

Sustainable Development

a green solution to Global Warming



The Shroff Experience

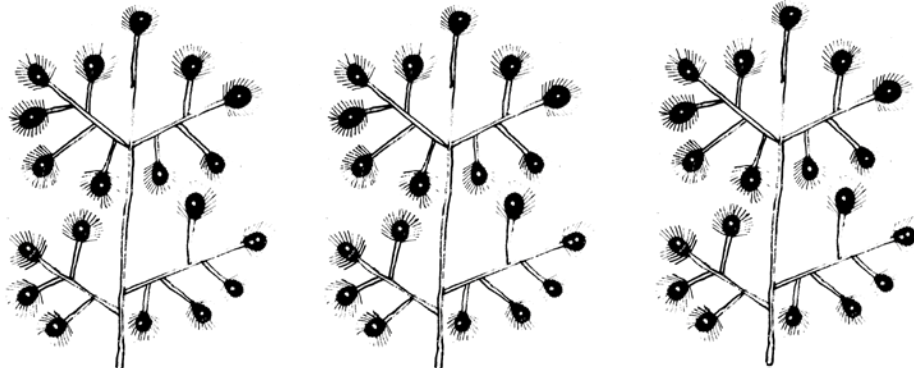
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Kathan Kothari*



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Foreword

Global warming is finally being recognised as a major threat to the environment and the future of humankind. It has a generalised impact on crucial aspects of our everyday life. The number of natural disasters related to global warming is increasing steadily and alarmingly. Long periods of drought, extreme temperatures, heavy rain and sudden storms are considerably conditioning our lives and prospects of future development. The diagnosis of the situation is essentially already done, although improvements and updates are recognisably needed. Solutions must be found and effectively implemented to meet this grave challenge.

This excellent book gives very meaningful inputs and brings a novel approach to the subject. In fact, agriculture and sound public leadership are fundamental to tackle the threats that global warming poses and to ensure widespread, inclusive democratic and sustainable development of society.

Global Warming, Agriculture, Sustainable Development and Public Leadership are definitely major keywords to consider when formulating an action plan to ensure a better life for all of us and a brighter future for humankind.

Throughout the book, two other crucial keywords appear: Education and Empowerment. Empowerment of individuals and communities can be effectively achieved only with widespread literacy. Education should be imparted to all individuals regardless of age or social role, starting from childhood. Education is fundamental in helping people understand the importance of sustainable agriculture and of environmental issues such as global warming, biodiversity, soil erosion, water usage and poisoning, deforestation and the need for sustainable development, which respects Nature and the developmental needs of humankind.

Focusing on a series of case studies on India's Kutch region, the authors brilliantly address these issues by presenting a set of highly significant and meaningful examples in an interesting manner.

Among the many important aspects mentioned in the book, I would like to stress on 'action' or 'problem solving' through committed initiatives of the individual and the community. Family and local communities, NGOs and educational institutions, local leaders, regional and national government bodies all joined hands for common welfare.

The book's attractive descriptions are also functionally organised, which makes the message easy to transmit. It can be adapted to similar situations in other contexts and environments with ease. The book will, thus, have very good practical use not only for the populations, but also for policymakers worldwide. It will help raise public awareness about global warming, the importance of agriculture and the rural world and empower the people to bring about sustainable development in our societies.

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Preface

In my latest book on public leadership 'Leadership by Choice not By Chance', I received feedback and faced several questions. The most interesting question was regarding the ground-level situation. The questioner wanted to know, 'Are there any real examples of igniting leadership at grass root level? And even if it has happened in some well-implemented programmes, are there any examples of its implementation all over a state?'

I, therefore, took a look at the Kutch revival story and the role played by Shri Kantisen C Shroff to bring about this change. My association with Shri Kantisen Shroff (popularly known as Pujya Kaka) and his wife Chandaben Shroff (known as Pujya Kaki) is almost four decades old. We started working together in the late '60s, when I was in the Rural Development Department and they had initiated their activities in Kutch. Chandaben was working through Shrujan Trust for creating sustainable livelihood for women and Shri Kantisen Shroff was working on a comprehensive rural development programme through Vivekanand Research Training Institute (VRTI).

I asked young Kathan Kothari to join our efforts to document and illustrate these 'Shroff Experiences'. The narration consists of stories of different villages of Kutch -- how they have fought against natural adversity to develop sustainable livelihood and creation of local leadership from the individual to the community level to meet this challenge and to turn around the situation. We thought this narration needs to reach a wider segment of people. In fact, VRTI had published these stories in Gujarati, which have been translated into English.

The 'Shroff Experiences' show that the solution to major problems of development lies at the local level -- one has to go there. Many a times, the most difficult situation and adverse natural conditions could be changed by simple methods and determined, persistent efforts. The individual initiative of Pujya Kaka has had a multiplier effect on reviving the agrarian economy of Kutch. It shows how local level leadership has come forward to take responsibility, whether individually or as a community or both. He also used advanced technology depending on requirement of the local situation. The present concern of global warming and its impact has been dealt with in these experiences.

We often face criticism that our success stories are model stories and are not implemented on a uniform basis throughout the country. That's why a very brief account on how Gujarat attained sustainable development in recent years has been given. This, in fact, is a summary of the author's book 'What Ails our Agriculture'. It is, therefore, not difficult to convert such success stories into programmes which can be implemented in the entire country by igniting local level leadership -- both elected and non-elected. In fact, the mission of International School for Public Leadership set up by Prof Nathu Puri is to build the competence of existing leadership and the future generation at grass-root level.

'Shroff Experiences' have shown us the igniting of leadership at village level while 'Gujarat story' reveals the determination of public leadership to turn around agriculture and make it sustainable. What is possible in Gujarat can also be made possible in the entire nation.

We have also talked about Natures' five forces -- the earth, the sky, the atmosphere, water and vegetation -- and the need to maintain equilibrium among them. What happens when this equilibrium is disturbed and how can it be restored? Nature sometimes creates calamities, but it also provides a solution to meet that challenge. Human-beings also create problems by misusing nature's forces, but nature has its solution for that too. We need to use natural resources judiciously -- with patience, intelligence and commitment.

We are sure that this book will be of interest to all those who are interested in sustainable livelihood and in taking up the challenge of mitigating adverse impact of global warming. It will be of special interest to students and teachers of rural development and of climate change.

Dr. Kirit N Shelat, I.A.S.(Rtd)

Kathan Kothari



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Sustainable development is a pattern of natural resource use that aims to meet human needs while preserving the environment. This ensures that the need for resources can be met not only in the present, but also in the indefinite future.

The word "sustainable development" has very well-known implications. It is a long-term activity, which involves the use of natural resources. It implies economic growth with both socio and economic content.

Sustainable development aims to provide enough of what one needs in order to live or exist, so that resources do not run out for future generations. It envisages gradual growth in the income of people through development of wealth of an area, of a society or for that matter of the country. It endeavours to provide better quality of life to all participants, especially to poor families in remote areas. Empowerment of the poor is the key to socio-political stability. A huge divide between the rich and the poor fosters political turmoil and instability in the country. Many a times, it results in the emergence of local terrorist groups.

The programme for sustainable development varies across regions, families and countries. The development of an area and the status of the poor community are the principal factors which determine the components of such a programme. The process involves social, economic and infrastructural activity as part of special initiatives or 'developmental programmes' initiated by the government.

COMPONENTS OF DEVELOPMENTAL PROGRAMMES

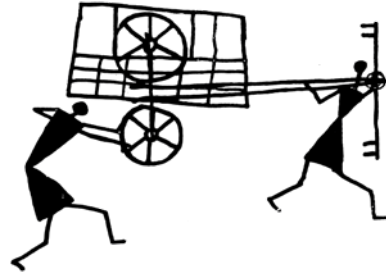
Economic agenda to improve the economic status of majority of people, with focus on poor families.

Provision of basic social infrastructure such as roads, water supply, education, credit services, power and irrigation.

Capacity building of participants.



SUSTAINABLE DEVELOPMENT: NATURE'S FORCES



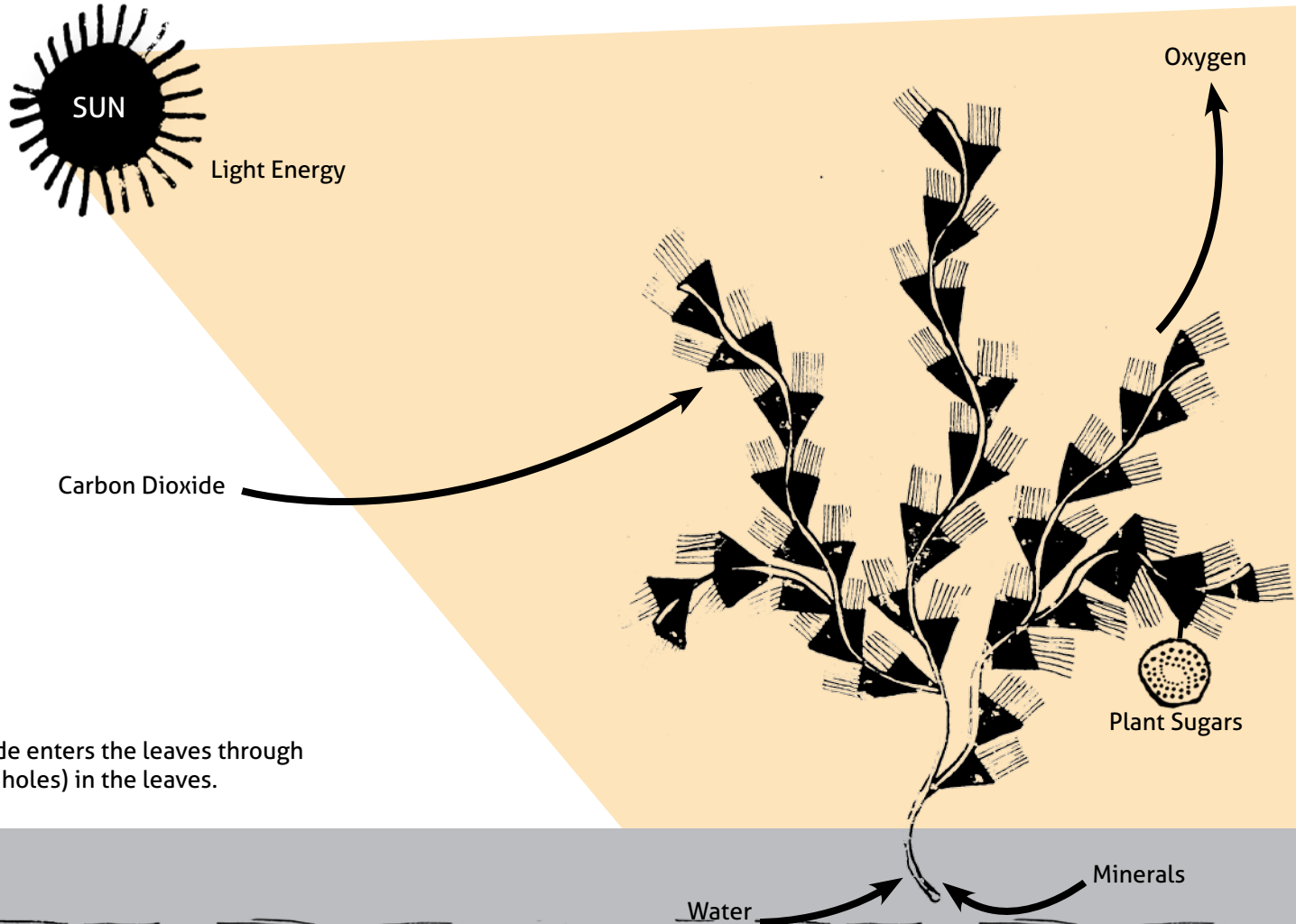
Nature has five important forces - Sky (atmosphere), Sun, Earth, Water and Vegetation. These forces are inter-dependent and maintain equilibrium in nature. They are responsible for different seasons round the year - the weather cycle that is known as climate.

Appropriate use of these resources helps to generate basic resources for livelihood, which sustain the habitat and promote sustainable development.

Improper use and reckless exploitation of these resources disturbs the balance of nature and affects sustainable development. For example, overdrawing of underground water leads to salinity ingress and advancement of desert while excessive use of fossil fuel leads to excess discharge of gases that generate heat and affect the balance of heat absorption in the atmosphere. Inequitable use of resources leads to social and political instability.



Photosynthesis



Carbon Dioxide enters the leaves through stomata (tiny holes) in the leaves.

HOW NATURE OPERATES ITS SYSTEM

The sun's rays fall on water create clouds and moved by winds in sky, results in the rain on earth-land. Due to moisture in land, the seeds germinate into plants, which in turn grow through process known as Photosynthesis.

Photosynthesis is a process by which green plants use sunlight to make their food. They use sunlight along with carbon dioxide and water to create simple sugar or glucose. They absorb CO₂ from the atmosphere and release oxygen.

Plants produce millions of new glucose molecules per second. They use these to build leaves, flowers and fruits and seeds and to convert glucose into cellulose - the structural material used in their cell walls. Most plants produce more glucose than they can use. Hence, they store it in the form of starch and other carbohydrates in roots, stems and leaves. Excess starch is also transferred into the soil, which increases its fertility. This is known as carbon assimilation by plants.

The ancient by-products of photosynthesis are fossil fuels such as natural gas, coal and petroleum - essential for the energy needs of humans.

Like plants, humans and other animals depend on glucose as an energy source, but they are not capable of producing it on their own. They are dependent on plants for glucose and the oxygen released during photosynthesis.

Thus, virtually all life on earth, directly or indirectly depends on photosynthesis -- the process of interaction between the five forces of nature.

Whenever nature's balance or equilibrium of its forces is disturbed, the weather cycle is adversely affected, resulting in climate change. In present times, this is called 'Global Warming' due to 'Greenhouse Effect'. Climate change often causes natural calamities and a direct impact on sustainable development.

GREEN HOUSE EFFECT

The greenhouse effect refers to the change in the steady state temperature by the presence of an atmosphere containing gas that absorbs and emits infrared radiation. The greenhouse gases trap heat within the surface-troposphere system. Water vapour, carbon dioxide, ozone, methane, nitrous oxide, and chlorofluorocarbons absorb heat and trap heat within the surface-atmosphere system, leading to increase in atmospheric temperature.

Nitrogen, oxygen, and argon make up 98 per cent of the atmosphere, but they do not absorb significant amounts of infrared radiation. Thus, these gases do not contribute to the greenhouse effect.

Of the greenhouse gases produced by humans, carbon dioxide (CO₂) contributes the bulk of radioactive forcing. Increased industrial activity (fossil fuel burning) and other human activities such as cement production and tropical deforestation have increased its concentration in the atmosphere. The concentration of carbon dioxide (CO₂) in the atmosphere has increased from 285 ppm at the end of the nineteenth century, before the industrial revolution, to about 385 ppm in the new millennium. This increased emission, particularly of CO₂, has affected the natural balance.

Excess CO₂ remains in the atmosphere, generating abnormal heat. This imbalance results in climate change. Unpredictable weather has an adverse impact on habitats across the world as well as sustainable development.



ATMOSPHERE



1
Solar radiation passes through the clear atmosphere.

2
Some Solar radiation is reflected by the atmosphere and Earth's surface

5
Some of the infrared radiation passes through the atmosphere and is lost in space

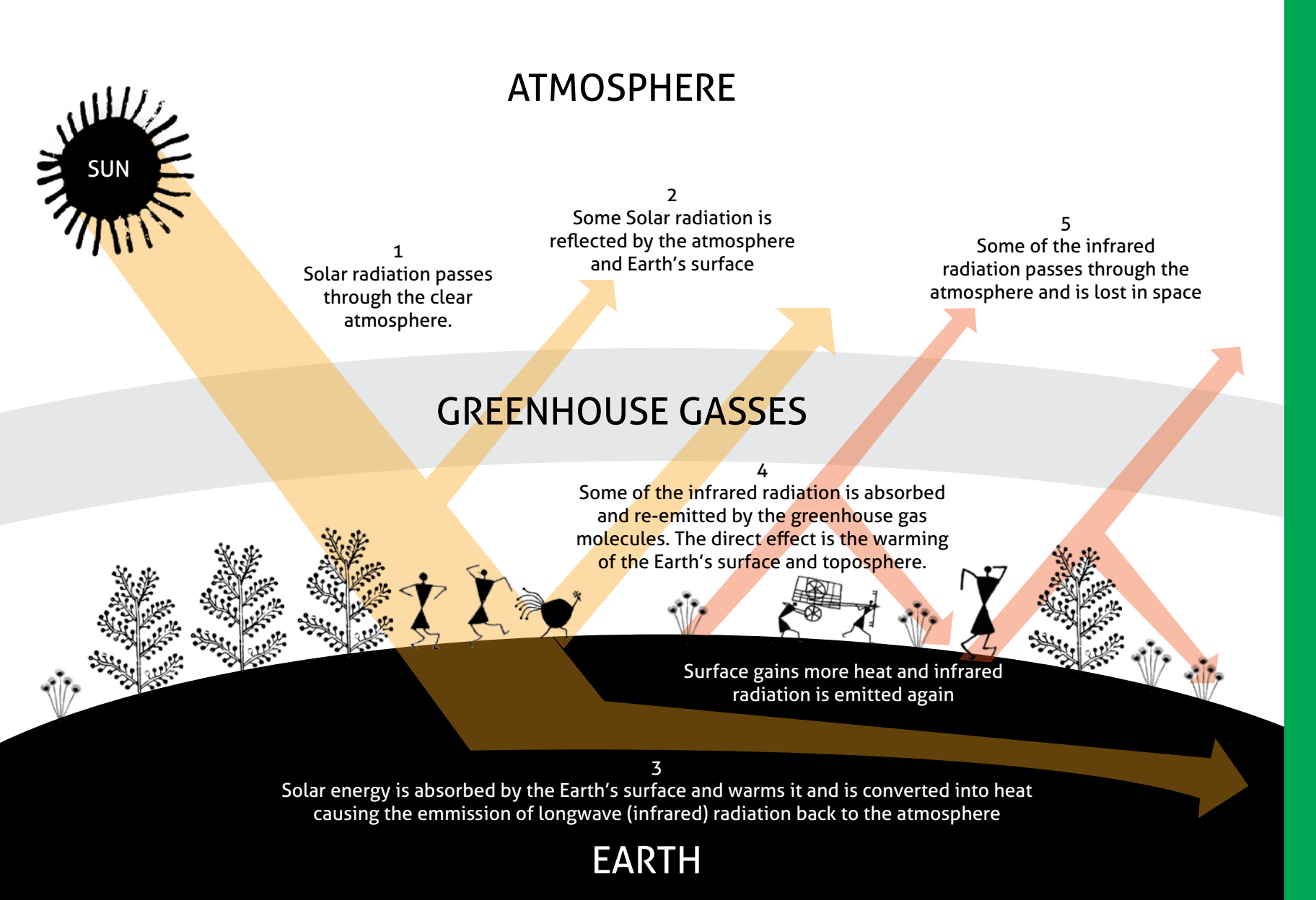
GREENHOUSE GASSES

4
Some of the infrared radiation is absorbed and re-emitted by the greenhouse gas molecules. The direct effect is the warming of the Earth's surface and toposphere.

Surface gains more heat and infrared radiation is emitted again

3
Solar energy is absorbed by the Earth's surface and warms it and is converted into heat causing the emission of longwave (infrared) radiation back to the atmosphere

EARTH





NATURAL DISASTERS IN INDIA IN RECENT YEARS

India like other countries in the world has had its share of natural disasters. However, the frequency of natural calamities has increased in the new millennium.

Gujarat Earthquake, 2001:

The Bhuj earthquake that shook Gujarat was one of the deadliest earthquakes to strike India. The region continues to simmer and has experienced several mild earthquakes and tremors since 2001.

Trail of Destruction

Number of deaths: 19,727

Injured: 166,000

Houses destroyed: 348,000

Homeless: 6 lakh

Cattle killed: 20,000

Estimated financial loss: \$ 1.3 billion

Tsunami, December 2004: Affected Andaman & Nicobar, Pondicherry, Kerala and Andhra Pradesh. Tidal waves swept away people, agricultural crops, cattle and houses. Countless people lost their lives and livelihood.

Mumbai Flood, July 2005: Heavy rain inundated and paralysed the metro and surrounding areas, resulting in deaths and loss of property.

Surat Flood, 2006: Estimated loss of Rs 22,000 crore. City's infrastructure affected, lives lost. Crops such as sugarcane destroyed leading to loss of Rs 4,000 crore.

Bihar Flood, 2008: The Koshi River breached its banks and flooded vast areas of Bihar and Uttar Pradesh, after a dam in Nepal released huge amounts of water.

Droughts, 2009: Delayed monsoon caused drought in some states.



UNPREDICTABLE CLIMATE IS A THREAT TO SUSTAINABLE DEVELOPMENT

Every single day, one hears about a natural calamity hitting some region in the world. This unpredictable climate is creating havoc around the world, destroying habitats and disturbing people's livelihood.

Difficult to predict even with modern scientific tools, climate change is causing natural disasters that result in loss of life, destruction of agricultural crops and livelihood. Floods result in outbreak of diseases, damage infrastructure and communication links. Droughts cause starvation and loss of livelihood. The worst victims of these natural calamities are rural people. Such disasters push farmers and daily wagers in rural areas below the poverty line again, completely negating the benefits of sustainable development.

A solid way to meet the challenge of Global Warming is to promote sustainable agriculture development. This aims at using land and water resources for environmental sustainability, economic sustainability and socio-political sustainability. Agriculture serves as a source of livelihood while benefitting the environment at the same time. Crops provide land cover and absorb CO₂ from the atmosphere.

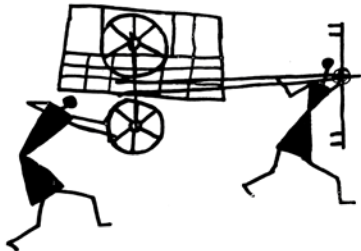




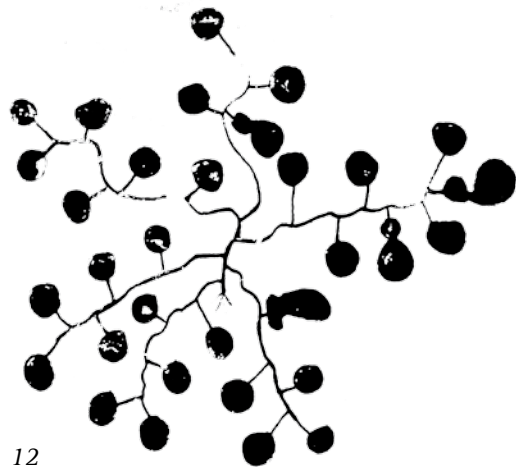
Farming involves not only the individual but also the entire family and community. It benefits the individual as well as the rural community. One such example is the resurgence of agriculture in Kutch.

Sharing his experiences about rural development in Kutch, Shri Kantisen Shroff says, "Kutch is an arid district in Gujarat province of India, where sudden natural calamity changed the flourishing green area into a desert. With determination and persistent efforts, the situation has been reversed in recent years."

"In our sunlit tropical areas, all our natural resources are acquired through the process of photosynthesis. That means the CO₂ forms the atmosphere with molecule forms the basis of all resources. We also get back oxygen. We have measured these conversions and seen the positive changes in the environment," he added.



THE STORY OF KUTCH



In the 19th century, a devastating earthquake struck Kutch on June 16, 1819.

Before the earthquake, Sindhu River flowed in the region. Kutch was a green land which produced paddy. Agriculture and livestock flourished.

After the earthquake, the Sindhu River changed its course and disappeared from Kutch. The earthquake caused a nine- metre vertical displacement, which came to be known as the Allah Bund. Sea water made huge ingress into the land through this displacement, converting the entire area into a huge saline desert which came to be known as the little and great Rann of Kutch. The vegetation cover was slowly lost with high occurrence of famines.

Crops failed, drinking and irrigation water became scarce, health and sanitation were affected. Survival became difficult in this arid land. Farmers left agriculture and land soon became fallow. This resulted in large-scale human and cattle migration over the years, a trend which continued in the last century.

The situation was changed with persistent efforts by people who were determined to make the desert green again.





SHROFF INITIATIVES



Shri Kantisen Shroff came to his motherland Kutch in the early seventies from Mumbai. He was the chairman of agrochemical firm Excel Industries Ltd in Mumbai. He has been now staying at Bhujodi – Kutch since last two decades – with his wife Chandaben. They are popularly known as Pujya Kaka and Pujya Kaki.

The Shroff's were the first to work for rural development in Kutch. When Shroff started visiting Kutch, the region was facing recurrent droughts that led to scarcity of water and huge cattle and human migration. The government was running some relief projects to provide livelihood and create community assets such as ponds, roads etc. The villagers remained occupied in such projects whenever monsoon failed - from September till the beginning of monsoon next year. The most severe droughts occurred between 1968-70 and 1973-75. This was when Shroff started thinking of a solution to the problem on a long- term basis.

Shroff set up a number of voluntary organisations to initiate the participation of people in sustainable development projects such as Vivekananda Research Training Institute (VRTI) at Mandvi in Kutch, Shrujan – Bhujodi-Bhuj and Shroff Foundation Trust in Vadodara.



'Shrujan' was developed by Chandaben for promoting assured livelihood and self-respect among rural women of Kutcha, who were highly skilled in traditional embroidery work.

Pujya Kaka developed a participative approach which involved people as well as government agencies. This, in turn, created a local committee of participants who implemented the programmes.

A clinical approach was taken, which involved the diagnosis of a problem, a prescription for its solution and its implementation. The programmes were planned taking into consideration the local requirement and involved the use of modern technology.







CASE STUDIES



The following case studies depict this initiative and show how sustainable development has been achieved despite the adverse conditions prevailing in remote villages of Kutch. A watershed approach for harnessing of scanty water and change in land use made it possible to convert arid stretches into green areas in the villages of Lakhpat and Abdasa. Individuals and communities united to turn around the situation in Kutch. The efforts of these local leaders have had a catalytic effect in the entire region, by bringing about sustainable agriculture and solving livelihood problems. These efforts show that adverse effects can be mitigated, whether they are due to a change in climate or change in a river's course or both. In each of the following cases, the local people and their leaders took on the challenge of environmental adversities and succeeded.



SELF-SACRIFICE

An individual can change a village

Kutch is a land of struggle against continuous odds. Its people are full of spirit. Here is the tale of one such son of the soil who refused to leave his birthplace.

In a remote village called Fulaiwandh, three kilometers away from Abdasa, people were fed up of constant famines. The 300-year-old village was devoid of even basic amenities to sustain the small population of 110. Villagers were completely dependant on rain to sustain their major occupation -- farming and animal husbandry.

Due to recurrent famines and absence of water, most villagers left Fulaiwandh. A lone man decided to stay. Taking a handful of soil in his hand, he took a vow to never leave his birthplace, come destruction or death. This brave son of the soil was Ibrahimbhai. With a grim determination to beat all odds and a deep faith in God, Ibrahimbhai stayed behind along with ten others. He had a large family of 70 persons spanning four generations.

It was the foresight of Desharbhai, a descendent of Ibrahimbhai, that changed the future of Fulaiwandh. One fine day, Desharbhai was invited to dinner at nearby Nodewandh village. Coincidentally, Arvindbhai and Desharbhai from Vivekananda Research and Training Centre (VRTI), a voluntary organisation working on land reforms, were visiting the village. Desharbhai talked to them about the scarcity of drinking water and listened to the work done by Arvindbhai and Desharbhai under 'WASMO' to seek a solution to this problem.



Desharbai asked them, "Can such work be done in my village too? We got a water pipe line installed in the village 15 years ago, but water is still not available. If a water tank can be set up through this project, our problems will be solved."

The VRTI workers visited Fulaiwandh and addressed the village assembly and the women of the village. They told villagers about the works of 'WASMO' and asked them to raise around Rs 23,000 for the project. Villagers were stunned to hear the high sum, as most of them were struggling to make ends meet at the time. This is when Desharbai took initiative and requested his wife, "If you are ready to mortgage your jewellery, we could contribute the money and the village would get water."

Desharbai's wife readily agreed and put all her jewellery in his hands. She said, "We are lucky that we can be of some use to the village and our community".

Everyone was taken aback by this selfless gesture. Another large-hearted man, Osman Salimanbhai, came to their rescue. He sold his goats for the cause, saying, "Now our village women will not have to walk one-and-a-half km every day to fetch water."

Sufficient funds were thus raised. Recollecting the journey, a smiling Desharbai said, "A bank account was opened with some difficulty with a meager deposit of Rs 1,000. Initially, we could only raise Rs 4,500. Everyone heaved a sigh of relief when the entire amount was collected."

The development project was sanctioned by the government. The foundation stone was laid. A place for the water-tank was selected, raw materials were bought after consulting villagers and pipelines were installed. Finally, the much-awaited water arrived.

Desharbai also toured other villages to see how the projects were executed there. Desharbai vowed, "If everyone agrees, the taluka of Abdasa will not remain without water. VRTI has showed us the way. Now we must plant trees and clean the field every fourth day. Everything is for the community, not for anyone's self-interest."

The small village of Fulaiwandh now shines because of the sacrifices and selfless service of people like Desharbai, his wife and Salimanbhai.

SALINITY REDUCED BY THE 'TRENCH' SYSTEM

Mundra's story

The story of Mundra Taluka is a tale of how exploitation of resources can drain the prosperity of a land and its people. Mundra was a green belt where crops such as banana, groundnut and sugarcane were cultivated and villages such as Zarpara, Dhruh, Bhujpur, Navinal and Siracha were flush with natural reserves of sweet water.

Dhruh, situated east of Zarpara village, witnessed large-scale migration of Turks in ancient times. With Turks, came dates from the Middle East. As time passes, The Turks started sowing date palm seeds in Dhruh -- a land whose soil, water and climate were perfect for growing dates. The success story of date cultivation in Dhruh spread to nearby villages and soon date palms covered the entire Mundra Taluka.

Ground water was the major source of irrigation. Earlier, water was drawn by using leather bags. The seventies saw the use oil engines and electric motors. As a result of proper irrigation, farming progressed. But this success lured farmers to dig deeper and draw more and more ground water.

This, unfortunately, was the beginning of a vicious cycle. The greed to have "more" water brought down the level of ground water. Saline water ingresses in these areas increased the salt content in ground water. The water was now unfit for irrigation purpose. Farm produce drastically declined.

People now realised that not using water with discretion was a grave mistake. Their greed to exploit resources had cost them dear.

Vivekananda Research and Training Centre (VRTI), a voluntary organisation run by Kantisen Shroff, has been working on land reforms since three decades. Shroff visited Mundra Taluka and carefully examined the farming areas. Zarpara village had 3,554 hectares of farm land, of which 998 hectares was under irrigation. Around 10,000 chickoo trees and 3,000 date trees used to cover almost 90 per cent of this farm land, in addition to guava, jujube and bijora trees. Crops such as lucerne, jowar, carrot and cotton were also sown. But overexploitation of ground water had made these memories of the past. Shroff felt that a new system should be used to revive Mundra's glorious past.

Trench System

Shroff and Mavjibhai talked to the Sarpanch and villagers and discussed the water scarcity problem. They suggested a trench system to solve the problem. Under the system, a one-and-a-half foot trench is built, which encircles the trees under irrigation. It is filled with biomass, which helps in the growth of fruit. The approximate expenditure for building a trench is as follows:

Expenditure for trench around 1.1/2 feet around tree	Rs. 30/-
Expenditure for filling farm waste	Rs. 15/-
Expenditure for 7 to 10 KG organic fertilizer	Rs. 30/-
Total expenditure on a trench	Rs. 75 /-
Expenditure on sowing 40 trees (per acre)	Rs. 3000/-



Around 40 trees can be cultivated in each acre and the expenditure is around Rs 3,000. Approximately 1000–1100 litres is saved in irrigation. Trees can now bear fruits with less water and give permanent income to farmers.

If we talk about the water-basin in this area, then,

- One bed for Chickoo is 5 m x 6 m (l x b)
- 4 to 5 inches of water to be filled.
Thus, one bed will utilise 3,000 to 3,600 litres of water
- It can be irrigated twice a month
- Water to be filled in a trench around tree
- First round of 2 metres around tree (2 x 3.14 x 2)
12.56 square metre
- Second round (2 x 3.14 x 1.55) 9.73 square metre

More water is supplied in the trench system, but the total quantity of water used is actually less than that utilised in the furrow system.

Villagers adopted the suggestion and followed the instructions of volunteers of VRTI who visited these areas regularly.

The work started in 2004. At present, there are 45,000 fruit giving trees in this village. The average annual income of the participating farmer is Rs 12,000.

Observations

There is 40 to 50% water saving

Farm beds are used in an efficient way

Humidity is maintained for a long period in the root zone

Land under trees remains soft, as there is biomass in trenches

New sprouts are better and dark green

LIGHT OF EDUCATION TRANSFORMS VILLAGE



Have you ever heard about Bhambhar Wandh? Probably not! A small settlement of 47 houses, the village is situated near Hajeepeer on the northern end of Nakhatrana Taluka. With not even basic infrastructure in place, Bhambhar Wandh also suffers from recurrent famines due to scarcity of rain. There is an acute shortage of drinking water and fodder. People are mostly illiterate, but fighting bravely against all odds. Unable to cope with the hardship, 20 families moved out over the years, but the rest chose to battle on.

The bleak scenario changed when Kantibhai Shroff (fondly known as Pujya Kaka) visited the village. After a long discussion with the villagers, he offered to find a solution to their problems. Pujya Kaka asked villagers to come up with suggestions to solve the problems faced by the village.

An elderly villager, Hasan Haji Mithy, spoke up, "Survival is difficult in the present situation, but the remedy to our problems lies in our own hands."

Surprised villagers asked Hasanbhai what the magic remedy was. Hasanbhai answered that the problem is not shortage of water or fodder, but lack of education. "Illiteracy is our major enemy. We do not know to harvest our land properly. We are ignorant of many activities which can be undertaken for progress," he said.

A villager, Jato, asked, "Do you expect us to go to school at this age?" Hasan laughed and replied, "It may be rather late for us, but our children can surely learn. There are hardly 24 children in the village. The village will certainly progress if they get an education."

Pujya Kaka asked villagers whether they backed this suggestion. All the villagers agreed to free their kids from housework and send them to school. Hasanbhai then went to Anjar and approached an organisation called 'Ulma-e-Hind' and explained the situation. Asking for help, he invited them to visit Bhambhar Wandh.

Workers of the organisation visited the village, asked questions about the people's expectations and then agreed to start a small primary school. Ulma-e-Hind workers made it clear that they would arrange for a teacher, but the responsibility for running the school and procuring the study material would lie with the villagers. Hasanbhai accepted the responsibility and requested an educated gentleman to teach at the school, which was started in the village mosque.

The school started but there were no facilities such as blackboard, slates, chalk, etc. The teacher came to give lessons, but children simply played games in the absence of study material. At this stage, VRTI came to the village's rescue. VRTI contacted another organisation 'Giants' who gave donation for the purchase of essential material.

Lo and behold! The school started functioning in full swing!

From the very beginning, Hasanbhai remained in touch with the teacher and school children. If a child failed to attend school, he would personally go to the child's house to know the reason for his absence.

The good Samaritan died recently in a truck accident, leaving behind grief-stricken villagers. Hasanbhai's younger brother Mamadbhai now shoulders the responsibility of running the school.

Hasanbhai is no more, but his dream school continues to bring the light of education in the lives of children. His leadership and determination to educate the future generation motivated several to work for the betterment of their community.



SUCCESSFUL MANAGEMENT

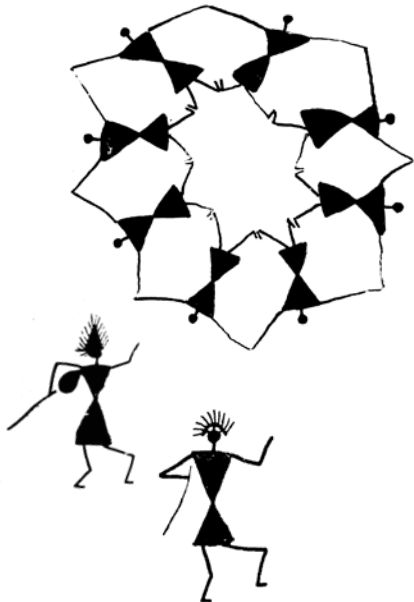
Successful management is a commitment which our country needs very badly. It can play a great role in the making of the nation.

One of the greatest problems faced by our country today, especially in areas near the sea, is water scarcity and saline land. Kutch especially suffers from saline water ingress which has rendered the soil incapable of sustaining normal agricultural crops. Once upon a time, Mundra Taluka was a green belt, but with increasing penetration of salt water, sustaining crops has become difficult.

To address this mammoth problem, Pujya Kaka called a meeting all stakeholders at Shri Vivekananda Research and Training Institute in Mandvi. After two days of deliberation, a plan was chalked out within the existing government schemes.

To begin with, 20 villages were selected from Mundra Taluka. These were places where a lot of area was under cultivation, but crops were less due to salinity ingress. Siracha was one such village situated 20 kilometres from Mundra. Most of the agricultural land had turned dry due to scarcity and poor quality of water. Limited ground water was available and that too at a depth of 400 -500 ft.

A small beginning was made here in November 2003. With the joint effort of villagers and VRTI, community ponds were planned as the first step to solve the problem.



VRTI workers and farmers decided to construct a pond near the village temple and also discussed different ways to harness water. The cost of building the pond was estimated at Rs 11 lakh.

According to government rules, for any such developmental project, 20 per cent of the funds had to be raised by the villagers. A local committee was thus formed to raise the funds and resources. Five to six prominent farmers from Siracha and nearby villages shouldered the responsibility. Devotees visiting the temple also contributed to the fund. The matter was of importance not only to Siracha village, but also to nearby villages such as Navi Nal and Zarpara. With the joint efforts of people from these villages, Rs 25,000 was collected.

Work commenced on the project under the supervision of all the committee members. Farmers from neighbouring villages sent tractors without earning any profit.

On completion of the project, 1.17 million cubic ft water could be stored in the pond. The water was sufficient to take one crop in almost 25 acres of land. Barren land was slowly turned into a green zone.

However, let's not forget that it wasn't smooth sailing when it came to implementing the project. Many difficulties were faced and hurdles cleared by determined local leaders. The place where the pond was eventually constructed belonged to the forest department. A lot of time and effort was invested to acquire the plot. The location of the pond was also changed from behind the temple to the front area.

Another hurdle was the village Talati's announcement that "the entire plot is an industrial zone and earmarked for a private company". However, the committee members did not give in. They made detailed inquiries and found out that the industrial zone was 200 -300 metres away from the proposed pond site.

The entire area now benefits from the pond. Fields are irrigated; animals from neighbouring villages come here to graze.

The committee is also growing fodder on the village wasteland. The net result was:

- Drinking water is available
- Water is available for growing trees and farming
- Fruit-bearing trees can be grown
- Fodder can be raised
- Income of the people will go up

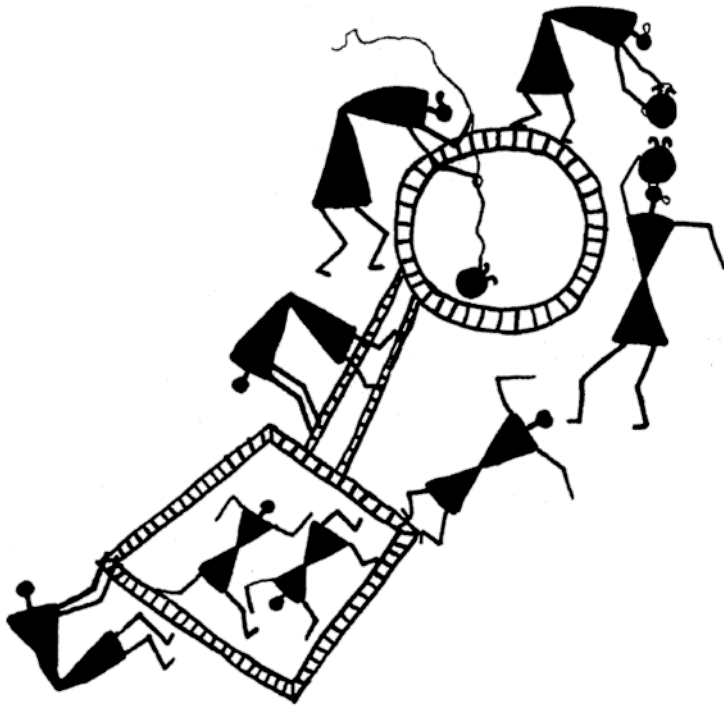
At several points, the hurdles seemed tough to surmount and villagers feared that the project would have to be abandoned. But as the saying goes, 'Where there is will, there is a way.' The determination of villagers made the project a success. Every village needs such visionary leaders who can transform ideas into reality.

ANYONE DIPPING HIS HANDS IN WATER WON'T BE TOLERATED

Nana Nakhatrana, situated two kilometers away from Nakhatrana, had a persistent problem – its children suffered from recurrent water-borne diseases. The mainly Rabari (Shepherd) community in this village got water from the Nakhatrana reservoir. People did not know what to do. Pujya Kaka was on a visit to this village. He met villagers and asked women the source from which they drew water. The women replied that the children drank water from pots by dipping glasses and in doing so, often dipped their hands in the pot too. Pujya Kaka asked, "Is it possible that their hands were dirty and contaminated the water? The answer was "Yes".

VRTI Nakhatrana, with the help of District Rural Development Agency, started a campaign for 'Total sanitation and Cleanliness'. The campaign comprised personal hygiene and cleanliness of public toilets and careful use of water by using a 'doya' for drinking water. Group meetings, exhibitions and cleaning of schools were started. The artists Kavibhai and Shri Shyam Makwana came out to help. An attempt to bring awareness through songs, poetry, and folklore was also made.

The women of the village suggested that they may be provided with 'doyas', which would be used in every household to avoid contamination.



The suggestion was unanimously accepted. 'Doyas' were distributed in 197 houses of the village. (Doya is a utensil with a metal rod fixed to a metal glass. Direct contact of the hand can be avoided while using it to draw water from the pot).

Water from the pot was now be taken only by using the Doya. Villagers realised that direct dipping of glass into water pots spread infection and disease among children and even elders.

Tree plantations and toilets are also being planned on a war-footing. The villagers have taken a vow to keep the village neat and clean.

Rabaris are the front-runners in the campaign for cleanliness. Difficult problems have simple solutions, if the community is willing to accept them. Joint efforts are needed to implement projects.

SAVING WATER AND SOIL NUTRITION BY MAKING CHANGES IN THE SYSTEM OF GROWING DATES



Dates are known in Gujarat as “the Kalpvruksh of Kutch” (Kalpvruksh is a mythological and an imaginary tree satisfying every desire). Usually, dates are cultivated on the sea-strip in the areas of Anjar, Mundra, Mandvi and Abdasa. Among these places, the major area covered by date trees is in Anjar and Mundra talukas. Even today, dates from Dhrub village are popular all over India.

The credit for bringing dates to Kutch goes to the Muslims of Dhrub. They migrated years ago from Turkey. They had brought dates with them. As dates were used by them as part of food, they began sowing the seeds. Even today, eating dates is customary in Kutch. While traveling by bullock carts, people in Kutch use dates for snacks.

Gradually, dates became an important crop. People started growing dates on the border of their farms. A distance of one or two metres between two trees was maintained. The male and female trees are separate and the process of pollination is done by hand. Secondly, only after inflorescence can it be decided whether the tree is a male or female. But all trees do not give uniform fruits. However, the farmers do not uproot trees even when they bear poor quality fruits, as they have leased the entire orchard on a contract basis. The lease is based on the number of trees in an area. Contractors are concerned with the quantity of the dates rather than quality. As a result, their orchard started having poor fruits. The matter came up for discussion when Pujya Kaka came on a visit.



The solution was removal of trees of inferior quality. Vivekanand Research and Training Institute agreed to help in the following areas:

- To make people ready
- To bring about changes in the system of growing dates
- To raise farmers' income

Mr Kishorebhai Shroff and his wife Ranjanben selected a farm near Mandvi at Jakhania village in 1995. They selected 'Kinuwadi' for giving guidance to the farmers and brought an Israeli expert for developing a model farm. Every year, the Israeli expert came here during the date season and educated farmers in growing dates in a scientific manner. The farmers also sowed new cultured-based date plants.

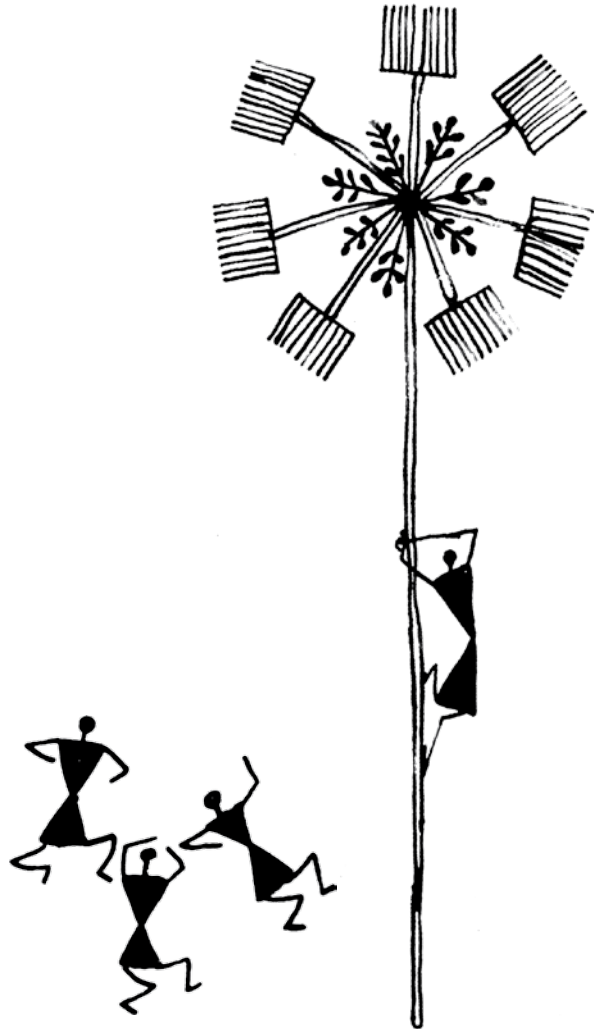
The farmers in the areas around Bhujpur, Zarpara, Dhruv and Samaghogha started experiments based on 'Israel Technology'.

The institute resolved to do the following:

- To grow more than one tree of the same features using Tissue culture
- To remove the trunk of bad dates and to bury it deep under the soil so that it became a fertilizer.
- To terminate the contract system of selling dates. Farmers were encouraged to sell dates themselves. By doing this, they would know about good dates and market needs too. More income would be available by removal of middlemen.



- To ask farmers to clean dates, remove bad dates and old fruits and to undertake systematic farming.
- To use fertilisers according to the age of the trees in the months of November-December.
- To bring about better quality dates by growing male flowers.
- To maintain bunches of dates depending on the strength of the tree and eliminate the hands which are extra to maintain the quality.
- To nurture dates of the best quality (which are more productive) and remove inferior quality which would be used as fodder for animals.
- To obtain good organic fertiliser by drying the date leaves. The leaves could be mixed in the trunk of the trees, with a residue of fodder eaten by animals.
- To observe the growth of good dates and record their history to help in growing similar trees.
- Steps should be taken to prevent the infestation and to educate the farmers. To take necessary steps to prevent disorders brought about by fungus.
- To harvest date crops on time.
- To make arrangements for packing and selling (of dates)



Results:

- Farmers started the process of selling and packing dates according to market needs.
- Dates came to be regarded as an important crop. Sowing was made by keeping a distance of 8.8 meters of 7 X 7 meters between plants
- Farmers started removing trees of inferior quality.
- Production went up and reasonable profits were available as quality of dates improved.
- Average income increased as bad dates got removed.
- Underground water was now judiciously used, so nutritive elements were saved.

It would not be a surprise if in the near future, dates become 'Kalpvruksh' not only for Kutch but also for Gujarat! Modern technology was obtained and adopted and the benefits were explained to farmers. The Shroffs provided leadership and transformed the date crop.



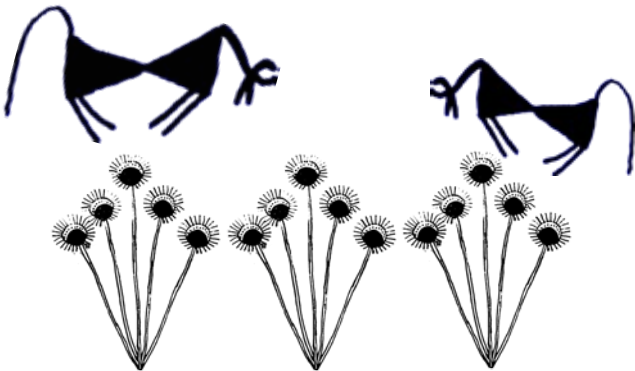
A SUCCESSFUL EXPERIMENT: CATTLE FEED UNIT

To solve different geographical problems of Kutch and to make maximum use of the natural resources, Pujya Kaka talked about a successful experiment with the representatives of CARE. The CARE representative was impressed by this experiment and agreed to support VRTI.

'CARE-INDIA' runs a programme called 'Empowering Vulnerable Community for Comprehensive Development'. Its purpose is to help the poor and the needy and to work in a way which will increase their income and bring about progress. 'CARE INDIA' selected 20 villages from Abdasa and Lakhpat and coordinated with VRTI - Nalia on this programme.

The programme was conducted in two phases. In the first phase, discussions were held to understand the problems and then solutions were sought. A dialogue was initiated at the village level.

- To have understanding of the local situation.
- To get partnership/ participation of all stakeholders.
- To prepare long-term plans
- To prepare a village-level plan based on an individual's family needs, assets, strength and weakness.



In the first phase, it was planned that work and responsibilities would be delegated and shared, to assess their confidence. It was decided to start a 'micro-project' and initiate local dialogue on the following issues:

- Income: namely, cattle-breeding, farming, fishing and employment
- Basic facilities: public facilities, public health and education

The main difficulties faced by farmers engaged in animal-related activities are as under:

- High prices for cattle feed and the difficulties of transporting it
- Low prices for cow dung
- Low milk price during monsoon
- Diseases affecting animals
- Scarcity of drinking water for animals during summer
- Difficulty in getting fodder for animals during summer
- Fodder, such as oil cakes and bran had to be purchased from other centres located 4-14 km away.
- Rs10- had to be paid as minimum rent for transporting one bag
- Its price was Rs 30-40 more than that of distributors' price
- The weight of the bag was not standard.
- New purchase was possible only after paying the amount borrowed for the first transaction

The Experiment Begins

Pujya Kaka sat down with the villagers to bring about a solution to the problems. The following resolutions were made:

- Cattle feed should be ordered from Bhuj only and stored in village. It would be cheaply available.
- A committee was formed to raise funds for cattle feed. A truck could be purchased to transport feed. It was resolved to create a revolving fund of Rs 70,000
- An association should be formed. All stakeholders should become mentors and pay the fee for every animal owned.
- Members of this association should form a committee for 'Animal Husbandry'.
- Posts of President and Secretary should be held for a year only.

The following rules and regulations were adopted for the Association for Animal Husbandry:

- Any cattle owner can become a member by paying the fees
- Fee (for membership) will have to be paid only once, but fees will not be refunded if membership is withdrawn
- Annual fee for every animal will have to be paid
- Benefits of cattle feed will be given to members only
- Distribution will be there twice a week only against payment on cash basis
- Revolving fund will have to be paid in three years i.e. by six installments
- Price and stock will be written on a board which will be placed outside the centre
- The association will have a bank account and will be operated by the President, one of the two secretaries and a representative.

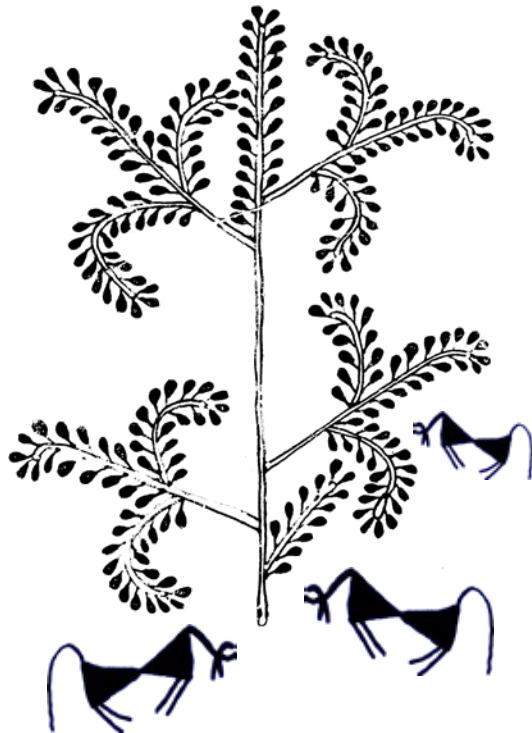


Responsibilities of the Committee

- Distribution (of cattle feed) should be regular and at the centre
- Mill owners and merchants should be contacted for purchase
- Rates should be fixed (for cattle feed)
- Transparency should be maintained in accounts
- Arrangements should be made for stocking cattle feed and proper stock should be maintained
- Problems within association should be solved by discussion
- A meeting of the committee should be called every week
- Information about the centre should be made available to all.

Benefits

- All animal owners in the area became members of the association.
- Cattle feed was easily available at a reasonable price.
- Proper choice could be made as things were locally available
- Time and money were saved and women could also procure cattle feed



Implementation in other villages:

This campaign was a huge success. With the help of 'Oxfam India', it was taken to eight other villages. The execution of the policy was the same in every village.

Conclusion:

Overall, there were many benefits of this experience.

- Cattle feed is available at a lower price than the price fixed by the local merchants
- Transport expenditure is less, as it is available in the village itself.
- Time is saved
- Good quality and quantity of feed is available
- Spare time can be devoted to increasing business
- Information on maintaining accounts is available

Above all, the greatest benefit is that the villagers are united and they are aware of their strength. They now know what unity can do. A small cause has taught them the biggest lesson of democracy.



FODDER BANK: A BOON IN TIMES OF CRISIS

Abdasa and Lakhpat talukas of Kutch are well-known for cattle-rearing. But people there are gradually saying good-bye to this profession due to recurrent failure of rain and water scarcity. During such times, relief work is undertaken and grass depots are set up by the government to protect people as well as cattle. Despite the fact that almost Rs 100 crore is spent on these measures, the situation remains the same when rains fail.

'Drought Prevention Programme' was launched for 30 villages under the auspices of Rural Development Department (Government of India) in association with organisations such as 'Kutch Navnirman Campaign'. Its purpose was to organise people. Work and resources needed to prevent droughts, within a period of three years.

- To set goals for the work to be completed in three years
- To preview water problems of the villages
- To see to it that enough grain is available from farming
- Fodder for animals should be made available in the village itself
- Employment for locals should be available

Progress was visible. Local discussions with experts were encouraged.

- Uncultivated land in the village should be improved
- Better quality grass-seeds should be sown
- Jowar seeds should be sown on uncultivated land and even as a regular crop
- More fodder should be grown and stored when the times are good

In brief, if the village water storage remains in the village, the problem of water deficiency gets solved. Similarly, if the village fodder remains in the village, availability of fodder will not be a constraint. On the basis of this, it was decided to have a fodder-bank in three villages by VRTI (Nalia).

Associations for animal husbandry were formed in Ashapar, Sudahdro Moti and Sudahdro Nani. Every cattle owner became a member by paying a membership fee and by contributing two to three mans of fodder. The association opened a separate bank account. A revolving fund was set up.

The year 2003 saw good rains and plenty of fodder. The committee procured and stored 64,280, 41,000 and 88,080 kilograms of jowar in Sudahdro Moti and Sudahdro Nani respectively. Insurance was also taken against any loss due to accidental fire.

The following year, rainfall was scarce resulting in an acute shortage of fodder. But, for once, villagers had no worries, as enough was in store.

In the absence of a fodder-bank, villagers would have been forced to depend solely on fodder from Bulsar. The villagers from these three villages did not have to go out to buy fodder. Now they had better quality fodder at a reasonable price.

Thus, the fodder bank proved to be a boon in times of crisis. Any crisis can be resolved with commitment, joint efforts.





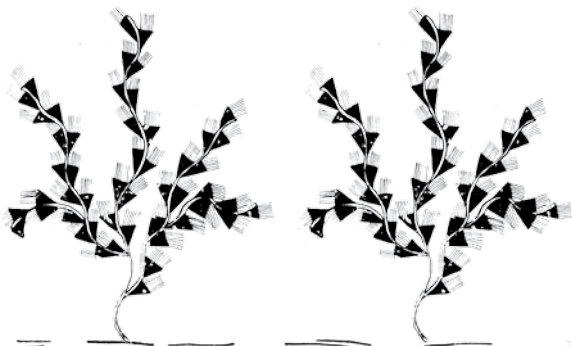
CULTIVATION OF GREEN VEGETABLES ON THE SEA-SHORE

The speciality of VRTI is to set a challenging goal and to achieve it. Every morning brings new challenges for the organisation.

In a way, the entire Kutch district continuously faces challenges. The whole area was under green cover before the 1819 earthquake. The swirling water of Sindhu made lush green paddy fields. But the earthquake changed everything. Sindhu River changed its cause and disappeared from Kutch. Lakhpat Taluka became completely dry, facing the vagaries of continuous droughts. Every five years, on an average, one year used to be good; two years would be average, while the next two years would witness droughts. This led to wide-scale migration of people and cattle.

Can farming be done in such an area? This challenge was taken up VRTI. With the help of Oxfam India Trust, VRTI started a programme called 'Small Scale Agriculture'. The land was sandy and affected by salinity -- hardly suitable for farming. But the idea was to use local condition.

Pujya Kaka called a meeting to get the views of farmers. At the meeting in Mohadi on May 3, 2005, elderly farmers said that Haji Ismail used to grow vegetables and sell them in past. Pujya Kaka asked Shri Dhirubhai to find out details from the village and visit Haji Ismail.



It came to be known during the discussion that there was some sweet water in the sand dunes. These dunes could be converted into "recharged wells" during monsoon. During summer, water could be obtained by digging around the dunes. Lots of un-built wells were seen around the dunes. If these wells could be widened and re-built, then harvesting of water could be done to meet day-to-day requirement. With proper use of water, vegetables, corn and fodder could be cultivated.

All the farmers agreed to take up the task of water harvesting and re-charging of wells. A well was required to be built. Initially, four farmers took the lead in digging the well, but three quit the project later on, as it involved a lot of hard work. Only Ardhemanbhai Jat remained committed to the project. The patient and brave man was prepared to fulfill the task, despite all odds.

It was decided to build a well on Ardhemanbhai's farm. This is when the workers realised that a well built by

the Panchayat already existed, just 300 feet away from the farm. So, a tank was placed 300 feet away from the farm and a 'Micro-irrigation System' was installed. Water was collected and used to cultivate green beans, okra, drumstick and spinach.

In the second phase, the tank was filled regularly, vegetables were grown and every care was taken. Fifteen days later, sucking pests were detected on the farm. Cow urine and neem leaves were sprayed to bring the insect attack under control.

Thanks to the efforts of Ardhemanbhai and his family, there was a profusion of green vegetables on the land. The villagers were astonished to see green vegetables flourishing on desert land. They wondered how Ardhemanbhai had managed to accomplish this and wanted to follow his methods. A transformation took place in this arid and difficult terrain due to joint efforts. Many a times, individual determination paves the way for a new beginning for the community.





PRAISEWORTHY ATTEMPT TO RE-ESTABLISH FARMING

Mundra Taluka is situated in the southern part of Kutch district. The land is made up of sedimentary rocks. Mundra Taluka is the last one to emerge from the sea. Rivers and rivulets are in the last phase in this district. The profile consists of layers of sand and earth. Innumerable sea creatures are also present.

In the distant past, a lot of water was present in the layers of sand. In the past, Maldharis used to dig deep wells (5 to 10 feet) and draw water with the help of bullocks. Crops of cotton, sugarcane, nuts, vegetables and bananas were cultivated, as the layers were fertile and water was of good quality. But as time passed, Kutch was affected by recurrent droughts. With modern technology, farmers started pumping underground water -- the result was depletion of water level and salinity ingress. The TDS content in water increased from 2500 to 3000.

Pujya Kaka, during his visit to villages, noticed that the problem could be solved by controlling salinity. The 'Salinity-ingress project' was started in the monsoon of 2003, with the financial help of Sir Ratan Tata Trust and Shri Vivekanand Research and Training Institute and the help of farmers. A detailed micro-level plan was prepared.

- A check dam to be built in a rivulet at the cost of Rs 7 lakh
- An attempt should be made to take water to the lake through the canal
- A local committee was formed. Villagers were encouraged to join the effort and the project started
- The committee of farmers was registered. It supervised the work.
- The local committee was assigned the task of maintenance of the structures, the distribution of water and its judicious use.
- The work was finished before the monsoon of 2004. The rainfall recorded was 400 mm.

Results:

- Beneficiary farmers' families: 17
- Total accumulated water: 1,03,792 cubic metre
- Benefited area: 47.48 acres
- Crops sown: Cotton, Pearl millet, Wheat, Lucerne, Carrot.

- Produce/Production: (From 47.48 acres)
 - Cotton (8.66 acres) : 8992 kg
 - Pearl millet (8.63 acres) : 13780 kg
 - Wheat (2.19 acres) : 3280 kg
 - Jowar (fodder 8.00 acres) : 13800 kg
 - Lucerne (fodder) (20.00 acres): 1500 kg

Lesson learnt:

A great deal was learnt in this experiment done in the south of Zarpara

- There was no possibility of presence of water
 - either worthy of farming or drinking
 - below 20 to 25 feet in the areas near seashore, but it is possible to control salinity ingress
- There should not be overcrowding of wells in these areas
- Farming should not be expanded haphazardly

- As quantity of water declines, seawater enters those layers, turning water into saline water. Hence, drawing of water by pumps should be restricted/banned. The width of a river or a rivulet can be seen more in these areas
- With the height on the banks, it is difficult to build storage structure for water. Hence, location of a check dam should be carefully selected

The challenge lies in controlling salinity both above the ground and underground. This can be done by the community through disciplined and joint efforts.

It is possible to sort rainwater. It is also possible to stop salt water mingling with water by constructing a bund. There are two uses (1) Farming should be done in such areas using wells as an irrigation source, as wells have the benefit of recharging (2) Lift irrigation should be undertaken from the lake only.

The most important thing is to estimate the water balance, the availability of water from the catchment areas and the judicious use of this water. If the requirement is more, the water balance can be maintained by using water- saving techniques and reducing the farming area. This experiment raised the spirits of farmers.

The problems of difficult terrain can be solved by adopting technology and through the joint effort of the community.



TRIVENI SANGAM

The Ganges, the Yamuna and the Saraswati – the place where these three rivers meet is called the Confluence or Sangam. Wherever three good things meet, we call it the Sangam. A similar thing happened in Sudhadroh village of Abdasa. The tale is full of excitement and thrill. During a famine, Puja Kaka along with a VRTI team visited Sudhadroh. People talked about the problems faced by them. Puja Kaka suggested a brainstorming session to come up with solutions. Kaka said such arrangements should be made that even if the place is hit by famine, the villagers would face no difficulty at all. Labourers would be paid according to work done. The only work is to avoid famine. This was a new concept for the villagers, a radical idea they had never considered before! They were anxious to know how this could be done and agreed on the course of action suggested by Puja kaka.

Committees were formed and work started on the construction of Jashugari Lake. Never was such a huge project undertaken in the village. This was followed by projects such as the construction of Makutari Lake, Polagadh Dam, Kak Dam and a fodder bank.

In all, projects worth Rs 38 lakh were implemented in two years. The quality of work was high as each and every villager contributed.

An important matter came to everyone's notice: Water would be permanently available if a well was built around the sources of the big dam.

The project got unanimous approval and was sanctioned. A well was constructed at a cost of Rs 2.48 lakh. Potable water was now available aplenty! Everyone was happy.

Soon, the idea of undertaking a cleanliness drive and implementing a potable water programme came up for discussion. Everyone liked the idea. A contribution of ten per cent of the project cost was necessary to kickstart the projects. But the question in everyone's minds was, "How do we gather the money in such a lean year?" The matter was discussed and debated at the committee meetings. Around 10 to 15 women present in the meeting volunteered to gather the required funds.

These women went from house to house and explained the problem, its solution and the need for contributions to the cause. Every single donor was given a receipt. Along with the funds collected by the women and a grant from WASMO project of Water Supplies Department, the projects were undertaken. Water reached every home, benefiting 5,000 people. Water connection (at a cost of Rs 50 per month) was provided to supply well water in every home. A Bhagwat Katha was organised to thank God for the boon.

Later on, people grew more aware and started focusing on tree plantation, cleanliness, individual cleanliness, dryness pits etc.

SALINE AREA, SALINE WATER, DRIP SYSTEM

Mundra Taluka: Salinity here has increased due to proximity to sea. Farming is no more remunerative. Efforts are on to prevent this salinity. Vivekanand Research and Training Institute accepted the challenge. The objectives were as follows:

- To prevent salinity due to sea water ingress
- To develop farming in this area
- To make arrangements for water for irrigation

Experiments "to improve upon the salinity" and "drip irrigation system" were undertaken.

Dates, mangoes, guava, and sapota were cultivated. The organisation held talks with farmers to explain the benefits of accepting the 'Drip System'. Farmers were worried that the 'Drip System' would not be enough and trees would dry up in the course of time. It was then decided to take the farmers on a visit to places where these experiments were being carried out.

Farmers were taken to the farm of Shri Vikram Sinh Jadeja, a leading and progressive farmer of Khedoi village in Anjar Taluka, where the 'Drip System' is used for guavas (on 10 acres) and mangoes (on 5 acres) of land. This was shown to all the farmers. Farmers presented their problems and got satisfactory replies. Their faith was revived in the Drip System.



Ten farmers from Dhruv, where there is estimated 5000 to 5500 TDS water, fixed the 'Drip System'. A small beginning was made in the new date plantation -- Land was not very hard and small date plantations require less water.

Such a system was also installed in a farmers' orchard in Kemtharpur, where the land is full of sand and there are 20-year-old Sapota trees. The farmers did not have faith in the beginning, but they also agreed to adopt the system. They were provided detailed guidelines on installing and using the Drip System.

Gradually, moisture gathered in the land because of organic manure and biomass. Today, the farmer is more than satisfied. His trees are stronger, more beautiful and water is saved.

What was the situation like earlier? Earlier, water used to get collected around trees. Around 1935-square metre of water used to get collected. Water (around 1359 litres) was used up and therefore, watering had to be done every ten days. A lot of water was wasted. But all that has changed after the adoption of the 'Drip System'. During a certain period of year, potable water is provided every second day for four hours and 320 litres of water is utilised. Now farmers can save a lot of water!

Climate change may have a similar impact, but that can be met with the use of appropriate technology and participation of people. What it needs is a clear plan, determined persistent efforts of all stakeholders and involvement of local leadership.





ANOTHER SUCCESS STORY

A similar experiment was conducted on a small farm near Nani Bhujpur. Shri Dhanrajbhai, a small farmer had a farm near Nagmati River. Drip System of irrigation was optimally used in his farm, where Sapota was planted in one hectare of land. Other farmers in this village had no faith in the drip system, as the land was full of sand and there was no moisture. The drip design comprised eight litres per dripper. A distance of 1.25 metres was kept between two drips so that the area of the drips did not get wet despite continuous water supply for five to six hours. This farmer was ready for hard work, but wanted assurance that his trees would not die for want of water and moisture.

The organisation removed the eight-litre dripper and replaced it with a four-litre dripper. As a result, moisture was maintained. The farmer was informed of the practice of 'Mulching' and its benefits. The leaves of Sapota were collected; a lateral was placed on the leaves, topped by a layer of soil. As a result, moisture spread to a wider area. The crop turned out to be extremely good and the fruit of Sapota was softer!

Little wonder that other farmers followed suit. Those who were completely skeptical of this system have taken to it in a big way. The organisation, too, has learnt a lot from these experiments. Farmers now have access to guidance from the government scheme of 'GGRC'.



AWARENESS SPREADS IN NAVINAL VILLAGE

Attempt to create public awareness to remove salinity

Navinal, a seaside village in south Kutch district, is situated in Kanthi area of Mundra Taluka. The village came to be known as 'Navinal' after the Darbar community or 'Navi' settled near the biggest water course of the sea here. The original village 'Jesar' was on the south of Juwar. Remnants of it can be seen here even today. Today, the village is known as 'Khari' and is progressing by leaps and bounds.

This village was beautiful 38 years ago. A lot of farming was done and the level of water was very high. Sugarcane, banana and groundnut crops were also cultivated.

Hankering after money led the farmers to use electric motors in a big way. More and more water was used to produce more crops. A lot of water was wasted and the level of water went down. The quality of land deteriorated and production suffered. Farms in the south became barren. Farmers started moving to other areas, but the situation was the same there too. Young people lost interest in farming. The youth began to move elsewhere in search of jobs.

VRTI Intervenes

VRTI had a scheme to check the deterioration of land – the 'salinity-ingress project'. Villagers came into contact with this project. Initially, people stayed away from the organisation. However, the constant efforts of VRTI workers paid off. People gradually developed trust in the project.

The workers organised the following activities to create awareness:

Folk programmes (Lok dayro) were organised

Street plays were staged to create awareness.

PRA (land surveying with village cooperation) was made, which was attended by leading farmers. Problems were discussed and solutions thrashed out.

In the end, plans were made so that a "water shed project" could be taken up and salinity of land could be restricted

Certain conditions were put forward, one of which was that the villagers should remove sand and bawal trees and clean the entire area around the two lakes constructed, with the help of VRTI. After initial hesitation, the villagers agreed. Not only did they do what was expected of them, they dug the lake further.

Rain was plenty that year filling up the three structures. Villagers greeted this development with enthusiasm. The village bore also benefited from these three structures. Finally, eight check dams were ready as part of the programme. All this was done under the guidance of the village committee. 'WASMO' project was also implemented, in which everyone took keen interest. The village committee successfully organised schemes such as providing mid-day meals, tree plantation, water management, building gardens, schools, roads etc.

'Navinal' has become beautiful again. Farm-lake and water harvesting have brought about very good results. The village has taken a giant leap forward. People are happy. The challenge of salinity ingress has been successfully met.





CONVERGENCE OF EFFORTS

Many institutions have joined rural development programmes after the 2001 earthquake. Every institution seeks donations for this purpose. However, work gets restricted to a time frame. Villagers wait for another project after one gets completed. What is needed is overall development. Development activities should be continuous, but it is possible only when an agency remains continuously attached to a village and receives a lot of financial support. The government is the only such agency. More co-ordination with the government is necessary. One such initiative was taken in Abdasa and Lakhpat villages.

For Fishermen

A workshop for fishermen was organised to discuss the problems faced by them. Assistant Fisheries Director I C Jadeja was invited to address them. He promised all possible help to the fishermen and asked them to apply for a prevailing government scheme. Within a month, 66 fishermen were ready to take advantage of the scheme. They were given application forms, license and other necessary documents. The cost of 66 fishing kits was Rs 2, 87,100, of which Rs 1, 32,000 was contributed by the fishing department and the locals.

For Animal breeders

Training camps: A training camp was organised to introduce farmers to the activities of various government departments and to give them a platform to interact with the project officers. The camp was attended, among others, by the local veterinary officer and the manager of Rural Development Bank. They gave information about various schemes such as vaccination camps (for animals) organised at Mohadi, Bharawandh, Karmata and Valawari Vandh by the NIMI Husbandry Department. Everyone took advantage of these camps.

Check Dams & Village Ponds: Dams were selected on the basis of the location of village ponds and relief work done by the Gram Panchayat. The village applied to DRDA for this scheme.

Gradually, people developed confidence in the government. As awareness spread, people realised that even if an institution ceases to exist, they can always take help from government agencies. Pujya Kaka says, "Everything is useless unless the man sitting there is empowered." It definitely seems to be happening in Abdasa and Lakhpat!



CULTURE AND PROGRESS JOIN HANDS IN DADAMAPAR

Dadamapar village is symbolic of the glory and rich history of Kutch. The very name of the village, (which includes the word 'Dad'), shows respect for elders.

The people of the village are united. There are no court cases here. The problems, if any, are resolved by the village panchayat. Farming is the main occupation.

The VRTI took Dadamapar villagers on a visit to Rajsamdhiya. The villagers were highly impressed by this village and vowed to make their village as progressive as Rajsamdhiya.

On returning to their village, farmers called a meeting of the village assembly, at which VRTI members also were present. It was decided to create facilities such as stand post, bathrooms, water connection, water facilities for animals etc.

In the beginning, it was difficult to collect money. Some guests from Mumbai, who visited the village during Navratri festival lent a helping hand. Pipelines were fitted and arrangements for water usage were made. Time was short, but the work was accomplished.

Earlier, women had to walk one kilometre or more to fetch water. The scenario has changed. Now water is available in

the village, trees are planted and livelihood can be earned by making coal. There is a primary school up to Std VII operating in the village, where enthusiastic teachers give lessons to eager students. Students wear clean uniforms.

Cleanliness is now maintained everywhere in the village. Earlier, mosquitoes were found around mudas and filth accumulated in some areas.

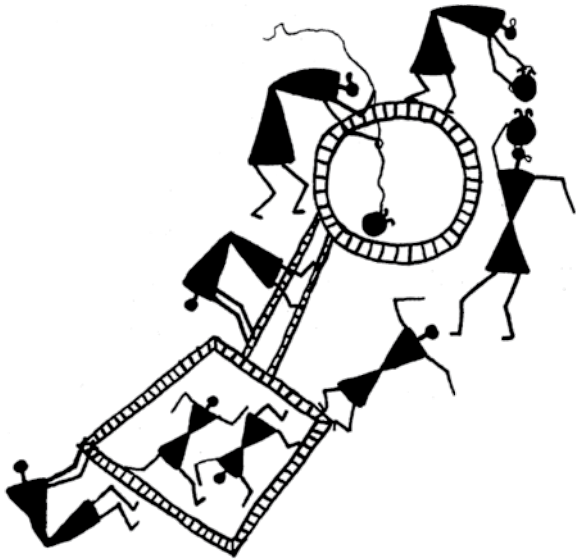
Leaders such as Shivjibhai Gajara and Shambharam Gajara suggested that dryness pits be made near these areas. The villagers got together to dig the pits. Today, the place is impeccably clean.

A lot of reforms are taking place in the village. A lineman was appointed at an honorarium of Rs 1000 to repair electrical faults. A tax of Rs 40/- is collected from the villagers.

On occasions such as weddings and ring ceremonies, cows, dogs and birds are fed too. Not a single person has any addiction.

Dadamapar is now an ideal village and has set an example for other villages to follow.

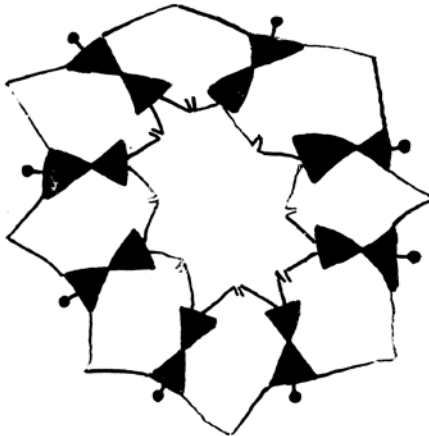
KHENGARPAR



A programme to provide water distribution facilities, which would be managed by the users themselves, was initiated in Khengarpar. It was advised that the veranda and open areas should be cleaned daily. The programme introduced under 'WASMO', under which 1,260 villages affected by the earthquake were covered. Khengarpar village is one of them.

Khengarpar is 400 years old. Jagabhagat was the first Rabari to settle here. He was followed by Raghy Lakha. Today, the village is inhabited by the Rabaris. Dayapar is the taluka headquarters. The famous Naryan Sarovar is situated 42 kilometres north-west of the village.

Khengarpar was established near a river course. In earlier days, the river flowed for eight months as the rains were aplenty. People used to make pot wells, if the water dried up. But as in other parts of Kutch, the areas increasingly got affected by recurrent droughts – the river dried up. As a result, Khengarpar had nothing more to offer to the Maldharis except the desert on one side and barren uncultivated land on the other. There are no natural resources or natural beauty around. Despite these hardships, the wandering Maldharis are spirited and smiling. They stand solid as rock in their determination to stay, never complaining about anything. They are not prepared to leave the place and go elsewhere. They love their village and are ready to face whatever



hardship comes their way. Women here have made herculean efforts to get water – a lesson to all men. Women started a water campaign which turned out to be a blessing for all.

Under the guidance of 'Shrujan', a local committee was set up to meet the challenges of the scarcity of water. It requires tremendous efforts to get water. The news of this activity spread far. The villagers, who had left the village for the sake of the cattle, started returning. The village has witnessed a sea-change bringing joy to everyone.

Shrujan, WASMO and the Khengarpar water committee have won fame which is very inspiring to other villages. Availability of drinking water is no longer a problem here. Cleanliness is here to stay. "Keep the village clean and remain healthy" has become the motto of villagers. The secret of their success is that everyone contributed to the cause. The people feel that due to convergence of efforts of the voluntary agency, the government Water Supply Department – WASMO – joining hands with them, their dreams have turned into reality.



INDEPENDENCE – THANKS TO KITCHEN GARDEN

Dhareshi is a small village of 430 people in Lakhpat Taluka of Kutch district. Farming and animal breeding are the main occupations of the predominantly Hindu population. The middle class makes a living by working in coal mines.

There is a family of Harijans too. Shri Pababhai Heerabhai heads the family. It is a joint family of 17 members including Pababhai's three sons and two daughters. They all live together peacefully. Two sons work as drivers to the mines. The third one is farming in a 40-acre plot of land. Out of this, 10 acres of land are fertile. The produce is less owing to droughts. The level of water is low and of poor quality. Cash crops are few.

Green vegetables (1.5 kg) have to be brought everyday for making two meals for this 17-member family. Due to rising costs, it was becoming increasingly difficult to buy the vegetables every day. Pababhai gathered his family and floated the idea of starting a kitchen garden. Everyone accepted the idea with enthusiasm. A small scheme of making a kitchen garden took shape. Vegetables were sown and the responsibility of watering, gardening, etc was taken up by the wives in the family.

Today, fresh green vegetables are readily available for consumption. This has improved the health of the family. Crops of tomatoes, brinjals, radish, palak, methi, etc are grown. Vegetables (2.5 kg to 3 kg) are kept for use and the rest are sold in the market.

People visiting the village inquired about the flourishing kitchen garden. Earlier, when workers from Shrujan came up with the idea of a kitchen garden, they were not very enthusiastic. We were not very hopeful about the success of the project either. But all that has changed. The land has been made fertile and it gives us fresh, green vegetables. Earlier, vegetables worth 10 to 20 rupees had to be purchased daily from outside. Now we are saving money as well as making money by growing the vegetables in our own garden.

CLEANLINESS CREATED BY PEOPLE WORKING TOGETHER

Joining hands to make a clean sweep

Guneri village is in Lakhpat Taluka, Kutch District. It is located 22-km away from Dayapar, the taluka headquarters. The village is troubled by the problems of road, electricity, water and employment. The villagers go as far as Ghaduli and Dayapar to find work. Educated and financially independent people go outside the taluka or the district. The main occupation is farming, but they face recurrent droughts.

Apart from drought, the village is often hit by natural disasters such as earthquakes and cyclones. The village is inhabited by Darbars, Harijans and carpenters. The house count is 12.

Shrujan has been running an embroidery project here for the past three decades. Daughters of Darbars do the embroidery. Besides farming and animal breeding, Shrujan helps in distributing grass during famines. It also helps in water distribution. Workers of Shrujan give information on farming. Its activities include screening of videos and shows, tours of kitchen gardens, lectures on vermi compost, etc. Other programmes for public benefit include well-repairing, prevention of land erosion, recharging of pits etc.

Earlier, villagers used to suffer when well walls collapsed and water became dirty and unfit for consumption. Roads and houses would remain in bad condition. But thanks to recharging pits, potable water is available from wells. Facilities have been made for animals. People have become more aware. Residents of 25 to 30 houses re-charge water in the ground, thereby putting an end to washing away of roads and courtyards. These amenities have united people and they no longer quarrel for water.

Now thanks to the re-charging pits, culverts are no longer dirty and cow dung is not kept in a useless heap. Mosquitoes and flies do not infest the place, especially during summer and monsoon. Guneri is proof that small people can accomplish big things.

The movement to overcome the adverse impact of natural disasters is not limited to Kutch. In fact, the entire state of Gujarat has witnessed change in recent years and has developed sustainable agriculture.



THE GUJARAT STORY



Gujarat is a state situated on the west coast of India. Diverse in its topography, it boasts of a 1600-km coast line and is home to the largest desert in the country known as Rann of Kutch. The state has all possible handicaps faced by agriculture such as 70% of agriculture being rain-fed, recurrent droughts, untimely / irregular rainfall and some areas receiving rain only three to four days in a year. Gujarat's agriculture suffered heavily whenever there were droughts. The growth rate of agriculture used to be negative during such years. In a normal year, the agricultural growth rate used to be 2 to 3%. Agriculture was not sustainable in many parts of the state due to recurrent crop failures. However, this is a story of the last millennium.

In the new millennium, Gujarat, with determination and persistent efforts, changed the agriculture scenario. From 2004 onwards, agriculture witnessed a major turnaround with a growth of 11% per year. The state became a front-runner in agricultural production in the country. This turnaround became possible due to certain effective experiments and steps taken by people on the basis of the experience of Pujya Kaka mentioned earlier, government's experience and that of agricultural universities. Such successful experiences did not remain specimen or model projects, but also became a base to launch an overall initiative in all 18,000 villages in the state, known as 'Krishi Mahotsav'.

The key to this success was public leadership – both elected and non- elected, which introduced effective soil and water management and proper land use by using mass communication approach-based, micro-level management model.



On the water front, more than 100,000 check dams got constructed. In the last decade, the number of check dams were only 6000.

It inter-linked rivers such as Mahi and Sabarmati. These rivers, in turn, were linked with Narmada and Mahi canals. In its rain-starved areas, such as North Gujarat and Kutch, a special scheme for irrigation known as 'Sujalam-Suflam' was introduced.

Scientific agriculture was introduced by distributing Soil Health Card to every farmer. From 2004 onwards, 50 farmers from each village were given such cards every year. The farmers were provided cards with not only soil health analysis, but also soil moisture analysis and past five years' average market price of the crops grown in their area. This helped them in making an informed choice in the selection of crops. Farmers now sowed crops which gave them higher return and were sustainable in the soil of their farms.

A direct door-to-door extension programme for guiding the farmers at village level was introduced under a pre-Kharif programme, known as 'Krishi Mahotsav'. Every village was visited by a development team comprising agri-scientists and officers from the veterinary department, co-operatives, irrigation department, rural development department and local banks, etc. High-yield crops were identified. The farmers were guided about using certified seeds and looking at prices of APMCs before selling their farm produce.



BAISAG, an institute set up in collaboration with Space Application Centre (SAC), Ahmedabad, by the Government of Gujarat, prepared a micro-level plan for land use by identifying sites for check dams and village ponds for every village.

ICT material was made available to the farmers in their mother tongue for crop management, including use of fertilisers and pesticides.

Free telephonic helplines were introduced to answer the queries of farmers.

All these initiatives were backed by total involvement of public leadership, both elected and non-elected. From the Chief Minister to the village Sarpanch, from the Chief Secretary to the village level worker, from voluntary agencies, input dealers and co-operatives to bankers -- every single individual was involved in the projects.

This joint initiative brought about sustainability in Gujarat agriculture, bringing about overall growth in all important crops and an increase in the per capita income of an average farmer. The major transformation occurred in the state's most difficult areas of Saurashtra, Kutch and North Gujarat.

It is necessary that such experiences are replicated all over the country -- in all its villages. The turnaround in Gujarat was due to effective public leadership.



THE PATH AHEAD

These are stories – real life stories – of success of very small people of remote villages of our country. Normally, when we talk about 'success', we look at very big people and their achievements – The President or Prime Minister of the country, the CEOs of multinationals, so on and so forth. We identify their good qualities, how they have grown big and successful and what efforts they made to reach at top. We suggest to future generations, the way to success by following their examples. This is need of time to prepare our future generation. But we should always remember majority of our people at grass root level, in rural areas. We have problems there. There is dissatisfaction to rural youth, there are still poor families. There are villages which do not have any infrastructure or they face odds of difficulties – the adverse climatic conditions. We have many stories of success of people at village level. The major challenge of sustainable livelihood is our rural areas, but in same areas, there are achievers, the individuals, like Desharbhai and his wife, Vikramsinh Jadeja, Hasanbahi, house wives, village committees, sarpanches – all have quality of leadership as described earlier. What is needed is to ignite their leadership qualities to face challenge and that is what Shri Kantisen Shroff – Pujya Kaka – did.

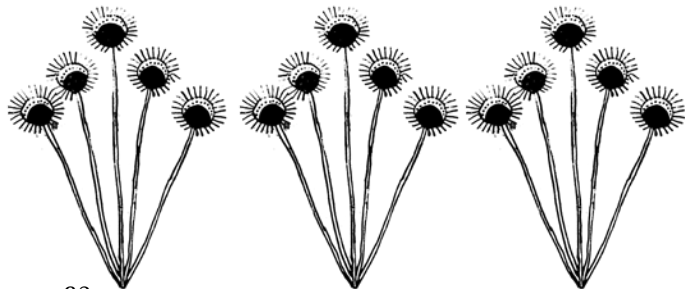
The villages of Kutch had all adversities, but they were turned around by local people with convergence of efforts with government officials and programmes, voluntary agencies, international agencies, etc.

Gujarat Story of developing sustainable agriculture is an extension of this, for all its 18000 villages of the State. Normally, there is criticism that when we talk about "a success story" that it is a well implemented programme at one place by some agency and that it is not replicated all over. In Gujarat, the public leadership, both elected and non elected, worked together with all the stakeholders for making its agriculture sustainable last few years. Key to its success is the policy of its leaders to learn from success stories from its own villages like that of Shroff experience and others to convert it into an implementable programme with participation of all and get implemented well at all levels. This is a remarkable example, where the leaders decided that something should happen, everybody joined together to make it happen.

Similar approach is needed today by countries, by nations, for meeting the challenge of providing sustainable livelihood or for that matter, meeting the challenges of adverse impact of Global Warming. It is the national leadership, which has to go down at grass route level to villages and efforts should happen in all the villages of a nation, alongwith State leadership, district leadership,

taluka leadership with village people and their leaders at the Center. India has an example of doing this, under IRDP (Integrated Rural Development Programme) which was introduced in late seventies and early eighties. This programme had focused approach on individual rural family and their need to grow economically were met with by convergence of efforts of government financial institutions, voluntary agencies on individual basis and this brought about massive reduction in rural poverty in our country, which is one of the most important achievement. But still there are poor families – about 20% and which have some handicaps as mentioned that of Kutcha and for which focused attention is needed. If agriculture can be brought back into the center, with focus on individual farmer, probably all these areas and people can be provided sustainable development and that is the viable solution to challenges of Global Warming and for that matter, meeting the challenge of terrorist groups like Naxalists, Maoist, etc. and providing sustainable livelihood and simultaneously providing opportunities for building leadership both future and present – to sustain such efforts on a long term basis.

THE KNOWLEDGE ECONOMY



Application of knowledge is the key to bring about rapid growth and to usher in sustainable development. Says Prof Mukul Asher*, 'The term Knowledge Economy (KE) reflects importance of knowledge for development process. It involves countries, organisations and people to acquire, create, disseminate and use knowledge more effectively for greater economic and social development. It includes application of successful technology of one field to another field. It provides more efficient ways of producing goods and services and delivering them more effectively and at lower costs to a greater number of people. It includes developing market mechanism strategy for remote – rural areas – within a country and merging it into global market.

It requires transfer of Knowledge Economy from Advanced Countries, who are generating most of this knowledge to Developing Countries, which need it because of their limited awareness, poor economic condition and weak institutions.

The knowledge revolution has a major role to play in the meeting challenge of global warming and development of agriculture and through that sustainable development.'

Indian Space Research Organisation (ISRO) played an important role in using knowledge developed for betterment of the rural economy. Under the guidance of Prof Yash Pal, ISRO introduced development communication, distant learning, micro-level planning, watershed, crop forecasting, etc for farmers.

The strategy is to bring non-cultivable wasteland, cultivable fallow land and marshy areas under vegetation cover by taking a cue from successful experiments in India and abroad.

In Gujarat BAISAG, Government of Gujarat Institute is using satellite imagery for planning. It has expertise in micro-level planning. It can identify all available open lands.

Each land area has to have its own strategy for land use and soil management, based on scientific agriculture and precision farming. It has to be based on soil health and moisture analysis for selection of crops and agronomy practices, micro-irrigation for water use and watershed approach for land and water management.

It becomes necessary to take up this task on a massive scale. However, farmers cannot afford to invest in such waste land. A rough estimate of the cost of developing one hectare of land is anything between Rs 2 lakh-Rs 2.5 lakh. It is, therefore, necessary to bring in public-private partnership (PPP) to sustain such projects

Use of weather forecast and mapping through satellite data, clubbed with empirical data for weather forecast and for mitigation of adverse effects of natural disasters, is the need of the hour.

Very limited data is available about different plants' capacity to sequester carbon through photosynthesis. It is therefore, important that agricultural universities set up "workstations" for assessing this in every agro-climatic zone.

There is a need to think about global warming from a new angle.

- Sustainable development
- Agriculture
- Involvement of Public Leadership

Sustainable development is the key to social and economic stability. Global warming has had an adverse impact all over the world. It disturbs social tranquility. The major sufferers are, of course, poor families and the small farmers. In India, agriculture is growing at 2% to 4% compared to service and manufacturing, which are above 8%. This has created urban and rural divide.

As per NSSO 2005, 60% of farmers do not like farming. Within agriculture also, there is disparity. Some farmers are becoming prosperous while others are committing suicide or embracing Naxalism. This is occurring due to the failure of public governance system – both elected and non-elected -- to reach out to farmers and youth and provide them with sustainable development. On the other hand, nature has provided un-utilized wasteland, resources and unlimited sunshine in tropical areas of our country. Its scientific use provides a new dimension to meet this challenge through agriculture, which is the key to sustainable development in majority of developing countries.

We do not have data about reduction of absorption of CO₂ due to loss of vegetative cover, which has occurred

due to reduction in vegetative cover, de-forestation, decrease of area for agriculture activities, increased industrialization and urbanization and increase of fallow agriculture land due to migration to urban centres. But in reality, due to this, there is substantial reduction in natural photosynthesis process, which has increased CO₂ in the atmosphere.

As mentioned, in fact, there are vast waste lands, which could be brought under vegetative cover to absorb CO₂ from atmosphere, which in turn can provide sustainable livelihood and also provide capacity to meet challenge of food security. More importantly, it can bring back balance – the equilibrium in nature's five forces, the sky, the earth, the sun, water and vegetation – and its inter action and inter-dependence and calm the unpredictable weather.

The combination of photosynthesis and ability of plants to lay down Cellulose and Lignin acts as a powerful concentrator of carbon from the atmosphere into a fixed form. There is no parallel human technology that is capable of performing this kind of carbon concentration. With appropriate use of knowledge

economy, even aerial seeding in the margin areas of the desert can be taken up. Similarly, genetically modified plants which consume more CO₂ can be developed.

Several countries in the world are witnessing a decline in the growth of agriculture, especially food crops. In Africa, this is due to re-current droughts and internal turmoil. Elsewhere, it is due to increasing urban areas and migration to urban centres leaving agricultural land uncultivated. Heavy corporatisation of farming in some developed economies is another reason. This is creating a food shortage.

There is an increased demand not only for food, but also for other agricultural produce due to increasing population and increase in per capita income in developing countries such as China, India, Brazil and Russia. There is national and international demand for bio-fuel, which has diverted growing of food crops. This trend has opened a big window of an opportunity in India.

India's share of arable land in the world is 11.5% (only second to USA). There is ample scope for improving

the yield of major crops. India's yield per Ha. of world average estimates in some major crops is: Paddy- 75%, Wheat- 63%, Cereals- 73%, Pulses- 79%, Soya- 48%, and Maize- 38%. In cotton, we have reached the world's highest yield with BT Cotton seeds. We need to first reach the world average and then the world's highest yield in all crops.

We have more than 1.30 million hectares of wasteland. It can be converted into cultivable land by sowing salinity-resistant crops and taking up salinity control measures along with agro-forestry, use of knowledge economy and help of scientists. Successful replication of experiences such as that of the Shroffs and the Gujarat turnaround can be done all over the country.

LEADERSHIP FOR SUSTAINABLE DEVELOPMENT

Global warming is a threat, but it can be converted into an opportunity, as has done by the Shri Kantisen Shroff initiative. It created a win-win situation for all, when efforts were channelised into sustainable development with agriculture at its centre. The unique aspect of this initiative is that it has a bottom-up approach at grass-root level and uses modern technology adapted to local needs. There is overall awareness at all levels -- from school children to senior citizens, with public and private players.

The International School for Public Leadership (ISPL), a non-profit organisation set up by UK-based NRI Prof Nathu Puri, has conducted more than 200 programmes for competence-building of existing leaders from the village level and above as well as for students – the future generation. During interaction with participants at the local level, it was revealed that they are aware of the impact of climatic change and global warming, but do not know the specific role they can play. The same thoughts and dilemma were voiced by many other members of the public governance system.

Therefore, the key to meet the challenge of Global Warming is LEADERSHIP, which has to become motivated and committed for promotion for sustainable development. It needs to have clarity, adopt detailed planning and implement the strategy based on knowledge economy. Our earlier narration of Shroff initiatives show how the local leadership can be ignited at the village level to bring about transformation. How this transformation can be replicated in an entire state has been highlighted by the Gujarat



Story. An entire state can successfully bring about sustainable development once its leaders, from the top to bottom levels, are determined.

The leadership at all levels -- village, taluka, district, state and centre --needs to be ignited and motivated to focus on farmers. This includes:

Non elected leaders, owners entrepreneurs, managing directors of companies, NGOs, civil servants, for VLW, Taluka Development Officer, Collector, educational leaders (teachers, research scientists and students), spiritual leaders and international organisations.

It is necessary to bring out the hidden capacity of human beings and mobilise all the available resources including those of the government, industry and voluntary organisations. With people's participation and local leadership, transformation can be brought about. Leadership qualities in the future generation need to be aroused to promote sustainable development. Sustainable development ensures that every individual has enough to live on and has the opportunity to grow.

Such transformation meets the challenges of poverty and global warming which seems to be insurmountable. But in reality, this is not so. It requires determined and persistent efforts to overcome these obstacles. If all of us act together with a common goal in mind, there will be all-round prosperity, despite the adverse impact of global warming.



INTERNATIONAL SCHOOL FOR PUBLIC LEADERSHIP



The International School of Public Leadership (ISPL), Puri Foundation for Education in India is based at Ahmedabad – Gujarat. It is promoted by Prof. Nathu Puri, an eminent Indian Entrepreneur who is based in U.K. His mission is strengthening of capabilities, attitudes and behavior of elected and non-elected existing public leaders and preparing the young generation to assume responsibility as public leaders and to remain committed to the needs of the country and objectives of socio-economic development and preparing existing leadership to face challenges of globalization, poverty removal, rapid economic growth etc. Dr. Kirit Shelat IAS (Rtd) joined hands in this efforts as a Founder Member.

The school has benefit of veterans in management education like Dr. Pestonjee, and Dr. V.R. Gaikwad Retired faculties of Indian Institute of Management, Ahmedabad, Prof. D.R. Patel, retired professor of B.K. Management School, Prof. Mukul Ashar, National University of Singapore, Mr. B.T. Dabhi, Retired Director, Rural Technology Institute, Mr. M. P. Vaja, Retired Project Director, Rural Development Corporation, Shri V M Sonavane (Retired IAS).

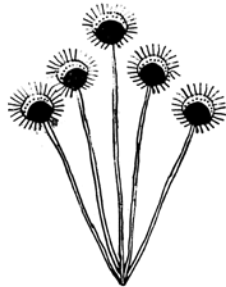
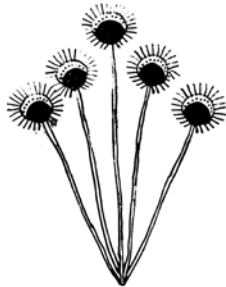
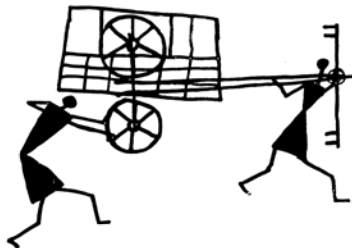
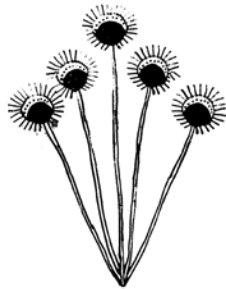
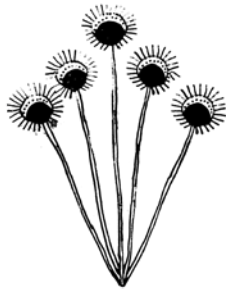
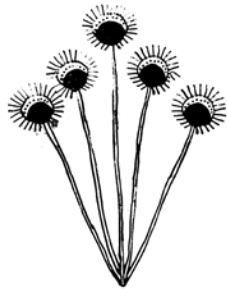
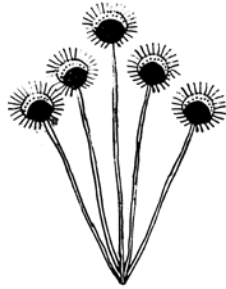
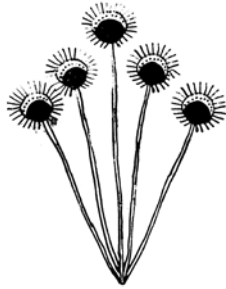
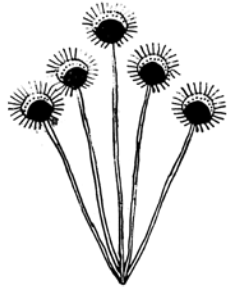
The programmes are conducted at taluka – level and district level from 2 days workshop to 2 weeks. At present focus is on grass root level leaders like Sarpanches, Chairmen of Milk Producer's Co-operative Societies, Chairmen and member of Self Help Groups, Village level women leaders, graduate and postgraduate students of rural areas and university teachers, Trade union leaders, Chairmen and Secretaries of Khadi and Village industries organizations and like.

ISPL is also organizing 8 weeks training programme for graduates and postgraduates of Agriculture and its allied subjects to promote Agri-Entrepreneurs. It has organized series of workshops and think tank meeting on impact of Climate change and on responsibility of public leadership.

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