

A decorative graphic consisting of various colored hexagons (blue, purple, orange, red, grey) and some hexagons with internal line patterns, arranged in a cluster around the text.

# Carbon Sequestration Project Highlights



*Empowered lives.  
Resilient nations.*

## Foreword

The Islamic Republic of Iran is party to numerous environmental conventions such as the UN Framework on Climate Change and the UN Convention to Combat Desertification and Mitigate the Impact of Droughts. Loyal to these engagements, Iran has placed environmentally sustainable development as a central priority in its development policies. This is visible in Iran's current Fifth National Development Plan (2011-2015) as well as in other national programmes and strategies. Environmental criteria are increasingly present in Iranian national policies and are progressively being integrated into audit processes.

Iran has worked hand in hand with its international partners such as the Global Environment Facility and UNDP to improve its performance on environmental management and on meeting its international engagements.

The Carbon Sequestration Project is one among many of Iran's efforts to reduce greenhouse gas emissions and promote environmental sustainability. Its originality lies in its innovative, participatory approach designed to catalyze transformational change in the lives of vulnerable Iranians. Thanks to the openness of the Ministry of Agriculture Jihad and its specialized agency, the Forest, Rangeland and Watershed Management Organization, the strong support of the United Nations Development Programme and funding from the Global Environment Facility, this 'bottom-up' project was able to create a successful model for the participatory rehabilitation of desertified rangeland, and contribute to sequestering atmospheric carbon.

By exploring the nexus linking environmental degradation and poverty in Southern Khorasan - one of Iran's poorest and driest provinces - the project has increased the capacity of villagers to rehabilitate their own environment, draw a better living from it, and develop alternative, non-climate dependent employment opportunities. Most importantly, the careful management of the dependency between local communities and their environment has created more sustainable mechanisms and steadily confirmed the committed involvement of villagers.

The project has leveraged the contribution of numerous governmental and non-governmental organizations in support of targeted communities through building infrastructure, delivering training or even financial support. The Carbon Sequestration project's tested success on the ground - in its environmental and socio-economic results - and the precedent it has set in terms of participatory methods in Iran has elevated it to a model to be reproduced in different parts of the country, many of which are very similar to Southern Khorasan in terms of environmental and socio-economic profiles.

Today, plans are currently being made to replicate the project in the southern province of Kerman, and the central Iranian city of Yazd, while participatory approaches figure prominently in Iran's Fifth National Development Plan. In December of 2011, the first international training workshop on the participatory management of natural resources in arid and semi-arid lands was held in Tehran to share the Carbon Sequestration Project experience with experts from all over the region.

Careful monitoring and evaluation, as well as innovation will be key to ensuring the project's continued success in its original site or in others such as Kerman and Yazd.



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# Introduction

## Iran's Environmental Context

With 80 percent of arid or semi-arid land, Iran's ecosystems are vulnerable to environmental damage, including biodiversity loss, groundwater depletion and pollution of air, soil and water. The impact of climate change is increasingly emerging as a critical issue with links to poverty, health and disaster risks.

According to recent studies conducted by the Ministry of Energy, the Islamic Republic of Iran is receiving 30% less precipitation compared to its long-term average. Consequently, the effects of climate change include a decline in the quality and quantity of water supply and of arable lands. Flashfloods and sandstorms have become more frequent.

Vulnerability to the effects of climate change is exacerbated by continued unsustainable land use, over-exploitation of the natural resource base and a need for more integrated management, of ecosystems and biodiversity. Environmental degradation has effects on agricultural productivity, internal displacement and rapid rates of urbanization. The rural poor are disproportionately affected by the negative impact of climatic variations, as their livelihoods are frequently weather-dependent.

The Carbon Sequestration Project run jointly by the Forest, Rangeland and Watershed Organization (FRWO), the United Nations Development Programme (UNDP) and the Global Environmental Facility (GEF), seeks to provide a model for rehabilitating desertified swaths of land while sequestering atmospheric carbon – the main cause of climate change – and contributing to poverty reduction.

## International Conventions

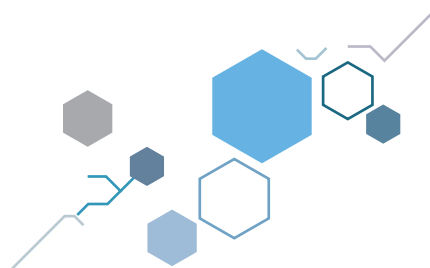
The I.R. Iran is a member to several Multilateral Environmental Agreements (MEAs), including the United Nations Framework Convention on Climate Change, the Biodiversity Convention, the Ozone Layer Protection Convention and its Montreal Protocol, the United Nations Convention to Combat Desertification, the Ramsar Convention, the CITES Convention, and the Tehran Convention on the Protection of the Marine Environment of the Caspian Sea.

The Islamic Republic of Iran is working to meet the international environmental agreements to which it is party in close contact with its international partners such as UNDP and other UN organizations working to ensure environmental sustainability such as FAO, UNIDO and UNESCO.

## The Fifth National Development Plan

Environmentally sustainable development has been made a key priority in Iran's Fifth National Development Plan (NDP, 2011-2015), as well as in other national strategies and development programmes. Nonetheless, gaps remain in legislation, institutional capacity and in the integration of environmental sustainability considerations across different development sectors. The cost of environmental degradation is not yet appropriately incorporated into development analyses and decision making.

In an effort to better link environmental degradation and poverty, exemplified by the Carbon Sequestration project, the Government of Iran now uses an inter-sectoral and community-based planning approach, aimed at improving the lives of the poor – those who are most affected by climatic variations.





### *Environmental Degradation in Southern Khorasan Province*

The Carbon Sequestration project is located in the extremely dry Hossein Abad plain in Iran's South Khorasan province which shares a border with neighboring Afghanistan. The rangelands in this region have been continuously degraded by unsustainable use, over-grazing and fuel wood cutting. The project area is also affected by a period of severe erosive winds lasting approximately from April to July, which can reach up to 120 km/h, causing considerable erosion and environmental damage. The area has suffered from increasingly recurrent droughts since 1997. Water scarcity has made large-scale agricultural production impossible. Hossein Abad's hostile environment has made it very difficult for its inhabitants to pull together even a meager living. Many of them flock to Southern Khorasan's main city of Birjand in search of work.

The goal of the Carbon Sequestration project is to promote transformational change by rehabilitating the project site and improving the socio-economic situation and Human Development Index (HDI) of local communities through a participative, community-based approach. The project aims to develop a model of carbon sequestration and natural resource management for replication in other parts of Iran and beyond.

### **Project Overview**

<b>Carbon Sequestration in the Desertified Rangelands of Hossein Abad</b>		
<p><b>Partners:</b></p> <p><b>Implementing:</b> FRWO &amp; UNDP (GEF Implementing Agency)</p> <p><b>Involved:</b> Ministries: Education, Employment, Agriculture, Health &amp; Medical Education (Provincial);</p> <p><b>Organizations:</b> Road Construction, Vocational Training, Mobile Pastoralists Affairs, Tourism &amp; Handicraft. Emam Ali &amp; Emam Khomeini charities, national &amp; provincial media.</p>		
<p><b>Phase 1</b></p> <p>March 2003 – March 2010</p> <p>31 villages in Hossein Abad Sharbisheh, South Khorasan Province. Population: 3,290</p>		
<b>Funding for Phase 1</b>		
Government of Iran (FRWO)	Global Environment Facility	UNDP - Iran
US\$960,000	US\$750,000	US\$629,000
<p><b>Phase 2</b></p> <p>March 2010 – December 2014</p> <p>40 villages in Hossein Abad Sharbisheh &amp; Momen-Abad, South Khorasan Province (phase 2 includes villages targeted under phase 1)</p> <p>Population of targeted area: 6,735</p>		
<b>Funding for Phase 2</b>		
Government of Iran (FRWO)	UNDP - Iran	
US\$1,500,000	US\$600,000	





## Challenges and Transformational Change

*The Carbon Sequestration project sites – Hossein Abad Sharbisheh and Momen-Abad District– in South Khorasan Province are among the poorest, most arid parts of Iran. This area, located close to the Afghan border, has suffered from recurrent droughts and severe erosion caused by persistent winds.*

### Desertification

Located close to the Afghan border, Iran's South Khorasan Province is mostly identified as an arid and hyper arid area. The land in this part of the country is "brittle and harsh. Its soil is poor, containing only very few nutrients, and has extremely low water content and high salinity", explains Ali-Mohammad Tahmasebi Birgani, Secretary of the Technical Committee of the Desertification Bureau in FRWO.

"The project site has been studied, indentified and classified as Wind Erosion Hot Point, scorched by the sand-laden 'sistani' winds that blow continuously for four months a year," adds Amir Pouyafar, Deputy of Bureau of Desert Affair for the Carbon Sequestration Project. Water erosion also contributes to the area's impoverished soils: three out of ten working areas covered by the project were considered subject to severe erosion early in the project's cycle (with water erosion values superior to 0.70).

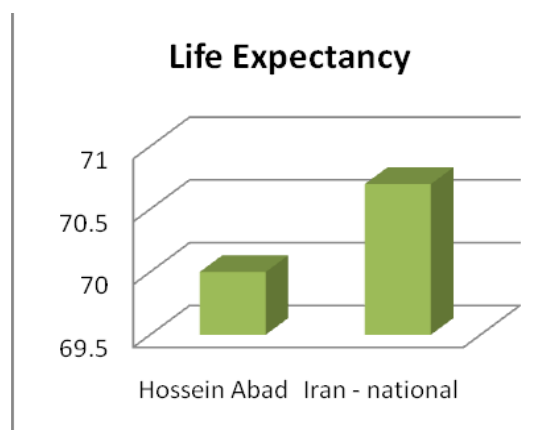
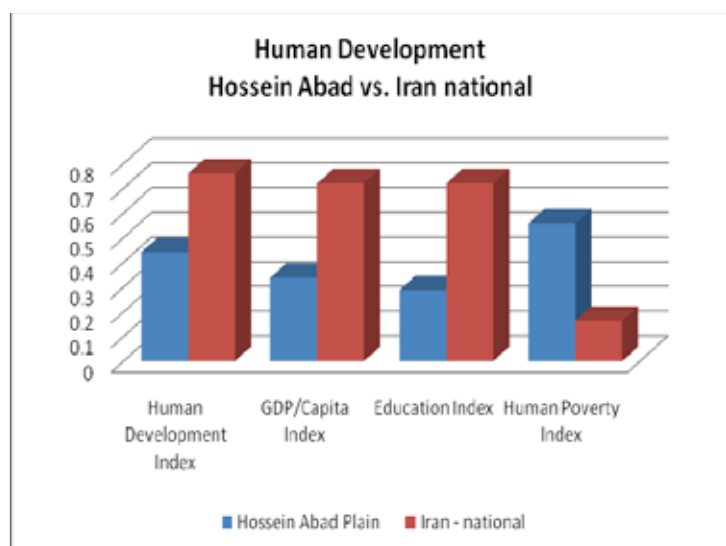
Previous to the implementation of the project, the targeted area suffered from a rapid rate of desertification. Little, if any live, woody biomass remained and only about 10% of the area's ground was covered with vegetation, by an invasive species, Peganum hamala. Severe seasonal winds, over-grazing, fuel wood gathering and recurrent drought have aided the advance of the desert and consequently impoverished livelihoods as herding remains the main source of income in this part of Iran. Arable lands rapidly became unusable as fields were progressively covered by sand.

"Villagers' degraded environment pushed them even further into poverty - and in turn, poverty pushed them towards increasingly unsustainable use of the land, exacerbating the vicious cycle of poverty and environmental degradation," continues Mr. Tahmasebi Birgani, of FRWO.

### Poverty

Previous to implementing the Carbon Sequestration Project, traditional activities such as herding or small-scale agriculture became increasingly difficult. "Southern Khorasan is one of the poorest parts of Iran" notes Mohsen Abdolhoseini, Carbon Sequestration Project cheif expert in FRWO's Desertification Bureau, "people living in the region's villages have extremely low purchasing power, low education and are very vulnerable to climactic changes because their livelihoods are weather dependent," he pursues.

Because of its harsh environment and limited opportunities, the Human Development Index in the project area was significantly lower than Iran's national HDI and suffered lower literacy and education rates than the rest of Iran. The project was instrumental at improving the poverty, education and literacy rates in the area and ultimately increasing the Hossein Abad plain's overall HDI. The graphs below offer a snap-shot of the extent of under-development in the area targeted by the project in 2006<sup>1</sup>.



<sup>1</sup>-Source: *ibid* and *The Human Development Report 2006, United Nations Development Programme*



## Improving lives

The Carbon Sequestration Project, with the involvement it leveraged from other governmental and non-governmental organizations, has succeeded in making a marked difference in the lives of the communities it targets. Indicators for education, literacy, human poverty, and overall human development have all improved significantly since the project's inception and are detailed in the table below. Other crucial improvements to the daily lives of vulnerable people in the Hossein Abad plain include women's inclusion in community decision-making, stronger social cohesion and empowering vulnerable individuals to make a difference in their own lives and the life of their community.

	Human Development Index	GDP/Capita Index	Education Index	Life Expectancy	Human Poverty Index
<b>2006</b>	0.441	0.338	0.287	70	0.559
<b>2007</b>	0.478	0.341	0.385	71	0.522
<b>2008</b>	0.504	0.358	0.413	74	0.496
<b>2009</b>	0.517	0.385	0.458	75	0.483

*Source: A Brief review on achieved outcomes of the CSP based on four years of M&E studies during the first phase; FRWO, Jan 2010  
Data for 2010 and 2011 will be made available in late 2012.*

### Areas of Transformational Change

- Improved partnerships between local communities and their members
- Women's involvement through village development groups;
- Networked micro-credit groups;
- Dissemination of information through dialogue, meetings and participatory knowledge sharing;
- Local governance structures adapting and responding to new community demands;
- Leveraging national involvement;
- Alternative and sustainable income generation;
- Innovations on rangeland practices and community linkages;
- Local R&D and innovation.





## A Holistic Approach for Transformational Change

*Although the primary aim of the Carbon Sequestration Project is to sequester atmospheric carbon, it also seeks to demonstrate that desertified rangelands can be cost-effectively reclaimed and sustainably managed by local communities.*

### The Importance of using a participatory approach

“At the time of the project’s inception, natural resource management in Iran was generally very government driven. While this is a strong positive sign that the Government of Iran invests significantly in its natural resources, this top-down approach tended to adopt a strictly environmental perspective with only marginal consideration to socio-economic issues,” notes Prahbu Budhathoki, Chief Technical Adviser for the United Nations Development Programme who lived in South Khorasan for over two years. “At times, that approach turned out to be very costly: when local communities were not involved, they feared that their land was being repossessed simply declined to cooperate. By adopting this approach for the Carbon Sequestration project, land, villagers’ common property became ‘community property’. This shift truly reinvigorated the relationship between the targeted villagers and the resource,” he continues.

“Previously, we contracted companies, which used to hire people from the local community, to support replanting desertified areas. We realized that this method was not sustainable since villagers - those who would use the rehabilitated resource - were not involved in planning at all, which created conflicts over ownership,” explains Mr. Abdolhoseini of the FRWO. Today, with the experience of the project, we rely on them to identify which sites to rehabilitate and which species of plants to use. People know that we work for them and this trust has helped bring down costs up to 50% in some cases, as communities participate in rehabilitation activities more willingly. Communities - unlike contractors - are able to take a long-term view,” he adds.

In 2003, during the project’s very early days, international development paradigms had begun a marked shift towards participatory methods for planning and project management. According to Mr. Budhathoki, “Iran benefitted from and built on international experience in participatory processes. The FRWO, UNDP and GEF together have succeeded in making the Carbon Sequestration project a replicable model for participatory management of natural resources.” Mr. Budhathoki’s experience in helping communities, led to publication of Social Mobilization Manual in 2006 which was followed by drafting a model of project during 2012 to be replicated in other parts of Iran or other countries with similar socio-economic and environmental challenges.

### Organizing communities

#### *Village Development Groups*

Beginning in 2005, the project started to encourage the local community to form Village Development Groups (VDGs). Each group holds regular meetings with its membership and has both a secretary and a chairman, who facilitate member participation and monitoring. A board of representatives composed of the secretary and chairman of each village development group meets every month and a half to oversee the work of fellow VDGs. Today, the project counts a total of 60 VDGs of which 11 are exclusively female, 16 are exclusively male and 33 are mixed.<sup>2</sup>

The VDGs were created to help villagers plan and carry out project activities such as identifying which areas to rehabilitate, selecting appropriate plant species, running nurseries and rehabilitation activities. In addition, VDGs helped identify villagers’ needs to facilitate adopting alternative, more sustainable livelihoods by introducing micro-financing funds (discussed later in this section) and conducting skills training workshops.

2-Carbon Sequestration Project Implementation Report 2011, Ministry of Jihad Agriculture, Forests Rangeland and Watershed Management Organization, January 2012



### *Women's participation*

VDGs have been instrumental in leveraging the participation of local women who do not always have a determined role in community decision-making.

The project facilitated several vocational and training workshops to enhance the skills of local women who are traditionally the poorest, most vulnerable community members. An adult literacy programme was also initiated. Diversifying the local skills base and consequently, the livelihoods of groups targeted by the project, helped to ease pressure on the natural resource base as most people in the project area are typically reliant on weather-dependent activities such as livestock rearing and agriculture.

Today out of over 1,774 village development group members 41% are female. Women have been empowered to create their own groups and now hold leadership positions presidents and secretaries. Around 90% of group members who participated in training courses were women<sup>3</sup>.

Women who previously had no economic activity and lacked public involvement in their communities today, via the Carbon Sequestration project, have opportunities to generate an income and have a say in community affairs through village development groups.



Table of training courses organized for village development group members

Agricultural and food production	Confectionary
	Suger beet cultivation
	Livestock & poultry rearing
	Animal vaccination
	Wheat harvesting
Skills development & income generation	Machine knitting
	Computer skills
	Kilim, velvet & carpet weaving
	Home appliance and cooling device repair
	Men's hairdressing/barber
	Sewing (basic) & Balouchi traditional sewing
	Embroidery
Health	Car electricity
	Family planning & health
	Enviromental health
	Introduction to first aids
	Personal health



### Introduction of micro-finance to the project

In order to involve village development groups sustainably in alternative income-generating activities beneficial to environmental rehabilitation efforts, micro-credit funds were set up for each group to manage collectively. Since 2006, 845 micro-credit loans (total of 398 mIRR) were disbursed to villagers drawing on project funds set aside for this specific purpose and a total of 633 loans (total of 755 mIRR) made up of small amounts of money pooled together by members.

“Alone, the poor have less capacity than others to set and achieve their goals because of their limited resources and often limited skill-set. Collectively, the poor can do better: when they pool together their small amount of savings, they can do much more for themselves and their community,” notes Mr. Budhathoki.

By the end of 2011, village development groups had saved approximately IRR 450 million. The amount of money saved by each group averages roughly IRR7.5 million, and the average VDG member's savings totals approximately IRR253.000.

Microcredit funds have been used for environmental rehabilitation activities but also serve as an initial capital injection to establish alternative income-generating activities such as cattle rearing, chicken raising, clothing production, carpet weaving, medicinal plant extraction and even hair-dressing. Funds were used to purchase seedlings and equipment for environmental rehabilitation activities, but personal micro-credit loans were also

made to acquire the necessary equipment for income-earning activities listed above. In 2011, 45% of loans were disbursed based on employment generation plans submitted to village development groups for approval and 55% of loans were for used to cover members' immediate needs such as medical fees, marriage expenses or other current expenditures<sup>4</sup>.

Women have typically drawn on microcredit funds more than their male counterparts which they have mostly channeled to income-generating investments such as purchasing sewing machines, plant distillation equipment, weaving material and the like. Approximately 58% of applications for loans were made by women in 2011. During the same year, women also submitted 51% of loan applications for employment generation plans<sup>5</sup>. In 2010, the Carbon Sequestration Project succeeded in creating 132 sustainable micro-enterprises in the area.

“Women have overwhelmingly been involved in production activities while men have typically been active in marketing the goods produced by their wives and daughters. At the outset, when the goods produced by women were sold and turned into money, we had to do a lot of outreach to encourage the men to give the money back to women in order to re-invest in their production capacity. Today, this is no longer much of an issue - women feel empowered and men feel that they have done something positive to support their family,” details Mr. Budhathoki.

According to Mr. Abdolhseini of FRWO, “the introduction of microfinancing, coupled with training, has helped VDG members to think about investing in their future - collectively and individually. Savings empower villagers, particularly women, and help develop a cooperative attitude among people: they must work together to survive in a hostile environment. The Carbon Sequestration Project has developed social cohesion using microcredit.



Village Development Group savings and microcredit fund disbursements -- 2011 (Iranian Rials)	
Total savings	450 million
Average savings per VDG	7.5 million
Average VDG member savings	253,380
Investment in Production/employment generation activities	45% of loans disbursed
Loan used for current non production activities	55% of loans disbursed
Female loan applicants	58%

*Source: Carbon Sequestration Project Implementation Report 2011, Ministry of Jihad Agriculture, Forests Rangeland and Watershed Management Organization, January 2012*

## Leveraging national involvement

The Carbon Sequestration project has had a strong catalyzing role for leveraging the involvement of various governmental and non-governmental organizations active in the project area and beyond. The project drew attention to existing needs of the targeted area such as road and school construction implemented by the Road Construction Organization and the Ministry of Education respectively. The Forest, Range and Watershed Management Organization and UNDP assessed the training needs within the project and facilitated them to be delivered by the Emam Ali Charity Organization, the Vocational Training Organization affiliated with the Ministry of Labour, Cooperative and social welfare and, the local office of the Ministry of Jihad Agriculture, the provincial Ministry of Health, the Organization of Tourism and Handicraft, and the Adult Education Bureau which is managed by the Presidency. Training delivered by these different offices included sessions on animal husbandry, herding, appropriate farming techniques, medicinal plant extraction and family planning among others. The Organization for New Energy supported the project financially and technically to build a solar powered public bathhouse and a solar-powered water purification system.

In addition, the Carbon Sequestration Project has been supported by the University of Birjand that runs all of the project's monitoring and evaluation and has become a knowledge center for integrated efforts against desertification.



### Achievements at a Glance (2011)

#### Village Development Groups

- 60 VDGs created,
- 1,774 VDG members,
- 41% of them are women,
- 90% of training course attendees were female (end 2010)
- Social mobilization manual published (2006).

#### Microcredit & Savings

- Total VDG savings: IRR 450 million
- Average savings per VDG: IRR 7.5 million
- Average savings per VDG member: IRR 253,380
- 45% of loan applications were made to finance employment generation plans, 55% were made to cover current expenses.
- 58% of loan applicants were women.

*Source: Carbon Sequestration Project Implementation Report 2011, Ministry of Jihad Agriculture, FRWO, Directorate of Natural Resources and Watershed Management, January 2012*



## Environmental Transformation

*By organizing local communities, and developing their skills, the Carbon Sequestration Project has succeeded in developing a cost-effective model for participatory land rehabilitation efforts. The selection of plants adapted to deserts and the application of relatively simple watershed management techniques have helped boost the vegetation cover in rehabilitated areas, and capture atmospheric carbon in the soil.*

### Rangeland rehabilitation

With the support of the local office of the Ministry of Jihad Agriculture office and Carbon Sequestration project, village development groups became contractors for rehabilitation activities, some of which drew on microfinance funds injected by the project. These activities included the maintenance of plant nurseries, the selection and replanting of patches of land and the protection of replanted areas. This participatory method of managing rangeland rehabilitation activities was selected to produce both environmental and socio-economic benefits to transform the lives of the highly vulnerable population inhabiting the Hossein Abad plain.

Nearly 15,000 village development group members participated in land rehabilitation activities in 2011, most of which are based on fairly simple techniques such as creating a small crescent-shaped watershed around planted seedlings or using basic irrigation methods.

Appropriate species for planting such as Artemisia, Ferula, Haloxylon, Artiplex and Iris were identified among local species with the help of a consultant suggested by local communities. These plants are especially resilient to dry and high-salinity soils such as those found in the Hossein Abad plain. They are also especially efficient in containing wind erosion. To date, approximately 11,700 hectares of land have been have now been rehabilitated and planted with assistance from the project.





## Reducing dependence on rangelands

Rangelands in the project area had been severely depleted by overgrazing and firewood collection for use by surrounding communities in their everyday lives (cooking, heating etc). Previous to the project's implementation, the local staple naan bread, was prepared in wood-fired ovens using shrub wood collected from rangelands. The project supported village development groups to acquire gas-fired ovens to reduce their dependence on brushwood and consequently decrease the environmental damage caused by its collection. To date over 25 village development group own and manage gas-fired ovens.

Not only has this measure diminished dependency on shrub wood and other rangeland resources for energy, it has also reduced villagers' exposure to smoke<sup>6</sup> previously caused by wood heating and cooking, and eliminated the time-consuming task of firewood collection, leaving villagers with more time to dedicate to environmentally sustainable income-generating activities fostered by the carbon sequestration project. Other examples of the project's contribution to reducing dependency on the rangeland for energy include creating solar-powered water purification plants, heating systems and powered cookers and building a solar-powered bathhouse.



Village dependency on rangeland shrub wood for energy	
2007	23.30%
2008	19.40%
2009	14.20%

*Source: A Brief review on achieved outcomes of the CSP based on M&E studies of four years of project implementation, FRWO, Jan 2010  
Data for 2010 and 2011 will be made available in late 2012.*



The development of alternative livelihoods fostered by the Carbon Sequestration project has sought to reduce pressure on the natural resource base. While traditional income generating activities such as rearing livestock or farming have continued, villagers have benefitted from training and organizational skills received through the project which support them to conduct these activities in a more sustainable - and ultimately more lucrative - fashion. For instance, agricultural activities are run using alternative techniques that are more appropriate for impoverished and dry soils. They include: compost production, building windbreakers, consolidating farmlands and training villagers in environmental management.

The adoption of better suited methods improves yields and reduces the waste of rare resources such as water and soil nutrients. Livestock grazing is now much more controlled to reduce the significant damage caused to land by over-grazing - which is among the most conducive factors for soil detachment and exposure to erosion. “Today”, explains Mr. Abdolhoseini of FRWO, “rangeland is only progressively open to controlled grazing. Not only do villagers fully understand the purpose of limiting the access of their flocks to protected rangelands, they clearly see the benefits of this practice which has increased the grazing potential of rangelands and transformed villagers’ lives.”

## **Sequestering Atmospheric Carbon**

Soil is the largest repository of terrestrial carbon and plays a critical role in sequestering atmospheric carbon dioxide, which is among the atmospheric gasses responsible for global warming. Carbon sequestration in the ground occurs when plants transfer a portion of the carbon they absorb through the process of photosynthesis to the soil that surrounds them. The Carbon Sequestration project seeks to increase the vegetation cover in the project area through the plantation of aridity-resistant plants to reduce soil degradation as noted above, but also to sequester a maximum of atmospheric carbon, while increasing the productivity of the site.

With the selection of appropriate, aridity-resistant plants, project and microcredit funds, and the dedication of village development group members, the carbon sequestration project has succeeded in steadily increasing the rate of carbon sequestration in the soils of the project area.

By linking poverty reduction and environmental rehabilitation, the carbon sequestration project has successfully created a sustainable model for capturing atmospheric carbon while transforming the lives of extremely vulnerable communities.

## **Success Story**

### **UNDP and the GEF help Iran breathe life into the parched plains of Hossein Abad**

In April of 2005, Prahbu Budhathoki, a technical advisor for the United Nations Development Programme (UNDP), stepped out of the plane that brought him to Hossein Abad, 100km away from the urban center of Birjand, in Iran's South Khorasan province. All he could see around him was a vast stretch of barren earth.

"When I first visited the Hossein Abad valley, I could not imagine that people lived there. The area was very dry, windy and bare and the situation was exacerbated by a prolonged drought. Sheep and goats were trying to get some nourishment from a parched and dusty land. I often asked myself whether these animals were eating sand or grass. People were completely covered with clothes to protect themselves from sistani winds and the scorching heat. There was life, but living conditions were simply not right," explains Budhathoki.

The rangelands in this region near the Afghan border have been continuously degraded by unsustainable use, over-grazing, fuel wood cutting and severe erosive winds. Hossein Abad's hostile environment has made it impossible for its inhabitants to pull together even a meager living. Many of them flock to Birjand in search of work.

The Global Environment Facility (GEF), UNDP and the Iranian Forest, Range and Watershed Management Organization (FRWO)-funded project began there in 2003 which has helped control desertification, model the sequestration of green-house gasses in dry land areas and provide micro-financing opportunities for the communities living in Hossein Abad. Thanks to the land rehabilitation activities supported by the project, not only are people less inclined to migrate to the city; they are setting a bottom-up model of contribution to the fight against climate change.

"My family was about to migrate to the city nearby in search of a living, with our marriage at the brink of failure. This small herbal extract workshop that I started with the help of the project's microcredit system has contributed to our family income. We are now busy enough to stay in our own village. God has blessed my family by giving us a second child, my baby boy," confesses Mrs. Zari Sa'adati, a 35-year-old woman from the village of Hassankolangi.

In line with advice from the specialized Iranian government agency, patches of land are re-planted using the pool of funds provided by the Government of the Islamic Republic of Iran, UNDP and the GEF. These partners have also supported the communities in the Hossein Abad plain with training to enable them to tackle their serious environmental and economic challenges, and to build diverse and sustainable livelihoods. The plants used are selected specifically for their capacity to slow the advance of the ever-threatening desert, pushed by the strong "120 day winds" the region experiences each year. This has helped break the vicious cycle of environmental degradation and ready the land for cultivation. "This project is the first time we have modeled the way dry land vegetation contributes to absorbing atmospheric carbon," explains Dr. G. R. Hadarbadi, Head of the Jihad Agriculture Organization, in South Khorasan Province:

"Involving communities was essential to give them a sense of ownership and make them feel like they could take their destiny into their own hands," explains Mr. Budhathoki, who lived in Hossein Abad for two years as the project's Chief Technical Advisor.

The local communities set up several micro-financing funds constituted with money from the project and with the savings of villagers living within the project's area. The funds were managed by Village Development Groups (VDGs) specifically created and mobilized by the project. Villagers could borrow funds to use as starter money for income generating activities like purchasing, growing and selling seedlings to re-plant their parched earth, or for environmentally-friendly animal husbandry.

"No mainstream banks wanted to set up shop in this area because there was no profit to be made. The people living here are extremely poor," notes Farzaneh Derakhshi, UNDP Programme Associate.



The project drew on a holistic approach; while most VDG members drew on microcredit funds for environmental rehabilitation activities, some borrowed money for the creation of parallel socially relevant initiatives. For instance, a Health Service Network was entirely created with micro-credit funds in Sarbishe Township where parents can now bring their children for medical checkups.

By the end of 2011, 60 Village Development Groups have been thriving, 11 of which are exclusively female and 30 are mixed gender. “Importantly, the project has set a model for local community participation and bottom-up decision making for the sound management of natural resources. This is essential for achieving sustainable development,” states Dr. Hadarbadi. “The project organized people and made them understand that collectively they can do more for their individual and community benefits”, adds Mr. Budhathoki.

“In addition to its significant positive impact on the environment, one of the project’s major achievements is the involvement of women. It has given them confidence. Before, they were too shy, too embarrassed to talk to me – even as a woman. Today, they talk to me proudly about their future initiatives and plans,” adds Ms. Derakhshi.

The first phase of the Carbon Sequestration project has been so successful that the government of Iran has selected it as a model for replication in other provinces such as Tehran and Kerman. A women’s self-help group is now working to replicate the project near Yazd. Kasrab, one of the 30 villages covered by the project, was selected by the Imam Ali charity as a model for knowledge transfer.

UNDP, and FRWO have agreed to extend the project into its second phase which will encompass up to 15 additional villages, using the same participatory methods that proved so successful in phase one. New communities will have direct responsibility for restoring their environment and rebuilding their livelihoods sustainably, while contributing to the fight against climate change.

“The results of the Carbon Sequestration project have exceeded my expectations by far,” admits Mr. Sharifi, Director-General for Natural Resource in South Khorasan. “The communities of Hossein Abad can be proud of their achievements – for rebuilding their local livelihoods, for the model they have created, and for their broader contribution to reducing global greenhouse gas emissions. Today Hossein Abad is greener and more bustling than I ever could have imagined.”



## Conclusion

### Tackling the poverty-environment nexus

The integrated approach adopted by the Carbon Sequestration project intelligently tackles the nexus that links poverty and environmental degradation. This multifaceted project has created lasting benefits in numerous sectors - environmental, socio-economic and governance. The Carbon Sequestration project also provides a model for participatory approaches to rangeland rehabilitation which can be replicated in other parts of Iran and beyond to promote transformational change.

Land rehabilitation activities conducted with the active participation of villagers, coupled with the creation of microcredit funds and the availability of training, have generated alternatives to traditional income-earning activities such as herding and farming. Previous to the project, these activities were conducted in an unsustainable fashion - today, access to land for grazing is controlled and more appropriate farming techniques have been adopted to ensure that such traditional activities no longer deplete the environment.

Along with these very significant achievements, the Carbon Sequestration project is making further efforts to better integrate its management of the different economic sectors the project now affects. Thanks to the project's success, Hossein Abad now sustains more people than when it began. Consequently, careful attention will be paid to minimizing the environmental impact of their livelihoods.

### Helping governance structures evolve

The CS project initiated by the Forest, Rangeland and Watershed Management Organization, UNDP and the Global Environment Facility has leveraged the involvement of numerous governmental and non-governmental organizations in Iran. Each has contributed to the project in their respective field of competence. According to Amir Pouyafar, Chief Expert for the Carbon Sequestration Project: "the participation of local and national authorities and the networking opportunities provided by the project have been almost as important - if not more - than the involvement of local communities. For them to be involved meaningfully, a space needed to be created to have their voices heard in planning and implementing the project."

"Indeed, previous to the Carbon Sequestration project, the participatory approach was somewhat unfamiliar in Iran. Today, the project has shown that it is possible to cost-effectively rehabilitate desertified land using such an integrated approach: drawing on the contributions of all stakeholders, working with upstream and downstream levels of government to boost local community benefits," adds Mr. Abdolhoseini of FRWO.

"Iran's 5th National Development Plan (current) encourages the adoption of participatory approaches for development efforts: this is a clear recognition that this approach to land rehabilitation is not only sustainable, it is also cost effective," pursues Mr. Pouyafar.

### Creating a model for replication

The success of the Carbon Sequestration project has been so significant that Iranian national authorities have selected it as a model for replication around Tehran and in the southern city of Kerman. Other, independent organizations such as women's self help groups have sought to use the project as a model to be implemented in their communities. This has been the case with a women's group from Yazd, an important city in the desert of central Iran which harbors similar environmental characteristics as South Khorasan.

### South-South Cooperation

South-South cooperation on development efforts has been a strong focus of Iran's regional outreach. The Carbon Sequestration Project is no exception to this tendency and its managers have sought to share their



experience with professionals from neighboring countries.

In 2011, a call for applications was sent to regional experts working on desert rangeland rehabilitation and watershed management to participate in Iran's first "International Consultative Training Workshop on Participatory Management of Natural Resources in Arid and Semi-arid lands." Out of 37 applicants, 12 were selected to join the workshop which was held from 9th-23rd December 2011, and run in two parts: the first theoretical, held in the outskirts of Tehran; the second field oriented, including visits to Birjand's surroundings, Yazd and Isfahan. The workshop brought together experts from neighboring countries such as Iraq, Syria, Pakistan, Turkey and beyond. Sharing the successful experience of the Carbon Sequestration Project contributes to creating a vibrant regional community of practice.

"It is very helpful to understand how Iran has managed to use a participatory approach. 'Many stakeholders' often means 'many problems' in an environmental rehabilitation project. I look forward to learning how the partners working on the project were able to make it sustainable," states Haluk Ersan, Expert at the Ministry of Forest and Water Affairs of Turkey. Another participant, Seyed Kazim Abbas, Capacity Building Specialist at Pakistan's Ministry of the Environment, explains: "I have learned many things through this workshop including new techniques such as mulching for sand dune stabilization. The CS project has very ambitious goals - but that is good. Also, I have noticed that in Iran, government-initiated development projects are much more integrated with universities than in my country - this is a highly relevant insight which I'll bring home with me."



## Lessons learned

- The formation of VDGs has been the most important factor in promoting the participation of local communities in sustainable rural development. Nonetheless, as the project expands, village development groups will give greater consideration to ecological constraints in planning their income-generating activities.
- Making traditional income-earning activities more environmentally sustainable is as important as developing alternative livelihoods, as the adoption of new businesses and activities is not immediate. In addition, the project will encourage village development groups to adopt a community-wide approach previous to promoting individual livelihood plans. This will help produce better integrated development plans across different sectors of economic activity.
- Social mobilization is a slow and systematic process. Village development groups have progressive stages of development and constant support is required until they are fully established.
- Beyond using a bottom-up, participatory approach, multi-disciplinary and integrated planning is essential to leverage the participation of other charitable or governmental organizations. The project will also benefit from the greater delegation of decision-making power to local management teams and from increased cooperation between the different institutional partners involved.
- When possible, the use of local trainers for skills development activities is more appropriate and less costly than using trainers from other parts of the country: participants are better able to communicate with them and are more at ease.

## Looking ahead

In line with the development priorities of the Government of Iran, the Carbon Sequestration project has proven that desertified rangelands can be cost-effectively rehabilitated by local communities while producing transformational socio-economic and environmental change. The project would not have been as successful without the commitment and openness of Iranian authorities who have consistently shown themselves accepting of new approaches to development efforts.

Today, the project has provided a model which is beginning to be replicated in other parts of Iran and has started sharing its experiences internationally with the first of many regional workshops conducted in late 2011. Innovation will be key to consolidating gains in the original project site, but also in the areas where the project is being replicated. More detailed plans are being developed to improve marketing and monitoring, as are new financial mechanisms to reinvest gains in further rehabilitating rangelands.







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