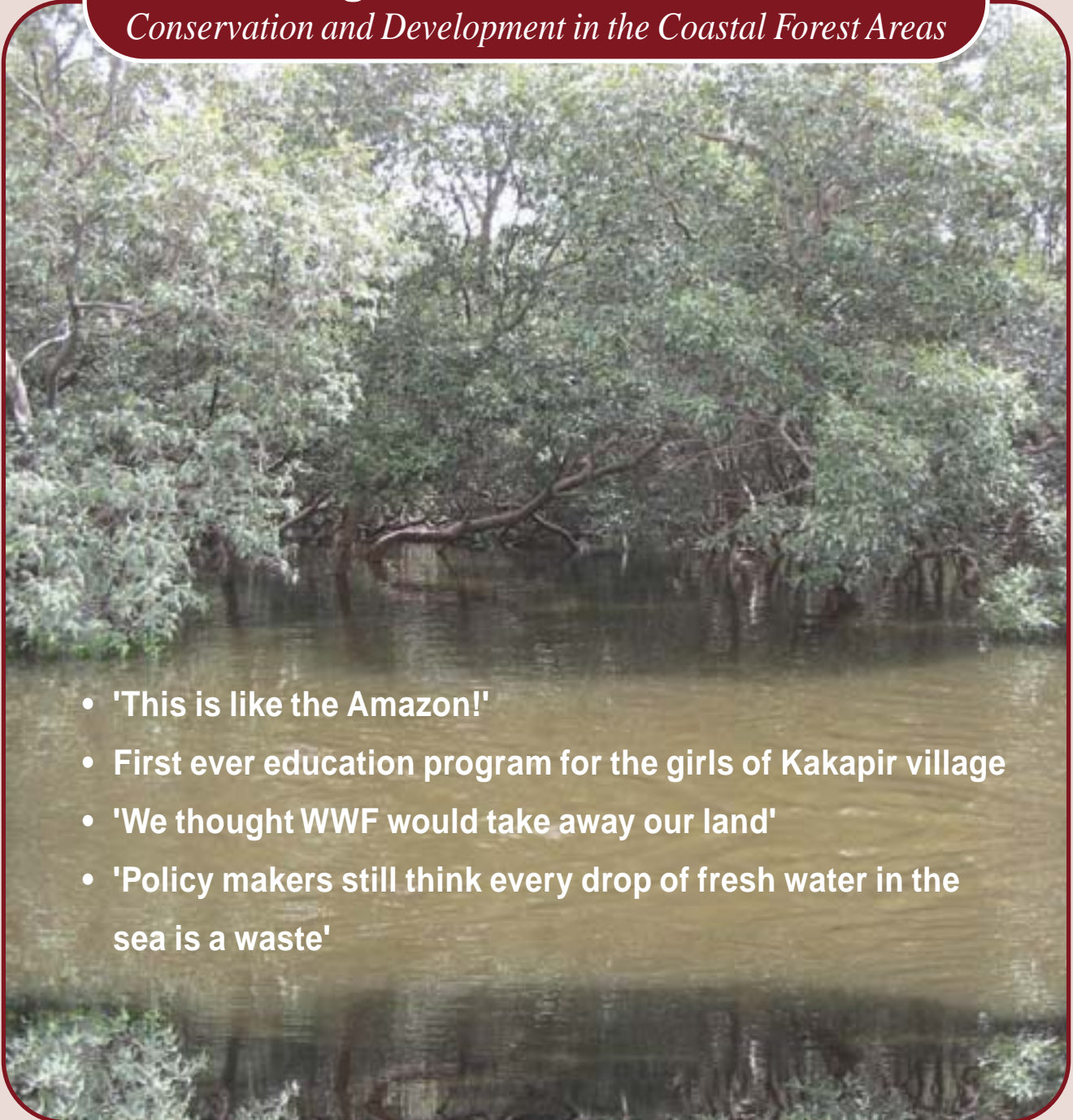




## Saving Pakistan's Green Gold

*Conservation and Development in the Coastal Forest Areas*



- 'This is like the Amazon!'
- First ever education program for the girls of Kakapir village
- 'We thought WWF would take away our land'
- 'Policy makers still think every drop of fresh water in the sea is a waste'

Pakistan's mangrove forests are in a dismal state. Directly affected by logging, grazing and overfishing, and undermined by the pollution and falling water levels of the region's rivers, their ability to act as coastal protection and to provide a breeding ground for the many marine species is becoming increasingly compromised. But all is not lost. On the Balochistan coast, WWF is working with fishermen and community-based organizations to rehabilitate mangrove forest and provide alternatives to unsustainable harvests. A Wetland Education Centre in Sindh Province, near Karachi, is now informing the public of the major threats facing the mangroves, and raising awareness amongst decision-makers of the importance of mangroves to Pakistan's economy.

# Dealing with the open- and the narrow-minded

*Restoring the country's wetlands, including the fragile mangrove ecosystem, is only one of WWF-Pakistan's many priority activities.*

*Ali Hassan Habib, the organization's dynamic Director General, knows that to win the struggle for a better environment, in a country which has so many other pressing problems, it is necessary to forge as many partnerships as possible.*

‘We do recognize the risks, but we still think it makes a lot of sense to engage with Shell.’

Speaking at the occasion of the ceremonial inauguration of a new partnership between WWF-Pakistan and Shell Pakistan, Ali Hassan Habib shows himself to be a pragmatic man. ‘There is a lot of potential within that company for a more sustainable approach, and if we don't engage with them, that potential might not be realized. We feel it's worthwhile to invest time and energy in cooperating with such huge companies.’

WWF-Pakistan has been struggling to find new funding for the conservation of the precious mangrove ecosystem in the country's coastal areas. At the end of a five-year program that was sponsored by the government of the Netherlands, WWF's Karachi office had to find new donors in order to continue the many activities initiated. With the Shell-partnership and the European Union taking over large parts of the 'old' project, the future of the mangrove conservation activities now seems assured. Shell's engagement also signals a new dimension in thinking of WWF Pakistan, i.e. involving the corporate sector in nature conservation.

A precondition for WWF-Pakistan entering into a partnership with Shell in the mangrove conservation was the oil company's assurance that its own staff would get involved in the activities. Ali Habib, who himself worked for many years for a British chemical company, explains why: ‘Shell has hired some of the best brains in the country, so if we can influence them, this will influence Shell's in-house thinking as well as influence their future careers. We increasingly ask this of our corporate partners:

financing a project is only one part of the game, the main thing is to stay engaged and get involved in the activities themselves.’

Engaging with the oil giant doesn't mean that WWF-Pakistan has surrendered its right to criticize the company. ‘We have made it very clear that if tomorrow Shell does something which we feel is irresponsible we will have no problem in criticizing them, as we have done before,’ says Ali Habib.

The organization adopts the same, autonomous attitude in its dealings with the Pakistan government, whether at the federal or more local levels.

Fortunately the present Pakistani government is fairly open to criticism and the country's newspapers openly criticize the politicians. However, being criticized for a lack of environmental awareness is not going to disturb the night's rest of a government official. ‘In many case we are able to work with local government officials,’ says Ali Habib, ‘like with forest departments or the managers of wildlife protected areas. Often they themselves are very critical about the centralist and bureaucratic way they have to work. They also complain that they are provided with inadequate facilities, autonomy, or back-up to perform their duties.’ Ali Habib, however, says he is ‘extremely disappointed’ about the interaction with the higher echelons of government decision-makers. ‘There is a lack of vision about the future. High-ranking public officials regularly state in public that the environment is not important, that first the country has to develop. These are very narrow-minded views. Of course you can have economic growth and look after the environment at the same time. In fact, environmental improvement should be considered as one of the indicators for development.’

In Pakistan, caring for the environment is still, for the most part, seen as a Western agenda, as a luxury. It will take a long time to change that attitude. While working on that, says Ali Habib, WWF-Pakistan is mainly active at the local level, ‘where people are more responsive and changes do take place.’ The Mangrove Conservation Project in the Balochistan and Sindh areas is a case in point.





## *Sandspit Wetland Centre opens the eyes of many* ‘This is like the Amazon!’

*Whenever possible, WWF’s local conservation officer, Jahangir Durrane, takes groups of students or corporate officials visiting the Wetland Centre at Sandspit out for a boat trip into the backwaters, which are surrounded by mangrove swamps. Most of his guests are flabbergasted by the sight of the lush vegetation and the richness of the animal life which includes every year thousands of wading birds, on their way south from Central Asia. ‘This is like the Amazon,’ they exclaim - a region they know from television. ‘They find it hard to believe,’ Durrane says, ‘that we have such rich nature here in our own backyard, so close to the megacity of Karachi.’*

The visitor’s surprise is understandable, it is indeed a small miracle to see this fragile ecosystem less than 20 km from Pakistan’s largest metropolis, where, every day, over 10 million people contribute to the further pollution of their environment. Most visitors, especially young students, have never been outside an urban

environment in their lives, says Durrane. Their reactions emphasize the importance of seeing nature with their own eyes, rather than just reading about it in their textbooks. ‘One student told me that he had always thought that there were no birds in Karachi and its environs. But in one or two hours at the Sandspit Wetland Centre he spotted 17 species.’ Which, by the way, is only a small part of the more than 100 species that have been recorded here — Dalmatian pelicans and flamingoes, gulls, terns, and waders are but a few of them.

In 2003, over 4,000 visitors from schools, colleges, universities, communities and the corporate sector, mostly from Karachi and its suburbs, have participated in activities at the Wetland Centre (which was opened in February 2001). They have been involved in mangrove plantation, bird- and turtle watching, training courses, beach-cleaning activities, and awareness-raising workshops.

Students are the main focus group of the Centre, which is the first of its kind in Pakistan. It contains a display hall, which has different exhibits and posters on wetland ecosystems, a children’s play area, a





*The Wetland Centre*

laboratory, a data resource unit, and a staff office. Its activities include a school membership program, different product lines, and clubs like the Green Gold Club - an exclusive club for educational institutions.

‘To maintain a steady stream of visitors, continuous lobbying and networking with school administrations is necessary,’ says the Mangrove Project’s manager, Ali Hasnain. ‘Consequently we have organized an orientation program for directors of about 200 institutions, to highlight the value of the Centre for them.’

Many under-funded government schools have problems paying the entrance fees for their pupils to visit the Centre. For the moment, this problem has been solved through a contribution of Sui Southern Gas Company, which has promised to pay the fees for a thousand school children. Other companies

have been asked to do the same. Companies like Unilever and ICI are already involved in small-scale activities for their staff. A group of 28 volunteers from Unilever, for instance, which (like Sui Gas company) is an Exclusive Corporate Member of WWF-Pakistan, planted hundreds of mangrove saplings near the Centre and attended a presentation on conservation activities marking the occasion of Earth Day.

Other activities of the Wetland Centre include the production of several video films, and organizing training courses on wetlands management. Well-known television performer, Ms Marina Khan has joined as a Goodwill representative, attracting extra attention from the print and electronic media.

### **Not self-sustaining**

Since its launch, the Wetland Centre seems to have operated quite successfully and has gone some way to achieving its aim of enhancing public awareness of mangrove ecosystems. However, sustaining itself financially has proved a difficult task for the Centre. Project manager Ali Hasnain admits that ‘creating a self-sustaining Wetland Centre is the only major aim that we have not achieved in the past years.’

Marketing a fairly new concept like the Wetland Centre is not an easy task in Pakistani society and fundraising has proved difficult. WWF-Pakistan estimates that US\$ 50,000 will be required annually for the Centre’s operation. A marketing and fundraising plan has been developed, with the help of a consultant from the Mai Po Nature Reserve of WWF-Hong Kong. WWF-Pakistan is now considering the establishment of an Endowment Fund or Trust Fund, that with an amount of



*Students are involved in planting activities*

## Former carriage driver in the British empire

*Hajee Gul Mohammed* is the fisherman who takes us for a trip in Sandspit's backwaters. He thinks he must be somewhere between 80 and 90 years old. He is certain of this because he remembers the 'Victorian time', as they call the British colonization here. At that time, he worked for the British as a carriage driver.

Here, in Sandspit's backwaters, he tries to earn a living during periods when fishing in the open sea is banned. It's not something he enjoys: there is a lot of competition amongst the fishermen, with crab catchers from the whole region coming to this area. 'In the backwaters there are days you earn only 20 or 30 rupees. It's impossible to live from that, with your family.' Consequently, Hajee Gul is not always able to buy the medicine he needs for his heart condition. He has never received any support from the provincial fisheries department. At the start of each fishery season, he borrows money for equipment or to repair his boat from the moneylenders in his village. The moneylender takes 8 per cent of the catch as interest. Pay back of the loan is not arranged, that can be done at any time. 'But if one day your boat sinks, you may end your life as a beggar.'



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US\$ 500,000 would assure a continuous flow of funds to the Centre. Ali Hasnain: 'It will be a gigantic task to secure such an amount of money. We will approach various donors, corporate and individual, to provide money. We now know that such a Fund should have been proposed at the beginning of the project. It would have provided consistency and

continuity for the activities and have covered other operational expenses, after the life of the project.'



*The Wetland Centre established its own Newsletter, called Wet and Wild, and has a separate webpage on WWF-Pakistan's website:*

*[www.wwpak.org/wet-club.htm](http://www.wwpak.org/wet-club.htm)*



WWF PAKISTAN

# Sindh Mangrove Conservation Project

## Biophysical description

- The project is being implemented at Sandspit in Sindh province.
- The project area lies 18 km southwest of Karachi City (which has a population of 10-12 million people). The area contains shallow tidal lagoons, inter-tidal mudflats and 400 hectares of mangrove swamps.
- The western part comprises open sandy beach extending for 20 km. The beach platform is high enough to remain above the high tidemark throughout the year except during the monsoon, when it can be inundated by high tides.
- The river Lyari feeds the backwaters from the eastern side and seawater enters from the south and from Karachi harbor.
- The average annual rainfall is 125 mm and the mean annual temperature is 32°C.
- The climate is arid subtropical, with temperatures remaining moderate throughout the year.

## Biodiversity significance

- One mangrove species, *Avicennia marina*, is present in the area, covering about 400 hectares.
- About 50,000 waterfowl such as waders, pelicans, flamingos, egrets and herons, and gulls and terns

use the area as a wintering ground and Ardeid kites breed in the area.

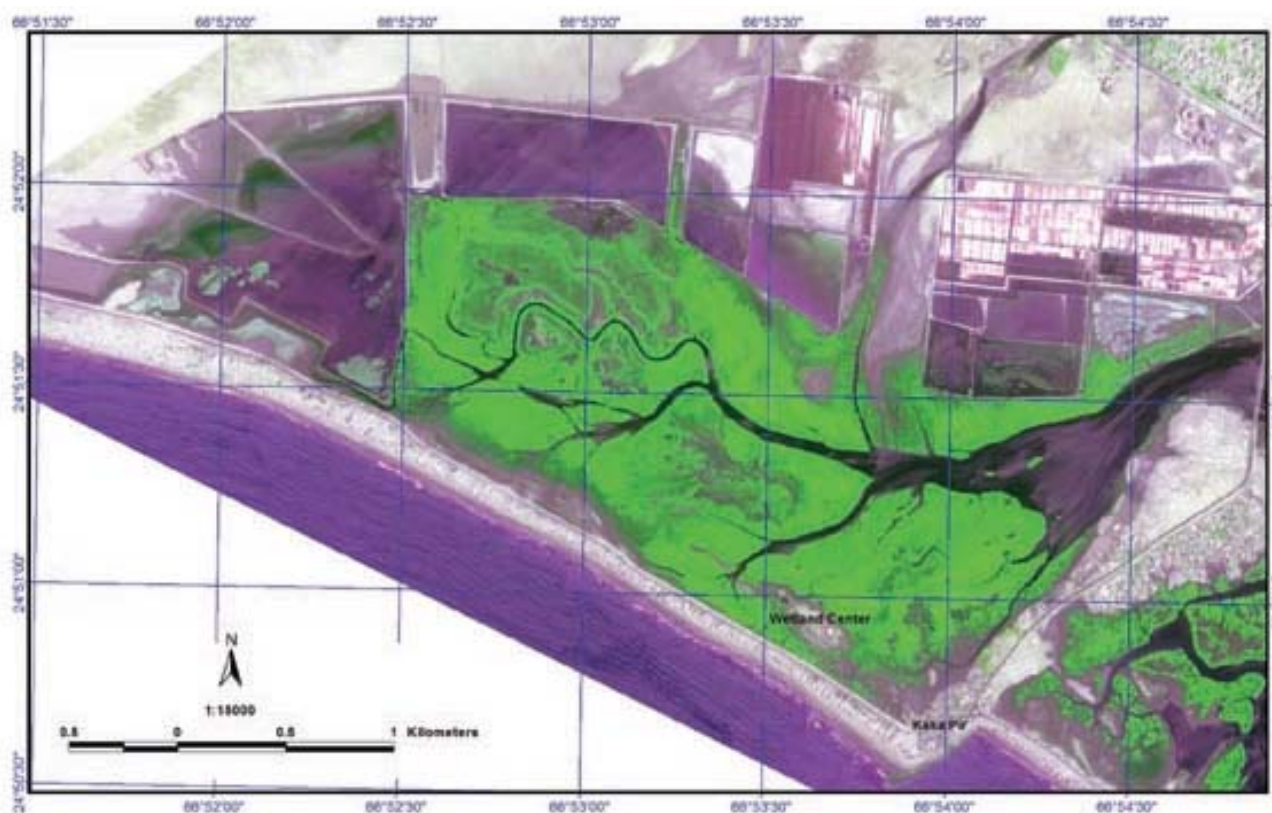
- Two species of turtle - green turtle and olive Ridley turtle - use the beach for nesting from August to January.

## Social setting

- Approximately 5,000 people live in the Sandspit area.
- About 85% of the population are engaged in fishing activities.
- The area is used for recreational purposes with more than 150,000 visitors annually.
- Basic facilities such as health, education and safe drinking water are inadequate.
- Women have no significant role in economic and development activities or in decision-making.

## Pressures on resources

- Lopping of mangrove trees for stall feeding of cattle and camels.
- Dumping of untreated municipal sewage.
- Nesting grounds of marine turtles under pressure from: construction of recreation huts, solid waste from beach visitors, and predators (crows, kites, and dogs) that feed on eggs and hatchlings.



Area of the Wetland Centre Sandspit, Karachi





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# First ever education program for the girls of Kakapir village

*September 30, 2003 was an important day for the village of Kakapir, in the vicinity of the Sandspit Wetland Centre. On that day the education program for girls at the local community school was officially inaugurated.*

The village with a population of some 1.200 people, lacked a separate school for girls so far. Some girls have in the past been enrolled in the governmental primary school, but due to local customs most parents were reluctant to allow their daughters to be educated in the presence of boys. The girls and their mothers were, however, eager for education.

In consultation with the community elders, WWF's Mangrove Project decided to resolve this

situation and helped to initiate a non-formal education program for the girls in the village. A female teacher from a neighbourhood community was hired, while a teacher from the community has been engaged to provide education for the adult women. About 70 girls and women from 6 to 25 years have been enrolled in the past half-year and are now attending daily lessons in the afternoon (while the boys have lessons in the same building in the morning).

The girls themselves seem very happy with this arrangement. After we have been granted special permission to enter the classroom where some 30 girls, aged between 13 and 19, are being taught, we ask them some questions. All of them emphasize how glad they are to get this education, and to learn, as one of them says, 'what is right and what is wrong.'



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When asked what they plan to do with their lives, several girls say that they want to become like city people: 'Well dressed, rich, and with all kinds of material things.' (Later, teacher Nasreen Perwaiz says that all these girls are in fact already engaged with local boys and there's little chance that they will be able to leave the village).

Teacher Nasreen speaks of a 'challenging' job: 'These girls are really blank, you have to teach them everything, but they are extremely interested and motivated, and so are their parents. Some of them come every week to the school to ask if their daughters are doing well. Working here gives a lot of satisfaction.'

The support of the parents is confirmed by one of them, 38-year old local fisherman Mohammed Sidique. He is very proud of his daughter: 'For a few months now she has been going to school in the afternoon: every evening she studies. Within weeks she was able to write her own name!'

Haji Siddiq, the much-respected township elder, says he is thankful to WWF for making free education for the girls possible. 'There were no

education possibilities for our girls because the government was not interested in providing us with a female teacher. But they did not provide good education for the boys either. Now almost all boys and girls of our village go to school, and that is how it should be.'

The education program is one of the most visible results of the cooperation between WWF and Sandspit's local community. Much has changed here since the start of the conservation activities. 'At first, people gave WWF a hard time,' admits Haji Siddiq. 'There was a lot of mistrust. We told WWF that people need to see tangible results. That is what is happening and now everybody wants to join the sustainable activities like plantation and raising the mangrove nursery.' As one illustration of this, 30 young women from the village participated in the 2003 celebration of World Environment Day, planting mangrove saplings in the degraded areas near the Wetland Center. Seven of them also helped with the establishment of the nurseries.

Another important development is the construction of a natural gas connection, which will



probably be laid before the end of the year. In most areas of Pakistan people cook with gas, but in the Sandspit area there is no gas supply, which, with the consequent need for fuel wood, contributes significantly to the pressure on the mangroves. WWF-Pakistan lobbied hard for the Kakapir

community to be given a gas connection, which will be operated by its Corporate Member, Sui Southern Gas Company. 'It will mean that the conditions for stopping the degradation of the forest are in place,' says Haji Siddiq. 'Gas means our women can stay at home instead of collecting wood.' ▲

### ***Students clean the beach to save the turtles***

Sandspit Beach is a recreational area for Karachi inhabitants. It is frequented by thousands of visitors, particularly on weekends. Unfortunately much of the trash they leave in their wake is made up of plastic products and does not degrade for years. Together with the litter coming down the rivers, this constitutes a real danger for the sea turtles who eat it. WWF's Wetland Centre organizes regular beach-cleaning activities before and during the nesting season of marine turtles. The Centre has been mobilizing students to participate in the beach cleanups to provide a safe nesting habitat to the endangered green turtles. About one hundred students from Karachi Grammar School cleaned up a 5 km stretch of the beach in February 2003. This exercise was repeated in October, when no fewer than 400 students participated. 'These events were sponsored by ICI, a pharmaceutical company,' says Babar Hussain, WWF-Pakistan's Turtle Conservation officer. 'Every year we organize these major beach-cleaning activities, which is also a good educational tool.' The marine turtle conservation program itself is sponsored by the banking corporation HSBC. There are three WWF guards active at Sandspit Beach. One of their tasks is to watch the nests and help turtle hatchlings to find their way to the sea.

Together with the Karachi-based NGO Shehri, WWF-Pakistan is developing a more permanent and systematic mechanism for beach cleaning activities, involving the City District Government, the Manora Cantonment Board and the Karachi Port Trust (with the help of the GEF Small Grants Program).



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BUREAU MBO

*Integrated conservation and development around Miani Hor*

# ‘We thought WWF would take away our land’

*Facilitated by WWF-Pakistan, community-based organizations (CBOs) have been created in the three villages that are situated around Miani Hor Lagoon - Sonmiani, Dam and Bhira. Despite initial resistance the CBOs have had a significant impact on these traditional fishing villages and their popular support has grown along with their success.*

While seated on the ground of the attractively decorated meeting room of the Sonmiani Development Organization, coordinator Abdul Rashid tells the story of his CBO. He tells how, when it was launched a few years ago, it won over the

community by mobilizing the villagers to establish an *eidgah*, a congregation ground for the *Eid* prayer (*Eid* is the largest Muslim festival). In this village of devote Muslims, this created a lot of goodwill for the new organization.

More recently the CBO organized resistance against plans to establish a commercial shrimp farm near Sonmiani’s mangrove forests. ‘We know that these kind of shrimp farms are bad for the environment,’ Abdul Rashid says. ‘The mangroves that we have planted recently would have been cut again. We celebrate Environment Day and Ocean Day every year. So it would be strange if we were to accept such a shrimp farm here.’

Consequently, when the governor of Balochistan

Province recently visited the area, the people from Sonmiani seized the opportunity to mount a protest against the plans, complete with banners - in itself, a revolutionary step for the people in this village. However, not everybody agreed with the CBO-inspired activities. Some of the community elders, in particular, were annoyed. 'They wanted to get financial compensation from the company, in return for their permission to start the farm. But we did not agree with them. We said: this is an area for poor, but proud fishermen. Local people only want to fish, they don't want to work on a shrimp farm,' says Rashid.

### Power struggle

Other CBOs tell their own stories of internal resistance to the new community-based initiatives. Fear of losing their influence made some community elders - effectively, the village's informal leaders - resist the new CBOs, which were set up by mostly young men from their own communities. 'These people had full control of the community,' says Habibullah, president of the Society for Social Development and Conservation of Nature, the CBO of Dam village. 'To get anything done it was always necessary first to approach them. The creation of the CBO weakened their influence and they did not like it. But we have done all we can to show our respect. We consult them frequently. But the creation of the CBOs has undermined the old power system here, that's for sure.'

The community elders in Dam did not resist the new CBO too strongly, adds former president Muhammad Ali (presidential jobs within the CBO rotate every two year): 'They were convinced that these young people were doomed to fail. But we did not,' he says proudly, 'and now almost everybody supports us.'

The creation of the CBOs can be seen as an effort to fill a gap caused by the steady decline of the indigenous system of community organization (*Kutcheries*). The main focus of the Kutchery members - mainly the elders of the village - presently is on conflict resolution, land disputes and ethnic feuds. The formation of CBOs requires the endorsement of the Kutchery members.

Also present at this meeting of the Dam CBO is Darya Khan, president of the newly formed CBO of the village of Bhira. This is the most remote village of the three: the best way to approach it is by the coast, at low tide. In the past the village has had some very bad experiences with the provincial Forest Department, which suddenly banned mangrove cutting. The Bhira population, which depends heavily on the resources of the nearby forest, protested against the decision. The situation then escalated and some of leaders of the protest

movement were sent to jail. The memory of this episode encouraged the Bhira population to resist every effort of the WWF Mangrove Conservation Project (which had announced it would work in partnership with the Balochistan Forest Department) to enter the area.

'There was a lot of mistrust in the first years,' admits Darya Khan. 'Many people were afraid of WWF. They thought it would take away their lands.' But the people of Bhira were also aware of the big problems facing their village: the total lack of a (social) infrastructure such as a metalled road, a school, dispensary or electricity. When they saw the results of the WWF-supported CBO activities in the villages of Dam and Sonmiani, the mood changed. 'Most people in Bhira now believe WWF really wants to help us.' Although, Khan admits, there is still some resistance. 'But we are facing these people now.'

### Applying for funds

The Dam CBO has 68 members, all of them men, who pay a small monthly contribution. Women are not allowed to become members. There is, however, a special CBO women's committee, which organizes specific activities like the mangrove nurseries, health education and midwife training. Other recent activities of the Dam CBO include installing a sewage pipe in the market, establishing a dispensary as well as raising the village's educational possibilities from 8th to 10th grade for boys (for girls the 8th grade is still the highest possible level). Fuel-efficient stoves have been introduced. A facility workshop for boat engine repair has been installed, while the CBO has also started giving small loans to fishermen, to supplement the loans from the moneylenders.

WWF-Pakistan - which has two community mobilizers in this area: one male, one female - supports the CBO in applying for funds with several donors, ranging from the Ministry of Environment to foreign donors like the Swedish SIDA (health project for women) or the GEF Small Grants Programme and the EU/PTF fund (mangrove planting, as well as ecotourism activities). WWF-Pakistan also arranged an exposure visit of the CBO members to community-based projects in Northern Pakistan, where an integrated conservation and development approach is practiced successfully. The members of the CBO were also provided with skill-based and issue-based training to deal with environmental, social or development issues.

'We are very satisfied with the partnership that we've build with the communities of Sonmiani and Dam,' says WWF Karachi's Fayyaz Rasool, who himself lived for several years in Sonmiani as the





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*The facility workshop for boat engine repair which has been installed in Dam*

project's local conservation manager. 'And relations with the Bhira community are also improving rapidly. These communities are really contributing and taking steps for the betterment of the local environment and living conditions, while at the same time working for the development of the area.'

The CBOs now have the technical proficiency to raise mangrove nurseries, establish plantations and

monitor them with little assistance from the Mangrove Conservation Project. However, the partnership between WWF-Pakistan and the Miani Hor communities didn't stop when the DGIS funded 5-year project came to an end. A second phase of the project has been accepted for funding by the European Commission. The project will focus on sustainable management of mangroves and fisheries,

while providing natural resources, food and income to the poor households in the coastal communities. The villages around Miani Hor are part of the new project, which will also include Sandspit as well as two new sites, i.e. Kalamat Khor in the North Arabian Sea Ecoregion (Balochistan) and Ketti Bunder in the Indus Delta Ecoregion (Sindh).

### Ownership

Looking back at the Balochistan experiences, Dr. Ejaz Ahmad, Deputy Director General of WWF-Pakistan, and the Regional Head for the Sindh and Balochistan Province, emphasizes that the main concern throughout was focussed more on the process than the output. The target of planting 140 ha with mangroves could have easily been achieved within 2-3 years by bringing in labor, he says. 'In fact, that's what we did in the first year of the project. But we soon discovered that this was not the right way. We were talking with the communities about the importance of mangroves and community development processes, but we weren't involving them. Our Community Development Officers stopped this practice and initiated discussions with the CBOs about participating in the mangrove conservation activity. The local population first

became involved in seed collection and nursery raising. Then they started taking part in other activities as well. After that they themselves actually started planting with the two CBOs competing to see which could plant the most. This helped enormously. Some of them told us that, in the beginning, they weren't bothered when people cut mangrove trees – sometimes they even helped them. Now, having planted the seedlings themselves, it hurts even if someone plucks a leaf of the tree. So now they have a feeling of ownership, they want to protect the forests. They also learned about the relationship between mangroves and shrimp and fish production, which has a direct link with their livelihood.'

Training the local population was another important element. Initially, the local population was trained in various skills connected to the mangroves. However, says Ejaz Ahmad, 'we felt that their interest in the community development process was enhanced after we had trained them in management-related skills, such as the management of CBOs, work plan development, accounts, book keeping, etc. Because of these enhanced management skills, their confidence has grown so that now they can deliver and improve the condition of their communities.'



### Not much of a choice

The largest fishing concern in Dam owns three large ships, each with up to 40 men aboard. But, as the manager points out, in fact the company's fleet also contains some 60 smaller boats (a large part of the total 130-ship fleet of the village). This is because the fishermen have been given loans to buy these boats by the company. Part of the deal is that they have to sell their catch to the moneylenders. There is not much of a choice, because this is the only way to get credit in Dam, the nearest bank being many miles away. Fishermen in Dam are used to borrowing money in this way, with no written contracts, solely based on verbal agreements. But of course, they would prefer to be able to do without the restrictive loans and accompanying arrangements that reduce the return they receive from their catch. It is estimated that almost two thirds of the households are indebted to informal moneylenders. Increasing debt has undermined sustainable fishing and the mangrove harvesting traditions of the past: the borrowers' inability to pay back the loans have pushed their households to a point where their dependence on natural resources has increased, resulting in rapid degradation of these resources and increased poverty.



BUREAU M&O

## Former mangrove graveyards

WWF-Pakistan has enabled the planting of 176 ha of degraded mangrove areas in the past years in the Miani Hor, while the target of the project was 140 ha (by June 2002). Additionally, the CBO of Dam village has planted 52 ha of mangroves through a project supported by the Small Grants Program of the Pakistan Ministry of Environment.

Research by the Botany Department of the University of Karachi has shown that at least 40 percent of the rehabilitated area survives

to maturity. These plants are now bearing flowers and have started producing their own seeds. Approximately 700 ha, including the rehabilitated areas, have been earmarked for sustainable management by the community.

The plantation activities are continued through the involvement of local communities. There are four operational nurseries in the area, stocked with 40,000 saplings of *Rhizophora* and *Ceriops*. Most of the work in the nurseries is done by women. Planting the saplings is considered men's work. In both cases,

the voluntary work is organized by the CBOs. The main goal of all these activities is to protect, conserve, restore and assure the quality of the natural resource base for future generations. Fisherman Muhammad Ayub hopes his own generation may already be seeing the benefits: 'I have been at sea since I was four years old. We used to sail as far as India and Muscat. That was of course before Independence in 1947. Fishing has always been good here, but not

anymore.

However, this year, for the first time in many years, shrimp production was good again. That may have a natural cause, but there is a chance that this is the first result of our mangrove planting. It's only the first year of course, so we should not jump to conclusions. Let's wait and see.'



*Project Manager Ali Hasnain pointing at recently planted areas*





# Balochistan Mangrove Conservation Project

## Biophysical description

- The project has been implemented at Sonmiani Hor (bay) which is a body of water some 60 km long and 7 km wide, connected to the sea by a 4 km wide mouth. The total area of the Hor is 125 sq. km and the adjacent shelf is 80 km wide.
- Two seasonal rivers enter the Hor. The river Porali drains through the Bela region and empties into the central part, while the river Windor enters near the mouth of the Hor.
- Several low-lying islands, extensive mangrove swamps and inter-tidal mudflats commonly occur in the Hor.
- The temperature is high in the summers (35°C to 40°C) and the climate is arid to extremely arid. Winters are mild (20°C to 25°C).
- The annual rainfall ranges from 106 to 122 mm per annum. The area does not experience the monsoon.

## Biodiversity significance

- It is the only area in Pakistan where three mangrove species, *Avicennia marina*, *Rhizophora mucronata* and *Ceriops tagal* are present. The vegetation covers 2,500 ha.
- About 50,000 waterfowl have been observed during winter such as waders, gulls and terns, cranes, pelicans and flamingos. The area is used by Ardeids and Brahminy kites as their breeding grounds.

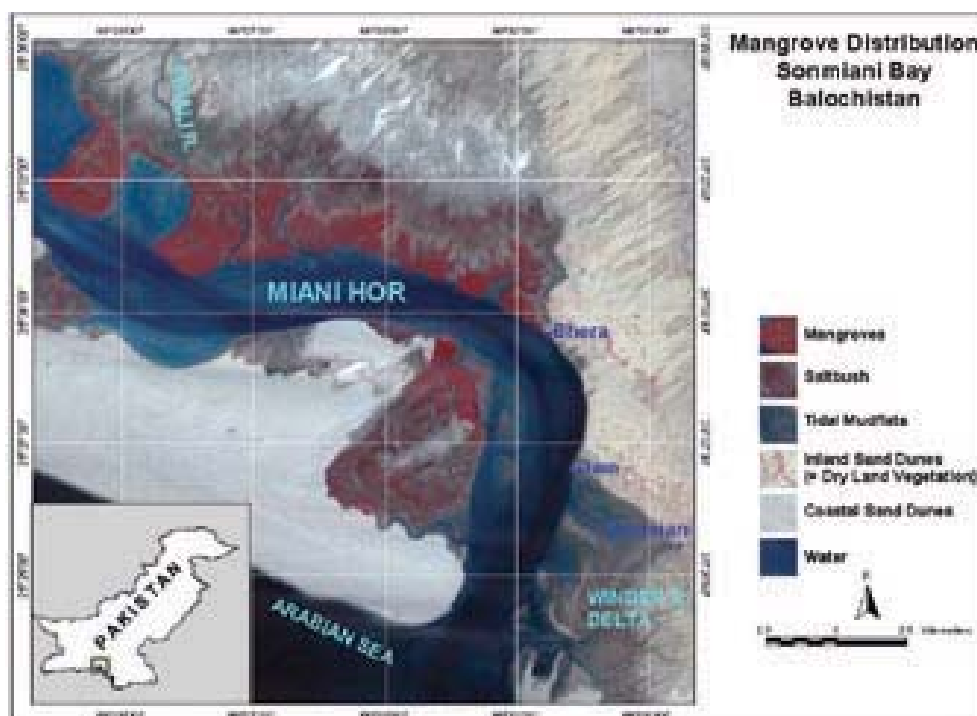
- Miani Hor is part of the WWF Global 200 Ecoregion i.e. North Arabian Sea and is also a Ramsar site.
- Two species of marine dolphin are regularly seen in the Hor: Humpback dolphin (*Sousa plumbea*) and Bottle-nose dolphin (*Tursiops truncatus*).
- It is a nursery ground for shrimp and fish.

## Social setting

- Three villages - Sonmiani, Dam and Bhira - are situated around the bay with a total population of approximately 7,000 inhabitants.
- 10,000 people seasonally migrate to the area during the fishing season (October to April).
- Approximately 90% of the population depend on fishing.
- Basic facilities such as health, education and safe drinking water are inadequate.
- Women have no significant role in economic and development activities or in decision-making.

## Pressures on resources

- Dependency on the mangrove forest varies from village to village. Bhira relies on the resource to a greater extent than the other two villages.
- Lopping of mangrove trees for stall feeding, camel grazing, and cutting of mature and large trees for house roof construction and boat support.
- Use of illegal nets for fishing.
- Over-harvesting of fish resources.



### **'We all know these nets are harmful'**

Late in the afternoon we meet *Abdul Ghani*, who is drinking tea with some friends in a Sonmiani open-air café. He used to earn a living from the shop he owns here. Now he has rented the shop to his nephew, and returned to fishing. He fishes in the traditional fashion, without a boat, catching by hand (mainly crabs and small fish). This earns him a daily income of some 60 to 100 rupee (1 to 1.5 dollar). With this money he has to sustain his much-younger wife of 30 years (he himself is in his fifties), one son who is still in school and a nephew. His income has decreased lately, he says, for which he blames the massive use of small-mesh nets. 'All the fishermen along the Pakistan coast use these nets. We all know it is harmful but nobody wants to be the first to stop using them. The government doesn't care, the government officials extort their money and keep their eyes closed.' However, he also signals a new development that is as harmful as the use of the nets: 'Some fishermen have started to close off the mouth of the channels and catch all the fish in there.' Abdul Ghani has complained about these practices to the local CBO and he is hopeful they can do something about it.



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### **'Coastal students are very smart'**

*Mohammed Ismail* is the headmaster of the Governmental Middle School for boys in Sonmiani. 'We organize a lot of environmental activities,' says Ismail. 'It is compulsory for students to visit the mangrove plantation. Children are now aware of the value of the mangroves.' The Sonmiani CBO recently donated school books for 35 children whose families were too poor to buy them for themselves. The creation of a school garden was also sponsored. Some 50 percent of the local boys attend this middle school, the rest start work after finishing primary school. 'But in the end they all become fishermen,' says Ismail. 'Because their parents are too poor. They can't afford to pay for their children to go to Karachi to study.' It's very sad that students who have the ability, are unable to go on to high school, sighs the headmaster. 'And especially here: coastal students are known to be very smart.'

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# Luckily, mangrove trees lack commercial value

*Pakistan's unique mangroves face many threats, ranging from internal factors such as overcutting for firewood and illegal fishing practices, to external factors such as the reduced freshwater discharge and water pollution. Fortunately the commercial threats facing the mangroves are not as serious as those facing most of the forests in the rest of the country. They are also fortunate in that, so far, no large companies have shown interest in establishing shrimp farming here.*

WWF's Director General, Ali Hassan Habib, is one of those who refuses to be too pessimistic about the future of Pakistan's mangroves, even those that are so close to the mega-city Karachi. 'We've done a ten-year study of the state of the mangrove forests in the Indus delta and the Sonmiani area,

which has shown that the overall area of the mangrove forest has not shrunk dramatically. Biodiversity has been reduced and certain pockets have become degraded. The threats are there, no doubt about it. But, given the state of the mangroves today, there is ground for optimism. With the steps being taken now, Pakistan's coastal forests can be sustained for the future.'

The WWF Director General however also points to the many uncertainties. 'There is still a lot going on in the mangrove ecosystem that we don't understand. There is of course the problem of the decreased fresh water flows. But you also see degradation in parts of the mangroves that have virtually no contact with fresh water. This means that pollution must also play a role, global warming maybe, or other factors. Scientists are still studying this question. At present we don't completely understand the dynamics of the mangroves.'

The plea for additional research is wholeheartedly embraced by Dr. Saifullah, Professor of Botany at



# Mangrove conservation project launched in Pakistan



BUREAU M&amp;O

*DAWN Newspaper, Pakistan*

**KARACHI, Sept 30, 2003: A non-governmental organization and an oil company, on Monday, jointly launched a three-year conservation project aimed at upgrading the mangrove ecosystem located in the outskirts of Karachi, Pakistan.**

THE PROJECT, WHICH is likely to cost about Rs5 million, will be executed jointly by Shell Pakistan and the World Wide Fund for Nature (WWF)-Pakistan, in the Korangi-Phitti creek system. The project emphasizes not only the conservation of the existing mangroves but also envisages further mangrove plantation in the area, besides creating awareness among the local communities, including students, about the importance and proper utilization of the mangrove resources.

Speaking as chief guest at the

inauguration ceremony of the project, the Sindh Governor, Dr Ishratul Ibad said the project would also support environment conservation efforts. Expressing his appreciation of the joint move by Shell and WWF, Dr Ibad urged the corporate sector to play a proactive role in the conservation area in order to make society better for all.

Referring to the events of the last few weeks, he noted that conservation of the environment was a national priority. "Degradation of the environment is more often a result of neglect and irresponsible actions and has an impact, far wider and deeper than we often imagine," he added. Calling for more projects and the creation of more awareness among the masses, he hoped that some of the major problems could be addressed before it was too late.

In a plea made by the WWF Director General in his speech, Dr Ibad assured the audience that he would extend all-out

support in securing protected sanctuary status for the mangrove forest, spread over an area of 350 hectares around the Sandspit.

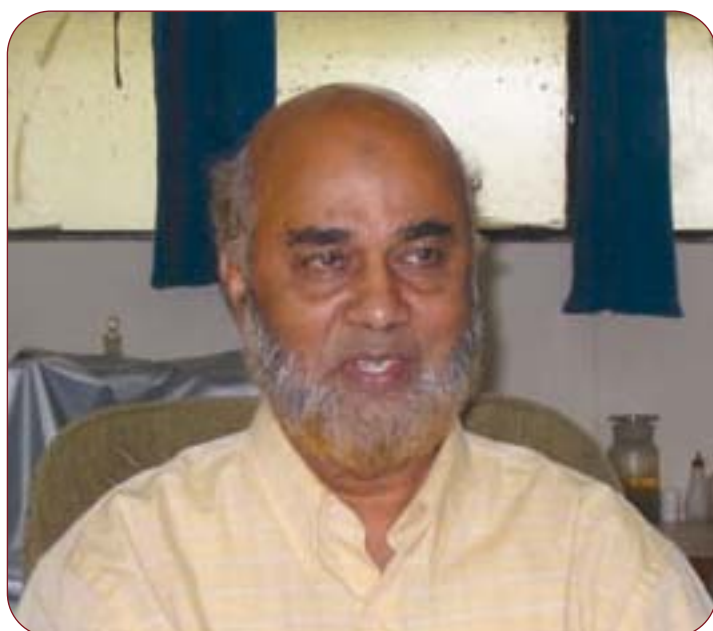
According to the WWF Director General, Ali Hassan Habib, the Sandspit mangrove forest, which is currently under the control of the Karachi Port Trust, was in relatively good condition and should be maintained as a model area providing opportunities for eco-tourism. Speaking at the launch ceremony, Mr. Ali Habib said that mangrove forests were facing massive degradation every year, which needed to be checked in the interest of ecosystem and fisheries, and for saving other marine species.

In his welcome speech, the chairman of Shell Pakistan, Farooq Rahmatullah, referring to the 129,000 hectares covered by mangroves in the Indus Delta held that it perhaps was the largest mangrove forest in the world in any arid climate. He said that the mangrove ecosystem was of great economic and ecological significance, and it was a pool of biodiversity and a habitat for diverse species, ranging from bacteria and fungi to fish, shrimp, birds, reptiles and mammals, besides being a source of fuel wood for people in the coastal area and fodder for the livestock, in addition to other benefits. However, he added that the indiscriminate exploitation of mangrove resources by the coastal population, the reduction in fresh water supply and the dumping of refuse and pollutants had degraded the ecosystem in the country. About the joint venture, he maintained that it was a partnership for a meaningful contribution to the society. The project would be financed by Shell, in line with its policy of supporting sustainable environment projects, he added.

Karachi University, one of the leading national experts in the field of mangroves ecology. But he is less optimistic than the WWF's Ali Habib. Saifullah has already spent several years lobbying - unsuccessfully - for the establishment of a Mangrove Research Centre, which should preferably be located in the Miani Hor area. At 100 kilometers from Karachi, biodiversity and the quality of the water are still largely unaffected. 'I am almost retired,' says

Saifullah with a dramatic undertone, 'but my work won't be complete before we have established such a research centre. Without proper research, it will be hard to stop the ongoing deterioration of Pakistan's mangroves.'

Internal as well as external pressure on the fragile ecosystem is enormous, according to the professor. And growing rapidly. 'Twenty years ago, the water of Clifton was clean but now it is no more and the beach



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*Professor Saifullah*

soiled with black murky domestic sewage from the adjacent residential area. The Balochistan mangroves, especially, are in great danger, because they are relatively small, compared to the ones in the Indus delta.'

Saifullah, who was one of the main advisors to the WWF Mangrove Conservation project, is cautious in his judgment of the project's activities so far. 'Many good things have been started, but we still don't know how it will work out. However, the general approach is right. People in these areas are so poor, you need to give them incentives before they will act. WWF-Pakistan was also the first organization which had staff there, right at the spot. That was very important too, to win people's trust.'

A large part of the internal pressure on the mangroves can be tackled by simple measures, Saifullah feels. 'People cut the wood, because they don't have access to natural gas. That problem can be solved by connecting them to the gas supply system. It is the same with the animal fodder problem. You

UN-organization UNEP once estimated that 1 ha of mangrove forest, if properly managed, will produce an annual yield of 100kg of fish, 25 kg of shrimps, 15 kg of crabs meat, 200 kg of mollusks and 40 kg of sea cucumbers. Substantial amounts of firewood and fodder should be added to that yield. According to these figures, the economic value of Pakistan's mangroves is approximately US\$ 60 million (US\$ 30-40 million alone for the export of shrimp). In addition it should be noted that mangroves are important for reducing coastal erosion and the siltation of ports, and also for weakening the impact of coastal cyclones.

can help people to establish small gardens to grow fodder. You have to find natural solutions, which are affordable for the local population and for the institutions helping them.'

Local people should manage the forests themselves, says the Karachi professor, and government needs to support them. Which is a problem. 'Politics here is dominated by personal feuds and lack of capacity. We need an intersectoral, intergovernmental approach to tackle the problems in the coastal areas. But only foreign experts will be able to convince the politicians, they don't listen to a simple local professor.'

### Oil spill

Professor Saifullah illustrates the need for a more active government role with the example of a recent near-catastrophic oil spill incident. On July 27, 2003, the Tasman Spirit, a single-hulled tanker carrying 67,000 tons of crude oil, ran aground near the Karachi port. Attempts to tow it away failed; the tanker broke into two pieces and probably almost half of the oil leaked into the sea. The Balochistan coast and Sandspit area, with its precious mangrove ecosystems and the unique marine turtle breed areas was only saved by the eastward direction of the current. However, the crude oil did affect the 14 km long Clifton beach on the Karachi coast, as well as parts of the mangroves area in the Indus Delta. An Integrated Coastal Management Plan would have prevented this near disaster, thinks Saifullah, because it wouldn't have permitted the tanker to pass as near to the coast as it did (at less than 1 km), while rescue efforts could have been mobilised much more quickly and efficiently.

In their office at the Sindh Forest Department, Divisional Forest Officers Hyder Raza and Sadiq Mughal agree that Pakistan has been lucky this time. 'The disaster could have been much worse.' However, they say, the mangroves did suffer from the oil spill, which is a pity because for the first time in ten years the rains were good this year. 'That would have compensated for the continuing reduced freshwater discharge. Also, you have to remember that there is very little knowledge available on the direct effects of oil spills on local fish stocks, not to speak about the long-lasting adverse impact on marine life.'

The Sindh Forest Department is still working on a comprehensive master plan to stop the degradation of the mangroves in the Indus Delta, together with the Ministry of Environment, say both officers. The World Bank, UNDP and several other international organizations support rehabilitation programs in the Delta, which contains the largest arid climate mangrove forest in the world. ▲

## Overview of the main goals, obstacles and results

### Balochistan Province

The objective of the project was to restore degraded mangrove forest, to establish mangrove plantations, and to bring mangrove forest areas under local sustainable management.

<b>Goals</b>	<b>Obstacles</b>	<b>Results</b>
Plantation of mangroves	Working experience of communities with the government especially in the field of conservation has been very bad, which created problems during the initial stages and therefore, trust-building and mobilization of the communities took longer than expected.	A 176 ha area has been planted against a target of 140 ha. Four operational nurseries with a total stock of 40,000 mangrove saplings established. Balochistan Forest Dept. now also involved in mangrove plantation. Women are participating in plantation activities.
Community mobilization towards sustainable management	Difficult start because, in the beginning, the communities perceived that the project would bring livelihood and employment opportunities to the area. The project's emphasis was mainly on mangrove conservation activities though, which limited the abilities to address development and social issues including livelihood and policy issues.	Two functional CBOs assisted (Sonmiani and Dam), both are working in the project area for social and conservation improvement. A 700 ha area has been selected for sustainable management. Relations between CBOs and NGOs, government and donors organizations established. Capacity of the CBOs enhanced through various training programs. Action Plan developed for the area jointly with CBOs and the Balochistan Forest Dept.
Tackle the root causes of biodiversity loss in mangrove ecosystems in the region.	A more holistic ecosystem approach would have allowed intervention in a wider range of actions such as marine resource conservation like fisheries and shrimp. Completion of the study of the root causes of biodiversity loss was delayed.	The result of the root cause study has been considered in the current project funded by EU.

## Overview of the main goals, obstacles and results

### Sindh Province

The objective of the project was to establish a high-profile self-financing Wetland Centre at Sandspit, which would be developed for training and dissemination of information through resource materials to different target groups such as students, community members, and beach visitors.

<b>Goals</b>	<b>Obstacles</b>	<b>Results</b>
Establish a high-profile, self-financing Wetland Centre.	The lack of an endowment fund means there is no regular support for activities and maintenance. Marketing of such a product as the Wetland Centre is a difficult task in Pakistani society.	The Wetland Centre has been established and is operational. Its financial future is not secured, however.
Raise awareness about wetland ecosystems systems through the Wetland Centre using public awareness and resource material development, training and support for field research, marketing and fundraising, and development of a data resource center.		The Centre contains a display hall with different exhibits and posters on wetland ecosystems, a children's play area, a laboratory, a data resource unit, and an office for the staff. A marketing and fundraising plan has been developed to make the center self-sustaining
Resource material development	It is not easy to enhance the participation of schools in Centre activities. Therefore, resource materials should be developed in consultation with the Federal and Provincial Education Departments.	Resource materials in the form of posters and educational packs on mangroves, turtles and birds are available. Activity sheets are present in these packs for students and teachers. Five video films have been produced.
Workshops for different target groups. Training on different issues such as natural resource management and social mobilization. Organize events to involve different target groups.		Over 4,000 students from 50 different institutes in Karachi and its suburbs have participated in activities at the center. They have been involved in mangrove plantation, bird-watching, turtle-watching and beach-cleaning activities, and awareness-raising workshops on themes related to wetland ecosystems including mangroves. Also, training courses on wetlands management have been conducted.





WWF PAKISTAN

*To conclude*

## ‘Policy makers still think every drop of fresh water in the sea is a waste.’

Pakistani society is undergoing great changes. Unfortunately, one of the areas most resistant to change seems to be the (lack of) environmental awareness among high-ranking politicians, as WWF’s Director General Ali Hassan Habib has signaled. His observation is confirmed by Professor Saifullah of the University of Karachi, who says that ‘most politicians still think that every drop of fresh water in the sea is a waste.’ Behind these attitudes lie vested interests. The large-scale agricultural sector, for example, resists any attempt to impose water charges and encourage a more efficient water management and better drainage. The reduced freshwater discharge due to upstream agriculture is one of the main external reasons for the decline of Pakistan’s mangrove forests. Other factors are marine pollution and the insufficient regulation of commercial fishing. Also here, powerful interests block efficient legislation and enforcement.

But on the ground, be it in the communities or at district and provincial level, far more change is evident. The recent decentralization of some government power to the district level creates new opportunities. This level of government seems to be less controlled by vested interests and more accessible to poor communities. Community capacity development will enable villages to demand improved services from the newly created district governments.

The creation of community-based organizations, aided by WWF’s Mangrove Conservation Project, has also brought change. For the first time, many people in these extremely poor communities have discovered that, with some external help, they themselves are able to improve their living conditions.

Change can be noticed at the level of the corporate sector, which is increasingly willing to accept its responsibility and contribute to sustainable natural resource use, as has been seen with Shell Pakistan and the Sui Southern Gas Company. Changing attitudes can also be seen at the level of the Karachi and Port Qasim Port authorities. The Karachi Port Trust has supported the Wetland Centre by supplying the land on which it has been built. It also endorses the plan for declaring the Sandspit mangrove forests a Nature Reserve. The Port Qasim Authority, which manages the second largest port in Pakistan in the outskirts of Karachi and has 64,400 ha area in their jurisdiction in the Indus delta, is also collaborating with WWF in mangrove conservation in the Korangi-Phitti creek area.

Support is coming from the Balochistan and Sindh Forest Departments too. The Balochistan foresters decided to set up their first mangrove nursery (in the Miani Hor area), inspired by the good results of the WWF project’s nurseries. The Sindh Forest Department desired WWF-Pakistan to start a new



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conservation project in the Indus Delta, having seen the successful approach in Balochistan. The representative of this Forest Department praised WWF-Pakistan for 'providing a model with these mangrove conservation activities, for us, for themselves and for any other organization.' The result of these activities, he said, is that local people

proudly say that it's their own forest. 'That is a change of attitude which will be very valuable in helping us to achieve our goals.'

Accepting the need for an integrated conservation and development approach has been a learning process for WWF-Pakistan too. 'The first years we were only talking about mangroves,' says Project Manager Ali Hasnain. 'We learned a lot about how to address the biological constraints on managing and regenerating mangroves, but a major gap was that the human and poverty issues were not sufficiently addressed.' The lessons learned stood as the basis of the formulation of the new project proposal. The EU-funded project will put a focus on the overall livelihood of the community, and treat the sustainable management of natural resources as part of this. Addressing the most critical livelihood constraints, such as the debt trap (by stimulating micro credit schemes) and lack of value-added from fishing (by promoting more sustainable fishing methods) is included in the new project setup.

'We aim to combine practical work with carefully targeted advocacy,' says Hasnain. 'That is also something we've learned in the first mangrove project: you should grab the opportunities to link with others and create partnerships. Not only with the local communities, but also with other important stakeholders.' Realizing the need for sound environmental policy as well as efficient poverty reduction in Pakistan means working with government in the first place, at all levels. In the end, groundwork has to be complemented by work on the top.



## Funding

The Mangrove Conservation Project in the Balochistan/Sindh areas was started by WWF-Pakistan in 1997. The project was supported by the Netherlands Government (DGIS), through WWF International, with a contribution of US\$ 1,328 million for a five-year period. WWF-Pakistan succeeded in finding new funding for the continuation of several elements of this project (and starting some new activities) after the end of the DGIS-WWF contribution. In March 2003 the European Community, with the support of WWF-UK, began contributing to a series of activities (Tackling Poverty in Pakistan's Coastal Communities through the Sustainable Coastal Livelihood) in Sandspit and Sonmiani Bay - and the new project locations Keti Bunder (Sindh) and Kalmat Khor (Balochistan). The EU contribution of 731,250 Euro is intended for a four-year period. Also, a Mangrove Conservation project at Sandspit (through the promotion of sustainable livelihood) is supported by HRH Prince Bernard of the Netherlands with a contribution of US\$ 150,000 for a two-year period. Finally, in September 2003, WWF-Pakistan and the Shell oil company launched a three-year project for upgrading the mangroves located in the outskirts of Karachi in the Indus Delta. The contribution of Shell Pakistan amounts to Rs 3,25 million (some US\$ 57,000).

WWF-Pakistan is still searching for possibilities to make the Wetland Centre financially sustainable. It is estimated that US\$ 50,000 would be required annually for its operation. WWF-Pakistan aims to establish an Endowment Fund or Trust Fund of US\$ 500,000 for this.



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