The key Indian partners included Arid Communities and Technologies, Maharana Pratap University of Agriculture and Technology, and Vidhya Bhawan Krishi Vigyan Kendra*
5. *A living lab is characterised by i. active use involvement, ii. real life setting, iii. multi-stakeholder participation, iv. multi-method approach and v. co-creation.*
6. *ACT is an NGO based at Kutch, that promotes participatory groundwater management in Gujarat and other states.*
7. *ARGHYAM is a Public Charitable Organisation based in Bengaluru that supports sustainable water and sanitation solutions.*
8. *Integrated Water Resources Management and Conjunctive Use of Water in the Command Area of Water Scarce Irrigation System of North Gujarat – Impact Assessment Report. (April, 2020), Ahmedabad: Center for Integrated Development (www.cfid.org.in).*

PART - B

Reflections and Recollections by Key Stakeholders

From Farmers to Philosophers

“To learn about groundwater conservation, DSC took us to Udaipur for an exposure visit. After coming back, we decided to work on groundwater conservation as well. We have established ‘Vasundra Groundwater Cooperative’ through which we have been able to improve groundwater conservation.

... To our satisfaction, many people from outside have been coming to see our work. From farmers, we have also become philosophers! We tell them “*Jal hai to Jeevan hai!*” (life is possible only when you have water!) We advise them to conserve water and maximise water use efficiency.”

- **Rambhai**, *Watershed Association*,
Navaghra, & Kanubhai, *Watershed Association, Gai Vachharda*

Experiences of Bhujal Jankars

Collective management of groundwater

“A graduate, I got involved in watershed development from 2009 onwards. But it was in 2011, with the starting of MARVI, that I got a lot of training regarding groundwater and its monitoring.

Initially the participating farmers had some expectations of getting material benefits from the project. But soon they realised that this was a research project which would generate feedback on the state of their groundwater, which would be valuable to them in the long run. Now they are keen to know the results of their wells. Some farmers like Rambhai are eager to monitor their wells as it helps them to plan their crops during the coming

season, based on the stock of water available.

The data is also shared in the Gram Sabha. It enables settlements (hamlets) to prepare water balance maps which enable them to plan the use of available water in ways that demands are moderated and supply sources are augmented.

The first attempt at making a water budget by the farming community in Gujarat was by *Vasundhara Groundwater Cooperative* under a NABARD-funded climate change project. DSC provided the training and helped develop the by-laws. The groundwater data showed that water levels had gone down from 30–140 feet to about 400–500 ft over a space of *two decades!* The seriousness of this feedback prompted them to take action at their level. A group of 19 families living in the same *falia* (hamlet) formed the cooperative to moderate groundwater use and find ways of reversing the depletion. They linked 14 bore wells horizontally so that it became a common property asset, covering 36 ha of land. The principle of distributing the water equally was adopted. Extraction was done on rotation from three wells at a time. Each farmer was to adopt drip irrigation to conserve the valuable resource. Interestingly, both the elders and the youth are enthusiastic about the project. The youth, some of whom are educated professionals, are also giving full support to the idea as they are also concerned about the next generation.”

- Nandlal Menat,

Bhujal Jankar and Community Organiser from Meghraj

Towards sustainable use of water resource

“Following the shift to groundwater by farmers in many irrigated areas, including the Dharoi command area, PGWM was initiated in around 2012–13 with six villages. *Bhujal Jankars* were also appointed in these areas. Subsequently, under the Integrated Water Resource Management project started in 2012, *Sujal Samitis* (water committees) were established to monitor both groundwater and surface water to make sustainable use of the water resource. During the project, we underwent an intensive technical training of 45 days, imparted by an agency called ACT. We acted

as the link between farmers and DSC. Their training enabled us to prepare seven types of maps in a given area. The first five were related to natural resources and hydrogeology. The last two were about preparing a water budget map, leading to a planning map to implement the suggestions emerging during the discussion of water budget.

The entire exercise made the community realise an age-old Gujarati saying: '*pani pehla paal bandhwo!*' (one should build a preventive bund before the flood waters arrive). In other words, one has to take action much earlier!

Nothing can be done by a handful of *Bhujal Jankars* alone! The government and farming community must also play their roles. The number of bore wells must be restricted by the government through regulation. Farmers must collaborate with a spirit of sharing. This is possible, as can be seen from the example of Navanagar, where all farmers have taken collective action for the management of water and adopted the drip-irrigation method of irrigation. The canal water is used to recharge wells and bore wells. Water is drawn from these to irrigate crops using drip-irrigation.

DSC's strategy has evolved over the years from working towards improved productivity of land to managing water for the future. The government is also trying to do its bit. We are confident that DSC will be successful as it is people-centric in its approach."

- Ajay Chauhan, Jaspal Singh Jhala,

Bhujal Jankars from the Guhai and Dharoi command area respectively

MARVI project has evoked interest across the world

"... The future of groundwater will be determined by how we manage it at the farmer and village levels. This can be taken later to higher levels like block and district. We need to engage people in having a dialogue among themselves. When we have a more objective discussion, people become part of the solution. Climate change is going to be a major issue for agriculture. Groundwater will be a buffer to deal with this challenge. That is why we have to work at the farm and village levels first.

I got involved in the MARVI project funded by IWMI at Meghraj as a technical expert from the University of Sydney. It was a trans-disciplinary project with a focus on improving water security as well as the livelihoods of the local community. Water security includes aspects of water recharge and availability in the right quantity and quality of water needed for the farmer's livelihood.

... What we are doing is to get the science of groundwater into the hands of the community so they start monitoring rainfall and groundwater levels and develop rules of thumb to understand the water available. Low-cost devices are now available for monitoring the water level in wells and tube wells. The farmers realised that they were all using the same resource and that the aquifer they were drawing from was a *common pool resource*, which only they could manage by exerting collective self-restraint. The ICICI Foundation has agreed to fund the formation of three cooperatives in Gujarat and two in Rajasthan for self-regulation of groundwater at the community level.

... We found DSC very professional. The field staff, including the *Bhujal Jankars*, were very dedicated. We learnt from them as well. DSC has a good relationship with the farmers, so the project just fitted in! DSC has a very mature relationship with the farming community in the area and a good rapport with them. Good cooperation of the people is very important for this kind of project.”

... The MARVI project has evoked a lot of interest across the world. I have received communication from researchers in France and Spain who are trying to do something similar in Morocco and are keen to see how MARVI is implemented. Botswana, Uganda, Sri Lanka are among other countries which are interested in developing similar projects in their countries. Even in India, WASSAN has initiated such projects in the states of Andhra Pradesh, Odisha and Karnataka.”

- Dr Basant Maheswari,

Professor,

Western Sydney University, Australia

PART - C

Future Directions and Possibilities

DSC's Learnings

The experience from the MARVI project indicates that a transdisciplinary approach is likely to be more effective in enabling stakeholders like farmers, NGO researchers and government agencies to work together on groundwater management issues. Such an approach is necessary to understand the groundwater situation and design interventions that are holistic, resulting in wider ownership at the village and Gram Panchayat levels. Also, such an approach is expected to deliver longer-term sustainability of groundwater at a regional or basin scale, when all villages in a basin are supported and networked.

The heuristics for achieving groundwater sustainability were identified as the six 'R's, namely:

Research + Recharge + Respect + Reduce + Reuse + Regulate

A major challenge in the management and control of groundwater aquifers is that these are not visible from the surface. But they have been mapped by experts using direct (satellite imagery) and indirect methods (bore wells, topography, water-diviners, etc.). Accessing this *research* is crucial in order to decide what kind of treatment is necessary for *recharge* of existing aquifers. But recharging alone does not address the problem. Communities also need to become more responsible in how they value water as a life supporting resource, which is becoming scarce day by day. This *respect* would be reflected in initiatives to *reduce*, *reuse* and *regulate* the use of water.

IEC materials were developed to promote these thumb rules among the farming communities. These learnings should bear DSC in good stead in the coming years.

Future Directions and Possibilities

DSC has reached an exciting point in its nearly three-decade-long journey of working as a resource agency and partnering with the government. It now has an opportunity to demonstrate the cumulative knowledge and skills for community-led integrated management of water resources. This is a critical event as water scarcity threatens to be the next most important challenge in the coming years for development and survival, not only in India but around the globe.

The fact that relevant state government departments and agencies acknowledge DSC as a key resource agency and knowledge partner bodes well for its role in the coming years. The idea of raising awareness about the need for collective management of water resources within farming and other village communities is crucial. The unbridled exploitation of groundwater, a precious community resource whose boundaries are very difficult to locate, is extremely difficult to control through law alone. Village- and hamlet-level collectives that know how to monitor groundwater and maintain water balance are likely to play an important role.

The models being developed by DSC in resource-scarce areas of North Gujarat may prove invaluable to other states as well. Therefore, DSC should continue to work on developing tools, techniques, principles and models/approaches in this sub-sector in different geographies. Collaborative efforts are necessary to make water security a goal that is achievable within the next two to three decades.

At the ground level, it may call for innovative ways of creating awareness and incentivising behaviour that values and conserves water. A few ideas that can be explored include:

- Exchange of water credit
- Linking government schemes with water-use audit—rewarding collectives and individuals who tend to use water as a precious resource and avoid wastage
- Aquifer mapping study of the command and rainfed areas and

reallocation of surface and ground water for conjunctive use of both sources

- Deploying the cadre of *Bhujal Jankars* in MNREGS scheme of rural employment so that they may identify the kind of work necessary to recharge groundwater aquifers
- Creating district and block-level platforms where integrated water management can be discussed and made workable on a democratic basis
- Working out proper criteria for groundwater pricing
- Water budget as a pre-requisite for allocating funds to the Gram Panchayat
- Periodic review of groundwater regulation

Chapter-5

“Takau Kheti, Kamau Kheti”
– Pushing the Agenda of
Sustainable Agriculture



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DSC's work in the water sector had raised its credibility among farmers, government departments, non-government organisations and policy-making forums in Gujarat and adjoining states. Meanwhile, when DSC was on the verge of withdrawal from its direct role in PIM and watershed projects in the year 2008–09, the PRAs revealed that farmers were grappling with serious problems in making their agriculture economically viable. Among the main reasons were excessive use of inputs (seeds, water and chemical fertilisers and pesticides) and uncertain weather conditions leading to declining productivity, soil health and micro-climates. Lack of technical advice and access to quality inputs in a timely manner were the limiting factors. Not surprisingly, the youth were getting disillusioned with farming. DSC's attention therefore turned towards making agriculture ecologically sustainable and economically viable (Takau Ane Kamau Kheti)—a challenge that required a long-term vision. This chapter describes the establishment of a robust agri-extension system leading to the creation of a self-supporting Farmer Producer Company (FPC) in Gujarat over a span of a decade-and-a-half. Similar efforts are underway in the neighbouring states of Madhya Pradesh, Maharashtra and Rajasthan, of which the first two have already established FPCs. In this chapter, we focus more on the agri-extension system which seeks to build climate change adaptability and sustainability of agriculture without compromising economic viability/prosperity. Given the complex nature of FPCs and their incubation process, these are discussed separately, in the following chapter.

PART - A

Summary of Interventions and Impacts

5.1 Introduction

After two decades of success in augmenting water resources and their equitable management at the community level, DSC realised that enhancing water management alone was not enough to improve the lot of marginal farmers who constitute 70% of the farming community. At the turn of the century, agriculture was plagued by several problems. Indiscriminate use of chemical fertilisers and pesticides (due to prevailing myths and misconceptions about higher doses leading to higher outputs), affected soil health, micro-climates and farmers' health over a period of three to four decades. Uncertain weather conditions exacerbated by climate change had made farming riskier than before. Lack of market information left marginal farmers at the mercy of traders. These issues were compounded by the near absence of an agri-extension system that could guide marginal farmers.

DSC's vision now was to help marginal farmers by making agriculture ecologically sustainable and economically viable. The slogan adopted was "*takau kheti, kamau kheti*" (sustainable farming, profitable farming). This is because early adopters had experienced a drop in income levels for about three to four years while shifting from chemical farming to organic farming. This had made most farmers cautious about giving up chemicals completely.

In 2008, DSC developed a systematic plan for promoting sustainable and profitable agriculture with the following key objectives: productivity enhancement, cost reduction, risk mitigation and increased price realisation (through the aggregation of produce, market linkages and/or value addition through cleaning, grading, packaging and processing). This was to be achieved by demonstrating a Package of Practices (PoPs) for

all major crops of marginal farmers, starting with a handful of progressive-minded farmers. The PoPs were designed in consultation with scientists and the farmers. The guiding principle was to make a gradual shift to non-chemical and organic farming so that farmers do not suffer sudden drops in productivity and farm income.

Collective action and enterprise were necessary to realise most of these objectives. DSC therefore visualised a three-tier organisation comprising farmers' clubs and SHGs at the hamlet level (for mutual learning and resource pooling) with a special focus on marginal and small farmers, organising committees at the cluster level (for consolidating demand and supply needs) and a Farmer Producer Company (FPC) at the regional level (for creating backward and forward market linkages). Hence, its strategy to revive agriculture and make it both profitable and ecologically sustainable included the establishment of a robust agri-extension system that would undo the harm caused by the so-called green revolution. It also included the creation of an FPC, which would subsequently take up the supply of critical inputs on a timely basis and deal with the market forces to secure higher prices for commodities produced by farmers. This was depicted in a simple diagram (Figure 1) which represents DSC's strategy to make agriculture viable and sustainable once again, using non-chemical inputs and methods of cultivation. In this chapter, we focus mainly on the nuances of creating a successful agri-extension system.

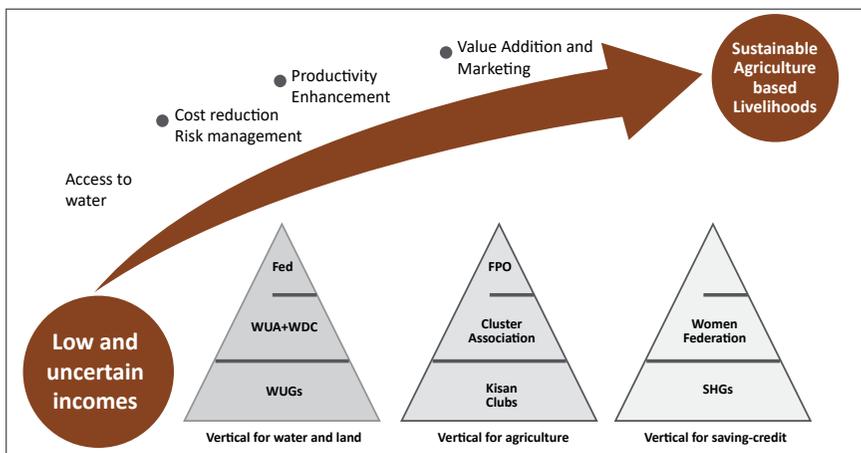


Figure 1: DSC's strategy for making agriculture viable and sustainable

5.2 Interventions

As discussed in the previous chapters, in the first decade-and-a-half, DSC went through various steps of its broad approach of assessing problems, identifying collective solutions, testing and piloting them before scaling up. This approach was followed diligently in all programmes including watershed, PIM and promotion of sustainable agriculture development. Over the past decade-and-a-half, DSC began to spread its activities to neighbouring states. This was felt necessary in order to validate the effectiveness and usefulness of its learnings in different cultural contexts and political environments. Such a move was found beneficial as it helped to sharpen and modify its learnings leading to broad approaches that can be adapted and customised as per the local cultural and political environments. This was a departure from the popular notion of developing models for others to follow.

Initiatives were funded through multiple sources including a combination of government and non-government agencies. However, the nature of projects kept evolving, such that DSC's understanding of what it takes to transform agriculture is now considerably different from what it was when it started. A major contribution to this evolution in thinking has been its legacy of documentation and research, which has made it a learning organisation (see Chapter 8). In Table 1, we have tried to map the evolution of DSC's strategic thinking even as it expanded geographically to the neighbouring states of Madhya Pradesh, Rajasthan and Maharashtra.

5.2.1 Pioneering Participatory NRM in Gujarat

Livelihood Enhancement through Participatory Natural Resource Management (LEPNRM)

DSC's initial vision as set by Anilbhai, the founder chairperson, was for water-centric participatory natural resource management (PNRM), which was realised through successful demonstration of PIM and watershed. Anilbhai extended this vision to what he called "PIM Plus" and "Watershed Plus" which gave birth to the idea of FPCs taking charge of collective

Table 1: Evolution of themes along with geographical expansion		
Theme	State and Year of Initiation	Replication in other states
Water		
Participatory Irrigation Management	Gujarat 1994	MP (2009) Maharashtra (2016)
Watershed and Rainwater Harvesting	Gujarat 1994	MP (2012) Rajasthan (2015) Maharashtra (2017)
Participatory Drinking Water	Gujarat 2002	MP (2012) Maharashtra (2020)
Groundwater management	Gujarat 2012	Maharashtra (2018) MP (2023)
IWRM and Water stewardship	Gujarat 2015	Maharashtra (2018) MP (2023)
Landscape development ¹ And Biodiversity promotion	Rajasthan 2019	Maharashtra 2020 MP 2024
Spring-shed development	Maharashtra 2023	-
Agri-extension		
Extension of sustainable agriculture practices (through LRP, FIGs, SHGs)	Gujarat 2008	MP 2014, Rajasthan 2015 Maharashtra 2018
Extension of climate-smart Agriculture	MP 2012	Rajasthan 2015 Maharashtra 2017
Women's SHG and their registered federations	Gujarat 1994	MP 2009 Rajasthan 2015 Maharashtra 2016
Promotion of non-conventional energy (solar and biogas)	Gujarat 2015	Rajasthan 2022 Maharashtra 2022
WADI development	Rajasthan 2017	Maharashtra 2020
Biodiversity promotion on common and private land	Maharashtra 2018	Gujarat 2021
Leveraging carbon financing	Maharashtra 2022	-
Nutrition promotion	Maharashtra 2021	-
Millet value chain development	MP 2023	
Livestock development	Maharashtra 2020	MP 2023, Gujarat 2023

Entrepreneurship		
Women led Micro Enterprise Development and FPO Promotion	Gujarat 2004	MP 2014 Maharashtra 2022 Rajasthan 2024
Supporting innovative organic farmers	Gujarat 2022	Maharashtra 2022 Rajasthan 2022
<i>Gramin Sushasan</i> by GPs	Gujarat 2015 MP 2015	Maharashtra 2018

management of natural resources to improve farm productivity and linking up with larger market players for better price realisation. The Dhari FPC, one of the first two FPCs of India, was already established before he stepped down due to health considerations. The board invited Vijay Mahajan, the leading social entrepreneur of India and founder of PRADAN as well as BASIX group, to take charge as the next chairperson. He shaped DSC's second vision for the revival of agriculture in selected target areas of Gujarat, taking PIM and Watershed initiatives to the next level. Under his leadership, funding for a decade-long programme called LEPNRM was secured, starting 2008. The programme covered the cost of both agri-extension system and incubation of the FPC. It gave a new dimension to DSC's journey. A new slogan of moving from "Water to Wealth" was articulated to popularise the new vision.

By 2010, the extension system was up-scaled and fully operational. By 2019, the Krushidhan FPC in Gujarat was fully incubated and ready to take over both functions, viz. guiding farmers on one hand and dealing with the markets on the other.

The first step was to make agri-inputs of good quality and at a reasonable price, available to farmers at their doorstep. During this phase, when the FPC was getting incubated (2013 to 2019), the incubator (DSC) and incubated (Krushidhan FPC) functioned as partners. A conceptualisation by the authors (Pastakia and Oza, 2023)² of how this "*jugalbandhi*" (partnership) worked in practice is shown in Figure 2. It shows which criteria had to be met by "creators of demand" (DSC, local resource persons, Kisan Clubs and women's SHGs) on one hand and "supplier of products and services" (Krushidhan FPO) on the other.

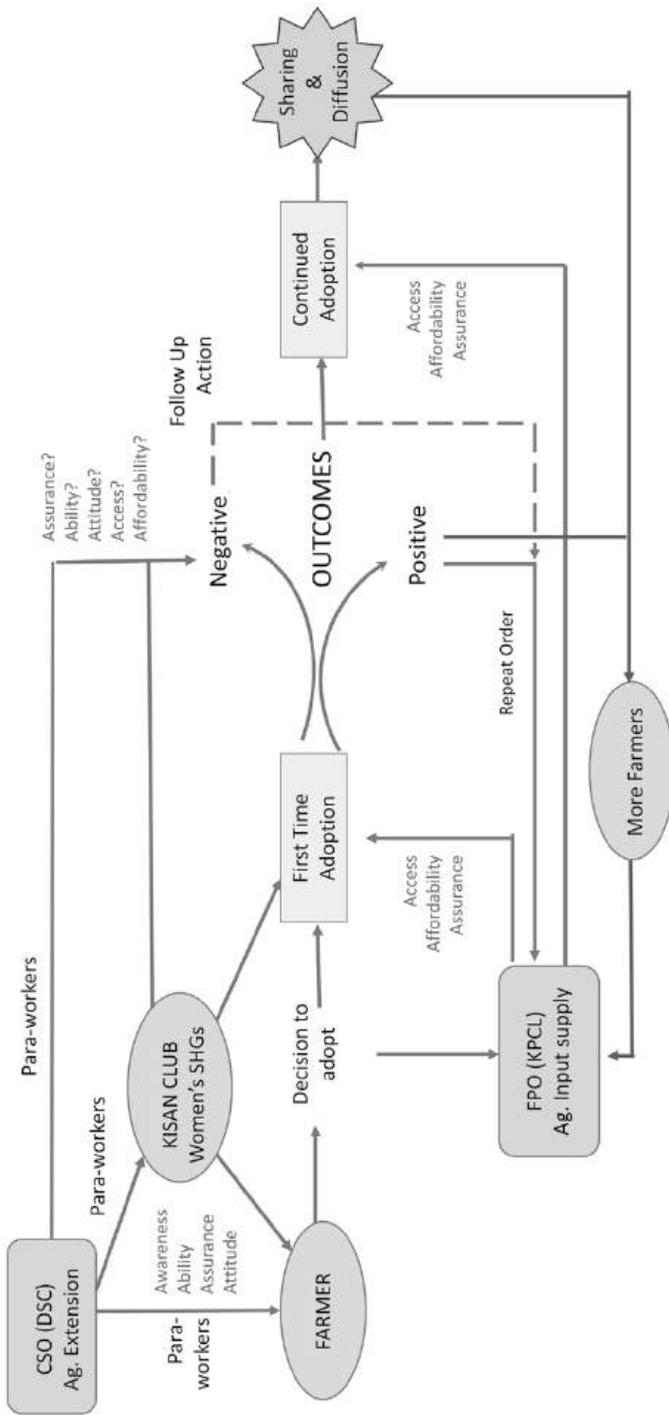


Figure 2: Agri-extension system—complementary action of incubator and FPO

A team of local resource persons (LRPs) link DSC to the farmers through Kisan Clubs and women's producer groups, providing them information about the latest practices, technologies and agri-inputs for sustainable agriculture acquired from agri-universities, ICAR research institutes and Krishi Vigyan Kendra (KVKs). DSC uses a variety of methods to create awareness and diffuse locally feasible low cost and effective technology and agri-inputs. Such methods may include demonstrations on farmers' fields, exposure visits, farmers' field day, farm advisory through radio, mobile phone and Information Communication Technologies (ICT) among others. The technology also includes "do-it-yourself" kind of products and practices that would reduce dependence on external inputs and improve soil health.

An important function of LRPs is to support selected farmers to carry out demonstrations in a small portion of their field. A high level of care and technical and social protocols are followed in order to maintain scientific rigor and learning curiosity among farmers. This is supplemented, where necessary, with exposure visits and workshops for both LRPs and farmer leaders. The technology is discussed within the group and farmers draw support from each other, leading to higher adoption. Farmers also go through stages of adoption. First-time adoption usually implies a trial. If the farmer does not get the desired results, he or she may discontinue. Here, the role of the LRP becomes critical in following through until the farmer takes more trial(s) and gets the desired results through *continued adoption*. After sustained adoption, the farmer is likely to encourage others to adopt as well. According to a third-party evaluation study conducted on completion of LEPNRM project-1 (2009–2012), the project achieved a ratio of 1:14:4 for adoption of new technology. This implies that for every one farmer organising a field demonstration, 14 farmers on an average who visited the 'demo' decided to opt for it. In addition, four others who heard from the visitors also got interested and adopted it. Hence, the 'demos' proved highly effective as a method of sharing and diffusing new technology and agri-inputs.

A framework of seven 'A's described below and indicated in the figure is conceptualised and ensures optimisation of the system where supply of

agri-inputs matches the demand generated:

Demand Generation³:

Firstly, the agri-extension system should be able to create **Awareness** about the new technology/ package of practices (PoP). It should then provide the **Assurance** needed by the farmer to make the necessary investment in the new PoP or technology. Further, it should be able to build the capacity (**Ability**) of the group of farmers testing the technology in the field to examine the performance from multiple dimensions such as efficacy, cost-effectiveness, timely availability of inputs and environmental impacts, among others. It should cultivate the right **Attitude** for exploring new alternatives and adopting them after proper testing in the field.

Supply of Agri-Inputs:

On the supply side, the FPO must take care of the following three 'A's to ensure repeat orders (Kanitkar and Shambu Prasad, 2019):

Access: The farmer must get the necessary inputs—both material and knowledge—in a timely manner and preferably at his/her doorstep.

Affordability: The new agri-inputs should be affordable and priced lower than or equal to that available in the market.

Assurance: The farmer should be confident that he/she would get agri-input material of good quality at an affordable price, in a timely manner and at a convenient location. He/she should also be convinced about the efficacy of the new material. Further, he/she should be convinced that in case of dissatisfaction or dispute regarding the above, there would be a mechanism to communicate the grievance and get it sorted.

Faithful adherence to the 7A criteria resulted in high rates of adoption. By 2019, approximately 45,000 farmers in 190 villages had been exposed to the new technology. They were being served by 20 LRPs through 338 Kisan Clubs and 185 woman-SHG (of whom 78 engaged in group activities like production of vermicompost and bio-pesticides using local resources). After its incubation, Krushidhan absorbed many of the LRPs in its team.

The total amount spent under LEPNRM was Rs 27.8 million of which Rs 21.4 million (77.9%) was towards extension work and Rs 6.4 million towards incubating Krushidhan FPC. The learning that took place in Gujarat served as the basis for launching similar extension systems in other states.

Better Cotton Initiative (BCI):

Traditionally, cotton has been the most preferred cash crop of farmers across DSC's working areas in Gujarat, Madhya Pradesh and Maharashtra. According to a study conducted by Dr Sukhpal Singh (2009)⁴, it is one of most expensive and risky crops due to its climate and market vulnerabilities. In this context, DSC and IKEA International initiated the Better Cotton Management Practices project in both canal-irrigated and rainfed areas in Gujarat on a pilot basis. The success of the BMP project encouraged DSC and IKEA to scale it up under Better Cotton Initiatives (BCI) global initiative that focuses on responsible cultivation of cotton and maintaining fair trade in cotton industry.

Since 2018, DSC has become a most trusted partner of this initiative in India, promoting BCI in four blocks of Mehsana and Sabarkantha districts, covering 14,400 farmers from 98 villages. The major focus of the project is to reorient registered cotton growers (especially smallholder farmers, including allied stakeholders such as agricultural labourers and local ecopreneurs) to the sustainable production, supply and trade of cotton.

Protecting Farmers from Risk of Crop Failure

DSC was among the lead institutions within Sajjata Sangh, which played a major role in experimenting with new approaches to protect farmers from risk of crop failure in Gujarat. It was involved in implementing two different schemes, both individually and through Sajjata Sangh network of NGOs. Weather insurance sought to cover the risk associated with fluctuating rainfall (in dryland regions) in which farmers were protected from both excess and deficit rainfall. On the other hand, crop insurance covered all other risks including pest and disease attacks. As this subject is covered in more detail in Chapter 7, it is not being discussed here.

5.2.2 Expansion to Madhya Pradesh

Drawing inspiration from LEPNRM in Gujarat, DSC mobilised private funding to implement a similar PIM Plus project in the neighbouring state of Madhya Pradesh to improve the productivity and profitability of marginal farmers there. This project was implemented in Kukshi and Manawar blocks of Dhar district between 2014 and 2019 and a little later in Alirajpur block of Alirajpur district and Sonkatch block of Dewas district. It led to the establishment of two new FPCs, one in each district.

A major departure from LEPNRM, Gujarat, was a greater emphasis on involving women producers and integrating animal husbandry, which is seen as an important link in promoting sustainability of agriculture and in improving overall farm income of marginal producers. Some of the key findings of an impact study⁵ after four years of LEPNRM in Madhya Pradesh showed encouraging results:

- i. Demo farms in soybean crop reduced the per hectare cost of cultivation by Rs 3,720 and realised an increase in net profit by Rs 36,720 in comparison to non-project farms. Similar results were seen in other crops like cotton, wheat and maize with an increase in profit by Rs 15,200, Rs 16,375 and Rs 10,350 respectively.
- ii. About 25,711 households got benefits of about Rs 34.6 million through formal convergence activities and about 8,640 households got benefits worth Rs 69.1 million through informal convergence activities, through LEPNRM. The FPC also benefited farmers through seed processing.
- iii. Adoption of best practices: 82% farmers used low seed rates, 78% farmers adopted seed treatment, 60% farmers reduced the use of chemical fertilisers and pesticides, 81% farmers undertook soil testing and 59% farmers utilised proper irrigation management.
- iv. About 64% farmers adopted organic farming but mainly for home consumption.

- v. Gross saving from the use of bio-fertilisers and bio-inputs was estimated at Rs 19.75 million with additional benefits of adding 192 tons organic carbon to the soils.

5.2.3 Expansion to Rajasthan

Since 2016, DSC has been facilitating community-managed Integrated Natural Resource Management and Livelihood Enhancement initiatives in collaboration with *Mission Sunehra Kal* of ITC. This is being done with more than 4,000 farmers across a cluster of 36 villages in Kishanganj and Shahbad blocks of Baran district. The target villages have a dominant (66%) population of the *Shahariya* tribe, considered as one of the most primitive tribes in India.

Starting with water harvesting and balanced utilisation, the project moved on to promoting sustainable agricultural practices. Two highlights of this were the adoption of direct seeded paddy method resulting in reduced cost of cultivation and the adoption of kitchen garden for nutritional security. The broad-based furrow method of tillage gave superior results as it improved drainage conditions during heavy floods, retained moisture during long dry spells and prevented crops from failing. DSC established effective relations with the KVK for participatory varietal selection in paddy, soybean and other crops.

The fact that DSC had chosen to work with a primitive tribe resulted in high level of convergence with government programmes. Resources worth nearly Rs 3 million were leveraged from various departments such as KVK and agriculture department to provide support to about 570 farmers for a variety of activities. DSC is an active member of National Coalition for Natural Farming (NCNF) which has state-level coalitions of organisations working in Rajasthan and other states. The Baran unit of DSC participates in the regular network activities of the coalition. During 2020–2021, a pilot demonstration of natural farming was carried out with 300 farmers. The farmers learned to prepare bio-fertilisers like *Bijamrut*, *Jivamrut* and *Ghanajivamrut* that can help rejuvenate the soil and increase farm productivity in the long run. A beginning has also been made in

implementing *wadi project* models of agro-horticulture in 15 villages.

5.2.4 Expansion to Maharashtra

The developments in Maharashtra state are a lot more interesting and futuristic, as described in two recently launched projects:

- a. Water stewardship in Ghod basin
- b. Low carbon agriculture in Nandurbar

Their success may show new ways of simultaneously addressing the issues of water management, stabilising production and viability of cash crops like sugarcane and onion, climate change adaptation and sustainable agriculture.

Water Stewardship Programme in Ghod Basin

The Ghod river is a tributary of the Krishna River, spread across six talukas of Pune and Ahmednagar districts. The entire basin has an unequal spread of rainfall, with high ridges receiving good rainfall of up to 2,500 mm and lower areas receiving an average of 400–450 mm. The unequal spread of rainfall across the basin affects agricultural production in the project area. Also, post-monsoon, the basin has a negative water balance.

DSC with the support of CSR fund is trying to address these issues through demand- and supply-side interventions to make the basin water positive. It provides support as a knowledge and capacity-building partner in Participatory Irrigation Management (PIM) and contributes to the development of rainfed villages in the basin. The partnership began in 2015–16, and since then it has been working in the Junnar block of the Pune district, covering 80 villages and an area of more than 53,000 hectares.

Interestingly, the Ghod river-basin collaboration was helpful in addressing over-exploitation of water and land in the case of two cash crops, viz. sugarcane and onion. DSC and the CSR designed a model of partnership between sugarcane cooperatives, KVK and crop research stations to promote scientific, simple and high-performing PoPs, which provided

exemplary results in terms of reduced water-footprint and chemical-input treadmill effect. Transformative agricultural practices in one hectare of sugarcane provided farmers with benefits comparable to those of a medium-sized check dam costing more than Rs 0.5 million, saving of water in the range of 3,000 to 11,300 cubic metres of water per season if he/she adopted the following package of practices in an incremental manner, viz. 1) pregerminated seedling through nursery, 2) recommended agronomic practices, 3) trash mulching and 4) drip irrigation system. In addition, the farmers also benefited from increased production of 37 tons per ha.

Low carbon agriculture in Nandurbar

Agriculture is a major source of Greenhouse Gas (GHG) emissions, accounting for 60% and 70%, respectively of global anthropogenic emissions of methane and Nitrous Oxide. These are caused mainly due to the use of chemical fertilisers, pesticides and animals. Animals accounts for about 70% of methane emissions in agriculture while chemical fertilisers contribute approximately 49% of total agricultural GHG emissions—the emissions come from the application of synthetic nitrogen fertilisers to crops, according to Resources for the Future magazine. This rate is bound to rise further as a result of an increase in the demand for food by a growing global population. Effective GHG mitigation by the agricultural sector requires an improved understanding of the causal factors in different farming systems. This will enable the promotion of an integrated farming system and leveraging carbon financing.

The objective of low carbon interventions is to sustainably increase agricultural productivity and incomes; adapt and build resilience to climate change; and reduce or remove GHG emissions where possible. Some activities that can contribute to achieving this objective include:

- i. Precision agro-forestry
- ii. Organic amendments
- iii. Livestock and agri-residue management
- iv. Drip irrigation and other water efficiency measures
- v. Reduced energy consumption to pump water for irrigation

and domestic purposes

- vi. Improved agronomic practices in soil and nutrient management
- vii. FPO formation and leveraging institutional structure for carbon financing

The Water Resource Group 2020, Maharashtra government, VNV Advisory and DSC have collaborated to work jointly with communities to ensure that ecosystems are restored and sustainable growth is achieved through clean and low-carbon means. The pilot project has been undertaken in a subset of the area in which DSC is currently working through Public Private Community Participation (PPCP) projects targeting a 90,000 ha area of Nandurbar district, supporting 45,000 farmers.

Adoption of Disruptive Technology:

Through this pilot, data from satellites, drones, IoT sensors and smartphones, combined with analytical solutions through predictive analysis, data science, imaging, knowledge algorithms and AI on technology-based platforms will provide inputs for agri-water advisory services for farmers and farmer collectives to improve agricultural productivity and sustainability.

Livestock Development:

With over 15 years of experience in supporting marginal, rainfed, small, tribal and women farmers, DSC has recognised the need for a more integrated farming system. This approach not only promotes crop diversity and indigenous seeds but also emphasises animal husbandry and livestock development as key components. By integrating these elements, DSC aims to build resilient farming systems that help rural communities cope with economic and environmental vulnerabilities, ensuring the sustainability and viability of agriculture-based livelihoods.

To support livestock health and management, DSC has introduced a women-led cadre of *Pashu Sakhis*, or para-veterinary professionals, with assistance from the Azim Premji Foundation. These trained women provide fee-based animal healthcare services directly to rural households,

improving access to essential services in remote areas and simultaneously creating income opportunities for rural women. The *Pashu Sakhi* model empowers women within their communities, promotes self-reliance in animal husbandry and strengthens livestock productivity. DSC's initiatives in livestock development exemplify an inclusive approach to rural development, enhancing community resilience and securing sustainable livelihoods through diversified, locally driven agriculture.

5.3 Impact on Farming Communities

DSC's thrust on promoting "responsible farming" (co-terminus with Low External Input and Sustainable Agriculture (LEISA)⁶ during the last two phases of LEPNRM is in line with making agriculture sustainable and climate resistant in the long run. While considerable success has been achieved on this front, progress on shifting completely towards organic farming has been slow on account of several challenges discussed in Part C. However, there have been significant economic and ecological impacts as shown below.

Economic Impacts:

The evaluation report of LEPNRM II provided empirical data of achievements on the economics of farming. The total economic benefit at the project level was estimated at Rs 892.43 million (Table 2A), which worked out to about Rs 27,000 per farmer household. The pie-chart (Figure 2A) shows the proportion of the three broad categories. It may be noted that in this particular year, the major source of increase in income was better price realisation (80%). This was because the FPO could take advantage of the MSP scheme of the government for groundnut crop, which may not be available every year⁷.

The break-up of savings in expenditure through various sources is shown in Figure 2B. The savings from optimising irrigation water and use of weedicides offered the maximum economic benefits.

Since the LEPNRM project had invested Rs 278 million during the entire

decade, the benefits accrued to farmers (Rs 892 million) had been more than three times the investment.

Ecological Impacts:

The increasing substitution of chemical inputs with bio-inputs and adoption of water-efficient practices and technologies by farmers led to several benefits which are either intangible or difficult to measure in the short run. Improved soil health and water savings have begun to reverse some of the harmful effects of sustained and excessive use of chemicals in agriculture. In Sherpura village of Idar block, farmers had earlier reported more than 25 cases of cancer. This has become a thing of the past. The food consumed by farmers themselves is now safe, resulting in better health of the community as a whole.

Soil Health:

DSC had the vision to keep track of soil health right from the beginning with the help of a mobile soil testing unit which visited different villages regularly with a specially equipped van. The results of five key parameters of soil health were tracked over a period of eight years, as reported in LEPNRM-3 evaluation study. The changes in average figures on soil health are not very significant. However, the figures on variability (range)

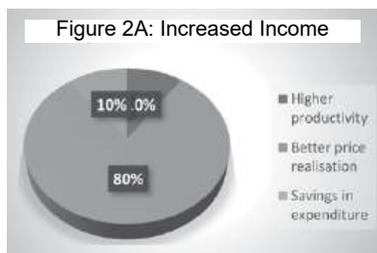


Table: 2A

Increased income (Rs million)

Higher productivity	66.77
Better price realisation	552.85
Savings in expenditure	72.81
Total	892.43



Table: 2B

Savings in expenditure (Rs million)

Seeds	8.94
Chemical pesticide	8.98
Chemical fertilisers	8.64
Weedicides	16.34
Bio-pesticide	2.61
Irrigation water	19.81
Labour & miscl.	7.57
Total	72.81

show a significant improvement in all the four chemical parameters. The variability of salinity (electrical conductivity) came down from 0.08–5.25 to 0.18–1.35. Similarly, the variability of available phosphorous and potash has come down significantly. This indicates that farmers are now using these fertilisers on the basis of soil testing results and not guess work. The level of organic carbon on an average was as low as 0.05% which increased marginally to 0.08% after eight years. In the future, soil testing should also be done separately for the fields which farmers have reserved for cultivating food crops for home consumption. This is because most of the organic fertiliser available with them goes first into these plots. Hence, soil health in plots for home consumption could be compared with those used for market crops. Comparison can also be made between those who have completely shifted to organic farming versus those who continue to use chemicals.

Table 3: Adoption of organic farming in project areas

Farmers and Natural Farming promoted by DSC				
State	Name of district	Total farmers in district that organisation is working with	No. of farmers working on transitioning to NF	No. of farmers already practising NF fully
Gujarat				
A	Mehsana	66,249	2,282	284
B	Sabarkantha	3,566	406	45
C	Aravalli	9,906	724	67
Madhya Pradesh				
1	Alirajpur	25,582	1,408	668
2	Dhar	4,798	371	65
3	Agar Malwa	2,605	566	15
4	Indore	3,500	500	200
Maharashtra				
1	Nandurbar	43,539	11,720	1,355
2	Pune	3,692	100	-
Rajasthan				
1	Baran	7,379	545	46

Source: data provided by NCNF (2023)

End-notes

1. It considers the interconnections and interactions between different land uses and ecosystems and focuses on sustainable land use practices that ensure the long-term health and productivity of the land and its resources.

2. Pastakia Astad and Sachin Oza, "Dynamics of Incubating a Multi Community, Multi Commodity, Multi Location FPO: The Case of Krushidhan Producer Company in Gujarat" in Prasad Shambu C., Ajit Kanitkar and Deborah Dutta (eds.) *Farming Futures: Reimagining Producer Organisations in India*. London & New York: Routledge Taylor and Francis Group, pp 27-50.

3. Attributed to the research of Prof Anil Gupta during the eighties (per.com).

4. Sukhpal Singh (2009) *“Risk and Productivity in farming in North Gujarat and Amreli: A region and crop specific analysis and strategies for improvement and diversification” an internal study for DSC.*

5. *Impact Assessment Report of LEPRRM Project, by Dr Arun Joshi and Change Maker Consortium, Bhopal, (2019).*

6. *LEISA is a farming practice that aims to balance environmental conservation, economic profitability and social equity. It makes use of local natural and human resources and minimizes external inputs.*

7. *The price difference was particularly favourable that year because of which farmers gained considerably. Since MSP prices may not be as favourable every year, this proportion may vary from year to year.*

PART - B

Recollections and Reflections of Key Stakeholders

Relationships with KVKs – Experiences from Mehsana District

“I have been at this KVK since 2009. It is a large district with 10 talukas and there is only one KVK. With a staff of 16, we are expected to cover the entire district, which is difficult. Fortunately, we have the support of agencies like DSC and, to some extent, SEWA.

We have the same goals—of providing the latest scientific information to the farmers regarding sustainable agriculture, which is also adaptive to climate changes. The KVK has devoted one acre to organic farming on its campus and organised over 100 demonstrations on farmers’ fields. However, the transition is not easy and chemicals are also recommended when necessary.

We get very good support from DSC. Rajendrabhai never says ‘no’ to any support we ask for, and once he says ‘yes’, it is final! This is also made possible because they have a very good network. We conduct demonstrations through DSC. Some are only for inputs which the Krushidhan Producer Company can provide. We have seen 40%–45% adoption by farmers. Farmers call us on the phone or through WhatsApp if they have queries. We also communicate through the Kisan Sarthi app which has toll free numbers. When we organise Kisan Melas, we invite staff and LRCs from DSC who actively take part.

I have two suggestions for the future of agri-extension in the district:

a) An agency like DSC can take up the running of a separate KVK covering four or five talukas. For this, it will need to procure 20 hectares of cultivable land and make a proposal to the Department of Agriculture.

b) As of now, we have only one meteorological station for the whole district. We should have at least one meteorological station for every taluka. This will enable us to help farmers in a better way because rainfall pattern is critical in farm advisory. If the monsoon is delayed, it may be better to suggest crops and varieties that are shorter in duration and require less irrigation, e.g. gram requires two irrigations less than wheat but provides the same kind of returns. The same is true for crop varieties, e.g. GW 173 of wheat and GW 499 take only 90-95 days while GW 496 takes 120 days to mature.

- Dr Ramesh Patel,
Head, KVK Mehsana District

Experience of Local Resource Persons (LRPs) from Mehsana district

"I have been with DSC since 2014–15. At that time, I was engaged in diamond polishing work. When I became a member of the Kisan Club, I prepared bio-pesticides. I tried it and found it extremely useful in the field. I also started using certified seed and found it very useful. I began to maintain a diary on expenditures and crop-wise economics. I benefited greatly in my own fields. People started asking me about the new techniques. We introduced vermicompost production through SHGs. In a village of 20,000, only 50 people started using it, but they were impressed. We realised that the *sanstha* (DSC) was doing good work.

Bio-pesticide *Jeevamrut* is being used in cotton crop for the past six to seven years and is making good impact on soil health. We bought cow-urine in order to make it on bigger scale. We personally started growing crops with eco-friendly technology. People would call and ask us.

... Earlier we did not have the confidence to speak to people about these things. Bharatbhai from DSC was with us and encouraged us to speak. Now I can speak in front of an audience of 500 people without hesitation. I also have gained knowledge due to experience which gave me the confidence although I am only Class 12th pass.

“... LEPNRM which used to support the extension system under DSC closed in 2020. After LEPNRM, the Kisan Clubss are on their own. However, we had initiated the culture of sharing the experiences of innovative farmers. Fortunately, the KVK in Mehsana is quite efficient and provides excellent services to farmers. KCs are well connected to it and remain active. Now we get demonstrations from the KVK and continue operating as in the past. In addition, Krushidhan Producer Company Limited (KPCL) has started a WhatsApp group in which there are more than 500 farmer members. We share all new information on it.

- Mukesh Patel,
Kansa village

“I joined as LRP after completing MSW in 2016. I was given charge of five villages. We did season-wise meetings with Kisan Clubs to plan for the coming season based on the previous years’ experience and availability of new inputs and technology. We shifted from *desi* seed to new improved varieties in the case of cumin and castor crops. We organised Farmer Field Day for demonstrations in the field. We learnt how to make bio-pesticides and how to use fertilisers based on soil testing—for which DSC had a mobile van service.

Kisan Clubs received support of Rs 10,000 annually from NABARD for exposure trips and for calling experts to share their knowledge. Earlier, we did not know much about the emerging technology. But we got linked to KVKs and used to call up the scientists for their guidance. They would come to solve farmers’ problems and in the process we too learnt.”

- Ratansingh,
Kharod village

“Some of the factors that brought about change in our farming systems can be listed as follows:

- Farmers started savings in Kisan Clubs and women’s SHGs. This enabled them to avoid money lenders and instead take loans from their own savings at a reasonable rate of interest.
- Seed of good quality and other inputs were delivered by KPCL at

the farmer's door step at reasonable price.

- Demonstrations on new technology was organised in farmers' fields and the DSC staff was available at critical stages.

Owing to the above, farmers developed faith in the new system being promoted by DSC.

Due to increase in educational levels, the youngsters are not interested in agriculture. Therefore, it should be made more attractive to them by use of technology.

"... I had secured a BEd degree but did not know how to speak to people. Earlier, I was not comfortable speaking to groups of women. But over time, I have shed my inhibitions and now feel comfortable in organising meetings."

- Jayeshbhai,
Sundhiya village

Future Directions and Possibilities

Emerging Challenges of Ongoing Interventions

(A) Challenges of Organic and Climate-Resilient Farming

While the transition to LEISA has been progressing reasonably well, the adoption of organic farming has been only partial—about 30%—and mostly restricted to production for home consumption⁸.

- i. An internal assessment on adoption of organic farming methods in DSC's operational area in North Gujarat was carried out by DSC Foundation in 2017–18. The study identified several constraints. Some of these are common across regions, such as transition losses, high cost of certification, difficulty in marketing small quantities of diverse crop production, difficulty in maintaining isolation of small plots where neighbours are still using chemical inputs, etc. But a few others are also location specific, such as perception among farmers that wild boars are attracted to fields because of vermicompost leading to destruction of crops, lack of sufficient organic matter within the region, and high cost of labour leading to limited production of bio-fertilisers and pesticides.

DSC has initiated several measures to tackle these challenges. Some of these include:

- Carrying out demonstrations in fields so that farmers may get convinced about the benefits
- Promoting group-fencing to protect the crops from ungulates and wild boars

- Field testing of alternative methods of producing bio-fertiliser and compost
- Promoting group certification in order to keep the costs of organic certification down

Although a retail outlet for marketing of organic farm produce in Ahmedabad city was tried by GUJPRO, it did not prove to be economically viable. Hence, the issue still remains a challenge. On the production front, the issues of losses during transition and drudgery in producing organic inputs are still in the process of being addressed.

The LEPNRM-II evaluation study documented ideas suggested by innovative organic farmers. Some of these are:

- Farmers can minimise transition losses if they shift from chemical to organic inputs in a phased manner over three or four years.
- Simple agronomic practices can help bring down the high cost of labour for weeding operations in organic farming. If these practices are included in the Package of Practices (PoP) of organic farming and diffused widely, more farmers will be ready to take the risk to switch to organic farming, not just for home consumption but also for organic markets.
- Milestone Green's technology for making compost and biogas simultaneously from farm-waste was being tested by a few organic farmers⁹. Although it requires an investment of around Rs 50,000, it can play an important role in making organic farming viable.
- Vermicomposting can be as effective as Milestone Green's technology if adopted with suitable design principles and fully integrated in the farm with agriculture and animal husbandry. An innovative farmer, Ashokbhai Devkaranbhai Patel (Village Rahiyol, Aravalli district), has designed a system that reduces drudgery and improves productivity.
- For marketing of organic produce, until such time that an organised market emerges, selling to and through 'kith and kin network' seems to be the best available option.

The third phase of LEPNRM had a special focus on promoting climate-resilient crop varieties. While external agencies and a few educated farmers may appreciate the long-term impacts of adopting such varieties, the farming community as a whole is still not convinced that climate change is for real. DSC's survey through students indicates that farmers' opinions were divided about the loss or gain incurred due to recent climate change incidents. Hence, providing more evidence of long-term changes in temperature and rainy days, etc. to farmers during awareness camps may help to create a better understanding. Meanwhile, it is clear that any new varieties or technologies must demonstrate economic benefits right from the beginning in order to be accepted by the farming community.

(B) Challenges of Restoring Soil Health

Monitoring soil health with five parameters over the past eight years has been a good initiative. It shows that so far there have been only marginal improvements in these parameters. Restoring soils that have been subject to extractive farming over three to four decades without any replenishment is bound to take a longer time.

Soil health depends on physical, biological and chemical properties. It should be noted that of the five parameters being monitored only "organic carbon" reflects the biological component while the remaining four are related to chemical parameters. Physical parameters such as depth of top soil, soil profile and texture, moisture-holding capacity and drainage capacity among others and biological parameters such as micro-flora and fauna, availability of beneficial organisms like earthworms, etc. are also useful indicators for getting a more comprehensive assessment of soil health. Past history of crop productivity in the field being tested should also be recorded to compare it with the soil testing data.

Apart from macro-nutrients, micro-nutrients are also important for healthy growth of the plants. Micro-nutrient deficiency makes crops vulnerable to disease and pests, often leading to severe loss in productivity. These tests are more expensive and time-consuming.

An annual survey would help to show the long-term trends if any. The soil

sampling method by DSC could include selecting farmers from different soil type areas in order to get more accurate patterns of the changes taking place over time. Soils used for producing crops for home consumption versus markets should be tested in order to understand adoption patterns.

(C) Challenges in Providing Risk Insurance in Farming:

i) Agriculture Insurance Company of India (AIC):

A review of the pilot scheme on weather insurance brought out several issues, such as limited coverage, improper targeting and administrative delays resulting in limited time for raising awareness about this new scheme. However, the real challenge was one of matching economic expectations of farmers with those of the company. The economics of risk assurance was not working out for the farmers. The sum insured was too high and the premium fixed was also very high on account of revenue considerations of the company. Until a mid-point is reached which is acceptable to both stakeholders, the scheme cannot be expected to scale up. Hence, a dialogue with the company would be needed to redesign and relaunch the scheme. For more information, refer Chapter 7.

Future Directions and Possibilities

DSC's work over more than two-and-a-half decades shows clearly the need to work on integrated models for water and other natural resources. It also indicates that rather than replicating this work only at the village level, such work should be scaled up at the river basin level in order to create impacts not only on the natural resources but also on the lives and livelihoods of village communities.

The projects being implemented at Nandurbar and Ghod basin should be closely monitored and documented well as these are likely to throw up useful and interesting ideas for interventions in the coming years. Apart from the conceptual advancement, these are also being used to test emerging and disruptive technologies which could reduce drudgery and improve accuracy and efficiency in agricultural tasks as well as their monitoring.

The most promising aspect of these projects is the innovative financing model which seeks to link earned rewards to further development of the area by allowing their utilisation for investment in and promotion of FPCs. The rewards can also be used by the promoting agency to manage its costs of project operations and implementation. Given the current shortage of funds faced by credible NGOs, such arrangements would benefit not only the farmers and their agro-ecology, but also the concerned agencies working towards sustainable and climate-resilient agriculture.

Some of the ideas being discussed internally for implementation in the near future are:

- *Reducing the water footprint of cereal crops:*

To be adopted for crops such as wheat and paddy; it involves promoting region specific, low water-footprint crops having high economic returns.

- *Adopting crop intensification methods:*

DSC will upscale its experiences of System of Sugarcane Intensification, Better Cotton Initiatives, Sustainable Spice Initiative, Onion Intensification, Paddy Intensification, Wheat Intensification and millet farming that have been initiated successfully in different agro-climatic zones like Western Maharashtra, North Gujarat, Central Gujarat and Western Madhya Pradesh. These approaches are multi-faceted, involving improved irrigation techniques, better crop varieties, sustainable soil and water management practices, economic incentives and strong policy support in collaboration with Crop Research stations and KVKs.

- *Promoting chemical-free farming clusters:*

DSC will identify sizeable designated areas where farmers practise organic and sustainable agriculture without synthetic chemicals. DSC, in collaboration with government schemes and policies, facilitates this by providing training and resources to farmers on organic methods. One such Innovative project, “Miracle Millet”, has been launched in Alirajpur district,

Madhya Pradesh, for promoting the whole value chain, right from seed development to production, processing, consumer and market development. DSC will enhance these efforts through funding, technical support and market linkages.

■ *Connecting organic farming clusters with urban consumers:*

DSC leverages the growing demand for organic produce, ensuring that farmers receive fair prices and consumers get fresh, chemical-free products. This initiative not only promotes healthier food options but also supports environmental sustainability and rural economic development. Urban consumers are engaged through awareness campaigns, farmers' markets and digital platforms, creating a direct link between producers and consumers. Government collaboration ensures policy support, subsidies and infrastructure development, making chemical-free farming viable and profitable.

■ *Tapping the potential of geo-tagging for better marketing:*

This has already been demonstrated successfully in Nandurbar for chilli and *amchur* and can be explored for other traditional crops and food products. Geo-tagging of products ensures authenticity, promotes sustainable harvesting practices and enhances marketability. This approach supports traceability, quality control and fair trade, benefiting both producers and consumers while preserving the region's ecological balance and promoting sustainable development.

■ *Developing a cadre of LRPs for the entire value chain:*

At the village level, DSC foresees a big gap in availability of skilled agencies and professionals that can create a farmer-led crop value chain. There is a need to develop a cadre of Local Resource Persons (LRPs) for the entire crop value chain, which involves strategic intervention across three key phases viz. a) pre-production b) crop production c) post-production crop phase.

- *Formation of a consortium of natural farming farmers and ecopreneurs:*

DSC has enabled more than 3,000 farmers to take up organic farming. It would like to develop a network/ consortium of farmers and ecopreneurs who have taken the plunge towards full organic farming or natural farming with the support of state and national networks. It will create a unified platform for sharing knowledge, resources and best practices in natural farming, which enhances productivity and environmental stewardship. By pooling expertise and resources, members will access better technology, training and markets, thus improving their overall efficiency and profitability. The consortium also facilitates collaborative efforts to overcome common challenges, advocacy for supportive policies and promotion of organic and eco-friendly farming practices. Additionally, it strengthens the bargaining power of small-scale farmers and ecopreneurs, enabling them to negotiate better terms for inputs and sales. This collective approach fosters innovation, drives sustainable development and builds resilience against market and environmental fluctuations, ultimately contributing to a more sustainable and equitable agricultural system.

- *Integrating nutrition concerns with integrated farming:*

DSC envisions a future where integrated farming practices not only enhance agricultural productivity but also address critical nutritional needs, ensuring holistic well-being for rural communities. The idea has been initiated in a few villages on a pilot scale.

To achieve this, DSC will promote diversified farming systems that incorporate nutrient-rich mix crops like pulses, coarse cereals, oil seeds and vegetables with sustainable practices to develop a minimum of 100 nutrition-smart villages. One component will be education to raise awareness about the

benefits of nutrition-sensitive agriculture. DSC will collaborate with local stakeholders to tailor interventions to specific dietary needs, and leverage data-driven approaches to monitor and improve nutritional outcomes. This integrated approach will empower farmers, enhance food security and contribute to healthier communities.

■ *Promoting climate-smart agriculture/ Agro-ecological farming:*

Farmers need to respond to the changing climatic conditions. DSC would like to contribute to the challenge of making Indian farmers adaptable to climate change by promoting climate-smart practices that would enhance productivity, sustainability and environmental stewardship. It will provide training on climate-resilient crop varieties, adopting precision irrigation techniques and sustainable pest management. By fostering partnerships with research institutions and leveraging technology for data-driven decision making, DSC aims to empower farmers with the tools and knowledge needed for effective climate-smart agriculture, ensuring long-term food security and farmer-resilience.

End-notes

8. *Based on a survey of farmers within the target area, with the help of students from NLRI, Ratlam, (2017–18).*

9. *Technology provided by an entrepreneur of Vadodara city was introduced by DSC for testing in the field.*

Chapter-6

Promoting Farmer Producer Companies (FPCs): Unlocking the Potential of Marginal Farmers



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DSC was among the first NGOs in India to promote FPCs as a vehicle to unlock the potential of marginal farmers for spearheading the transition to sustainable agriculture. Its first FPC, Krushidhan, with a membership of over 70% marginal farmers was established in northern and central districts of Gujarat in 2012. Within six years, it became financially independent of DSC and has been running successfully since then. With a turnover of Rs 87 million in 2023–24, it could pay the salaries of all its employees and cover overheads. Even before reaching that milestone, it had received national recognition from two independent sources. Krushidhan serves about 18,000 farmers, which is more than 4 times its shareholder base of 4,409. It hopes to reach 40,000 farmers within the target area where the economic viability of farming is becoming a challenge. Its long-term goal is to make farming both sustainable and profitable. Drawing upon its knowledge and experience of incubating Krushidhan, DSC has been promoting seven more FPCs in different cultural and agroecological situations in Madhya Pradesh and Maharashtra. This chapter reflects on the evolution of DSC's strategy for incubating FPOs from one state to another. It also dwells briefly on 'carbon financing' being adopted in Nandurbar, which addresses the persistent problem of finance for FPOs while simultaneously promoting ecologically sustainable agriculture.

PART - A

Summary of Interventions and Outcomes

6.1 Introduction

Prof Tushaar Shah's research at IRMA during the mid-1990s brought out the complicated nature of a farming cooperative through his theory on collective organisations¹. The complications arose because a farming cooperative was both a social and corporate organisation at the same time. Therefore, the governing board had to make decisions that would balance social objectives of benefiting farmers with the corporate objective of economic viability and profitability. It needed professional managers to run the organisation and deal with markets, where the risk was high. But it could hardly afford the fees of competent marketing professionals who would also be sensitive to the needs of marginal farmers.

The legal system was tweaked somewhat through the creation of the Mutually Aided Cooperatives Societies Act (1995) in Andhra Pradesh and Telangana. Another option created was that of a not-for-profit business enterprise under Section 25 of The Companies Act (1956). But these did not provide a collective the freedom to operate in the way it would like to while passing on the benefits, including profits, to members and other farmers of the region.

The year 2003 saw a paradigm shift with the passing of a legal provision within The Companies Act, which allows a collective business of farmers to be established under it as a Farmer Producer Company (FPC). DSC was among the first to have such a company registered for farmers in the Dhari block of Amreli district, where it had been working closely with the state government to promote watershed development. The Dhari Krishak Vikas Producer Company Ltd (DKVPCL) was the first FPC to be registered in Gujarat with the major objective of providing better agriculture inputs to the farmers.

As it turned out, perhaps this was a premature move since neither had the farmers developed the right kind of leadership to take up a collective business nor was DSC fully aware of what it meant to incubate such an enterprise. As a result, this turned out to be a false start and the company began to register losses from its single business activity of supplying agri-inputs within a cluster of 10 villages. But at the same time, DSC's team members learned some very important lessons which stood them in good stead later when the demand for FPOs came from the central and northern districts of Gujarat. This was part of a larger Sustainable Agriculture Development programme, where it had been working with farmers for PIM and watershed development in irrigated and dryland regions respectively.

6.2 Nature of Interventions

6.2.1 FPO as a Vehicle of Change

The FPO emerged as a natural progression in the areas where DSC had established farmer interest groups called Kisan Clubs (KCs) and women's SHGs along with a team of Local Resource Persons (LRPs), which together constituted the agri-extension system. Neither the Water User Associations (WUAs) in canal irrigated areas nor Watershed Associations in rainfed areas demonstrated the required enthusiasm and capacities to carry out the agriculture extension programme as envisaged by DSC. They were comfortable continuing their primary responsibility of supply of irrigation water management only. DSC understood that the nature and demands of agri-business were very different from irrigation management, and therefore a separate social vertical (institution) was required to provide backward and forward market support to a large number of farmers. It also realised that the membership and geographical base of agriculture extension and marketing institutions should be much larger than that of the WUAs.

KCs and SHGs became the building blocks of a three-tier farmers' institution representing the quest for economic independence and progress. SHGs had found and tasted a sense of freedom from moneylenders. KCs realised

the benefits of forming small groups to test and adapt new knowledge and technology – knowledge that helps not only to reduce costs but also to do it without affecting soil health and micro-climates.

Farmers who had started adopting the new technology realised the need to have their own organisation which would make available quality agri-inputs at their doorstep by aggregating demand. In the long run, it would make agriculture more profitable through collective marketing and processing of produce.

This was the genesis of Krushidhan Farmer Producers Company Ltd. It was a reincarnation of an earlier company promoted in Amreli by DSC, which had gone dormant after incurring initial losses. It was felt that the administrative cost of registering a new company would be more than expanding the coverage of the earlier company and reviving its operations on a larger scale.

Krushidhan FPC lived up to its expectations. After an incubation period of six years, the company became very close to being financially independent of DSC. This meant that the entire salary expenses of staff as well as the overheads of the company were covered by the profits of the company. As per the current situation, the CEO Jasvantbhai gets 30% of his salary from Krushidhan while 70% comes from DSC. This is because he has now started providing mentoring and hand-holding support to seven other FPOs promoted by DSC. Meanwhile, Krushidhan has appointed a Managing Director from within the Board who has taken over much of the responsibilities from Jasvantbhai. DSC's Programme Director who served the company as an Expert Director on the Company's Board of Directors for seven years in a row (2013–2019) and stepped down as part of DSC's exit strategy.

The learning emerging from incubating Krushidhan had emboldened DSC to initiate similar interventions in the neighbouring states of Madhya Pradesh and Maharashtra. Table 1 provides a summary of all FPOs incubated or being incubated by DSC in these three states.

The profile of FPOs as tabulated shows some significant changes and

diversification in its approach over time. DSC has moved from:

- a. Predominantly irrigated farming area in Krushidhan to rainfed area in three other FPCs
- b. Caste-based farming communities to tribal communities in Madhya Pradesh and Maharashtra
- c. Male-dominated to women-led FPC in Adimjyoti Gramoday in Madhya Pradesh
- d. Multi-location in Krushidhan to single location in Nandurbar

Simultaneously, the incubation strategy saw a significant change as well:

- i. From large size (4,400-plus shareholders) in Krushidhan to as small as less than 500 in the most recent FPCs in Nandurbar—in keeping with NABARD guidelines
- ii. From incubating one FPC in multiple districts at a time to a cluster of FPCs in Nandurbar covering about 20 villages per FPC
- iii. From donor-supported FPCs to those supported under CSR/government agriculture development projects/NABARD scheme

What have been the major considerations for these changes in approach? This is discussed a little later after sharing the Krushidhan experience. Needless to say, Krushidhan was DSC's university which gave it the confidence to create several more FPCs in neighbouring states. It is therefore imperative to understand how this was achieved.

6.2.2 Understanding the Krushidhan Model

Registered in December 2013, Krushidhan caters to about 40,000 farmers from 190 villages in five blocks of four northern and central districts of Gujarat. By 2020–21, the company was serving 18,400 farmers—4,409 shareholders and about 14,000 others. It received early recognition at the state and national levels for its impact on marginal farmers of the region,

Table 1: Profile of FPOs being incubated by DSC (2023–24)

Name of FPC (inception year)	Block (District) Total villages	Community	Irrigation	Shareholders, (shareholding in Rs Lakh)	No. of Board members (No. of women)	Avg. Turnover (Rs Lakh)
Gujarat						
Krushidhan (2013)	Vednagar (Mehsana), Himmatnagar (Sabarkantha), Modasa (Aravalli), Meghraj (Aravalli) and Dhari (Amreli) 190 villages	Multi-caste; tribal and OBC in Meghraj (Aravalli)	Canal-irrigated; except Meghraj which is rainfed	4409—23% women (45.0)	7 members (1 woman)	870
Madhya Pradesh						
Narmada Valley (2015)	Manavar, Gandhwani, Kukshi, Nisarpur & Dahi (Dhar) 53 villages	Tribal (70%) & non-tribal (30%)	Canal-Irrigated	1555—50% women (8.15)	9 members (3 are women)	39.81
Adimjati Gramoday (2017)	Alirajpur and Sondwa (Alirajpur) 36 villages	Tribal (women led)	Rainfed	544—230% women (1.60)	9 members (7 women)	7.79
Maharashtra						
Amu Aakha Ek Se (2021)	Dhadgaon (Nandurbar) 19 villages	Tribal	Rainfed/NTFP	604—9% women (3.20)	5 members (1 woman)	21.44
AMOP (2021)	Akkalkuwa (Nandurbar) 27 villages	Tribal	Rainfed/NTFP	451—9% women(3.20)	5 members (1 woman)	12.47
Bramhanpuri (2021)	Shahada (Nandurbar) 21 villages	Non-Tribal	Rainfed & Lift Irrigation	432—15% women (6.80)	5 members (1 woman)	37.20
Nandbhoomi (2021)	Nandurbar (Nandurbar) 537 villages	Tribal	Canal Irrigated	690—15% women (5.0)	5 members (1 woman)	32.24
Dasheri Tur (2021)	Nawapur (Nandurbar) 51 villages	Tribal	Canal Irrigated	583—20% women (5.00)	5 members (1 woman)	7.49

because of which its experience has been well-documented. A detailed case study by the authors was published by IRMA in a volume of 15 cases drawn from all over the country (Prasad, Kanitkar and Dutta, 2023²). We provide below a brief understanding of the uniqueness of this case and what it contributes to the challenging task of incubating successful FPOs.

The Krushidhan case shows that if properly managed, a multi-commodity, multi-community, multi-location company can deal more effectively with market risks, while creating greater socio-economic benefits. Some of the main reasons identified are:

- i. It has a relatively large basket of commodities. Hence, in a given year, if one commodity is badly affected, other commodities and products can fill the gap and the overall performance is not affected.
- ii. It can cater to the needs of a variety of farmers producing a variety of commodities and products. This is because products and services with low margin can be cross-subsided with those with high margins.
- iii. Farmers in one cluster/location can become customers in another location of the same company, thereby promoting a circular economy through closed-loop value chains.
- iv. It can achieve large volumes quickly, which is beneficial for negotiating in the markets and most importantly,
- v. It can impact the agricultural practices of an entire region, making it possible to move towards sustainable agriculture.

However, all this presupposes a strong foundation of social capital, an effective agri-extension system and a competent and sensitive professional team that knows how to work with the governing council and understands the needs of its members. It also implies the creation of appropriate leadership for enterprise building, collective decision making and ability to work closely with professionals.

Krushidhan could make larger social impacts not just because it was much larger than the average size of an FPO but also because it was

built to benefit farmers of the entire region. Its objective was to transform agriculture in the region and therefore it was targeting all 40,000 farmers of the target area, not just 4,400-plus shareholders. The number of farmers actually benefiting from its services in 2020–21 was more than four times the number of shareholders. Hence, the FPO was seen as an effective tool for socio-economic change. It occupies the central place in DSC's theory of change (described earlier in chapter 5). As a result, even the medium and large farmers of the area were supportive of it and have also contributed cash to the company when it was in need. Eventually, the company is likely to cover the majority of the farmers in the target area and become its main vehicle of transformation.

It is worth understanding that the real benefits do not flow through the path of dividends as much as they flow through impacts on farming—through higher productivity, lower risk and costs, and higher price realisation as visualised in DSC's theory of change. The section on financial performance and impact assessment shows how this is actualised.

Incubating Krushidhan – learning by doing

In 2013, incubating FPCs was new to most development agencies, including DSC. Not surprisingly, it made its quota of mistakes. But it also ensured that these mistakes were never repeated. Some of the measures taken right from the beginning while incubating Krushidhan were:

- a. Building from bottom upwards—three-tier pyramid structure with a broad base
- b. Allowing only committed, interested and apolitical farmers as shareholders through a technical and institutional screening process conducted by Kisan Clubs
- c. Emphasising farmers' shareholding in order to build their stakes in the company while providing external support for increasing the shareholding as well
- d. Making special efforts for greater involvement of women; for example, women SHGs were the first to lend money to KPCL to start business operation

- e. Ensuring capacity building of the Board of Directors (BoD) as well as professional staff with training and handholding
- f. Providing advisory and hand-holding support to the company's board by senior programme staff of DSC for an initial period of six years to develop financial and management systems
- g. Deploying professional staff from Day 1 (with financial support under LEPNRM programme —refer chapter 5), with a clear understanding that the company would start paying for the salaries of staff and CEO once it had reached financial self-sufficiency
- h. Covering greater geographical area (expanded from one block to 11 blocks) in order to increase shareholding as well as business opportunities, resulting in a diverse product portfolio
- i. Ensuring that the DSC staff never engaged in core business activities and limited their involvement only to mentoring, community-organising and training

Search for a suitable revenue model

Most of the activities undertaken initially were aimed at meeting the felt needs of the marginal farmers. These were related to timely supply of quality agri-inputs at their doorstep. These product lines happened to provide low to moderate margins to the company (between 3 and 13%). However, an appropriate revenue model involves having at least one or two product lines that can contribute enough income to the company to cover its fixed costs. Selecting such an anchor activity has two main considerations: a) the margin and b) the existing or potential volume that can be achieved over a reasonable time frame.

An initial assessment of the product mix showed that *crop seeds* coming through distributors, (the regular supply channel) provided very low margins at around 3% as they had to accommodate many middlemen. *Chemical pesticides* provided better margins (12-13%), but promoting

chemicals was antithetical to sustainable farming. Selected chemical pesticides were to be used as a measure of the last resort. Bio-products (fertilisers, pesticides, growth stimulators, etc.) from distributors provided high margins but were not proven and therefore still under observation. Farm equipment provided moderate margins, but these were not very fast-moving items and required space and capital for storage. Bio-pesticides and bio-fertilisers produced by their own farmers were mostly sold to other farmers in the village itself. Although margins were good, the volumes were limited and unlikely to grow in the future. Hence, for the initial years, the company provided good services related to the supply of agri-inputs, but this did not show in terms of profitability on its balance sheet. Not surprisingly, commercial banks were not interested in funding the urgent working capital needs of the company. The story was not very different from that of other contemporary FPOs.

Participation in Procurement Activity for State Government's MSP scheme:

As the company sought to build forward linkages for marketing of collective produce of the farmer, the opportunity provided by the government for purchase of groundnut under MSP scheme proved to be a boon which lasted for three years. Although the margin was only 1% to the company, the scale of operations was large and the benefits to farmers substantial because of the price difference from local market price. In 2016, Krushidhan learnt the ropes of aggregating produce for collective sale. It also learnt how to deal with various departments and complete the operations as per their requirements. The revenue turnover reached Rs 56 million. The results were beneficial for both the social and commercial goals of the company. MSP, therefore, met the requirements of an anchor activity.

Hence, the operations were scaled up the following year, reaching a record turnover of Rs 161 million. In 2019, however, the state government faced problems with a few FPOs and subsequently it discontinued FPOs from participating in this activity. Krushidhan was by then on its last year of its incubation. Since the grant was to expire in October 2019, it had to become financially viable by then.

At this stage, the Board of Directors of the company along with the programme director of DSC and the CEO of the company made a collective attempt to experiment with alternative product lines, which could become anchor activities in future. They had organised two major brainstorming workshops (one in 2016 and the second in 2020), facilitated by external consultants, to identify suitable activities that the company could take up. These have helped to shape the product portfolio of the company over the years.

Among these, the business of producing certified wheat seed had been initiated right from the beginning with the support of the State Agricultural University in response to the increasing demand for wheat seed of new varieties performing well in field demonstrations. These demonstrations were part of DSC's extension and farmers' training programme covering 145 villages across four districts under LEPNRM project. Certified (and truthfully labelled) seed production represented a case of backward integration as farmers themselves produced the value-added product. Social benefits were high as farmers who produced the seed realised higher prices and at the same time farmers who consumed the seed also benefitted through timely supply of quality produce as the doorstep. However, finance is a major constraint for scaling up this activity. This is because the certified or truthfully labeled seed needs to be stored until the next season. For instance, in the case of wheat seed production, which has very good potential to scale up, the capital gets blocked for six months—from March to November. This calls for higher amounts of working capital, which is not easily available.

It was in a district-level workshop organised by DSC under a sustainable agricultural programme in 2018 that farmers of Himmatnagar suggested that Krushidhan should become an agent for contract farming of potatoes. Potato cultivation was expanding to Himmatnagar from south of Deesa, the conventional centre of potato farming. Hence, in 2019, this activity was taken up on a pilot scale. On August 30, 2019, Krushidhan signed a contract with Iskcon-Balaji to cultivate potato of its patented variety *Santana* from 100 MTs of seed provided by it. The results of the pilot were favourable, and 1,000 MT of potato was produced. The economics

worked out very well for both farmers as well as Krushidhan, which got a commission of 2.75% for its services. Farmers earned on average a net profit of about Rs 1.125 lakh/acre. Each farmer was allowed a maximum of two acres. The profit/sales ratio was 52.9%, which was much higher than that of wheat, their main crop. In 2020, it contributed to meeting more than half the fixed costs of the company. As the potential for it to become the next anchor activity became clear, the company decided to scale up production. By 2022, production had been scaled up to about 4,000 MT of potato, which was four times that in 2019 (Krushidhan APR, 2021–22).

Role of Governing Body

The BoD has a very difficult role to play as it has to constantly balance various needs of the company as well as its stakeholders while taking decisions. As seen above, the product portfolio emerged through a series of decisions which involved balancing farmers' benefits with profitability of the company. Similarly, there are several other factors, including power bases, which need balancing on an ongoing basis to minimise horizontal (institutional) risks (see Figure 1).

Some of these are listed below:

a) *Horizontal (institutional) risks*



Figure 1: Balancing decisions by BoD to minimise risks

- Needs of shareholders vs non-shareholder farmers
- Needs of women vs men
- Needs of different communities—tribal vs non-tribal
- Needs of different locations and agro-ecologies—rainfed vs irrigated
- Needs of marginal vs other farmers

b) Vertical (business-related) risks

- Farmer welfare/benefit vs company profitability
- Internal vs external funding
- Short-term vs long-term economic gains
- Local vs distant markets
- *Business partnerships: branded vs local companies*
- Govt-driven, strategy-driven vs farmers' practical needs
- Commodity vs value-added products—needing capital investment, especially for new technology

Composition of Governing Body

Precisely because of the above-mentioned challenges, the composition of the board needs also to be well-balanced, considering representation of key stakeholder groups—community representation, gender balance, location balance—depending on what is most important. In Krushidhan, each of the four clusters has a representative on the board, but Visnagar, which plays a bigger role in production, has two representatives instead of one. Women representatives were conspicuous by their absence earlier. DSC's intervention helped to bring two representatives on board from Meghraj cluster where the women's SHG has formed a federation and could offer suitable women leaders.

Mentoring and Handholding

LEPNRM project was conceptualised by a team consisting of Shri Vijay Mahajan, who had just taken over as Chairperson of DSC, Shri Sachin Oza, Executive Director, and Shri Mohan Sharma, Programme Director. In

2012, Shri Mohan Sharma oversaw the administrative transformation and relocation of the existing company DKVPCL into KPCL (Krushidhan FPO).

FPCs have a provision for expert directors who can play an important role in guiding the decision-making process without having voting rights. During the formative years, Krushidhan benefitted a great deal from the participation of Shri Arvind Gupta³ as a Chairman and Expert Director. After the first three years, he opted out for personal reasons. Thereafter, this role was taken over by Shri Mohan Sharma from DSC. After incubation, this position has been lying vacant for want of a suitable person to fill that role. The first business initiated was the supply of certified wheat seed. The supply of quality and timely supply of agri-inputs was taken up with internal support of funds from SHGs. In 2013, KPCL formally invited Shri Mohan Sharma to join the BoD as an Expert Director, a position he held until 2019. On Mohan Sharma's recommendation, the DSC board nominated a senior person associated with the cooperative movement, Shri Arvind Gupta, to join as a second Expert Director. He shared his expert knowledge and provided guidance for three years from 2013 to 2015. The expert directors played a critical role in building the capacities of the BoD, the CEO and his team of workers selected from the youth of the farming community.

Nature of Leadership at Krushidhan

In an FPC, leadership must come from the BoD which is expected to volunteer a considerable amount of its time to a multitude of tasks. Initially, the board structure had a shadow of successful leaders of the irrigation cooperatives and therefore the first board was dominated by social / opinion leaders belonging to PNRM programme of DSC in different locations. Shri Haribhai Chaudhary of Dharoi Branch Canal Federation was the first chairman of the reformed company in 2012. He played a critical role in the revival of the DKVPCL and in its transition into KPCL (Krushidhan FPO) by enrolling thousands of farmers through his irrigation network with the support of DSC's staff. Later, young entrepreneur farmers like Shri Lalitbhai Patel were invited to onboard based on their long experience in commercial production of horticulture crops through contractual farming.

Board members are also exposed to legal risks because of certain

compliances. Most of them become aware of these only after gaining financial literacy related to the company. Leaders were expected to be high on commitment as well as competence. Two criteria used for selecting board members along with commitment were: a) membership with a Kisan Club or women SHG and b) active participation in the work of the company and Kisan Club. Apart from that, relevant experience included demonstrated leadership in other participatory natural resource management projects and some experience in dealing with markets.

The BoD was as active as DSC during the years of its incubation. However, the areas in which each took leadership were different. There were local issues that directors could handle comfortably (perhaps even better than DSC), but for some other issues like legal and financial compliance and market linkages, they needed its support. Some of the areas in which BoD was proactive right from the beginning are as follows:

- *Leadership at cluster level:*

BoD leaders took responsibility for their own clusters and used their influence to improve shareholding as well as participation of both members and non-members. It has taken up the idea of decentralised governance seriously by taking the lead in functioning of cluster-level committees.

- *Supporting professionals and implementation team:*

BoD played a valuable role by identifying the felt needs of the farmers on one hand and smoothening supply issues with farmers at the point of supply. It maintained customer relations and put in place a grievance redressal system. DSC seeded its proven conflict resolution mechanism, used earlier in PIM and watershed projects into the FPO management, with a few modifications.

- *Mobilising resources:*

The board understood how difficult it was to access formal credit. It chose to rely on internal funding and mobilised funds from SHGs, KCs and even from individual farmers who were

aligned with the company's goals and mission.

- *Dealing with external and internal threats:*

At one point in time, local vested interests which felt threatened by the rising economic power of the company, threw a spanner in the works by using false accusations with NAFED to get Krushidhan blacklisted from becoming a vendor. Patient lobbying over a period of about two years by chairperson Vasantbhai Patel and board member Chandrakantbhai Patel got the company out of this situation. Since their handling of the situation was mature and appropriate, DSC only needed to provide back-up support to them.

- *Identifying new market opportunities:*

To improve their entrepreneurial orientation, DSC took several initiatives, including brainstorming sessions, feeding of ideas from time to time, etc. which were evaluated by the BoD and ultimately owned and implemented by it.

Two ideas selected by the BoD as possible anchor activities in future were tested for implementation. These include seed production for fodder and contract farming of potato. While the latter has become an anchor activity over the past three years, the former (suggested by the Expert Director from DSC) also has good potential to be scaled up and provide good returns both to participating farmers and to the company.

The leadership demonstrated by Shri Vasantbhai and other directors in the face of external threats was exemplary. These external forces cannot be underestimated and a system of 'eternal vigilance' needs to be brought in place to safeguard the interests of the company. Internal threats can also pose a threat when some leader(s) become too big and start looking out for personal gains at the cost of the collective. But collective leadership norms are built into the structure of the FPC to ensure this does not happen. The process of building from below and instilling checks and balances also contribute to a stable governance. DSC always had a strong and experienced team for capacity building and has been following a participatory approach while working with farming communities. Perhaps

this is the main reason for its success in promoting viable and sustainable farmers' institutions.

Leveraging Support from the Available Ecosystem of Institutions

Contrary to popular belief, the ecosystem of support institutions in agricultural products is fairly well-developed. In fact, technology institutions are often specialised for different crops and sub-sectors. Special government schemes are available for marginal farmers, tribal areas and more recently for aspirational districts, which constitute the poorest farming communities. The major challenge for the incubating agency is its ability to leverage and access these sources. However, given its reputation as a national-level resource agency working for the welfare of small and marginal farmers, a number of private donor agencies and government institutions, like of Small Farmers Agribusiness Consortium (SFAC), came forward to support it for specific purposes such as matching grant for equity capital, support for incubating the FPO, onboarding women farmers, etc.

DSC was also instrumental in creating a network of small NGOs in Gujarat called Sajjata Sangh which in turn promoted an apex FPO called GUJPRO at the state level. Both these networks also became part of the ecosystem of support institutions for FPOs in Gujarat (see Chapter 7).

6.2.3 Replication in Tribal Context

When DSC moved into the state of Madhya Pradesh to work with a tribal population which had access to canal irrigation, it made a few changes in its approach. The first was to have smaller FPCs of village clusters supported by a larger FPC at the district level, which would work in collaboration with the government department. This was a major departure from the Krushidhan model. Other changes were in the gender balance. Given the tribal culture, it was easier to involve higher number of women in the FPC and its management. Since animal husbandry was a critical link for sustainable agriculture and since women were mostly involved with this activity, a far greater stress was put on animal husbandry and linking of the FPCs to the local dairy. This was a good move because dairy was a better-paying activity as compared to many crops, especially in rainfed areas.

From 2009 to 2015, DSC had been engaged in Participatory Irrigation Management (PIM) and watershed activities in Dhar and Alirajpur districts respectively. During the work, it was realised that farmers, especially those who were small and marginal, had limited access to quality agriculture inputs and advice and were therefore not getting good returns from agriculture despite the success of PIM and watershed development activities. A need was felt to have an entity that was owned and managed by farmers and worked for their interest. This led to the formation of the Narmada Valley Kisan Producer Company Ltd (NVKPCL) covering the five blocks of Manavar, Gandhwani, Kukshi, Nisarapur and Dahi in Dhar district.

Like Krushidhan, NVKPCL had a three-tier structure consisting of farmer clubs at the village level, cluster associations at the block level and a governing board at the district level. Compared to Gujarat, the tribal women SHGs in Madhya Pradesh were hungrier for the development of their community. A conscious effort was made by DSC to have a more balanced gender ratio of shareholders as compared to KPCL in Gujarat. Also, while KPCL did not have any paid board members, it was decided to appoint a paid field staff as a director on NVKPCL's board so that local social networks could be tapped. As of March 31, 2024, NVKPCL had 1,555 shareholders (52% women) and a paid-up share capital of Rs 0.82 million.

In 2016, DSC was approached by the District Panchayat office in Madhya Pradesh's Alirajpur to set up the state's first FPO under the Integrated Watershed Management Program (IWMP). This was a challenging task, considering that the area was largely tribal and rainfed and DSC did not have any prior engagement with the community in a majority of villages. However, since it presented an opportunity to expand into a new geography and partner with other NGOs, the organisation decided to take up the challenge.

A novel outreach approach was devised wherein leaders of watershed committees in all the villages where DSC did not have a presence were invited for a meeting to discuss the formation of the FPO. The group was also familiarised with the working of the NVKPCL through interactions and exposure visits. The efforts soon bore fruit and the Adimjati Gramoday

Producer Co. Ltd (AGPCL), covering Alirajpur and Sondwa blocks of Alirajpur district, was registered in 2017. As of March 31, 2024, AGPCL had 544 shareholders and a paid-up share capital of Rs 0.16 million. The FPO is unique in terms of its scope for non-timber forest produce (such as *kankoda*, custard apple, *nimboli*, *babool*, *white muesli*, *palash* flowers, etc.). About 70% of its governing board is made up of women members.

6.2.4 Experience of Group FPO Incubation

Taking advantage of the central government's push towards establishing 10,000 FPOs, DSC took up in 2021 a responsibility to incubate five FPOs together in the tribal blocks of Dhadgaon, Akalkuan and Shahada in Maharashtra's Nandurbar district. This project is being funded by NABARD under the Central Sector Scheme with DSC as a CBBO.

Based on its experience of working with tribal communities in Madhya Pradesh, DSC decided to adopt its strategy for FPO promotion in a post-watershed intervention area. On account of NABARD's guidelines for promoting FPOs, DSC was required to create a cluster of five FPOs within a tight deadline of three years without compromising its proven participatory approaches of community empowerment.

DSC sought recommendations from local agencies such as banks, cooperatives, NGO staff, school teachers and Agriculture Technology Management Agency (ATMA) officers among others to identify potential village clusters and farmers who could be enrolled as shareholders and FPO leaders. Also, since the DSC team in Nandurbar did not have any experience with FPO formation, they were provided stage-wise orientation through in-house practical modules on pre-formation exposure, basic and advanced training, and handholding.

This approach helped DSC fast-track the FPO formation process in Maharashtra and the first FPO was set up in a record time of six months. Within a short period, five FPOs were established with a total of 2,760 shareholders and a paid-up share capital of Rs 2.32 million as of March 31, 2024. Their total annual business turnover was Rs 11 million in the financial year 2023–24. Within two years of their existence, they mobilised

Rs 4.4 million loan from the financial institutions. DSC's FPO formation experience in Maharashtra was unique in a number of ways. One, it was the first time that the organisation started out in a new geography with FPO formation instead of PIM or watershed activities as had been done in the case of Gujarat and Madhya Pradesh. Two, separate FPOs were formed for each block in Maharashtra as opposed to having combined FPOs in the other two states. This could be achieved since the distinction in commodities across blocks was clearer in Maharashtra, which made it possible to have commodity-specific FPOs in this state. Finally, DSC was able to engage with the district administration as well as get techno-financial leverage from government schemes and programmes such as the Central Sector Scheme for 10,000 new FPOs, International Year of Millets 2023, MGNREGA, PIM, Watershed and others more effectively in Maharashtra. A good example of the collaborative working approach is DSC's success in getting a Geographical Indication (GI) tag for *tuvar and dry mango powder (amchur)*.

6.3 Achievements and Impacts

6.3.1 Recognition

Krushidhan received early recognition. Even before its incubation period was completed, it had received two national-level awards:

- *Best Agripreneur Award* at the 7th National Conference and Game Changer Awards (2017)
- *FPO Impact Award* from Access Livelihood Services (2019).

Its detailed case study was featured among 15 successful cases researched by a team of professionals at IRMA and published in the form of a book in early 2023 (*ibid*).

Krushidhan has made significant impacts on the local economy and market system. In the words of Shri Lalitbhai Patel, Managing Director of Krushidhan FPO:

“While selling inputs like seed, during the first year we were able to provide good quality at rates comparable to the market. The following year, we could sell it at less than the market price and maintain the same quality. Krushidhan now has a very strong reputation of being a credible company.

... The impact has been to stop cheating by private companies in seeds of groundnut, fodder and wheat. We are planning to go for processing so that farmers can get an additional 15–20% of price realisation.”

The retail procurement centres of KPCL in the tribal area of Meghraj in Gujarat, Adim Jati in Alirajpur (MP) and Amu Aakha in Dhadgaon (Maharashtra) have made a significant impact on the local markets where the local vendors and traders used to exploit the marginal farmers in retail selling of agricultural outputs.

Recollections and Reflections of Key Stakeholders

Narmada Valley FPC (Kukshi and Manawar Blocks, Madhya Pradesh)

“We are a tribal FPO formed in 2015 with the help and guidance of DSC. Currently, we have about 1,700 shareholders. In addition, 1,300 non-members also benefit from the services provided by the company. So, in reality there are about 3,000 farmers benefitting. We have benefitted mainly through supply of high-quality seed in a timely manner along with agri-inputs. Apart from that, we learnt to use the right quantity of agri-inputs resulting in reduction of costs and increase in profitability.

... In wheat, which is the main food-crop, farmers used to do double sowing using about 80 kg per vigha while the actual requirement was just 40 kg. While the cost on seed was almost halved, the production increased by about 1.5-2.0 quintals per vigha, resulting in average increase in income of Rs 5,000 per vigha. We also grow cash crops like cotton, chilli and soybean where also we realised similar benefits.

... Business suffered due to lockdown during COVID-19 as we could not purchase inputs and deliver it to the members. But we are now doing better. In the next five years we would like:

- To increase the number of shareholders from 1,700 to 5,000 and area of operations from about 90 villages to about 150 villages and from two to five blocks
- Our turnover to increase from Rs 5 million to about Rs 30 million and profits from Rs 0.25 million to Rs 1.5 million. We can do it by expanding to output marketing and value addition in crops such as soyabean (soyabean wadi, milk, flour, etc.), maize, gram,

wheat and by production of foundation and certified seeds

- To set up Kisan Malls in Kukshi and Manawar where all kinds of grocery items would be available at reasonable prices to farmers

... The support from DSC in setting up of the company has been invaluable. The goodwill of the organisation has helped the company in building trust with the community. It has also helped it to overcome some internal challenges and it stood by us during COVID-19. The organisation has nurtured the company like its own baby but ultimately its members have to own and run it. While we need to become financially independent, we will continue to require DSC's technical guidance and support in marketing, value addition and fund mobilisation."

- Bhuresingh Nigwal,

Director, Narmada Valley FPC

"Women have played a major role in the company because in any case women play a major role in farming and animal husbandry. Unlike men's groups (reference to KCs), which last for only one or two years, the women's SHGs are still active. The SHGs provided credit to women to purchase agriculture inputs. They had carried out sale of green chillis, making and selling of red chilli powder and cleaning, grading and sale of wheat. They had also collaborated with the Sanchi Dairy for milk collection centre in Ali village. Unfortunately, the milk production could not be sustained and therefore it had to be shut down. However, we are keen to revive the same. We also plan to invest in purchase of more cattle so that we can practise "jaivik kheti" (organic farming)."

- Shantadidi Tagore,

Woman Director, Narmada Valley FPC

Amu Aakha FPC (Nandurbar, Maharashtra)

"Our FPO got registered in July 2021. In the first season itself, we sold *amchur* (a traditional value-added product made from unripe mangos of a particular variety which is very sour in taste) worth Rs 18 lakh, apart from

tur dal, garlic and soybean. We also supplied agri-inputs to farmers for better productivity.

... We are preparing for amchur sale this year again. Last year, we had sold the crop in an Indore market located about 250 km from Nandurbar in order to avoid the middle men. This year, we made samples and gave to dealers in Mumbai. We also learnt about the inter-linkages between traders. This is important as they can block new entrants in the market. We intend to sell directly to big players and suppliers this year

... This year we have obtained machinery from Manav Vikas Prakalp along with machines for packaging under a scheme of Niti Aayog meant for aspirational districts. We will be able to make *amchur* powder, which will help us to reach consumers directly next year and increase the margins significantly.

However, sales are likely to suffer due to unseasonal rains that have affected the mango crop. We have not been able to address the issue of crop risk so far. ... We have a formula for sharing profits in the following ratio—Farmers (2): FPO (2): Staff of company (1). This will ensure active participation of all three stakeholders.

... Agri-inputs are also a problem. In the case of soybean, we have kept 15 tons of selected seed from the previous year's crop under cold storage. This will be used this year as seed material..."

- Lalsing Valvi,
Director, Amu Aakha FPC

"The company was initiated by DSC under a generous support from NABARD for a period of five years. It will get Rs 18 lakh over the first three years to meet administrative costs and overheads. DSC will get Rs 25 lakh over five years to cover its overheads... However, because of the nature of funding and pressure from NABARD to register the company quickly, DSC's model from Krushidhan could not be followed strictly. Nevertheless, we have promoted 70 women's SHGs and about 20 Kisan Clubs. Agri-extension work is being initiated simultaneously.

Besides Amu Aakha FPC, we have four other FPCs promoted by DSC in Nandurbar district. Each FPO is dealing with different commodities and has its own unique product. For example, one FPO is dealing with custard apple and *mahua*, another has papaya and banana, the third FPO is promoting millets while the fourth one is dealing with vegetables.

We can have an umbrella FPO organisation/FPO Federation which can deal in input supply and output marketing. We can also plan for large-scale production and packaging of multi-grains i.e. different types of millets and multi-grain flour. We can go for digital marketing and disrupt the existing market.”

- Atul Pawara,
CEO, Amu Aakha FPC

Krushidhan FPC (North and Central Gujarat)

Challenges of working for an FPC: CEO's Perspective

“Since a multi-commodity FPO has to deal with different sectors, it is quite challenging. The structure and characteristics of each sector are different, which has to be understood first, and so are the learnings for each of them.

Branding and marketing require a lot of investment. One of the major limitations is that an FPO cannot come up with such an investment. What can be done under such circumstances it to create “block-level branding”. This would be useful in closed loop value chains such as certified seed production by farmers for farmers.

In rainfed areas, the risk in farming has a downstream effect on business. For instance, in seed production if farmers have produced certified wheat seeds and the rainfall fails, we are compelled to sell the seed as ordinary foodgrain, suffering a loss.

In general, FPO business gets very low margins. In potato contract farming, the margin is better and we had plans to scale up significantly this year. But then the partner company could not provide the seed material at that volume.

One has to deal with all these risks while holding on to our beliefs and values underlying the social processes for change.

For an FPO to succeed, the committee of farmers (BoD) needs to be strengthened through regular training. This would greatly facilitate decision making.”

Importance of grooming and handholding for CEOs:

“During the last decade, I feel I have grown in my job quite a bit. Earlier, I was slow in taking risks. Now I have gained a lot of confidence. It has helped me to be organised in my work, which I lacked earlier. All this can be attributed to the “grooming” that I received at DSC. I feel that I could use my education well because of this.

I believe that such grooming and handholding is very important for new CEOs who lack experience. My role has now been expanded to provide such support to other CEOs in DSC-promoted FPOs.”

- **Jasvant Chauhan,**
CEO, Krushidhan FPC

Challenges of running an FPO—BoD’s perspective

“We faced many challenges both external and internal. In the formative years, during the marketing process, there were many pressures exerted by the private sector players who tried to stop our progress. For MSP of groundnut, there were issues of payments from government.

More recently, in potato contract farming, one of the truckloads of harvested potato was rejected by Balaji company. Some of our own farmers had indulged in cheating by mixing potatoes of other variety and passing it off as Santana. The responsibility for farmers’ behaviour is also ours, so we have to be very alert and put systems in place.

We now have a committee of three to oversee the process, which includes the chairman, the managing director and another director. Such committees have been formed to address other challenging tasks as well.

Finance is a major constraint for us to grow. Even in wheat seed production,

which has very good potential to scale up, the capital gets blocked for six months because the seed produced in the month of March needs to be stored until the next planting season in November.

- Vasantbhai Patel,
Chairperson Krushidhan FPC

“Finance is the biggest constraint for scaling up. In 2022–23, we had a target of Rs 90 million. We got a loan at 8% interest. At this stage, this interest is prohibitive. We need loans at 3–4% interest rate in order to be competitive and scale up operations.”

- Lalitbhai Patel,
Managing Director, Krushidhan FPC

“Our company has gained the confidence of farmers in our region because of quality services and reliability. While selling inputs like seed, during the first year we were able to provide good quality at rates comparable to the market. The following year, we could sell it at less than the market price and maintain the same quality. Krushidhan now has a very strong reputation of being a credible company. In the case of contract farming, many in the past have faced problems of not getting full payments from companies. In our case, they got full payment in all the three years so far. This has strengthened the faith of farmers. Even other farmers now want our seed material.

The impact has been to stop cheating by private companies in seeds of groundnut, fodder and wheat. We are planning to go for processing so that farmers can get an additional 15–20% more of price realisation.

... As a member of the board, I used to work voluntarily and never took any TA or DA. I used to put in one day per week and also make two visits to the company outlets. ... All this has become possible due to the guidance and support of DSC. It is an excellent agency for us. No other agency is as meticulous in its work.”

- Lalitbhai Patel,
Managing Director, Krushidhan FPC

PART - C

Future Directions and Possibilities

Key Elements of Success

The key elements of successful incubation of FPOs, as summarised by DSC's Executive Director, Mohan Sharma, are as follows:

- FPO formation was undertaken by DSC, not as an isolated activity but as part of its integrated 'water-to-wealth' approach for sustainable livelihoods centred around farmer institution building. Care was taken to ensure that the welfare approach was not diluted in the process of FPO formation, and that FPOs remained 'farmer-centric' while continuing to seek profitability of operations.
- In the process of FPO formation, a conscious effort was made to not only preserve certain core values but also allow flexibility of operations. Thus, while the structure and approach to community engagement and leadership identification remained uniform across all FPOs, each entity was given a free hand to decide its operational area, commodities, etc. in recognition of local needs, limitations and strengths.
- DSC's FPO journey shows that it is possible for promoting institutions to undertake successful FPO formation as an entry point activity even when no prior programmatic intervention or community engagement has been undertaken, provided local leaders and stakeholders working in the area are involved in the farmer identification process.
- Despite having separate block-level FPOs in Maharashtra, a district-level forum of all FPOs was created to leverage the collective strength and spirit, maximise negotiation capacity with external agencies, enhance visibility and market coverage, and promote cross-learning and mutual assistance in the long run.

- DSC's exit philosophy has focused on gradually withdrawing direct support to them within a time frame of seven to 10 years by taking up the role of a mentor and custodian, restricting its support function to agriculture extension and farmers' training while leaving governance and business operations to the FPO.

Challenges of Incubating and Supporting FPOs

However, when it comes to agriculture where any region produces a basket of commodities, the needs of the marginal farmers are different, and it is difficult to make the Amul model directly applicable. While Krushidhan became financially independent after six years of incubation, others in more impoverished regions have not been so fortunate. Experiences of organisations like PRADAN show that when it comes to supporting FPOs of most vulnerable communities (such as tribal women in rainfed and forest areas), the journey from penury to prosperity can be so long that even after two decades, the FPO may continue to need financial and other support⁴.

Hence, the nature and extent of support needed by an FPO will depend on whether its members are in the subsistence or in post-subsistence stage, whether they are socially most vulnerable or are relatively not vulnerable and whether the natural resources available to them are strong (e.g. irrigated farming with productive soil) or weak (dryland farming, poor soils such as saline and alkaline, rocky, etc.). The strategy adopted by the FPO would likewise depend on its location on this typology. Since DSC has started promoting FPOs of different types, its strategies are also modified, given the situation of the farming community at the time of initiation.

Strengthening ecosystem of support for FPOs and incubating agencies:

One of the important ingredients for success of FPOs is the creation of a strong ecosystem of support institutions. Venture capital institutions like Samunnati have been making useful contributions through its innovative approach. DSC has joined its efforts in a new project in Maharashtra where an innovative funding model is being tested, linking investment with ecological and economic returns.

Growing Role of Networks in Supporting FPCs

Increasingly, state-level networks of FPOs are becoming important sources of information, guidance and support to FPOs. In Gujarat, Sajjata Sangh has been instrumental in promoting a federation of FPOs called Gujarat Agribusiness Consortium Producer Company Ltd. (GUJPRO). Registered in 2014, GUJPRO is actively supporting 30 FPO members across 13 districts of the state. The members are aligned to it for collective marketing under MSP scheme, providing market linkages and information about various opportunities under various government and other programmes. GUJPRO has also taken up the task of lobbying with the government at various forums for better policy environment and ease of doing business. The Executive Director of DSC contributed as an expert director on the board of GUJPRO in the initial year to help in formulating its administrative systems and relationship with primary FPOs.

The Madhya Bharat Consortium of Farmers Producer Company Ltd (MBCFPCL), established in 2014 as a federation of 137 FPOs in the states of Madhya Pradesh and Chhattisgarh, is much bigger and stronger. It has been playing a more proactive role, especially in providing certified seed material to member FPOs and through policy advocacy to give the marginal farmer a voice. Similarly, in Maharashtra, the MAHA Farmers Producer Company Ltd (MAHAFFPC), started in the same year, is an active federation with over 600 FPC members. Its business model is to work with clusters of member FPCs around commodities like pulses, onion and soybean. Currently, it is the largest FPC federation having done business worth Rs 6.5 billion. In the coming years, these federations are likely to grow stronger and provide greater support to member FPOs, especially in providing better price realisation for their produce. Such federations are expected to emerge in other states as well.

Challenges of Assessing Financial Performance

A lack of understanding about the hybrid nature of an FPC has proved to be a stumbling block in accessing working capital from commercial banks at reasonable interest rates. Accessing credit remains a difficult problem,

compelling FPCs to rely more on internal sources of finance and thus restricting their growth prospects.

In the commercial world, profitability is the most important criterion to assess financial performance. Companies are expected to break even within three years. However, the real nature of FPCs is social, and it is only a tool/vehicle in the hands of a collective of farmers to further their goal of emerging from penury to subsistence and from thereon to prosperity. For FPOs emerging in more vulnerable communities and farming regions, it is more important to keep their 'head above the water' while passing on the benefits to members and other farmers in forms other than dividends. Using profits to invest in assets, which can provide important collective services (such as godowns for storage, cleaning and sorting and grading machinery etc) or assets which will appreciate in future (such as land for demonstration of new crops, varieties and technology), thus providing collateral for leveraging funds, seems to serve the goals of the FPC better. Hence, in reality, assessing "financial resilience" would be a more appropriate measure of performance than "profitability." The proper indicators for assessing resilience can be debated and suggested by financial experts, but our suggestion would be to look at the combination of "reserves and surpluses" and "long-term assets which are free from mortgage."

Challenges of Reporting Financial Impacts

FPOs are required to follow the current format for presenting annual financial statements which essentially bring out only the corporate or commercial aspect. These reports are somewhat misleading as they totally ignore the social aspect of benefitting marginal farmers who are the owners as well as beneficiaries of the company. In FPOs with members who have been marginalised and exploited by local markets, the socio-economic benefits that FPOs bring to their members are enormous. Hence, the profitability shown in the balance sheet may only be the tip of an iceberg as financial benefits passed on to members and other farmers are not represented anywhere in the balance sheet.

Impact studies are expensive and time consuming. In order to address this limitation, the authors suggest the use of a simple ratio of revenue accrued to participating farmers / revenue earned by the company through its services, which can be calculated for each of the product/service lines. The average ratio for a given year may be called the “leverage ratio” as it represents the company leveraging economic benefits for its member and associated farmers. While calculating this ratio, it was seen that the MSP for groundnut had an extremely high ratio of 22.5. This implied that for every one rupee of financial gain to the company, the farmer got a benefit of Rs 22.5. Hence, the leverage ratio, the number of farmers benefitted and the total value of benefit to farmers can be used to assess the importance and impact of a given vertical in the portfolio of a company. It can also be computed for the entire portfolio on an average for a given year.

Reporting Intangible benefits

In addition, there can be social, health and ecological impacts (such as climate change adaptation of farming, improvement in soil health, reduction of pesticide poisoning of water and micro-climate, etc.) which are hard to measure in the short term. There are also impacts on local non-participating farmers. Examples include impacts of the FPO on local markets and market prices, improved local micro-climates on account of reduced chemical pesticides and weedicides, etc. These can be listed each year in the annual report and assessed through separate periodic impact studies.

End-notes

1. Shah Tushaar, *Making Farmers' Cooperatives Work*. Sage Publications, (1995) pgs. 275.
2. Prasad Shambu, Ajit Kanitkar and Deborah Dutta, *Farming Futures: Reimagining Producer Organisations in India*. London & New York: Routledge Taylor and Francis Group, 2023.
3. Shri Arvind Gupta, an alumnus from IIMA and visiting Faculty at IRMA, provided strategic guidance to Krushidhan through his rich experience in the cooperative sector. He helped Krushidhan in developing its business (product choice), marketing and institution development.
4. Case study of Krishi Bagwani Swawlambi Sahakari Samiti Limited - Adaptive Management and convergence in an all-women tribal collective. *Farming Futures – Reimagining Producer Organisations in India* Edited by C. Shambu Prasad, Ajit Kanitkar and Deborah Dutta (2023)

Chapter-7

Creating a Common Purpose Network of Civil Society Organisations for Larger Social Impact: The Case of Sajjata Sangh



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“Purpose-driven networks” are now seen as important means of creating larger impacts in the social sector where innovative ideas cannot be spread simply by upscaling production as done by commercial organisations. The idea of such a network was mooted by Anilbhai Shah more than two decades ago while working closely with the government of Gujarat in promoting watershed development in dryland areas of north and west Gujarat. Small voluntary organisations, keen on providing services to farming communities were engaged with government funding to implement the project and ultimately brought together in the form of a purpose-driven network called Sajjata Sangh (SS) This network worked on a range of innovative projects and achieved remarkable success in themes like agri-extension, crop risk insurance and farmer producer organisations. Over time, however, as the approach of the state government towards watershed projects and voluntary efforts in general changed, many of these small agencies were unable to support themselves and began to drop off. The composition of the network began to change with CSR organisations also taking interest. The overall agenda of supporting farmers for sustainable agriculture remained unchanged. The network finds itself at a crucial juncture where it may have to reinvent itself, finding new ways to meet old challenges.

PART - A

Summary of Interventions and Outcomes

7.1 Genesis

Local networks are increasingly being used by NGOs to make larger and stronger social impacts. *Sajjata Sangh*, a network of NGOs working at the grassroots level in Gujarat, was established in 2002. The network was initiated by DSC under the leadership of Anilbhai Shah, with established NGOs like AKRSPI, SADGURU and BAIF joining forces. The coming together of these NGOs under a common banner helped to give them collective strength and identity at the state level, apart from mutual support for implementing projects of common interest.

The context and need for collective efforts were provided by the Integrated Watershed Management Programme (IWMP) of the Ministry of Rural Development of the government of India in 1995. The IWMP was a major landmark in designing centrally sponsored schemes. Instead of the usual top-down approach, this programme focused on development of plans at the village level, intensive involvement of people in planning, implementation and management of the programme, formation of village institutions, capacity building of people and the provision of funds directly from the district to the people's institutions known as Watershed Associations (WA). The guidelines also invited the participation of NGOs to play the role of a catalyst in creating these institutions.

The government of Gujarat responded positively to the IWMP guidelines and encouraged many NGOs to become Project Implementing Agencies (PIAs). From 1995 to 2000, nearly 70% of all watershed projects were implemented by NGOs, giving rise to a rich mosaic of experiences and expertise in natural resource management. After almost two to three years of implementation of the five-year watershed programme, DSC (which

functioned as a support organisation involved in providing capacity-building services to a whole range of stakeholders) realised along with other NGOs that the watershed programme alone would not suffice to improve the livelihoods of rural communities. While the programme was successful in strengthening the natural resource base at the village level and building social capital to take care of this base, it needed additional investments to enable farmers to improve farm productivity and deal with markets in order to realise improved incomes. A need was voiced by farmers and NGOs together for increased access to seeds of improved varieties of crops along with other agricultural inputs, modern agriculture practices and implements to enhance productivity and profitability of agriculture and allied activities. An informal network that had been initiated by Anilbhai parallel to the implementation of the WS programme was working to facilitate mutual learning among participating NGOs for almost four years. It was decided to give this network a formal status. The immediate goal was to play a key role in post-watershed activities, which implied maintaining the status of natural resources and augmenting farm productivity.

A seven-member Executive Committee (EC) was formed and Anilbhai was selected as its Chairperson. With the passing away of Anilbhai in 2007, Shri Harnath Jagawat (CEO of N.M. Sadguru Foundation) became the Chairperson and Shri Rajesh Kapoor of Cohesion Foundation the Secretary. Thereafter in 2014, Shri Apoorva Oza (former CEO of AKRSPI) became the Chairperson of SS. Currently, Shri Pravin Bhikadiya, CEO of Utthan, is the Chairperson of the network. There are 12 executive members including two co-opted members (DSCF and Gujpro Agri-Business Consortium). Four NGOs, viz. DSC, AKRSPI, BAIF and Cohesion Foundation, which were members of the first EC, continue till date.

7.2 Purpose

The network was created to build the capacity of its member institutions on sustainable agriculture. More specifically, it aims at:

1. Creating agri-extension systems that make available the latest credible knowledge and agri-inputs necessary for

moving towards sustainable agriculture. This could be achieved through multiple channels and methods such as:

- Organising events where multiple stakeholders—agricultural input suppliers, NGO representatives, agricultural scientists and government officers—can interact with each other and with the farmers
 - Conducting crop-specific workshops and
 - Developing and disseminating communication material such as crop-specific CDs and crop calendars for NGOs
2. Enabling member NGOs to organise groups and institutions of farmers in order to facilitate their linkages with markets, both backward and forward
 3. Participating in policy-making forums at the state and national levels

The network was also expected to engage in policy advocacy by participating in forums at the state and national levels. Initially, SS focused on building the capacities of member organisations in promoting Package of Practices (PoPs) for different crops. Over the years, the vision of the network has broadened and the range of activities increased, but mainly under the mandate of enabling farming communities to become both sustainable and profitable.

7.3 Membership Profile

Starting with 25 organisations in 2002, the network grew in membership, and, by 2012, it had 34 NGOs in its fold, covering 8,000 villages from 18 districts of Gujarat. Subsequently, mainstream funding for natural resource management programmes dried up, affecting membership as well as activities of the network. Currently, it has 24 members, of which 16 are active and work in about 10,645 villages of Gujarat. Figure 1 shows the geographical spread, while Table 1 provides information on the number of villages covered. They are mainly involved in promoting sustainable agriculture and incubating FPOs.

Sajjata Sangh has seen a few changes in membership over time that are significant:



Figure 1: Coverage of Sajjata Sangh in Gujarat

- a) The role of small NGOs in NRM has reduced dramatically due to the changing rules for foreign funding of Indian NGOs (since 2019), creation of special purpose vehicles by the government for implementation of its schemes and discontinued participation of NGOs in government schemes like Watershed Development, MGNREGS, etc. Some of the smaller NGOs have dropped out or closed completely.
- b) With the coming of CSR foundations as a major source of funding for development projects as well as their role in direct implementation, their presence has increased significantly in the field. Three CSR foundations that are involved in direct implementation within the state of Gujarat have become part of the network.

The change in membership profile, however, has not in any way influenced the focus of the network, which continues to work for the welfare of small

Table 1: Membership profile of Sajjata Sangh (2023)

Sr. No	Name of Organisation	No. of Villages
1	Utthan	265
2	Naisargik Trust	200
3	Prakriti Foundation for Natural Resources Regeneration	487
4	Development Support Centre	496
5	Mahiti Trust	180
6	Shikshan Ane Samaj Kalyan Kendra	112
7	Aga Khan Rural Support Programme (India)	1200
8	Ambuja Foundation	650
9	BAIF Institute for Sustainable Livelihood Development	3934
10	Aatapi Seva Foundation	134
11	Shri Vivekanand Research and Training Institute	158
12	Sarathi	300
13	Cohesion Foundation Trust	223
14	NM Sadguru Water and Development Foundation	130
15	Deepak Foundation	414
16	VIKSAT	615
	Total	9,464

Note: In addition to the above members, DSC Foundation (DSCF) and Gujpro Agri-Business Consortium (GUJPRO) are Special Invitees of the network.¹

and marginal farmers. Membership to the network is by invitation only and NGOs interested in becoming members need a recommendation from an existing member. SS has been based at the premises of DSC since inception. It is run by a full-time Executive Director who takes initiatives as decided by the group in its bi-annual meetings.

7.4 Brief Account of Key Activities

The Sangh has been contributing to a number of issues, from watershed development to Watershed Plus and movement to sustainable agriculture and livelihoods of farmers. See Table 2 for an approximate timeline of key activities.

7.4.1 Enhancing the Visibility of NGOs in NRM and Sustainable Agriculture

Accreditation of NGOs

The SS network played a critical role during the watershed project implementation years, when the credibility of some of the younger/smaller NGOs came under the scanner. This challenge was countered by involving *Credibility Alliance*² to provide a credibility certification to willing and deserving NGOs. Certification was provided to those NGOs once they went through a third-party assessment that verified their honesty of pursuit and means adopted. The certification benefited six NGOs wanting to collaborate with the government and other reputed agencies.

In the process, Sajjata Sangh has become a voice for small agencies and farmers in Gujarat. For its efforts to develop an accreditation mechanism for NGOs, including its contribution in developing parameters and indicators for the same, Sajjata Sangh received recognition from a variety of government bodies, including the Planning Commission of India and departments of Rural Development and Tribal Development in Gujarat.

Table 2: Timeline of key activities

Timeline / Key activities		2002–2007	2007–2012	2012–2017	2017–2022
A. Enhancing Credibility and Visibility of NGOs					
1	Credibility Alliance				
2	Study on contribution of NGOs in PNRM				
B. Promoting Sustainable Agriculture					
1	Crop-specific workshops and IEC material				
2	Agri-extension through radio programme and mobile phone				
3	Weather insurance				
4	Crop insurance				
5	Collaboration with National Coalition of Natural Farming (NCNF)				
C. Promoting Collective Enterprise of farmers					
1	FPO capacity building promotion				
2	Incubation of GUJPRO				

Study on NGOs of Gujarat and their Contribution to the State's Agriculture

In 2011, when stories about the growth of the agriculture sector in Gujarat were printed in the national media, it ignored the role of NGOs. Thus, Sajjata Sangh commissioned a pioneering study highlighting the contribution of NGOs to the state's agriculture sector³. The purpose was to provide a comprehensive understanding of the ecosystem for agricultural development in Gujarat and the vital role played by NGOs within it. It shows that partner NGOs have implemented watershed management, participatory irrigation management and sustainable agriculture programmes at scale, covering an estimated one million hectares. These NGOs are in areas of high deprivation relating to areas where tribal population and BPL population and proportion of wasteland are higher. Apart from geographic equity over the state, they targeted their interventions at small and marginal tribal farmers and women farmers, leading to relatively better equitable distribution of benefits. Despite being in such difficult areas, NGOs have created many innovative models, which have been replicated by other NGOs and the government of Gujarat. Some examples include semi-circular check dams constructed by Vruksh Prem Sewa Trust in Rajkot district, lift irrigation schemes by N. M. Sadguru Foundation in Dahod district, linking of water bodies in the coastal areas by Ambuja Foundation in Veraval and Junagadh districts, revival of the Meghal River Basin by AKRSPI and Participatory Irrigation Management by DSC in Mehsana district.

7.4.2 Promoting Sustainable Agriculture

Crop-Specific Workshops and IEC material

A major objective was to enhance the productivity of crops and promote scientific crop management practices amongst farmers. The network identified three major crops, i.e. maize (mainly grown in tribal areas), cotton (mainly grown in Saurashtra, North Gujarat, Kutch and South Gujarat) and wheat (mainly grown in North Gujarat and Saurashtra). Crop-specific workshops were conducted with agriculture universities

and agriculture research centres in these three locations. A major change in the methodology was that instead of lectures by experts, the farmers first presented their crop management practices and issues faced in implementing the recommended practices to crop scientists. The experts responded to these issues instead of providing generic solutions. This “problem to solution” approach proved to be quite useful for the farmers and helped them in adopting the recommendations. Thereafter, SS developed and disseminated crop calendars and print material in simple local language. This material was also used for developing the script for a weekly radio programme aired on “Akashvani”, Ahmedabad.

Agriculture Extension through Radio Programme

The radio programme “*Sajjata no sang lave kheti ma rang*” (partnership with Sajjata Sangh enhances agriculture) designed and broadcast by Sajjata Sangh. The programme, which was aired once a week for five years (2006–10) reached about 0.5 million farmers in Gujarat. It was highly appreciated by the farmers who organised themselves into “Radio Listeners Groups” across the state in order to take full advantage of the information being provided!

In an independent survey⁴ of 100 farmers from 10 districts, 98% reported that it had helped them in increasing production, while 52% stated having tried new things after listening to the programme. The impact on farmers constituted changes in agricultural practices, which included selection of appropriate seeds, crop protection methods, considering weather forecasts, input-cost reduction, productivity enhancement and risk reduction, among others.

Later in 2008, a mobile phone-based agriculture extension service was introduced under the banner of *Awaj Otao* (AO) in collaboration with the IBM, which reached about 4,000 farmers. An independent survey of 325 AO callers gave an exceptionally high average rating of 2.8/3.0 for its broadcasts.

Crop Insurance under PMFBY and Weather-Based Crop Insurance Scheme (WBCIS)

Another important aspect that has been rather challenging is to tackle risk in farming through crop insurance. Though agriculture insurance has been in India since 1972, crop insurance has taken successful strides since the launch of the National Agriculture Insurance Scheme (NAIS) in 1999. Realising the limitations of the earlier crop insurance schemes, the Government of India launched the “*Pradhan Mantri Fasal Bima Yojana*” in 2016. Sajjata Sangh was engaged in implementing PMFBY in 10 blocks of Gujarat on a pilot scale with support from Ford Foundation since 2017. The partners for this project were members of Sajjata Sangh and DSC was the grant managing agency.

Based on the field-level experiences, recommendations made by the states and studies carried out at the national level, the PMFBY was revised in Kharif 2020 by the Central Government. However, while neighbouring states like Madhya Pradesh, Rajasthan and Maharashtra decided to continue, the Gujarat government decided to discontinue it.

Piloting Weather Insurance in the State

Soon thereafter, in October 2020, Sajjata Sangh entered into an MoU with the Agriculture Insurance Company of India (AIC). The focus was now shifted to weather insurance and erratic rainfall rather than crop failure.

The WBCIS was initiated in the Kharif season of 2021–22 on a trial basis. Premiums to be paid by farmers varied depending on the crop. However, the farmers paid the minimum premium set for insurance, which was Rs 155 for a minimum land plot of 10 *gunthas*. More than 250 farmers benefited from this payout, which resulted in greater participation in Rabi 2021–22. About 150 farmers enrolled in this scheme in 2022-23, indicating that farmers do see certain advantages of the scheme as compared to the conventional crop insurance schemes.

The main advantage of the scheme was that the systems and procedures were simple, and data was more easily accessible to farmers. The India Meteorological Department (IMD) data, which was earlier available every

three months is now available online for all the subscribers and can easily be checked. The triggers for calculating the pay-outs are also simplified. Earlier, the minimum unit for availing insurance was one hectare, which has now been brought down to 0.2 hectares, making it more accessible to marginal farmers.

Successful completion of the pilot programme resulted in NABARD recognising weather insurance as an effective risk-transfer instrument for agriculture. It supported *Sajjata Sangh* partners for subsidised premiums in order to scale up the programme in Gujarat. The scaled-up programme covered about 14,000 farmers (with high repeat ratio), covering 15,400 acres for crops such as groundnut, cotton, maize, wheat and cumin.

Impacts through Policy Advocacy for Crop Insurance:

Studies on PMFBY I (2016–19) and PMFBY II (2020 onwards) were done by DSC Foundation in collaboration with *Sajjata Sangh*. These studies brought out the need for creating awareness amongst farmers, especially small and marginal and women farmers. It also brought out the need for better technology for assessing crop loss and simplification of procedures for claim settlement, so that the time taken for the same could be brought down substantially. There was also a need to involve Panchayati Raj Institutions (PRI), farmer's collectives, Self Help Groups and Non-Government Organisations and strengthen the Common Service Centres for enrolling the farmers.

Some of these observations and recommendations are also reflected in the 29th Report of the Standing Committee on Agriculture presented to the Lok Sabha on August 10, 2021. The committee observed that PMFBY should not be seen just as a scheme but as an effective tool for risk mitigation and financing against the challenges posed by climate change.

Collaborating with the National Coalition of Natural Farming (NCNF)

Sajjata Sangh collaborated with the Gujarat chapter of NCNF from 2021 to 2023. Today, the NCNF Gujarat chapter is working closely with Gujarat Natural Farming and Organic Agriculture University, Anand, and an MoU has been signed to provide a certificate course in natural farming to farmers

recommended by CSO partners. Till date, two training events have been organised for basic and elementary training of five days each. Training for women entrepreneurs has also been organised by NCFE for establishing Bio-Input-Resource Centre (BRC) with support from Sajjata Sangh.

Promoting Collective Enterprise of Farmers

Promotion of FPOs

Sensing the need for a market-based approach to livelihood enhancement, the Kisan Clubs and SHGs were aggregated into FPOs at the cluster and block level by many NGOs, including Sajjata Sangh partners, in various parts of Gujarat. From 2009 to 2012, these FPOs were working on innovative models of agri-input distribution and marketing of produce. While input distribution model worked for most of the FPOs, value addition and marketing of produce remained a grey area.

Incubation of the Gujpro Agribusiness Consortium Producer Company Ltd

Shri Kuldeep Solanki, the current CEO of Gujpro joined as the Executive Director of SS in 2012. In the same year, a state-level workshop was conducted by the Small Farmer's Agri-business Consortium (SFAC), New Delhi, in collaboration with Friends of the Women's World Bank (FWWB), DSC and SS. Considering the need for taking collective action in value addition, marketing of agriculture produce, knowledge and information sharing about FPOs and policy reforms, a state-level forum was proposed during the workshop. After initial consultation with FPOs, NGOs, experts and other stakeholders from Gujarat, an informal forum of FPOs, the *Gujarat Rajya Krushak Manch (GRKM)* was formed on November 27, 2012, by SS. The forum had representatives from FPOs formed by NGO / CSR members of SS, FPOs formed by NGOs / CSRs who were not members of SS, and self-initiated FPOs formed by an individual/ group of individuals. It conducted regular meetings with the FPOs for knowledge and experience sharing. Capacity-building programmes and exposure visits were also organised for FPOs and representatives of NGOs engaged in promoting FPOs.

One of the basic tasks of GRKM was to provide hand-holding support to the NGO staff for developing a business plan for the agriculture produce in their geographical area. In 2013, the GRKM and SS procured 14,900 MT groundnut worth about Rs 560 million from member FPOs for SFAC through tendering and NCDEX E-Market. It was a major confidence booster for GRKM and the member FPOs as it provided an opportunity for many FPOs to scale up their business. This experience also provided a major learning for SS, GRKM and the FPOs in terms of the processes, logistics, Standard Operating Practices (SOPs) including quality checks required for carrying out such large-scale trading of groundnut.

Realizing the urgent need for marketing of agricultural produce to get better price, the FPOs decided to register the informal forum of FPOs as a Producer Company. Hence, Gujpro was formed on 31st October 2014 and SFAC provided a grant of Rs 1 million. Ten FPOs subscribed 100 shares of Rs 100 each and provided the initial share capital of Rs 0.1 million.

As a result of its various initiatives, Sajjata Sangh has gained recognition as a network of credible organisations working on issues related to natural resource management.

PART - B

Reflections and Recollections by Stakeholders

Anilbhai's legacy

“The seed of Sajjata Sangh was rooted in Anilbhai's idea of ‘Watershed Plus’. People's livelihood would be impacted positively only through that. Secondly, it was meant to promote small organisations that worked closely with the people. These organisations had a turnover of less than Rs 5 million and staff of not more than 50.”

- Rajesh Kapoor,

Secretary, SS and Director, Cohesion Foundation

“After a few years of the programme, SS came out with a report that highlighted the role of NGOs in the growth of agriculture in Gujarat. In my opinion, much of this can be attributed to DSC because of its contribution in sorting out issues with government and creating space for smaller agencies to work comfortably. The impact of the work done at that time is felt even today, when government funding for watershed development has dried up.

At SS, we developed a feeling of being and working together for a common cause. We never felt that DSC and SS were different. This is what keeps us together. The legacy and vision of Anilbhai and the founder members is still keeping us together! We believe that we should continue to work together on long-term solutions for our region, which includes watershed development, sustainable agriculture, climate change mitigation and adapting to climate change, among others...

...Even today, DSC tries to support other agencies through professional training. SS is planning a regional meeting to determine how to move

forward on the common agenda of sustainable agriculture. We may find a new direction from this meeting.”

- Rajendra Jaiswal,
Director, Prakriti Foundation, Member Sajjata Sangh

Promoting Watershed Plus

“During the last decade, Saurashtra has received better rainfall as compared to the 1980s and 1990s. However, water recharging still remains very important. At SS, we had implemented Watershed Plus with good results. Although natural resource management work has gone down, we continue to support farmers through small activities such as crop insurance, farm ponds, water stewardship and water budgeting so that farmers achieve ‘more crop per drop’.”

- Dhirubhai Vagadia, Director,
Shikshan and Samaj Kalyan Kendra, Sajjata Sangh

“DSC’s unique contribution was the idea of *Watershed Plus*, which was aimed at achieving sustainable agriculture through crop diversification, reduction of chemical inputs and addition of horticulture among other measures. DSC taught us the importance of these measures and pushed us forward. It also recognised and encouraged agencies that performed well.”

- Rajendra Jaiswal,
Director, Prakriti Foundation, Member Sajjata Sangh

Credible Achievements, Challenging Future

“Main achievements were realised during the earlier phase when the state government was receptive to the idea of collaborating with selected civil society organisations depending on the area of their expertise. Some of these included:

1. Making small policy changes in the watershed guidelines of both Phase 1 and 2
2. Creation of Gujpro

3. Its radio programme for farmers, which was extremely effective and reached a very large audience
4. Keeping together various strands of voluntary agencies' efforts—Gandhian, professional and CSR
5. Its weather insurance project was piloted in collaboration with NABARD and AIC, which provided very useful learning

Since then, the civil society organisations and their network seem to have lost favour with state government departments. Member organisations have started facing their own crisis for funding and SS itself has been struggling for the past five years because of the lack of a common programme. In an industrialised state like Gujarat, farming is not considered central to the economy. Hence, there is a dearth of government programmes to support it. There is a limited capacity of NGOs to deal with these challenges. As a result, some of the smaller members have also been dropping out.”

- Apoorva Oza,
Former CEO, AKRSP(I),
Present Member of Advisory Committee, Sajjata Sangh

“Our radio programme which ran for 252 weeks was hugely successful. Sessions were broadcast every Thursday. Several villages formed listener groups to get the most out of these sessions. A lot of farmers sent their queries and comments through post-cards.

The contents were developed by a two-member team led by Shri Paresh Dave, a former communication expert at DSC. It had artists who offered their services *pro bono* for the roles of *Rangilo* and *Rangili*, male and female characters who anchored the programme and discussed various issues of farmers. The content was screened by agriculture experts before broadcasting.

Later, we experimented with a phone-based extension system using a private service provider. This worked well with farmers as it provided two-way communication. In the meantime, the state government also started a similar service. While we were thinking of pricing the service to make it economically viable, the government was offering it free of cost. This was

the main reason for us to wind up the phone-based system. In 2010, AIC came out with Weather-Based Crop Insurance Scheme (WBCIS) *Fasal Bima Yojana*. It was piloted in Gujarat by SS. At that time, there was a serious problem of aflatoxin in groundnut crop. NABARD got interested and subsidised the interest for the pilot project. However, when we wanted to scale up through the state government, in its wisdom, it felt it was not worth continuing with.

... SS had brought out a note on policy advocacy for the *Fasal Bima Yojana*, which was well-accepted and which contributed to policy changes in two states. An article was published in *Down to Earth* magazine and other media. The Ministry of Agriculture in New Delhi also took interest.”

- Rajesh Kapoor,

Secretary SS and Director, Cohesion Foundation

Promoting GUJPRO

“It was realised that farmers were facing major issues for finance and marketing. The first workshop on this was organised at AMA with the help of SFAC. This gave birth to GUJPRO in 2015 which was created to support FPOs of producers.”

- Rajesh Kapoor,

Secretary, SS and Director, Cohesion Foundation

“Even today, its work is relevant, especially in the areas of supporting FPOs, promoting natural farming, testing bio-products in partnership with NDDDB, etc. GUJPRO, promoted by SS as a state-level agency to support FPOs, has gone through a roller coaster ride but is still working. Its biggest contribution is that it provides a platform to all other FPOs and is seen as at least one state-level institution supporting them. If SS continues in spite of the present challenges, it is largely because of the support of DSC which provides space for organising various events. They were always there and will be there in future as well. What we need is to think through in a small group, how to select a few activities where SS can become more relevant.”

- Chandrakant Kumbhani,

COO, (Community Development), Ambuja Foundation

“DSC, a proud founding member of Sajjata Sangh, is honoured to witness the visibility it has got in the sector and also the great spirit of members to discuss the collective problems and their possible solutions.

Through our network, we have worked on some very important flagship programmes of the government to meet the needs of the farmers, such as Watershed Development, PMFBY, FPO promotion, crop and weather insurance, and sustainable agriculture. Even today, I receive phone calls from farmers of Banaskantha and other districts recalling Sajjata Sangh’s most popular radio programme “Sajjata No Sangh Kheti Maa Lave Rang” asking for its relaunch. It means SS is still relevant to farmers’ lives.

In today’s context, Sajjata Sangh has a challenge to remain as relevant as ever, serving as a catalyst for positive change amidst evolving socio-economic and environmental challenges. Despite our collective efforts, we continue to grapple with issues such as limited resources and a dearth of external support. I hope that these challenges will only strengthen our resolve to innovate, collaborate and advocate for systemic change. We are poised to make even greater strides towards building a resilient and inclusive farming community which is a need of the hour in our state and beyond.”

- Mohan Sharma,
Executive Director, DSC

SS as a major source of learning

“We decided to join the network because we saw the potential of symbiotic relationships. But it seems we have learnt far more than what we contributed! During the Minimum Support Price scheme of FCI for pulse procurement, we could pay the tribals a good price, which helped to build trust and to acquire knowledge about markets.

We also learnt how to build check dams and promote *Paani Samitis*, which made it possible to make forays into irrigation sector and promote drip irrigation among other techniques. We saw the importance of collective advocacy—the group can voice its opinion based on evidence from the ground.

By the time we joined, the network already had a body of work to its credit which was humongous. It was led by senior people like Jagawat sir, Apoorva Oza and Sachin Oza among others. This made it the best forum for sharing of knowledge and bringing together of voices leading to changes in policy.”

- Archanaben Joshi,

Former Director, Deepak Foundation

“We have been sharing the SS journey right from the beginning as we joined in 2003 itself. We joined as there was scope to help small NGOs during Watershed Plus through capacity-building efforts, along with well-established NGOs like AKRSP, DSC and Sadguru Foundation among others. We found some of the activities taken up by the network innovative, such as weather insurance, and radio programme which were quite useful. So, we also joined for our own small learnings and till this day we have found it useful. We try to do it in our area and it is a learning journey for us too.

In Gir Somnath district (formerly Kodinar district) of Saurashtra, the KVK hosted by our Foundation now has its own radio station where we have *replicated the Aavaj Otlo programme* that was run by Sajjata Sangh. The KVK supports six scientists who are dedicated to this work. It is an FM station for the community that covers a small area but demands a lot of resources. It took us three to five years just to obtain the licence for broadcasting programmes for the local farmers. The technical knowledge shared is very location-specific and needs to be curated as per the local agro-ecological conditions. Within SS, Sahajeevan in Kutch was the pioneer institution and AKRSP(I) is still running one in their own area in the Dangs.”

- Chandrakantbhai Kumbhani,

COO (Community Development), Ambuja Foundation

PART - C

Future Directions and Possibilities

Recent Interventions

Sajjata Sangh continues to promote sustainable agriculture in Gujarat. It has also collaborated with national networks for initiating new interventions:

Memorandum of Understanding (MoU) with National Dairy Development Board (NDDB):

In February 2023, an MoU was signed between Sajjata Sangh and NDDB to promote a slurry-based manure management model developed by NDDB in Anand's Mujkuvu and Zakariapura villages. The MoU encompasses the following activities:

- a. Promote *Sudhan* brand of natural fertilisers through FPOs formed by Sajjata Sangh partners and establish the market for slurry-based manure
- b. Motivate intensive biogas implementation with help of Agricultural Technology Management Agency (ATMA) and National Dairy Development Board (NDDB) to ensure biogas availability and use of slurry for Natural Farming
- c. Establish slurry-processing units at the village/cluster levels by the FPO/ Women Groups/ farmer group who wish to take up the activity of enterprise

The above collaborations show that just as the NGOs and CSR organisations of SS feel the need to work together on certain issues for better impacts, other institutions interested in working on scale also seek out such networks to promote their ideas and innovations.

Introspection and Search for Future Directions

In 2022, a two-day introspection workshop was organised by SS, facilitated by Gagan Sethi, an international facilitator on organisation development, as an external expert. The group realised that while a lot of changes had taken place in society and the development context, SS had not adapted to the changed situation. SS is not an isolated case since other networks have also been facing similar challenges. Some of the steering committee members whom we interviewed felt that these challenges could be overcome if a core group came forward to address them. Shri Apoorva Oza, former CEO, AKRSP(I) and former chairperson of SS, felt that there was an urgent need to create SS-Version 2. While the mission remains the same (i.e. serving the marginal farmers as a central focus), the network needs to reinvent itself.

Ideas were articulated in relation to membership profile, choice of interventions, sourcing of funds and reorganisation of the network. The first two are likely to bring about major changes in the composition of the network and its future strategies. Hence a brief summary of these two aspects is provided below.

Membership Profile

1. There are a large number of young entrepreneurs (even offsprings of farmers themselves) who are experimenting with various ideas to bring new technology and services to farmers for their prosperity. Areas where they are active include drone technology, processing technology, village-level storage with modern facilities, soil-testing, precision farming, bio-fertilisers, bio-pesticides and new apps to reduce drudgery, among others. SS may find ways of working with them—for instance, creating an Incubation Centre- to support start-ups working in the field of agri-preneurship. Some of them could become members of the network itself.
2. In this context, there is a need to engage with youth in general. Meeting physically may not be the best way to engage with

them. The methods of communication are different. So, SS will need to align itself with their ways of interaction and on forums of their choice.

3. Its presence is limited largely to Saurashtra and North Gujarat. Other areas such as south and central Gujarat which are left out so far should also be covered to make it representative of the entire state.
4. Many CSR organisations are doing good work on the ground with commitment and continuity. They bring value to the network because of better market orientation. They also see value in joining such a network. They are among the first to take up innovative ideas from the network and apply these in their own areas. Increasing their membership will prove beneficial to the network.

Choice of Interventions in Future

In future, SS must work in areas that are still relevant to agriculture, which is the mainstay of livelihoods in rural India. It should first pick just one idea and make it reachable to many people. Some emerging areas of operation could be:

1. *Weather insurance*: This is going to become more important in future. SS has exceptional knowledge in this area—about what works and what does not. But it is important to design new projects to meet the current needs of farmers drawing upon past experience.
2. *Carbon funding*: SS should explore how agriculture can be aligned to carbon markets. It is data-intensive and monitoring is needed at various steps. SS can explore and develop expertise in this emerging area; for instance, how SS and farmers can make soil healthy and, in the process, earn credits.
3. *Promoting a network for water stewardship in Gujarat focusing*

on agriculture: SS will also work on water management issues across various geographies. It has been found that most of the regions of Gujarat except south Gujarat are water deficit and there are also issues of water quality. Thus, the SS partners will once again need to work on enhancing the water supply, water recharge and optimising on farm water uses through appropriate technologies and institutional mechanism.

End-notes

- 1. Names of organisations which were once active but have become dormant are not included.*
- 2. Established in May 2004, Credibility Alliance is a consortium of NGOs, committed towards enhancing accountability and transparency in the voluntary sector through good governance.*
- 3. The study was carried out by India Natural Resources Economics and Management (INREM) Foundation, based in Anand, Gujarat.*
- 4. Carried out in 2009/10 by Black and White, an independent professional agency specialising in social research and communication.*

Chapter-8

DSC Foundation: Continuing the Legacy of a Learning Organisation



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DSC has always believed that it is necessary to learn from its own and others' experiences to enhance the effectiveness of interventions at the field level. The cycle of action, reflection, documentation and modification was internalised by the organisation and later evolved into DSC's theory of change. This has enabled it to stay relevant and meet the dynamic needs of rural communities. Evidence-based research and documentation have been at the core of DSC's policy advocacy and outreach activities. As times changed and the demands on DSC to scale up its field interventions grew, DSC realised the need for a separate organisation to focus on this critical activity. Thus in 2012, the DSC Foundation was established with a mandate to work on documentation, research, outreach, consultancy and policy advocacy activities. This chapter takes stock of the progress made in continuing and taking forward the legacy of a learning organisation.

8.1 Introduction

8.1.1 DSC as a Learning Organisation

Initially, DSC saw its role as one of bridging the chasm between government officers/policy makers and grassroots agencies/workers. Anilbhai was very clear that as a credible support organisation, it would need to be continuously aware of the changing realities and upgrade its knowledge and skills as per their requirement. Thus, in addition to being competent at field implementation, it would have to become a learning organisation. The founder members believed that since India was rich in cultural diversity, DSC would learn new things by working with diverse communities in diverse ecological conditions. Hence, the organisation must be flexible enough to learn, unlearn and relearn from its new experiences.

This meant creating space and resources for documenting experiences (its own as well as those of others working at the grassroots level), understanding deep layers of problems and their probable solutions, crystallising concepts, identifying innovative ideas and drawing implications for existing and future policies.

Building a learning organisation is not easy as it involves creating an institutional memory, which can be accessed by different members of the organisation for different purposes. The knowledge created can be used by decision makers, especially while taking strategic decisions or when developing advocacy papers or for developing capacity-building programmes/modules. DSC's success in being recognised as a resource agency at the national level for more than one sub-sector can be attributed to its capacity to build knowledge from grassroots experience and share this with relevant stakeholders in the necessary form and language.

In Figure 1, we have tried to capture the entire process of knowledge building, sharing and utilisation. When DSC takes up implementation of a particular project, it may come with a particular design which spells out the objectives, the target population, the issue of the local or the larger community being tackled, the methodology and processes to be followed

by the stakeholders. Inputs are taken through farmer participatory research at the grassroots level and through a partnership and consultative process with relevant government departments and other stakeholders. The project once implemented creates impacts, including positive and negative externalities, and in the process also throws up issues that were not visualised earlier. This knowledge is captured by DSC's learning system before it is lost either due to long time duration or employees leaving the organisation for better prospects. The impacts and issues provide strong feedback for project design as well as capacity-building modules, both ongoing and future. The knowledge products get deposited in DSC's knowledge repository which also serves as a source of knowledge and inspiration in different situations.

Occasionally, it may happen that a very important issue is raised, which is reported from other states as well. For example, when DSC began its work on Participatory Irrigation Management, tail-end deprivation in the command area of irrigation systems emerged as one of the most prevalent problems in canal irrigation. Partnership processes with government and other stakeholders were deployed to carry out larger thematic and regional/national studies to throw light on the magnitude and importance of the problem, which was then fed into policy-making forums. This study was conducted in year 2000–2001 and shared with the Planning Commission and several states including Gujarat, Maharashtra and Odisha. It led to the inclusion of tail-end farmers in the executive committee of the Water Users' Association by PIM Acts of different states.

For major sub-sector level knowledge creation, DSC has resorted to partnerships to conduct or be part of *action research projects*. A recent example is the Management of Aquifer Recharge through Village-Level Interventions (MARVI) project. The project generated knowledge on hydrogeological, social, economic, governance and livelihood aspects of groundwater, including recharge enhancement, and its sustainable management by the rural communities at the Gram Panchayat level. The MARVI project provided important lessons for designing the Atal Bhujal Yojana—a national level programme on Participatory Groundwater Management launched by the Government of India in 2020. Such projects

are extremely important in showing the way when future pathways are hazy on account of lack of empirical and practical research and even the government is not sure how to proceed.

DSC has several experiences in its long journey as a learning organisation. Its capacity to share valuable learning with other players in the field is what makes it popular as a resource agency. It has found itself working in close collaboration with government agencies on one hand and networks of non-government agencies on the other, thus realising to a large extent, the vision of its Founder Chairman Shri Anilbhai Shah.

8.1.2 Genesis of DSC Foundation

As a learning organisation that was expanding horizontally (geographically from one to four states) and vertically (from water to agriculture and collective enterprise), DSC realised that if it were to continue to expand its field operations, it would be difficult to provide adequate attention and resources for knowledge generation, dissemination and policy influencing. There was a need for a separate organisation that could focus on these aspects through research and documentation and capacity building. This would enable the different organisations promoted by DSC to play a major role together as a resource centre while continuing to scale up its field operations. Thus, in 2012, it initiated a Not-for-Profit Company named “DSC Foundation (DSCF)” under Section 25 of the Companies Act 1956. Shri Vijay Mahajan, the then Chairman, and Shri VB Patel, the Treasurer of DSC, contributed the requisite share capital of Rs 0.1 million for registration.

DSC Foundation was created to provide knowledge-based support to the development sector through research, documentation, capacity-building activities and policy advocacy. The Foundation builds upon DSC’s earlier linkages to collaborate with research institutions, academia, NGOs and CSRs in processes of knowledge building, sharing and utilisation. It focuses on developing knowledge products that help DSC and funding agencies in enhancing their project/programme design, implementation and impacts. It also conducts thematic studies and participates in Advisory Committees and Expert Groups to enhance practice and influence policies.

Governance and Human Resources:

Shri VB Patel¹ was the founding Chairman of DSCF. He was joined by other board members of DSC, such as Shri Vijay Mahajan, Dr Sankar Datta, Dr Tushaar Shah and Dr Indira Hirway. Shri Mohan Sharma, the Programme Director (PD) of DSC, became the part-time Administrative Director of DSCF and continued to provide his services till July 2016.

Looking at the interest and expertise of Shri Sachin Oza (the then Executive Director of DSC) in capacity building, research and documentation and policy influence, it was felt that he should be the full-time Executive Director of DSCF. Shri Mohan Sharma, the PD would take his place as the Executive Director of DSC. After Shri VB Patel, Shri OP Rawat chaired DSCF till 2023–24. Currently, Prof Shambu Prasad is the Chairman of DSCF and Dr Sankar Datta, Dr Sara Ahmed and Shri Naveen Patidar are the other Board members.

A unique feature of DSCF is that it is not run by professional academicians like PhD scholars or retired professors unlike the typical and classical knowledge agencies. It is owned and managed by practitioners in close collaboration with the parent organisation. Much of the research is carried out by experienced practitioners who have seen rural development issues from close and have been co-travellers of the community, government officers, and other stakeholders in building successful and failed initiatives. However, where needed, DSCF collaborates with academic institutions and eminent experts to conduct meaningful studies at low cost.

Table 1 presents a set of typical knowledge products, how these are generated and used.

8.2 Knowledge Generation through DSCF

As summarised in Table 1, DSCF generates five types of knowledge as per the requirements of its parent organisation. These are discussed briefly below.

Table 1: Knowledge generation and use

No.	Purpose of Knowledge Generation	Common KG activities	Potential utilisation
1	Project / Programme Design	<ul style="list-style-type: none"> • Baseline studies • Situational Analysis • Participatory gender appraisal 	<ul style="list-style-type: none"> • Designing and managing projects • Planning capacity building • Identifying issues for change in policies and procedures • Project proposal making
2	Effective Implementation	<ul style="list-style-type: none"> • Participatory assessment of systems and processes • Participatory monitoring and action • Management information systems • Capacity building modules 	<ul style="list-style-type: none"> • Strategic decision making • Monitoring and control • Identifying necessary interventions • Capacity building
3	Assessing project impacts	<ul style="list-style-type: none"> • Mid-term and end-of-project evaluation studies • Impact studies • Longitudinal studies 	<ul style="list-style-type: none"> • Learning for strategic decisions • Mobilising finance • Mobilising communities for similar projects • Identifying issues for change in policies and procedures

No.	Purpose of Knowledge Generation	Common KG activities	Potential utilisation
4	Policy advocacy	<ul style="list-style-type: none"> • Policy papers • Thematic studies • Impact studies • Longitudinal studies • Policy assessment studies • Action research studies 	<ul style="list-style-type: none"> • Sharing findings in networks and in special commissions, advisory boards, etc. • Sharing on media, including social media for diffusion and opinion building • Publications for researchers and practitioners
5	Capacity building	<ul style="list-style-type: none"> • Studies that capture principles and procedures of different projects • Development of general and specific modules for different projects and roles 	<ul style="list-style-type: none"> • As a resource agency for various programmes and training of government officers, local resource persons, farmers and their self-help groups and community-level organisations

8.2.1 Project / Programme Design

In 2014, the DSC Foundation conducted a study on “*More Food with Less Water*” - A stakeholder consultation report of the Dharoi Irrigation Project, Gujarat and Sanjay Sarovar Project, Madhya Pradesh. The findings were utilised by the Asian Development Bank (ADB) for designing the new generation projects for irrigation development in India and South Asia. Initial FGD and PRAs were carried out by Lahmeyer International, Germany, followed by second-stage participatory rural appraisals conducted by DSC Foundation from June to August 2014. These were useful in generating valuable feedback from key stakeholders for sustainably improving irrigated agriculture.

Till March 31, 2024, the DSC Foundation has carried out 12 baseline studies and situational analysis for various projects/ programmes related to sustainable use of natural resources and sustainable agriculture, in various states including Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Telangana and Uttarakhand. These studies helped the client organisations identify the current issues and capacities (awareness, knowledge, skills and attitudes) at the household and village institution levels. It helped them in designing new projects or modifying existing ones where needed. It also helped them to prioritise their interventions.

DSCF also helps CSOs in developing their livelihood strategies which integrate natural resource management programmes with extension and enterprise development. This enables the organisations to develop a clear road map for capacity building as well as resource mobilisation.

8.2.2 Knowledge for Effective Implementation

DSCF supports DSC and other CSOs for effective implementation of interventions and strengthening of people’s institutions. It carries out participatory assessment of the planning and monitoring systems for natural resource management and livelihood programmes.

8.2.3 Project Impacts

Eight impact assessment studies were undertaken by the DSCF for organisations such as ITC Ltd, National Livelihood Resource Institute (NLRI), Vivekanand Research and Training Institute, Axis Bank Foundation and DSC. These studies covered Gujarat, Madhya Pradesh, Rajasthan and Odisha. In addition to the quantitative and qualitative tools, GIS-based tools were also deployed to measure the impact of the various programmes.

The mid-term and end-term impact assessment studies helped the organisations in identifying the strengths and weaknesses of various interventions and institutions. The studies identified interventions that were successful and worthy of being scaled-up and replicated. Besides the socio-economic benefits, these studies also highlighted the environmental benefits of the interventions. In addition, they brought out the changes in the knowledge, skills and attitudes of farmers that had taken place due to active participation in village institutions and capacity-building inputs from the support organisation.

These studies provided DSCF an opportunity to visit remote areas of the country and directly interact with the rural communities. It enabled the organisation to understand and appreciate the context and constraints of implementing natural resource management and livelihood enhancement programmes in different locations of the country. They were a major source of revenue for DSCF and helped to meet its HR and administration costs.

8.2.4 Capacity Building

DSC has been involved in capacity building of stakeholders involved in participatory natural resource management and sustainable livelihoods right from its early days. DSCF therefore continues to carry forward this legacy.

In 2015, DSCF, in association with DSC, organised “India Water Study Tour” for senior irrigation officials from the Ghana Commercial Agriculture Project (GCAP) supported by the World Bank. The main objective of the

study tour was to learn from Indian best practices and policies in the field of PIM. DSCF also conducted a feasibility study for implementing PIM in the selected small irrigation schemes of Ghana.

In 2017, DSCF was invited to conduct a course on Participatory Irrigation Management (PIM) for the MSc and diploma course on Water Science and Policy at Shiv Nadar University. In addition to giving sessions on PIM to the students, the DSCF and DSC jointly conducted a one-month course from 2017–18 to 2022–23. The students were exposed to the field realities as they visited the canal sites and interacted with the Water Users Associations (WUAs) facilitated by DSC in North Gujarat and the command areas of Sardar Sarovar Narmada Nigam Ltd. Eminent experts, government officers, practitioners and community leaders also shared their experiences and provided inputs to the students.

DSC is a knowledge resource centre for the *Jal Jeevan Mission* and conducts training programmes for middle-level managers of various states. DSCF conducts sessions on participation, stakeholder analysis, leadership development and conflict resolution in these programmes.

8.2.5 Policy Advocacy

To understand issues in depth and generate knowledge in different geographical and cultural contexts, DSCF conducts thematic studies and documents case studies and best practices. It has so far conducted four thematic studies and documented three case studies and one best practice.

Thematic Studies

The key findings and recommendations of three thematic studies, two on *Pradhan Mantri Fasal Bima Yojana* (PMFBY) and one on Scalable Water Security Solutions for Gujarat, are given below. These studies enabled the Foundation to establish itself as a knowledge institute and also influence policies at the state and national levels.

i. Pradhan Mantri Fasal Bima Yojana (PMFBY)

The Government of India introduced the PMFBY in 2016 and revised it in 2019. DSCF conducted two studies on its implementation jointly with colleagues from Sajjata Sangh. The first study was done in 2018. It focused on the awareness and inclusion of non-loanee farmers in Gujarat, Madhya Pradesh, Maharashtra, Odisha, Andhra Pradesh and Telangana. This was so because as per the PMFBY guidelines of 2016, it was mandatory to include loanee farmers in the scheme. As a result, non-loanee farmers tended to be left out from availing the scheme. Some of the key recommendations were:

- a) The need for investing in creating awareness amongst farmers, especially small and marginal farmers, women farmers and non-loanee farmers
- b) Use of technology for assessing crop loss and
- c) Simplification of procedures for claim settlement

These recommendations were considered by the Ministry of Agriculture and reflected in the PMFBY guidelines of 2020. The new guidelines made it voluntary for the states as well as farmers to opt for PMFBY. They also made provision for investment by the insurance agency in awareness creation and the use of technology to speed up the process. Thus, there was a need to study how the revised PMFBY was being implemented at the field level.

The second study was conducted in 2022, covering 10 districts of Rajasthan, Madhya Pradesh, Maharashtra, Chhattisgarh and Uttarakhand. The key finding of the study was that, despite of the new provisions, nothing much had changed at the ground level. Awareness and capacity building of farmers on PMFBY was still an issue and considerable efforts need to be made for the same. The use of technology was limited and crop-cutting experiments continued to be a major bottleneck for timely loss assessment. Making the scheme voluntary for loanee farmers has resulted in reducing the number of farmers and therefore they are opting out of the scheme. The shortage of human resources in the Agriculture Department

as well as designated insurance agencies needs to be addressed. Banks are indifferent to the PMFBY scheme and the Common Service Centers are not functioning in many blocks which has resulted in low enrollment. The findings of the study were shared in five blocks in three districts of Madhya Pradesh where DSC was implementing the PMFBY project.

ii. *Building Informed and Scalable Water Security Solutions for Gujarat*

The DSC and DSCF with support from Hindustan Unilever Foundation conducted a study on “*Building Informed and Scalable Water Security Solution for Gujarat*”. The study, initiated in 2020, identified key problems in different regions of Gujarat and suggested region-specific solutions that can be driven through collaborative efforts among the government, civil society, academia, private sector and the community, and implemented at scale. It covers parameters such as rainfall, surface water, groundwater, soil, agriculture and animal husbandry.

The key findings of the study show that except for south Gujarat, most of the regions in the state are water deficit. There are water quality issues in several places; farmers are using much more water than recommended, soil health is also a major concern and there is an urgent need to focus on the water demand in agriculture and animal husbandry. Region-specific issues and possible interventions were also identified. These findings and recommendations would be very useful for the government, civil society organisations and CSR agencies. Dr Tushaar Shah, an international expert on water management, felt that it was an “excellent resource book that encompasses several dimensions and offers a geographically textured analysis of the interaction between agriculture, water and soil.”

Case Studies and Best Practices

- *Feasibility of PIM in selected Minor Irrigation Schemes of Ghana*, Mohan Sharma (2014).
- *Dynamics of Incubating a Multi-Community, Multi-Commodity, Multi-Location FPO - The Case of Krushidhan Farmer Producer Company in Gujarat*. by Astad Pastakia and Sachin Oza), IRMA. (2022).

- *From Civil Society Origins to an Independent Marketing Federation for Farmer Producer Organisations – The Case of Gujpro Agribusiness Consortium* by Sachin Oza and Abhishek Saxena) IRMA (2022).
- *Development Support Centre: Mainstreaming the Idea of Water Users' Associations.* by Sachin Oza and Mohan Sharma (2022).
- Case Study documentation of the interventions on Climate Change mitigation carried out by WOTR in Telangana (2024)

The case studies on Krushidhan and Gujpro have been published in “*Farming Futures – Reimagining Producer Organisations in India*” Edited by C.Shambu Prasad, Ajit Kanitkar and Deborah Dutta and published by Routledge Publication in 2023. The best practice documentation on WUAs was published in “*Anchoring Change*”, a compendium of 75 years of grassroots interventions that made a difference. This was brought out by the Centre for Social and Economic Progress (CSEP), Delhi and published by Harper Collins in 2023. The publications have helped in the wider dissemination of DSC’s best practices.

8.3 Knowledge Diffusion and Utilisation through DSCF

8.3.1 Networking and Participation in State and National-Level Workshops

DSCF has been participating frequently in state and national-level workshops for sharing the experiences, learning, best practices and findings from its research studies. Two examples of the type of issues raised are given below:

“Participatory Irrigation Management in changing times—Can one size fit all?”

This presentation made in the 2nd National Workshop organised by the Command Area Development and Water Management (CADWM)

in 2019 highlighted the diversity of irrigation systems within a state in terms of their size, location, cropping pattern, etc. It also brought out the temporal changes that have taken place in their storage capacity, groundwater availability, cropping pattern in the command area and socio-economic condition of rural communities. The presentation indicated that Participatory Irrigation Management as practised over the last 20 years needs to be re-conceptualised and contextualised. A contingency model considering the groundwater, agriculture and energy aspects needs to be developed for each command area.

“Assessing Social Returns of Farmer Producer Organisations: Development and trial of a simple proxy tool—A Case Study of Krushidhan Farmer Producer Company Ltd incubated by DSC.”

Farmer Producer Organisations are normally seen through the lenses of a private commercial organisation. The financial ratios applicable to a typical private entity are applied to assess its performance. There cannot be a greater fallacy because FPO is essentially a collective enterprise. While generating profits and becoming financially viable is one of the goals of the FPO, the larger goal is to enhance the livelihoods of farmers.

8.3.2 Contributing to Policy Advocacy at the State and National Levels

DSC is known in the country for its pioneering work on PIM. It has rich experience in promoting sustainable WUAs, capacity building, research and policy influencing. Several states including Gujarat have enacted well-intentioned PIM Acts. As indicated in the paper mentioned above, these do not consider the varied nature of irrigation systems within the state nor the temporal change that has taken place in the command area. Thus, DSC Foundation continues to make efforts to promote a more contextualised and dynamic version of PIM through participation in policy-level workshops and working groups at the state and national levels. Notable among these are the expert group for developing the water strategy for Madhya Pradesh and the Advisory Committee on “Assessment of the Status of Water Users Associations (WUAs) of Maharashtra.”

8.4 Key Challenges for Future Growth

Some of the challenges faced in sustaining and scaling up its activities are:

Change in priorities of funding agencies:

The financial resources for conducting research and documentation have seen a steady decline during the last decade. Funding agencies, especially government agencies and CSR agencies, are more inclined to support direct field-level implementation. Knowledge generation activities such as capacity building, research, documentation and policy influencing do not seem to be a priority. Unlike earlier times, wherein grants for conducting thematic studies and documentation were available, currently, there are very few avenues for the same.

Balancing between income and knowledge generation:

As seen earlier, DSCF has contributed towards knowledge generation and influencing policies at the state and national levels. At the same time, it has tried to generate adequate resources to meet its costs and become financially viable. Impact assessment and baseline studies are major sources of revenue for DSCF. Though useful, these studies tend to take up a lot of time and energy for DSCF. As grants for thematic studies become increasingly difficult, one needs to put in concerted efforts for searching appropriate agencies and developing proposals for obtaining the same. However, since DSCF has limited financial and human resources, income generation becomes a priority over knowledge generation. Striking a balance between the two so that it continues to generate relevant knowledge products, promote new ideas and influence policies remains a major challenge.

Attracting talented human resources:

The research studies conducted by the DSC Foundation aim to enhance practice or influence policies. Though relevant and effective, the studies are not viewed seriously by researchers and academicians. Thus, DSCF

is unable to attract talented youngsters and compensate them adequately. Since quantitative research requires considerable staff, it collaborates with other organisations to conduct multi-state studies.

Similar challenges are faced by other CSO foundations involved in conducting research studies. Thus, such like-minded foundations could collaborate to make a greater impact at the regional and national level.

End-notes

1. Shri V.B.Patel is the Retd Secretary of Water Resources Department in the Government of Gujarat and Chairman, Central Groundwater Board.

Chapter-9

Conclusions and Future Directions



For the authors, putting this document together has been a journey which took several months longer than initially visualised. Nonetheless, it has been rewarding in its own way in terms of the learning and the knowledge-building process. The effort has been to document and capture the contributions of a civil society organisation in a dispassionate manner. The cumulative impacts of DSC working with the farming communities as partners in the development process show that genuine work done at the grassroots level is often overlooked or under-valued by decision makers at the state and global levels.

DSC's experience shows that when such organisations partner with large government schemes, they provide the much-needed last mile connectivity with the target audience. They also provide critical feedback from the field, which enables policy makers and implementers to make course corrections and smoothen procedures, thereby making the scheme more community-friendly.

DSC's willingness to partner with all stakeholders, including farming community, government departments, private companies, technology institutions, CSR agencies and donor agencies, enables it to pilot new approaches and innovations in different sub-sectors. When these are found to produce positive results in the field with strong ownership of farming communities, DSC enables other organisations and institutions to scale up such projects across the country. These project ideas have strong implications not only for promoting self-reliance and resilience in rural communities, but also for meeting India's commitment to the Sustainable Development Goals (SDGs).

Impacting Sustainable Development Goals

DSC's strong alignment with Sustainable Development Goals (SDGs) existed much before these were declared by the United Nations (UN) in 2015 as global targets. Alignment of grassroots interventions with global objectives has become all the more important in the light of impacts of

global warming on agriculture and of state policies on natural resources available to farmers.

An internal reflection on the collective impacts of DSC's interventions shows that it has impacted 11 out of the 17 SDGs.

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
10. Reduced Inequalities
12. Responsible Consumption and Production
13. Climate Action
17. Partnerships for the Goals

These global development targets are important because they are designed to guide the global development agenda through 2030 and beyond. Therefore, it has become almost mandatory to consider these while designing development projects for sustainable agriculture and other natural resource-based interventions. The emphasis on particular SDGs would depend upon the target segment, objectives and nature of resources involved. Future evaluation and impact studies would need to report on SDGs apart from the local impacts on target communities and geographical areas involved.

Changing with Times

Reflections on DSC's role in the development sector reveal how it has changed gradually with changing needs of the farmers and changing government policies.

Intermediary organisation for water management (1994–2002)

From 1994 to 2002, Gujarat had the largest number of NGOs working as Project Implementing Agencies (PIAs) for the Integrated Watershed Management Programme (IWMP). DSC played the role of a training institute appointed by the Gujarat State Watershed Management Agency (GSWMA) and as an intermediary organisation that provided capacity building and handholding support to the PIAs while providing valuable feedback to government agencies.

DSC also initiated field implementation of the watershed programme in Dhari block of Amreli district and Meghraj block of Aravalli district more as “learning laboratories” wherein its staff got an experience of learning by doing before practising what it was preaching to other organisations. However, the revised guidelines of the Watershed Programme, *Hariyali* (2003) envisaged the implementation of the programme by Panchayati Raj Institutions (PRIs) and side-lined the role of NGOs as programme implementation agencies in watershed development. Thus, DSC's role as a support organisation in the watershed programme steadily declined.

From water to sustainable agriculture (2008–2012)

The main reason for the thematic shift was logical and holistic, as interventions were designed to move up the value chain from “water to wealth”. A much greater effort was now made to invest in direct implementation of projects due to greater demand from the government and donors to show results on the ground.

With support from selected donor agencies and *Sajjata Sangh*, DSC continued to support NGOs and government functionaries on water management and sustainable agriculture through outreach functions like

capacity building, hands-on support, research and policy influencing. Unfortunately, after 2012, there was not much support for such functions. While funding from bilateral and international donors had declined, CSR donors were more interested in supporting direct implementation.

Geographical expansion with more of direct implementation (2008 onwards)

Looking at the needs of the communities and invitation from donors, DSC started considerably expanding its area under direct implementation. While DSC continues to be a resource centre in various sub-sectors, its role in field implementation has gone up from 20% in the initial years to 80% in the present. The remaining 20% is still devoted to support and outreach services to other stakeholders and policy advocacy in specific sub-sectors. However, it continues to make impacts through innovative projects and approaches, many of which are captured in this volume.

3.0 Future Directions and Possibilities

Much of the reflection by DSC's stakeholders focused on future directions and possibilities. We have tried to summarise some of the main ones.

i) Supporting small NGOs:

Given the present environmental and livelihood challenges and donor requirements, small NGOs require considerable support. Thus, DSC could think of providing capacity building and handholding support to them, either independently or with Sajjata Sangh and other local networks. Again, SS is just limited to Gujarat, while DSC works in Madhya Pradesh, Maharashtra and Rajasthan where the needs of such small NGOs could be mapped /explored and supported in the fields of water, agriculture and farmers' collectives. Regional networks of NGOs and CBOs in these states could also be explored.

ii) Making water everybody's business:

Apart from over-exploitation of groundwater, climate change has a direct impact on water, agriculture and livestock. As brought out through certain

internal studies, there is an increase in demand, saturation in terms of water supply and deterioration of water quality. Water and soil health security has to be a focus of the community, the private sector and the government through collaborative efforts. Currently, both PIM and watershed management have taken a backseat and there has hardly been any policy dialogue, either at the state or the national level. The situation needs to be addressed urgently and it would be foolhardy to ignore it. Over the years, DSC has developed a more nuanced and holistic understanding of the water sector. It has the capacity and potential to reinvent proven ideas in the present-day context. Thus, it could play a leading role in making “water everybody’s business”.

iii) Liberating farmers from compulsive use of harmful chemicals:

DSC has been promoting sustainable agricultural practices that prioritise soil health, low external input methods and enhanced access to bio-inputs. This is achieved through various strategies, including participatory soil health monitoring, crop rotation and diversification, use of information technology in crop advisory, resource sharing and collaboration for community-led bio-input production, and Farmer Producer Organisations (FPOs) services for market linkages. These strategies are implemented through well-designed implementation steps of scope assessment, community engagement, pilot projects, participatory monitoring and learning, and upscaling. DSC has commissioned end-term studies to evaluate the successful results and documentation for outreach.

Yet the transformation has been only partial. Various constraints prevent farmers from converting all their land to organic production. These constraints will hopefully be relaxed and the transformation within the project area will increase to the extent possible.

iv) Supporting innovation for organic farming:

We believe that DSC will need to support and encourage innovative organic farmers both individually and collectively to find new solutions in production and marketing so as to make organic farming economically viable. Interest groups of organic farmers could be promoted in clusters and at the district

level. Farmers' innovations could be scientifically validated by researchers and KVKs would actively promote these.

v) Institutionalising Carbon Finance:

DSC has initiated a pilot project on institutionalising carbon finance with 22,000 farming households, covering 60,000 ha of land in Nandurbar district of Maharashtra. Soil carbon sequestration is being initiated through conservation tillage, cover-cropping, agro-forestry, use of bio-char and organic farming practices that combine trees with crops or livestock to increase carbon storage. It is promoting *improved livestock waste management* practices such as composting, anaerobic digestion and biogas production to reduce methane emissions and enhance nutrient recycling through the use of livestock manure in crop production.

DSC plans to scale up this pilot project to larger areas and integrate them with existing government schemes and policies for broader impact. Government schemes such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), National Mission for Sustainable Agriculture (NMSA), Natural Farming and Sub-Mission on Agroforestry (SMAF) are leveraged for this purpose. DSC has been mainstreaming FPOs formed under NABARD support in channelising carbon funds for capacity building, certification and verification activities. The FPOs have been capacitated to access carbon finance from international investors and buyers through a Bengaluru-based collateral company which helps them navigate the carbon market and pass on the earned credit to individual farmers. The credit can be earned in the form of physical activities such as agro-forestry, afforestation and reforestation, switching to renewable energy, improved manure management, organic farming, mulching and practices of agro-ecological farming, etc. Drone-based benchmarking and regular monitoring and reporting systems have been developed to accurately measure and report carbon sequestration, verified by a third party.

vi) Aligning CSR support for critical sub-sectors:

DSC is strategically aligning Corporate Social Responsibility (CSR) support to critical sub-sectors that address water resource management,

agricultural sustainability and community empowerment. This alignment focuses on value addition to existing government initiatives like *Atal Bhujal Yojana*, *Jal Jeevan Mission Yojana*, promotion of 10,000 FPOs and participatory irrigation management, among others. By aligning CSR support with these critical sub-sectors, DSC expects to:

- enhance community participation and ownership
- pilot low-cost user-friendly techniques
- test various social and technical innovations
- develop a local cadre of para-professionals
- achieve post-project sustainability
- promote behavioural change, including gender inclusion.

vii) Application of AI and other emergent technologies to agriculture:

DSC is leveraging advanced technologies such as geographic information systems (GIS), robotics, applications and other emerging tools to enhance planning, implementation, documentation, research and monitoring of natural resource management and associated livelihoods. It got started on this exciting journey with a collaborative project involving GIZ and the government of Madhya Pradesh to develop spatial NRM management plans in Barwani district from 2018 to 2020. The district Land Use and Conservation Mapping and Budgeting activity was undertaken utilising GIS tools illustrating detailed land use and land cover maps, identifying areas for agricultural development, water conservation and afforestation. The plans were used by the government departments to leverage funds under MNREGS and PMKSY among other sources. In the Carbon Finance initiative at Nandurbar, it deployed drones and robotic units for high-resolution surveys and data collection, providing accurate information for benchmarking and planning interventions.

DSC is also extending precise irrigation systems which demonstrate the use of sensors and controllers to optimise water use based on soil moisture, weather-time series trend analysis and participatory forecasting on a pilot basis in *Atal Bhujal Yojana* in Gujarat since 2028–19. The use of drones

is being planned by a women-led farmer field school in Narayangaon, Maharashtra, for precision planting, fertilising and pest control, ensuring efficient use of inputs and maximising crop yields. Mobile applications have been developed and deployed for farmers in collaboration with IBM and Awaz De among others, to access real-time information on weather, crop management and market prices, thereby enhancing decision-making by farmers at the field level.

In future, utilisation of drones and Unmanned Aerial Vehicles (UAVs) will be useful for regular aerial surveys, providing real-time data on crop health besides surveillance of pest infestations, assessment of irrigation efficiency or resource misuse. Advanced technologies will help in identifying risks and planning mitigation strategies, contributing to the resilience and sustainability of natural resource management and livelihoods. DSC expects to be at the forefront in empowering marginal farmers to access these technologies after testing their efficacy and cost-effectiveness.

Epilogue

A Tribute to Anilbhai Shah: DSC's Multi-Faceted Founder-Chairman



Practitioner, thinker, writer, innovator, institution builder, policy maker and above all a visionary—that's how one can describe Anilbhai, DSC's Founder Chairman. This epilogue is an honest attempt to bring together his tremendous contribution to the development sector.

Literature played an important role in shaping his world view. An avid reader and writer, he was extremely fond of Gujarati, Hindi and Bengali literature and often drew inspiration from novels penned by Jhaverchand Meghani, Premchand, Saratchandra Chattopdhyay and Rabindranath Tagore. “*Jodi tor dak shune keu na ashe, Tobe ekla cholo re. Tobe Ekla cholo, ekla cholo, ekla cholo re*”—these lines from *Ekla Cholo Re*, the beautiful poem by Rabindranath Tagore, were Anilbhai's favourite. He often used to recite these in Bengali and Gujarati.

Born in June 1926, Anilbhai, influenced by his father, a teacher, at Lokbharti, Sanosra¹, became a freedom fighter at 16 and went to jail. Thereafter, Manubhai Pancholi, the founder of Lokbharti, persuaded him to study further. He studied economics and taught at Shyamaldas College in Bhavnagar district of Gujarat. He started his journey as a bureaucrat in 1952 as a block development officer in Junagadh district and became the secretary, rural development, in the government of Gujarat in 1980.

After retiring from government services in 1984, he applied for the position of chief executive officer of the Aga Khan Rural Support Programme (India). There is this famous anecdote of Dr Verghese Kurien, the first Chairman of AKRSPI, being quite skeptical about bureaucrats and their abilities to lead an organisation. However, after interviewing Anilbhai, he changed his opinion and selected him as the first CEO of AKRSPI. The rest, as they say is history. Anilbhai started his second innings as a practitioner. Under his leadership, AKRSPI focused on enhancing the livelihoods of rural communities through participatory natural resource management in three diverse geographical areas of Gujarat. South Gujarat had heavy rainfall and forests with tribal communities, central Gujarat was rainfed, semi-arid with a substantive OBC population and Saurashtra coastal region was saline, rainfed and caste-ridden. Within a few years, he built a competent and committed team of professionals that made a remarkable impact on the

lives of rural communities by building their capacities to plan, implement and manage their resources, be it canals, watersheds or forests.

A firm believer in community participation, he got in touch with Prof Robert Chambers from the Institute of Development Studies, Sussex, and was one of the pioneers in promoting Participatory Rural Appraisal methods in the country.

At 68, when most people would love to live a leisurely life, Anilbhai, who had just completed three terms at AKRSPI, agreed to chair a newly formed organisation — Development Support Centre. He had long since felt that the state and the country would need many more NGOs such as AKRSPI if they had to make any real impact. Thus, there was a need to build capacities, strengthen civil society organisations and facilitate an enabling environment at the state and national levels. Having served as a policy maker and then as a practitioner, Anilbhai constantly worked towards joining the strengths of the government and civil society. He felt that while the government had the resources and power to bring change at scale, civil society had the compassion and competence to reach the last mile. He, therefore, was not content with bringing a change only at the community level but always strived to influence policies and procedures at the state and national levels. His knack for strengthening/complementing ground-level implementation with evidence-based research played a major role in influencing policies such as Joint Forest Management, Participatory Watershed Management and Participatory Irrigation Management.

In AKRSPI and DSC, he anchored several studies and wrote several papers which are compiled in two volumes — *“In the Hands of the People”*. Some of the path-breaking studies and papers are *“National Study on Tail end and other deprived in the command area of irrigation systems”*; *“Mohani may fail again”*; *“Eloquent Silent Revolution — A Longitudinal study on the impact of watershed management on drought-proofing”*; *“Drinking Water Security in Watershed Villages”*; *“Benefit-cost Analysis of the Watershed Management and PIM”*; *“Brick by Brick”*; *“Joining of Strengths”* and *“Clothing the Naked Emperor”*.

The studies and papers based on ground-level data and his own

experiences provide a glimpse of Anilbhai's flair for writing, reflecting, analysing and providing critical insights. These simple, lucid and jargon-free papers reflect his love for literature and the economist in him, putting value and monetising the benefit-cost of government programmes, private investments, participation and even the drudgery of women. Never shy of asking difficult questions but always conscious of their impact on policymakers (as he once was), he could present his suggestions in a manner that would not hurt their fragile egos. He also realised that "*seeing is believing*" and therefore made a point to take policymakers for field visits where they would get a chance to interact with men and women farmers. Always willing to learn, he had no qualms about sitting on the ground and interacting with farmers and was equally at ease in listening to youngsters half his age and experts.

Two of the most significant contributions made by Anilbhai are the "*Sequential Steps in Empowering Communities: The Cost–Benefit Approach*" and the "*Bopal Declarations—Principles of sustainable natural resource management*". The *Sequential Steps* provides practical guidance to organise the communities through real facilitation and not in a top-down manner. The eight design principles indicated in the Bopal Declarations were incorporated in the new Common Guidelines for Watershed Development Project (2008). The *Sequential Steps* is used as a guide for mobilising communities and formation of village institutions by practitioners and government departments including the State Institute of Rural Development and Water and Land Management Institute (WALMI).

While the steps are targeted at the practitioners, the Bopal declarations are for the policymakers, and both have universal applicability. Both are based on the learning from DSC's activities — the *Sequential Steps* draws upon the lessons learnt from DSC's processes for mobilising communities in rainfed and irrigated areas. The *Bopal Declarations* is largely based on the organisation's experience in policy influencing, capacity building and research. If implemented in the right spirit, the *Bopal Declarations* and *Sequential Steps* can create a far-reaching impact on the design and operationalisation of NRM policies in the country that empowers the rural communities to plan, implement and sustainably manage their natural

resources. The *Sequential Steps* shows the sensitivity and concern of Anilbhai in reaching the unreached while the *Bopal Declarations* reflects his vision for designing people-centred natural resource management programmes. His feet were firmly grounded, but his gaze was limitless. His vision, values and pragmatism helped DSC build a strong foundation and serve as a *Divadandi*² - a guiding light in DSC's journey.

Remembering Anilbhai...

(Reminiscences of a few close associates)

Prof Robert Chambers,

Institute of Development Studies, University of Sussex

Prof Chambers is a leading development practitioner, trainer and researcher of international repute. He is credited with developing participatory methods for involving communities in the planning, implementation and management of their resources. He has authored several books such as "Putting the Last First", "Whose Reality Counts?" and "Revolutions in Development Inquiry." The quotes are taken from the foreword written by him for Anilbhai's book "In the Hands of the People".

"Anilbhai was one of the outstanding pioneers of methods, approaches, behaviours and attitudes of PRA (Participatory Rural Appraisal). From the beginning, he recognized and emphasized that to use his own words "right attitudes and behavior are at the heart of participation.

Just imagine if all IAS probationers, and IFS and IPS, read and discussed half a dozen of the key short pieces (including e.g. "It Never Occurred to Me"). Moreover, these writings make the work of trainers easier. They are highly readable, highly relevant, and likely to be of interest, stimulation and challenge to people who go on courses. The practical and positive orientation of Anilbhai, the authority of personal authority with which he speaks, the field realism and detail, the whole thrust that things can be done, a difference can be made – these are so vital and can now be part of the training exposure of so many."

Dr Peter Mollinga,

Professor of Development Studies at the School of Oriental and African Studies (SOAS), University of London

Dr Mollinga was also the Director of the Centre for Water and Development, SOAS and an Associate Professor “Irrigation and Development” at the Wageningen University. A Doctorate in Political Economy of Canal Irrigation Water Management, Dr Mollinga is one of the leading academics on irrigation and has authored several books and chapters on the same.

“I hugely respected Anil Shah and his work, and I have been lucky to meet and collaborate with him at/in several occasions/contexts. Our largest collaboration was in the ‘Tailenders’ project, in which we investigated ‘tailenders and other deprived’. I considered him one of these rare individuals who placed himself at the boundaries of policy, activism and research, and made a point of trying to achieve better interaction and communication between these worlds. His genuine interest in people, including water users in irrigation systems, and the openness to listen, rather than teach or preach, as is the more common attitude, is a rare commodity in the irrigation sector, and I have always admired him for that, and wished there were more people like him active in this domain. I have also hugely respected the seriousness with which he read my book ‘On the waterfront’ and the details of the comments he gave. This and other discussions with him have definitely shaped my thinking about irrigation management in India, and I am very grateful I have been able to benefit from his knowledge and experience.”

Deep Joshi,

Founder of PRADAN, a renowned NGO in the country

Shri Joshi has received the Padma Shri Award and is also the winner of the Ramon Magsaysay Award. During the early days of his career, Deep worked with the Systems Research Institute at the Ford Foundation. He is known for his vision and leadership and for bringing professionalism

to the NGO sector. He was also the chairperson of the Institute of Rural Management, Anand (IRMA).

“I met Anilbhai 25 years ago (1982) while he was still in the Government, I think, as Industries Secretary. Robert Chambers and I were trying to put together a programme to support research on common property resources and met him to pick his brains on what the issues were and how to go about it. A few years later, I spent a week with him, travelling through Junagadh and Surendranagar in a Maruti Gypsy, visiting AKRSP’s projects as part of a review team, listening to him reminisce about the early days of the Community Development Programme, how he was trained at Neelokhedi by India’s only Minister for Community Development, the late SK Dey himself. Yes, Anilbhai was among the first community development workers when the CD programme started in 1954, and remained dedicated to that purpose through his life. No wonder he could relate so naturally, so effortlessly with a wide spectrum of people, from high government officials to grassroots workers and ordinary people in villages, making everyone feel valued, inspiring everyone ...

The lessons I learnt from him—never say die, remain focused, pay attention to detail and never wear your emotions on your sleeves—will keep guiding me; the warmth I experienced will endure ...”

Shankar Narayanan,

Senior Specialist at the World Bank, Washington

Shri Narayanan is a post-graduate from the Institute of Rural Management Anand (IRMA). He joined the Aga Khan Rural Support Programme, India (AKRSPI), one of the leading NGOs of the country. After working for several years in the field, he joined the Aga Khan Foundation and then with several international agencies such as UNDP, FAO and SIDA. His focus is on social risk management, environmental and social framework and participatory approaches to community-based natural resource management.

“From the day he selected me to work with him as part of AKRSPI till

the last time I spoke with him, I was always awestruck by this great man's immense ability, attention to detail, persistence and commitment to every task that he took up. His astounding memory and his ability to affectionately guide and mentor all those working with him are attributes that will remain etched in memory as he continues to be the guiding force in all of my work. Not to mention his ever-smiling face and sense of humour that made it such a pleasure to be with him, interact with him and to listen to all his life experiences from the times he had been part of the freedom movement to experiences with community development and at various rungs in the government. Every interaction brought forth a different aspect of Anilbhai's multifaceted personality and one saw him deal with several crises, demonstrating unparalleled leadership with as much ease as interacting animatedly with villagers and getting them to share the kind of information, I have seen few being able to.

His message was—if you are focused on your objective in life, if you care enough for what you want to contribute by way of development, you can do it come what may. His life and the way he lived it was the greatest message for all who knew him. He shall remain an enigma and inspiration who will remain forever in our hearts and minds.”

Nafisa Barot,

*Renowned Specialist on Gender and Water,
Sanitation and Hygiene (WASH)*

Shri Nafisa Barot has been in the Governing Board of DSC since its inception in 1994. She is the founder member of Utthan, an NGO that works on WASH, participatory natural resource management and sustainable agriculture in tribal and coastal areas of Gujarat. She is also the founder member of PRAVAH, a network of NGOs that works on WASH in Gujarat. She has been a member of several policy-making forums on WASH at the state, national and international levels.

“Anilbhai was a humble personality, who will always be missed. When I met him for the first time in Gandhinagar, he was still a government employee. So warm, respectful and welcoming was he that I had to remind myself

that he was a government officer and not a colleague from the voluntary sector! He listened so attentively without interrupting, never assuming that he knew everything, unlike many others in his position!

...On one occasion, when we were discussing gender issues in the context of watershed development, he told me, “Can we go to the field together please, as I want to understand from you how we can look at gender issues?” A bit embarrassed at such a request from someone so experienced, I did agree and was prepared that he may dismiss my suggestions and approach for understanding gender perspective. However, he proved me completely wrong by responding very positively and being very open to new learning.

...Anilbhai and I were on the steering and technical committee of CAPART when Utthan’s innovative proposal of watershed development in the coastal area with a ‘bottom up’ approach was put for approval and recommendation to the state. Both he and Sri Anna Hazare opposed this proposal. But Anilbhai wanted to understand more from the ground, so he visited Mahua area where we had demonstrated a few alternatives and developed the holistic proposal. After talking to the community, he was convinced that in such areas, this proposal was appropriate, so the recommendation from the committee went to Gujarat State and Utthan got resources to facilitate the implementation of watershed programme in a coastal area - the first of its kind.

... Anilbhai took a strong and open stand against the biased and poisonous article against minorities, published by one of the Gujarat’s leading writers, by disagreeing with him completely.”

Dr Sara Ahmed,

Specialist in Gender and Water Management

Dr Sara Ahmed is a renowned gender and water management specialist. She was a visiting faculty at the Institute of Rural Management Anand (IRMA). She is the founder of the Living Waters Museum at the Ahmedabad University. She is currently an adjunct faculty at the

Centre for Water Research at Indian Institute of Science Education and Research (IISER), Pune. She is a Board member of DSC Foundation, WaterAid, Utthan and Samerth.

“I remember learning about participatory irrigation management from Anilbhai first when I was at IRMA, Anand. He shared his thoughts on why gender was so important to PIM, and how women also had uses for irrigation water, for example, washing clothes and utensils along the canals. These gender concerns needed to be part of the design of PIM interventions otherwise they could not be called ‘participatory’.

Anilbhai was a visionary and a very sensitive person. Once we were travelling on the road together from Anand to Ahmedabad during the peak of the communal violence in Gujarat in 2002, or maybe just after the violence had abated. The car met with a minor accident and we had to stop by the wayside. Anilbhai was concerned about my safety. He was disturbed by the state of things and the adverse impacts on innocent people”.

Sunil Parekh,

Management Expert and Senior Corporate Advisor

Shri Parekh is currently Senior Strategy Advisor at Zydus Cadila Healthcare Group and Jubilant Bhartia Group. He has a rich experience of working with corporates in India, Africa & the US. He is a Start-up Evangelist, deeply involved with Gujarat’s Start-Up ecosystem. He is also the Chairman of FICCI - Gujarat Start-up Sub Committee. He is the founder Chairman of PanIIT Alumni Association (Gujarat). He is also on board of some leading NGOs including DSC.

“I had first met Shri Anilbhai Shah when he was in the Government of Gujarat as secretary and thereafter again in 2000. He had established his dream organisation DSC in 1994 and was looking at expanding the impact. He had evinced an interest in exploring if CRISIL, where I was associated, would be interested in developing a framework for rating NGOs, many of which he felt were giving a bad name to the voluntary sector in India. We

developed an initial framework and worked alongside Gagan Sethi during the early days of Sajjata Sangh (2002), a network of serious NGOs in NRM.

I have always found him to be a quiet, reflective, stubborn and vocal expert on several grassroots-level economic and social issues. Our paths crossed again during the Kutch Earthquake Rehabilitation programme. I got to know him better at the time he was compiling his writings and poems in his book Samullas Nisbat. I had liked his four line poem “Bandh ke Khullu” very much and we had talked about it. His book also had a reference to my maternal grandfather, Shri TL Shah, Revenue Secretary Saurashtra, when Anilbhai was with Debharbhai, then Chief Minister of Saurashtra state. I had finally met him when he was hospitalised for his ailment which eventually claimed his life in 2007. Thereafter, one thing led to another with friends and I was invited to the DSC board in 2015.

I miss him, his quiet talks, deep insights and his staunch commitment to the issue of empowering farmers, NGOs, CSR by corporates and local governments in best practices and for his constant thoughts and suggestions for farmer empowerment, natural resource management and agri-enterprise policies, based on his grassroots-level interactions and empathy for the farmers.

I will always remember him fondly.

MV Ramchandrudu,

Founder Director, WASSAN

Shri Ramchandrudu or Ram as he is fondly known, has been one of the pioneers in promoting participatory watershed management in the country. He was with DSC during his early days and was instrumental in incubating and WASSAN. He has been a member of several policy-making committees at the state and national level on watershed management and sustainable agriculture.

“Some of his words still ring in my mind. When people did not respond well to initiatives and we got dejected, he would ask: “*Garaj koni?*” (whose

need is it?), to which his own response was “*Tamaree che!*” (it’s yours!). He added, “Only if you adopt this attitude can you work in this sector!”

On another occasion, I learnt how to prioritise work. Once at a workshop, there was a very long queue for lunch. Anilbhai decided to skip lunch as he did not want to be late for the next session. I accompanied him! It was only later that I realised how to prioritise work and focus on the agenda.

Sachin Oza,

Executive Director, DSC Foundation

Writing about Anilbhai is never easy—for me, he was more than a mentor; he was a guiding light, a father figure. From the very start of DSC, his presence shaped the organisation and my journey. He taught us the power of discipline, clarity, and purpose. Time was sacred to him, and he made the most of every moment, often reminding us with a gentle nudge or a pointed “Tethi Shu?” to focus on results, not just activity. His humility, even after influencing national policy, was striking—he always saw change as just the beginning.

He had an unmatched ability to stay calm, be thorough, and maintain high standards. His quiet advice—“Don’t be tense to be intense”—still echoes in my mind. He pushed us to prepare, to question, to believe in rural wisdom, and to stay grounded. Anilbhai believed in accountability—not just from others, but from himself. His pursuit was always for the larger good, and even when faced with indifference or resistance, he stayed persistent.

As DSC celebrates its 30-year journey, I miss him. I am sure wherever he is, he will be proud, and his wishes will always be with us.

Mohan Sharma,

Executive Director, DSC

Working with Anilbhai from 2001 to 2007, I learned from his unique blend of vision, humility, and action. As a young agricultural engineer, I

grew into a development professional under his guidance. Anilbhai was a living university—his actions and words were lessons in people-centric development.

He believed that impactful work must be institutionalized within government systems to create lasting change. I assisted in key policy reforms, such as the 2006 rebate order for farmer organisations and the 2007 PIM Task Force in Gujarat. His approach was simple yet transformative: assess, pilot, document, and institutionalize through government orders.

He prioritized capacity building, empowering both grassroots workers and government officials by exposing them to successful community-led models. His respectful engagement, calling even junior officers “Saheb,” taught us how to build trust and influence policy.

The Dharoi PIM model, which grew from five WUAs to hundreds of villages, remains a national example of his impact. His ability to see and nurture potential in people, like polishing raw diamonds, still amazes me.

I learned that development starts with self-effort, and only then can we expect support from the community or government. The Team DSC strives to carry forward his legacy of learning, empathy, and systemic change, guided by his vision of people-centric development.

Taking the Legacy Forward

(Reflections of Different Teams)

Most of the present staff were not fortunate enough to meet Anilbhai. But, the ethos of the organisation is such that they carry his legacy forward.

The Central Office Team

As a team of senior staff working at the head office, we feel fortunate to be part of DSC, which has completed a remarkable 30-year journey. Many of our senior team members have been part of this fascinating journey, which started from the implementation of a watershed project in Dhari block of Amreli district and Participatory Irrigation Management in

the Dharoi command area of Mahesana district. We later diversified into drinking water, groundwater management, agriculture, enterprise, nutrition promotion activities, etc. Over the past three decades, DSC has expanded its reach from 10 villages to more than 1200 villages and from 1 state to 4 states of Western India.

The DSC team has achieved significant milestones and earned recognition as a training and resource centre at the national and international levels. The group of institutions (Sajjata Sangh and the DSC Foundation) promoted by DSC also represent DSC's thought process.

The senior staff has significantly contributed to this journey and has gained much knowledge in the process. It has always shown commitment to the core values laid down by Anilbhai and the founders, which fosters an inclusive and empowering work culture in DSC.

The adverse factors, such as shortage of funds, closure of projects and pandemics, test the skill and patience of the senior team of DSC. Through collective decision-making and professional integrity, the team has successfully tackled these issues and built its capacities to combat such challenges.

Today, being a *DSCian* is a pride and a symbol of credibility in the development sector. Under the direction of the Executive Director and the Board members, and strong support of field teams, DSC is working for the betterment of deprived and marginalised communities. We hope to set new standards in the fast-changing rural development sector in the coming years.

Maharashtra Team

In Maharashtra, DSC works in 3 districts, namely Pune, Aurangabad and Nandurbar, covering 429 villages and 13.7 lakh households. Nandurbar is an aspirational district with more than 80% vulnerable tribal community. The Maharashtra team is the youngest among all DSC teams. The team has learnt many things from the senior colleagues of Gujarat and Madhya Pradesh in PIM, FPO, NRM and agriculture sectors. We also learnt about the

importance of processes to strengthen Community-Based Organisations through the “Sequential Steps for Empowering Communities” authored by Anilbhai. Our field team feels impressed with the concept of motivating the communities through benefits instead of greed – “*Lobh nahi labh*”.

We feel proud of winning a prestigious national “Americare India Award” in only five years of presence in Maharashtra. The award has become a benchmark in our careers for all of us. We enjoy working in a collaborative environment where diverse skills and perspectives come together for a common purpose with organisational values. Seeing tangible results and the difference in work makes us proud and gives us satisfaction for putting in our efforts.

DSC often provides us with opportunities for learning and professional development, which gives us a chance to enhance new skills, gain diverse experiences, and broaden our understanding of social issues and positive change in the community.

While working in the development sector, we faced many challenges, limited resources, bureaucratic hurdles, and complex social issues. This has emotionally drained us sometimes. However, the multidisciplinary team, having a range of experience and expertise, has supported us in managing and overcoming these challenges.

Working with the Development Support Centre is a rewarding and fulfilling experience. In the era where multiple stakeholders/institutions are working for the same cause, DSC provides a sense of purpose, knowing that our efforts contribute to positive social change and help to address important issues, which is emotionally rewarding.

Gujarat Team

DSC is working in 374 villages across 17 talukas in 8 districts of Gujarat: Mehsana, Sabarkantha, Aravalli, Ahmedabad, Rajkot, Amreli, Kheda, and Banaskantha. Out of 1.79 lakh households, we currently work with 60,650 families, covering approximately 96,528 hectares out of 2.02 lakh hectares.

DSC began its work in Gujarat, and we are proud that we have the most experienced team. The organisation initiated different interventions across several districts of Gujarat. For example, Participatory Irrigation Management (PIM) was first piloted in 1994 in the Dharoi Command area of Mehsana district. This was later expanded to other districts such as Banaskantha, Sabarkantha, Rajkot, and Ahmedabad.

As we continued our work, we kept learning and expanding into new areas. This consistent effort led to DSC receiving the *India Power Award* for its work on water. The Planning Commission of India even referred to the Dharoi Command area as a 'Pilgrimage Site' for PIM initiatives.

DSC didn't limit itself to water alone—it also focused on agriculture and strategies to reduce farming risks, such as reducing cultivation costs and increasing production. This process enhanced the capacity of our field teams. To implement these interventions effectively, we formed small farmer groups at the village level, strengthened their capacities, and used them to accelerate our efforts. From these grassroots groups, Farmer Producer Organisations (FPOs) were also formed, now connecting more than 4,000 farmers.

Communities also raised concerns beyond water conservation and canal irrigation, particularly around groundwater. In response, we initiated the Integrated Water Resource Management (IWRM) programme. DSC established the first groundwater-focused cooperative society in Gujarat, aiming to ensure safe access to irrigation and drinking water at the village level. To support this, we developed local leadership at the village level, known as *Bhujal Jankars* (groundwater para-professionals).

However, the journey was not always easy. In many talukas of Gujarat where cooperative structures were absent, it took significant effort and time to establish our work. There were also mixed experiences while working with government officials. Yet, these challenges strengthened our team's enthusiasm and knowledge, ultimately proving beneficial for both the organisation and its members. DSC has always shared its learnings with society, ensuring that knowledge reaches the wider community.

Today, the organisation's work is not limited to Gujarat. We are also active in neighbouring states like Madhya Pradesh, Rajasthan, and Maharashtra, working with rural communities on agriculture, irrigation, livelihoods, and health.

DSC's initiatives with rural communities in Gujarat has been a source of learning for others. We are very happy that farmers, practitioners, researchers, government officials from several states and countries have visited our field locations and been inspired by our work. We have several successful programmes that began in Gujarat, which have supported replication in other states.

Madhya Pradesh Team

DSC has been working in Madhya Pradesh (M.P.) since 2008 and in Rajasthan since 2017. The main objective was to scale up the good practices and learning from implementation in Gujarat. In MP it promoted PIM in Man and Jobat irrigation projects, which received recognition at the state and national levels. Presently, DSC is working in 4 districts covering 210 villages. DSC has a multidisciplinary team of men and women with experience ranging from 1 year to 25 years.

Some of our senior members worked closely with Anilbhai, and they always motivate us with his theory and values. Though challenging, we have upheld the values given by Shri Anilbhai. We are very happy and satisfied to see and observe the impact of our efforts on the quality of life of the villagers. We are working as a family in the organisation, and DSC gives the freedom and trust to staff members to put in their efforts and innovation.

There is no bias in the organisation, and it always motivates new members to work harder. DSC always gives us the opportunity and chance to learn and gain experience in the social development sector. Working in the development sector is not easy as there is constant change in the external environment. We are very thankful to the senior management for their help in overcoming such issues and challenges.

We also challenge ourselves to improve our role and responsibility, and organisation helps a lot for that. We also receive appreciation from time to time from our seniors for good work, and they motivate us. DSC also gives us a chance to improve our work and mistakes.

We always feel proud to be part of the DSC organisation which was started by Anilbhai and taken forward by efficient leadership from time to time.

End-notes

1. *A University for rural reconstruction initiated by Gandhiji.*
2. *Divadandi which means a lighthouse in Gujarati was the name given by Anilbhai to a magazine brought out by DSC. This quarterly magazine provided valuable information to farmers on water management and sustainable agriculture and also documented the best practices.*

List of Awards and Recognition

- i. *Development Catalyst 2022 by Access Livelihood Services (2023)*
- ii. *11th Spirit of Humanity Award by Americares India Foundation (2022)*
- iii. *The Best NGO Award under Water Education category by Water Digest (2019)*
- iv. *The CII-CSR Water Award for its initiative in collaboration with RBS Foundation, India (2017)*
- v. *Gujarat NGO Leadership Award (2017)*
- vi. *The FICCI-CSR Award for Environment Sustainability (2016)*
- vii. *Runners-up for the Times of India Social Impact Award in the livelihood category (2014)*
- viii. *India Power Award by Council of Power Utilities (2008)*



Acknowledging Donors and Knowledge Partners

Current and Past Funding Partners

- Aga Khan Foundation
- Azim Premji Philanthropic Initiative (APPI)
- Australian Centre for International Agriculture Research (ACIAR)
- Axis Bank Foundation
- BCI Growth & Innovation Foundation
- Bajaj Foundation through Jankidevi Gram Vikas Samiti
- District Water And Sanitation Unit Ahmedabad
- Education for Employability Foundation (E2F)
- Ford Foundation
- Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) GmbH
- Department of Water Resource Development Water and land management Institute, Gujarat
- Department of Soil and water Conservation, Govt. of maharashtra
- Give India Foundation
- GRUH Finance Ltd.
- Gujarat Water Resources Development Corporation (GWRDC), Gandhinagar
- Hindustan Unilever Foundation (HUF)
- Hindustan Unilever Limited (HUL)
- Hindustan Coca-Cola Beverages Pvt Ltd.
- Housing Development Finance Corporation (HDFC)

- ITC Ltd Mission “*Sunahara Kal*”
- IDH- the sustainable trade initiative
- IKEA trading (Hong Kong) Ltd
- Krishi Vigyan Kendras in all locations
- International Resources for Fairer Trade, Mumbai
- Jal Jeevan Mission, Government of India
- Mahindra & Mahindra Foundation
- Madhya Pradesh Rural Livelihood Project (MPRLP)
- Ministry of Rural Development, Government of India
- Narmada Valley Development Authority (NVDA)
- Narmada and Water Resource Department, Government of Gujarat
- National Bank for Agriculture and Rural Development (NABARD)
- National Dairy Development Board (NDDB)
- Natwest Group
- Rapid Community Response to COVID (RCRC)
- Rajiv Gandhi Foundation (RGF)
- Rajiv Gandhi Jal Grahan Mission, Bhopal, Madhya Pradesh
- Ratan Dorabji Tata Trust, Mumbai,
- RBS Foundation, India
- Sardar Sarovar Narmada Nigam Ltd (SSNNL)
- Sir Ratan Tata Trust, Mumbai
- Small Farmers Agri-Business Consortium (SFAC)
- Shiv Nadar Foundation
- The World Bank, India
- Transforming Rural India Foundation (TRIF)
- Value Network Ventures Advisory Services Pte. Ltd (VNV)
- Vikrant International Pvt. Ltd

- VRUTTI Livelihood Services, Bangalore,
- Water and Land Management Institute, Uttar Pradesh & Andhra Pradesh
- Welt Hunger Hilfe (WHH)
- Western Sydney University

Knowledge Partners

- Aga Khan Rural Support Programme India (AKRSP-I), Ahmedabad
- Anand Agriculture University, Gujarat
- Arid Communities and Technology (ACT), Bhuj
- Advanced Centre for Water Resources Development and Management (ACWADAM) Pune, Maharashtra
- Charkha Network of Development Communication, Ahmedabad
- Dantiwada Agriculture University, Gujarat
- Gujarat Institute of Development Research (GIDR), Ahmedabad, Gujarat
- International Water Management Institute (IWMI), Anand, Gujarat
- Institute of Rural Management Anand (IRMA), Gujarat
- India Natural Resource Economics and Management (INREM), Anand, Gujarat
- SP Jain Institute of Management, Mumbai
- Water and Land Management Institute, Gujarat and Odisha

DSC Staff

HEAD OFFICE

- 1 Mohan Sharma Executive Director

FIELD IMPLEMENTATION SUPPORT TEAM (FIST)

- 2 Arun Kumar Tiwari Sr. Programme Integrator
(Agri. & Livestock)
- 3 Gordhan Kantariya Programme Executive-Training
- 4 Dipak Raval Programme Executive
- 5 Jasvant M Chauhan Manager-Producer's Company
- 6 Kaushal Gadariya Programme Manager - WRD & GIS
- 7 Sayeed Ashif Programme Associate

Support Staff

- 8 Rizwana Y Madhupurwala Chief Finance Officer
- 9 Kamlesh M. Patel Accounts Officer
- 10 Sandipa Nelson HR & Admin Executive
- 11 Ketan Khatri Communication Assistant
- 12 Indrasinh Majawat Driver cum Messenger
- 13 Jorawarsinh Rathod Driver cum Messenger

GUJARAT

Visnagar Team

- 14 Alpeshkumar Pravinbhai Patel Community Organiser
- 15 Patel Jigneshkumar Pravinbhai Community Organiser

Mehsana Team

- 16 Rajendra B Patel Team Leader cum
Programme Executive

17	Gandaji Hathiji Thakor	Community Organiser
18	Sangitaben Rajuji Thakor	Community Organiser
19	Hardi Bhaveshbhai Sukhadiya	Programme Executive-WRD
20	Ravi Patel	Engineer
21	Yogi Taralben Shaileshbhai	Sr. Community Organiser
22	Alpesh Raval	Community Organiser
23	Rathod Indrajitsinh Mahendrasinh	Accountant
24	Thakor Punamben Arjunji	Community Organiser
25	Dumadiya Ganpatbhai Ransodbhai	Community Organiser
26	Manubhai V. Vadher	Programme Executive
27	Nirmal Patel	Assistant Engineer
28	Patel Anupmabhen Babulal	Community Organiser
29	Ratansinh Chauhan	Community Organiser
30	Anitaben Nayee	Accountant
31	Chavda Amarabhai Kamabhai	Team Leader (Field Agriculture Expert)
32	Pradhyumansinh J Chavada	Sr. Community Organiser
33	Balavantji Pamaji Thakor	Agriculture Officer
34	Ajay Chauhan	Community Organiser
35	Vikramsinh Makwana	Community Organiser
36	Chirag Patel	MIS Executive
37	Dhrupatsinh Vanrajsinh Solanki	Agriculture Officer
38	Samarpan Bhimjibhai Hanspara	Civil Engineer
39	Viral H Modi	Civil Engineer

Viramgam Team

40	Bambhaniya Budhabhai Popatbhai	Team Leader
41	Dayabhai Gordhanbhai Gabu	Community Organiser
42	Sunsara Jayshreeben Pravinchandra	Community Organise

Himmatnagar Team

43	Chandrapalsinh Kiritsinh Rathod	Team Leader
44	Divyaben Bharatgiri Goswami	Community Organiser
45	Rupeshkumar Dilipbhai Raval	PU Manager
46	Rohitkumar Prahladbhai Patel	Agriculture Expert

Goblej Team

47	Prabhukumar Rameshbhai Thakor	Agriculture Expert
48	Hirenkumar Jivanbhai Parmar	Community Organiser

Meghraj Team

49	Gohil Ketanbhai Chaganbhai	Team Leader
50	Taral Bipinkumar Kantilal	Agriculture Expert
51	Jashodaben Damor	Community Organiser
52	Kripalsinh Solanki	Field Engineer
53	Raval Chetankumar Dineshbhai	Agriculture Assistant
54	Nandlal Menat	Community Organiser
55	Adil Kherda	Engineer
56	Mehul Vankar	Livelihood Expert
57	Bhagyati Khant	Community Organiser
58	Prachi Patel	Accountant
59	Sanjaykumar Bachubhai Pandor	Field Supervisor

MADHYA PRADESH

Manawar Team

60	Anil Shrivias	Team Leader
61	Neha Sharma	Field Accountant
62	Saloni Rathod	Programme Associate
63	Ujjwal Nigam	Project Engineer
64	Shubham Kushwah	Agriculture Expert

- 65 Mahesh Kote Community Organiser
66 Reena Muwel Block Coordinator

Kukshi Team

- 67 Durga Prasad Patel Agriculture Expert
68 Rupali Yadav Community Organiser
69 Rahul Parmar Project Engineer
70 Deepak Sen Community Organiser

Alirajpur Team

- 71 Babulal Pandey Civil Engineer
72 Niki Oraon Programme Associate
73 Pradeep Kumar Kushwah Field Accountant
74 Nitin Vitthalrao Dudhabade Livestock Expert
75 Jayntee Kewat Community Organiser
76 Jitendra Chhapriya Agriculture Expert
77 Nisha Parmar Agriculture Expert

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- 78 Kamlesh Rajat Team Leader
79 Rani Rana Community organiser
80 Vinay Shukla Civil Engineer
81 Denis Patidar Accountant
82 Natwar Yadav Agriculture Field Expert
83 Punit Pathak MIS Expert
84 Vijay Yadav Civil Engineer
85 Pawan Kushwah Community organiser
86 Amit Pant Livelihood Expert

Alirajpur Team - WHH Project

87	Durgesh Nanden	Team Leader
88	Manish Girdhani	Communication Officer
89	Vijendrasingh Panwar	Social Field Officer
90	Shakir Khan	Advocacy Officer
91	Mahesh Gopal Pingale	Accountant
92	Akbar Ahmad Khan	Marketing Officer
93	Manpreet Singh	Field Officer Agriculture Project
94	Jagtar Singh Dahiwal	Marketing Officer
95	Harish Tiwari	Agriculture Field Officer
96	Bhagat Solanki	Community Mobiliser
97	Ramesh Bhaydiya	Community Mobiliser
98	Mukesh Tomar	Community Mobiliser

Agar Malwa Team

99	Ravi Sisodiya	Project In charge
100	Anand Shah	MIS Executive
101	Jay prakash Tripathi	Engineer
102	Manohar Bhilala	Community Organiser
103	Ashish Vaghela	Accountant
104	Aditya Girothiya	Field Engineer
105	Gordhan Singh Bagdawat	Community Organiser
106	Onkar Parmar	Sr. Community Organiser
107	Chandrika Nishad	Community Organiser
108	Mahendra Singh Dhakad	Community Organiser
109	Lalpuri Goswami	Agriculture Field Specialist
110	Hemendra Arya	Livelihood Expert
111	Kailash Karte	Agriculture Field Specialist
112	Lalit Yadav	Field Engineer
113	Dharmendra Mewada	Agriculture Field Specialists

Mhow-Manpur Team

114	Neeraj Holkar	Team Leader
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117	Vikas Joshi	Agriculture Expert
118	Harisingh Karma	Community Mobilizer
119	Devendra Luniya	Community Mobilizer
120	Umesh Patel	Agriculture Expert-IAP
121	Sunil Girwal	Computer Operator

RAJASTHAN

Baran Team

122	Harimohan Meena	Team Leader
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125	Koshal Meghwal	Project Engineer
126	Mahendra Patel	Horticulture Expert
127	Saroj Kushwah	Community Organiser
128	Hemant Rathore	Field Accountant

MAHARASHTRA

Narayangaon Team

129	Suraj Hira Gupta	Team Leader
130	Nitin Dashrath Chaudhari	Agriculture Expert
131	Tushar Sudam Kute	Agri. Officer
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133	Uttam Maruti Jadhav	Agriculture Supervisor
134	Rohan Chandrakant Shelke	Agriculture Supervisor
135	Kiran Balasaheb Sondkar	Agriculture Supervisor

136	Omkar Khandu pathare	Agriculture Supervisor
137	Ramesh Sahebrao Karjanjekar	Agriculture Supervisor
138	Rushabh Baban Rokade	Agriculture Supervisor
139	Omkar Prabhakar Fartare	Agriculture Supervisor
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Silver Springs of Sustainability

The book captures the experiences and impact of the Development Support Centre's 30-year journey on participatory natural resource management and sustainable livelihoods. It provides valuable insights from its collaboration with the community, CSRs, CSOs and the Government. As climate change threatens to disrupt the livelihoods of rural communities, DSC's experiences provide useful lessons for the way forward to practitioners, academics and policymakers.



Development Support Centre

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