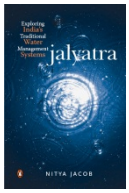


Chapter 7

Goa: Sun, sand and sea-food are bad for ecology

I am in Goa to see a marvel of engineering that has created a unique eco-system, the Khazaan lands. Using wooden sluice gates, that open and shut with the tide, controlling the flow of water on low-lying fields along estuaries of major rivers in this state of western India, and an intricate system of dykes, Goans have reclaimed land from the sea for farming.

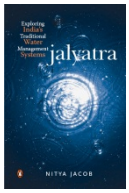
Legend has it that Goa emerged from the ocean. More likely, it was early settlers from inland who reclaimed the land along the major rivers, the Mandovi and Zuari, for farming. They built 3200 KM dykes with local material and allowed mangroves to grow on the outer walls for additional strength. At last count, there were about 18,000 of land classified as Khazaan lands. Put another way, this labour is the equivalent of building eight Egyptian pyramids, says Prakash Paryenkar in the book Fish Curry and Rice.

The Khazaans are the main flatlands in Goa, used for paddy and prawn cultivation, alternately. They are the saline flood plains of the estuaries of two rivers, and some of the smaller ones, that are below high-tide level. The dykes and sluices keep the land from being completely inundated but retain enough water inside to enable prawn and fish cultivation. Water flow between the Khazaans and the river or backwater is regulated by a complex system of sluice gates. These open at low tide and close at high tide.

Physically, Goa is divided into four regions – the Sahyadri escarpment of the Western Ghats, the plateau, the flood plains of the rivers and the coast. The Western Ghats are the range of hills that run from Gujarat to Kerala on the west coast of India a few kilometers inland. They receive extremely heavy and intense rain during the monsoons and are covered with moist deciduous forests – large parts have been decimated by mining and tourism projects. The part of the Ghats in Goa belongs to the Sahyadri range of hills, averaging 800 M in height. All of Goa's nine rivers originate in these hills.

The plateau region just below the Sahyadris is also densely forested but large parts have been converted to plantations. The government is also developing industrial estates on many plateaus, decimating the environment in the process. Received wisdom has it that the crowns of the plateaus should be covered with trees to handle the rainfall – catch the rainwater, slow its run off into rivers and let it percolate into the ground. The government hasn't heard of this or doesn't care. Buildings are replacing trees, as I saw on many plateaus near the Zuari River.

The flood plains of the major rivers, particularly the Mandovi and Zuari, are where the Khazaan lands lie. All of Goa's rivers are tidal, that is, there is a large difference in water levels between high and low tides. At high tide, sea water from the Arabian Sea travels 15 KM or more upstream, while at low tide, fresh water from inland flushes the river of salt water. At high tide, all the rivers flow considerably higher than the Khazaan lands, which is why they need the protection of the dykes and water regulation by the sluice gates. Where erosion is particularly severe, the dykes are reinforced and mangroves allowed to flourish.



I am eager to see the high technology of the Khazaan lands, developed indigenously probably by the Saraswat Brahmins centuries before the Europeans produced a spate of inventions and spawned the industrial revolution. This technology automatically controls the flow of water from the rivers into the low lying lands so that the dual cultivation of paddy and prawns is possible.

The coast is what attracts tourists and has given Goa its place in the sun, literally. The tourism industry is concentrated on these narrow strips of land, as is the fishing industry. Many beaches are over-touristed with an incredible build-up of hotels and shacks and are very dirty. Still, people flock to them. The hunt for clean beaches takes a few people to south Goa, but it's a matter of a time before this part also 'catches up' with the beaches to the north.

Sotter D'Souza, my guide to the Khazaans, meets me in the low balcony of his single-storeyed house on the outskirts of Panjim, Goa's capital city, two-and-a-half year old daughter Priya in his arms. It's a suburb called Porvorim. I introduce myself as we walk down the stairs from the road to him, dodging cacti. It's already warm though its 11 AM on a 'winter' morning in January. This is the best season to be in Goa, after the New Year crowds have departed but the mercury hasn't risen to astronomical heights, nor has humidity reached sticky proportions.

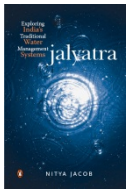
He is a is a six-foot tall, bearded, ever-smiling man in his forties with hair that is just turning grey. He looks every inch a man of the soil – his family owns several acres of farmland and plantations a few miles from Panjim near the Mapusa river opposite Chorao island. His house is beset with innumerable plants, so much so that it looks like a building in the middle of the tropical rainforest that once covered the state. Standing in his verandah, he completely dwarfs his 2-2/1 year old daughter Priya. It is a modern coastal house built to handle torrential rain, humidity and heat. Sotter used to support the Bharatiya Janata Party 'against the corrupt Congress' but quickly got disillusioned when they came to power – he saw no real difference them and the Congress. He now works with several civil society organizations against the degradation of his state's ecology.

He explains, sitting in the spacious living room with a TV blaring in a corner to entertain Priya, what the Khazaan lands are all about.

"The term Khazaan comes from khar, which means salty. The Khazaan lands are low-lying fields along the estuaries of rivers, owned by Communidades, the unit of village governance in Goa before liberation in 1961. The Communidades own all the land in villages which is not privately owned, and are responsible for maintaining the bunds and distributing and selling produce. Since liberation, the government has systematically undermined the authority and power of the Communidades, that has also affected the viability of the Khazaan lands," he says.

This is a new, social angle to something I thought was purely ecological. It seems logical to assume that the local ecological structures and local social structures were interlinked. A decline in one would affect the other. It is easy to see the decline across Goa.

The Communidades comprise men of different groups of people in a village. One group has all males over the age of 12 of all the land owning families in a village. The other categories include



servants of the local ruler who have settled in the village, artisans who are indispensable to village life and men who lives with their wives' families for want of a male heir. All land that isn't privately owned belongs to the Communidade; it is the residuary land owner of the village. They are a unique form of village self-governance that existed in India prior to colonial rule. Unlike in other parts of India, where the British undermined and destroyed the Panchayat system, the Portuguese who ruled in Goa did not dismantle the Communidades.

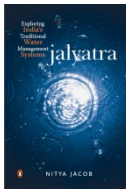
The Communidades in their own way ensure that everybody has a place to live and enough to eat. It isn't a perfect system and critics say it is chauvinistic and rigidly hierarchical. But as the village committee, the equivalent of the Gram Sabha elsewhere in India, the Communidade ensures the well-being of its constituents. It ensures job security for landless rural labourers, something no individual farmer can do given the uncertainties of the monsoon, when the rains were below average, by employing them in non-farming activities. As an employer, it gives these labourers a choice of employment; in the absence of such a choice, labourers are open to exploitation by a rich individual. If individual farmers want labour, they have to pay market rates and treat them well because Communidades are very influential in the rural labour market.

Communidades used to earn their money by auctioning harvesting rights to the coconut, cashew nut, arecanut and mango plantations on its lands. They also earned from auctions of fishing rights at the sluice gates of the Khazaan lands. These auctions accounted for 90 per cent of their income. From this, they paid taxes, maintained places of worship and community property. This money also paid for the upkeep of the bunds, dykes and sluices of the Khazaans under the Communidade. As much as a quarter of a Communidade's income went towards the last expense.

After liberation, the Indian government set about destroying this system of self-governance, believing it to be a Portuguese legacy. It distributed land to cultivators, usually small and marginal farmers too poor to farm on their own. It enacted the Tenancy Act of 1964 and superceded the Communidades. It deprived the Communidades of their income by setting up parallel structures to represent farmers and fisherfolk – Tenant Associations (TAs) and Water Users Associations (WUAs) – respectively. The plantations were also handed over to private cultivators. Once tillers got ownership of the land they had cultivated for years, they too chose to let it lie fallow since they found that tilling another's land was more profitable than cultivating their own. Only those who wanted to cultivate the land really needed the bunds and sluices of the Khazaans; these were a minority.

Starved of cash, the Communidades can no longer effectively look after the dykes and bunds of the Khazaans. The TAs and WUAs are filled with politicians and thugs interested in fattening their own wallets; they seldom their earning on dyke and bund protection, leave along repairing sluices. The Communidades are dying slowly, but surely, though they still remain a force to be reckoned with in Goa. In the book, Fish Curry and Rice, Jagdish Nazareth writes that 232 Communidades still own 30,000 hectares – eight percent – of land in Goa.

"But come," says Sotter. "Enough of theory. You will understand better when you see the Khazaans. I will show you my village and it's Communidade."



I exit and he locks up. Priya holds my finger as we walk out of the gate. Sotter brings out his bike.

"I have to drop her at my sister's play school, then we can go," he says.

We set off, Priya riding on the tank ahead of her father and holding onto the handlebars for dear life. It's a short journey and we drop her at the school. She enjoys the wind in the face.

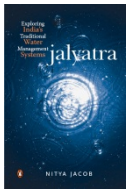
Most of Goa's local roads are well maintained, but narrow. Inspite of the heavy rains, they remain in fairly good repair but two vehicles can make for a crowd. The countryside is pretty and undulating in most parts. You seldom travel more than a few KM either on a straight line or at the same level – it's always uphill and down dale, twisting and turning. People live in villages or suburbs and commute to towns for work; the network of roads and excellent public transport comprising of buses, taxis, autos and motorcycle riders facilitates this. It makes it easy for outsiders like me to get around at reasonable cost as well. The most I paid for a journey in Goa was from the Railway station to my friend's house at night – Rs 120, by auto.

The villages are tidy, with whitewashed houses facing the road. Their low verandahs present a menacing look, belying tales of Goan hospitality. The front yards indicate if it's a Hindu or a Christian household. Hindu households have a tulsi in a tall white planter in the front yard. Christian houses have a cross or an angel in white. Nearly all of them have pretty gardens that were in bloom in January. The older houses have sloping, tiled roofs, the better to handle the monsoon deluge, high verandahs and drooping eaves; they also proudly display the year they were built – 1837, 1869, 1932, etc. The newer ones have flat concrete roofs, flat eaves and lower verandahs, not as well suited to handling the heavy seasonal rains. I see moss growing on the walls of most of the newer houses, but not on any of the older ones. Muslim houses are usually painted green and some of them have 786 written in front.

The women's clothes also give the religion away. Christian women wear the archetypical knee length skirt and waist length shirt. Hindus wear salwar-kameezes or sarees while Muslims occasionally wear burkhas.

A line of Christian houses suddenly gives way to a few Hindu ones and then the occasional Muslim house. I see more of the first two, and very few of the latter, in most villages. Beyond the first line of two of houses lie the fields or plantations, reaching down the hills in terraces.

It's a Sunday. We pass an enormous church in Sotter's village, part of the Selura Communidade. It was built in the early 17th century, an imposing European structure that dominates the skyline. It's painted a dazzling white. The whiteness contrasts with the black suits that the men wear, and the coloured clothes of the women, emerging from the church after Sunday morning mass. This is an old settlement, predominantly Christian. I can almost smell the old money in the rambling estates on the lower slopes of the hills. Almost everybody is a land-owner and has a steady income from agriculture, a well-paying job or a close relative settled abroad who sends home money to run hearth and home. Many of these families own entire hillsides that are now in great demand by property developers for resorts or housing. They own the cashew, arecanut, coconut, banana or mango plantations on the plateaus. I can see why the institution of the Communidade



refuses to die – it is such an old boys club and gives old Goans something to hang onto. It is a sign of good times long gone. Letting go means falling into the abyss of the future.

The Selura Communidade covers three and a half villages. Villages were demarcated along revenue lines, much after the Communidades came into existence. Communidades were demarcated along the lines of the local church parish that extends beyond a single village. Goa's countryside and towns are dotted with churches and shrines, much like north India has temples sprouting from fields and street corner.

The road winds uphill past the church, lined here and there by houses that get further apart as we climb. There is more greenery here of the natural type, less fields and no plantations yet. We reach the top of the hill where the road ends, past some shacks where recently-settled people live. Sotter parks under a spreading peepul tree under which is a garishly-painted temple.

Next to it is a pond called a tollem, created artificially by building a low embankment across the natural flow of water. These are ponds created on the tops or sides of hills to store rain or spring water. This tollem has walls of red laterite rock, the local building material that finds it way into everything from houses to lining fields, that descend in steps to the water's edge. It catches the runoff from the hill behind it. Tollem's can be quite deep. A sluice gate made of wooden slats placed in the grooves of concrete piers controls the flow of water out of the pond. There is a well in a corner of the tollem with some slimy water at the bottom – it's obviously not in use.

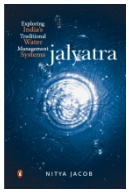
Tollems such as these built atop hills catch rain and spring water and store it for some months. They are important for ground water recharge. Typically, a hill will have a cascade of such ponds, each catching the overflow from the one above. In between, people grow crops in fields called ker, watered directly by channels from the ponds or from little springs where the ground water emerges. Either way, there is plenty of water on hills where forests still cover the crown and there are ponds at intervals, such as on this one above the Selura Communidade.

A channel one foot wide and about six feet deep runs from the sluice gate of the pond into ker a little downhill. The people living in the shacks – the new settlers, as Sotter calls them – cultivate these fields. The channel is dry at the moment but the farmers take water when they need from the pond. Their overflow feeds another pond further downstream.

"This water channel becomes a nallah that flows through our fields and eventually meets the Mapusa river," says Sotter, waving to the east. "It is fed by other streams from the hills. During the rains, it becomes a torrent."

We ride to the base of the hill and Sotter halts on a small culvert over the nallah. Pointing uphill, where a dry rivulet emerges from the bamboo forests, he says that is the nallah we saw at the top. Up to the road, the nallah is not walled – it's a natural drain. After the road, towards the fields, villagers have lined the gully with blocks of red laterite rock that abounds in this part of the country.

The channel runs along the fields on its way to the river. The red laterite blocks that form the wall have been neatly carved and stacked, held in place by mortar since 1938, or so the keystone



of a small footbridge over the channel proclaims. The fields are lower than the channel. The channel's walls are porous so that when there is water in it, it seeps into the adjoining fields. This is usually enough to irrigate an entire paddy crop.

A part of the wall has broken and a group of labourers is mixing cement on Sotter's field. The repaired part of the wall is untidy, made of broken blocks of stone and rock, held together with cement. It contrasts sharply with the older wall, made of neatly stacked rectangular laterite blocks. The cement will prevent water from seeping through, defeating the purpose for which the walls were built. There are no sluices in the sides of the channel to let water into the field; seepage is the only way fields get irrigated. Sotter looses his cool seeing cement in his field.

"Who is the contractor? I want this cleared immediately. Don't you have the sense not to mix cement in the field?" he shouts at the labourers.

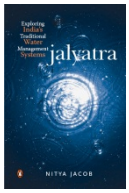
The local paddy variety is called konrgut and is grown specially in Khazaan lands. Sotter hasn't cultivated his fields for several years. It simply isn't worthwhile. He spends about Rs 5000 a year to cultivate the four acres that he owns but gets back only Rs 3000 – it's a losing game. It's more profitable to leave them fallow or find somebody who is willing to cultivate them for him and pay him a rent. In this part of Goa, farm labour is hard to come by and expensive because of the demand for Indian labour in the Gulf countries.

Sotter's fields still have stalks from a paddy crop of some years ago. His fields are part of a stretch of land that goes from the base of the hills to the sluice gates at the far end, about 3 KM away. They are Khazaan lands, though the water from the river does not reach up to his fields – it floods fields further down, beyond a road to the east.

We walk back to the road and ride off towards the distant sluice gates. I am finally going to get a look at this engineering marvel. Sotter's ancestral house appears round a corner. It is enormous, a rambling single storeyed structure set on about an acre of land. A low fence runs along the front, with a gate wide enough for a car to enter in the middle. A few steps lead up to the front verandah from which a single door takes you into the house. All around, teak and coconut trees shade the main building and tropical undergrowth provides a green foil to the whitewash of the house. The inevitable crucifix adorns a corner of the front lawn.

"There is somebody at home," he murmurs, debating whether to treat me to a view of the interior. He decides to go onto the Khazaans and return later, maybe when his brother is back. The road emerges from the trees that surround the dwellings on this side of the field and crosses the Khazaans. There are lots of little culverts to let water flow easily from one side to the other. If this weren't done, one side of the Khazaans would be permanently water logged by rainwater flowing downhill and the other would be quite dry.

A large tank opens up to our right with steps leading down to its base. There is no water in it and it is quite overgrown with grass. A herd of cows grazes on the bed of the tank. It has no water because the catchment has been built on. Houses, a primary school and a budding restaurant have taken up some of what was the tank. In a few years, the rest will come under buildings as well, unless somebody does something.



The steps in the corner are for the Ganesh immersion ceremony in October, when the tank is full, hopefully after a good monsoon. They are a feature of every tank, but the religious significance has not stopped people with political connections from nibbling away at the tank. A stream gurgles out from under some rocks near the steps and is soon lost in the grass on the bed of the tank. It has cool, clear water, ideal for tapping by a bottled water company. Inspite of the Goans' best efforts, nature still surfaces in the oddest of places. The hill above the stream has houses and plantations, little forest and greenery but there is obviously enough water underground to sustain the little stream. Once, it was a babbling brook which, along with other similar outlets, kept the tank filled through the year. The others have long since dried up and this solo stream bravely keeps one corner moist.

At the far end are a set of sluice gates that controls water from the tank into channels that irrigate fields. We drive up to them and I find the channels are blocked with rubble and garbage. The sluices are frail – in a year of good rainfall, they are likely to break and flood houses downstream.

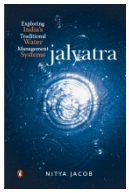
Sotter says, "The Communidade looked after this tank, kept the catchment free of encroachments and the bed clear of weeds. It repaired the sluices and the channels. Now, the WUA here does nothing. It does not have the money and it's full of political appointees who do not belong here.

"WUAs comprise fishermen who have the rights to fish near the sluice gates. In return, they have to maintain the sluices. TAs are made up of farmers, not just the old timers, but the new ones who have been allotted land to cultivate. Both the associations do not perform well because membership is based mostly on political patronage. The local legislator or strong man tries to fill the associations with his loyalists who have no reason to work. Sometimes, they aren't even locals but migrants from Bihar," Sotter tells me.

This is the other side of the Khazaan crisis, indeed the crisis of Goa's ecology. Sound agriculture is vital to the region's ecology – it balances water availability with need, forest lands with farmland, population with the land's carrying capacity. For centuries, Communidades managed Goa's farming, fishing and plantations as well as natural resources. They allotted the access rights to each natural resource and balanced the two interests, as they were bodies of local governance and knew the carrying capacity of the land. Their decline is reflected by the general decline in Goa's ecology and agricultural output. Sotter's barren fields are just one manifestation of this decline.

We drive along the fields till we reach a tri-junction at a place called Badem. One road heads south-west along the Mapusa river towards Panjim, the other into the interior up along the river. The third is the one we have come on. The road to Panjim passes over a wide embankment that keeps the Mapusa's waters off the Khazaans. There is a small bridge near the junction under which lie the engineering marvel of the sluice gates. I walk over to them eagerly, while Sotter parks his bike in the shade.

The sluices are set under an old arched stone bridge. Concrete steps without railings descend to a platform that stretches out towards the south-west from the bridge into the backwaters of the



Mapusa river. Its narrow at this point and I can see through the mangroves to the bird sanctuary on the Chorao island to the south-east. The mangroves, about 50 M distant, form an outer wall against the full erosive force of the river and protect the inner embankments. Even though the river's mouth is 10 KM downstream to the west, at high tide water from the Arabian Sea comes right up to these sluices, and even further upstream. It's a muddy river, flowing slowly to the sea.

There are two shacks on the platform below the bridge with a sign that reads, Serula Shetkari Association office, timing 10 AM to 12 PM. It's after 12, so the office is locked. Bablu, a fisherman who lives in the other shack on the platform, is more helpful. He is arranging his nylon fishing nets, a pretty, delicate tracery in the bright sun, like a woman making folds in her sari. He pulls in the net from a pile on the floor and folds it together – this makes it easy to release from the boat when he goes to spread the net inside the sluice gates in the evening when the sluices are open and water carrying fish enters the Khazaans. There is a wetland inside the embankment that holds the salty water and does not let it flood the fields. This is called a khoi, and it is separated from the fields by a wall made of the ubiquitous red laterite blocks.

Bablu says, "Every evening I spread the nets behind the sluices. I've caught fish as big as my arm."

"Is that all you catch. What about prawns and crabs?" I ask.

As if in answer, a crab frees itself from under a wicker basket where it has been kept since being caught and darts towards me, its prospective liberator – more like its prospective eater. I jump out of its way and it runs around aimlessly till Bablu puts it back in the basket.

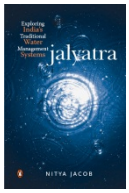
"Crab pots are out there," he says, waving his arm towards the line of mangroves. "They come into this place and it is easy to place the pots because the water is calm. I catch very big crabs too."

"Your Hindi is good, not like a local," I say.

"I am from Varanasi," says Bablu. He's sure come a long way to fish, but likes it here. The pickings are better than in the polluted Ganga back home. Bablu invites me for a ride in his canoe, a dugout made from the bole of a mango tree. I decline.

The bridge has three arches, each with a set of sluice gates. Two are working; the third has been sandbagged and is blocked. Water seeps through the sandbags and into the khoi. Behind me to the south-east, water from the river pushes against the sluice gates that are closed. The khoi and the Khazaans are to the north-west, under the bridge.

I walk along the top beam of the first set of sluices that are in working condition. The entire construction is made of wood – no steel is used anywhere. This increases the life of a sluice gate to around 80 years, if they are maintained, before the wood borers eat through them and weaken them. If they used iron nails to fasten the beams together, they would not last even a year.



The sluice gates are wooden planks, each about three inches thick in this case, seven feet long and about two feet wide. One side has rounded six-inch extensions – the hinges – that are of the same piece of wood. While sawing the gate from the tree trunk, the sluice gate maker cuts the gate section six inches smaller than the hinges, so these protrude along one side of the gate at both ends. The sluices and their frames are made of a local wood called borduim, that is light coloured and comes from a fairly large tree.

To construct the sluice gate, you need to find a suitable site. In Bordem's case, the bridge provided the site. First a thick beam with a cross section of about six inches by 8 inches is placed horizontally across the bottom of the bridge. It is wedged firmly in between the supports of the bridge. This beam has grooves cut into it at both ends and at intervals along its length to accommodate vertical supports.

The sluice doors are fitted into another pair of horizontal wooden beams, called sluice controllers. These are specially cut beams of wood, L-shaped in cross section. One leg of the L has arch-shaped holes cut in it to hold the hinges of the sluice doors. The other is smooth. One control beam is fitted on top of the bottom beam of the sluice gate frame so the arch-shaped holes face upwards. The leg of the L without holes faces the river, from where the water is to flow into the khoi. This leg of the L is the back-stopper of the sluice doors and keeps them from opening in, towards the Khazaans; the sluices can only open outwards to the river.

Vertical beams with ends flattened to fit the rectangular holes of the lower frame beam are pushed through the sluice controller into the lower beam. If the sluices are large, more than one set of vertical beam is needed to give the structure strength. Once the vertical beams are in place, the sluice doors are fixed into the arch-shaped holes in the lower sluice controller. Then, the upper sluice controlled is fitted onto the sluice doors and the vertical beams serve to create a space between the sluice doors and the control beam so the doors don't jam. Finally, the upper frame beam is fixed to complete the sluice gate.

A man is sawing a thick plank of wood behind the Association's office. His name is Shankar Dhule.

"How long do these last?" I ask him.

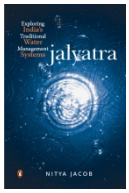
Shankar says, "Between 75 and 100 years, if they looked after."

"What do you mean, looked after?"

"Every year, they must be coated with a paint made from the outer kernel of the cashew nut to ward off borers and the effects of salt water," he says. "If that happens, they can last for a century. Otherwise, only a few years."

"How much does it cost to make them and how long do you take?" I ask.

"I take up to two months to completely replace a sluice but the Association's officers take longer to clear the files for payment. I don't know the cost since I don't buy the wood."



These, then, are the high technology of the Khazaans of Goa. Simple wooden sluice doors that open at low tide under pressure of water from the khoi behind them because the water level in the khois is higher than that outside. They shut at high tide when the water from the river pushes them. In the interval, fish and prawn larvae, as well as big fish, enter the khoi and Bablu's waiting nets. When closed, the doors let in a tickle of water but that is deliberately done to reduce the strain on the embankments and the sluice doors. The height of the sluices also ensures that the khois don't run dry, killing the fish in them.

There is another reason for the existence of the khois, a simpler one.

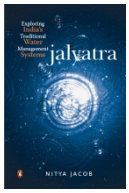
"The khois partly balance the force of the water outside the embankment. If they were there, the embankments would wear down faster and need more frequent maintenance," says Sotter.

They operate quite easily – I try moving one that isn't bearing the weight of the water at high tide. Inspite of its enormous size, it moves lightly. The sluices under the bridge have been there long enough for the borers to get to them. All of them have deep holes where insects have made their homes over the decades and are slowly hollowing them out. Once borers set in, there is nothing that can be done to save the sluices – they have to be replaced sooner or later. The borers also accentuate the effects of salt water on the wood.

The sluices are closed at the moment, under the weight of the Mapusa river at high tide. Water pours through the cracks between the doors and around the frame but it's a slow ingress. The khois will never get so full as to overflow onto the fields beyond. However, the salt water plays a part in organic paddy cultivation. Farmers flood their fields to kill off weeds, but never so long as to raise the salinity of the soil significantly. The water brings in a sort of moss that becomes excellent fertilizer when dry. Paddy is sensitive to salinity and if the farmers miscalculate, the paddy yields fall. The water also brings in fish and prawn larvae that breed in the khois. These act as natural insect controllers.

It takes a while for the doors to close when the tide comes in, which is when the fish come in as well and Bablu makes his catch. Of course, he cheats by keeping the doors open so that he can maximize his catch. This is a violation of the rules that state that the sluices must not be kept open beyond a certain time.

Fishing auctions are big business in Goa. They fetch between Rs. 50,000 and Rs. 2 million, depending on the size of the sluices. This money used to go to the Communidades; now it goes to the WUAs who are full of politicians and businessmen. They aren't interested in caring for the goose that lays the golden eggs, just taking the eggs. It's a lot of money, given that there are about 600 sluices across the Khazaan lands in Goa. The auctions happen at the start of December. The winners are supposed to follow certain rules about regulating water flow, repairing sluices and bunds and fishing. But given the WUAs' composition and the financial muscle of the winners, these rules are seldom followed. If the state government enforces its own rules, it will give the Khazaans a fresh lease of life. But the state's politicians are party to the plunder, so they have no interest in following rules. The income from the auctions is supposed to be spent on caring for the Khazaans but the WUA members distribute it as profit or the office



bearers simply pocket the money. The politicians also eye the Khazaans as land to be developed for housing or commercial use and have an interested in ensuring that farming stops.

The bunds, the other component of the Khazaan protection, are also intricate structures. They aren't simply walls of mud and straw. Outer bunds have a core of –what else – red laterite blocks. On top of this, bund makers, a specialized breed, lay a mat of bamboo and then cover the whole structure with a mix of mud and straw. Older bunds are further reinforced by mangroves. Communidades appoint professional bund managers called kamats and other people called bous look after the Khazaan lands. Across Goa, about 100,000 people still live off the Khazaans; they can provide jobs to another 125,000 and generate at least Rs 250 million a year.

Diwar island in the middle of the Mandovi river, a little upstream of Panjim, has vast tracts of Khazaan lands. It is surrounded by a thick wall of mangroves that hides the interiors of this low lying island from across the river. I catch the ferry at Ribander, one of the four ferry points to the island. It's an old tub called Hamzalem that has spent its life grinding from one side of the Mandovi to the other, carting people, cars, bikes and whatever else cares to cross the muddy river. On Diwar, a bus to the centre of the island awaits passengers. I set off on foot.

It's warm and the narrow road run flat and winding through barren fields, strewn with the remains of the last crop. Here and there, puddles of water indicate that ground water is literally skin deep. Kites and the occasional fork-tailed drongo keep me company on the open road – there are no trees. It's a long walk, I realize, once I clear the coastal mangroves, to the next clump of trees in which I can see houses.

A motorcyclist honks at me from behind. It's a narrow road, but not so narrow that a motorcyclist cannot pass. I move off the road, extremely irritated. Instead of driving on, the man stops and nods at me.

"Come I will drop you. Where are you going?" he asks.

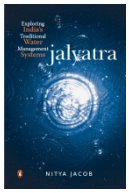
"I am researching a book on water and am here to see the Khazaan lands," I give him my well-rehearsed line.

Xavier, his name is, says, "These are all Khazaan lands. I'll drop you near the village."

He points to a shiny shed in the distance. "That is the other end of the island where they do prawn farming."

He is wearing stark black and white, with a bow tie. Xavier is the manager of a resort near the Candolim beach. "I would have shown you around but I have to attend a funeral."

He stops a little inside the clump of trees that is actually at the base of a low hill on Diwar. The village of Piedade lies up the hill at the intersection of the island's four roads. It is surrounded by the Khazaan lands of the Piedade Communidade that stretch up to the mangroves on all sides. They are all barren; its not crop season yet.



Xavier points me to a path off to the left of the road. "That leads to the Khazaans. Just keep going."

I start off. A couple of women in a barren field are building a wall of laterite bricks around a large plot to keep animals out. It's a vegetable patch, starkly green against the brown fields. On one side, houses peer from under coconut trees. On the other, fields with dried rice stalks stretch to the mangroves, now over a kilometer distant. When they aren't farming, the local folks take up temporary jobs in Goa. The tourism industry is the state's largest employer, agriculture its smallest. The tourism season coincides with the lean agricultural season. The more enterprising open businesses or migrate to the Gulf – Goans are in great demand as they educated and mostly English-speaking.

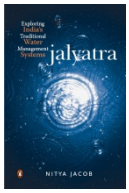
I round a corner – the fields stretch on endlessly but the shiny shed is closer. I decide to investigate the prawn farm. Prawn farms have sprung up all over the state because of higher returns than paddy. Farmers break the Khazaan bunds, flood their lands, and those of their neighbours, and create large prawn farms. Prawns need a mix of salty and fresh water to spawn and grow. The Khazaans are ideal places for prawn farms as this exchange of water happens naturally. All they have to do is to inundate farmland with salt water and reverse the water flow, and presto, farmers have a prawn farm.

A family of belligerent cows greets me a third of the way to the prawn farm. I take a wide berth around the closest of them, as I realize I cannot outrun a charging cow on the uneven ground and their sharp horns are best avoided. Children play cricket on more level patches of the fields. Vegetable patches surrounded by barbed wire, stone walls or thorny bush dot the dry fields. It's uncomfortably warm. Each field has its own bund, some a few inches high, others a couple of feet.

From behind a low hill the sound of a train floats across the fields. It's on the Konkan Railway route that runs along the coast from Bombay to Kerala. It came up in the mid-1990s at enormous expense and in the face of bitter opposition by Goans who feared it would destroy their peace, Khazaans and way of life. The peace has certainly gone – smoky diesels pull trains up and down several times a day blowing their sirens. Some of the Khazaans have been affected. But they grudgingly admit it has made it easier for people to work in Bombay, that is only an overnight trip now. The earlier rail link was via Pune and took much longer.

The prawn farm gets closer agonizingly slowly. The dryness of the fields suddenly gives way to a wet patch and my feet sink into gooey mud. I extricate the said foot and shake off the goo as best as I can, and proceed to a pond that has emerged on the periphery of my sight. Foot and sandal cleaned, I find myself alongside a bund about 10 feet high, newly made and covered with the same sticky mud that I just got rid off. I find a corner to climb onto the bund – the top is mercifully dry and slightly spongy underfoot. It leads to the prawn farm.

The farm is unremarkable, after all that. The shiny shed is the roof of a tumbledown shack – only the tin sheets are new. There are two tanks full of extremely still water where prawns are supposedly growing to consumable size. I estimate their size at about 5 acres. A stiff breeze ruffles the surface of the ponds, welcome in the warmth. Otherwise, there does not appear to be a



soul in sight. There are lights at intervals on the bund around the ponds and a mechanism to release water into the fields. I walk around to the shed.

One side of the ponds runs along the far side of Diwar island, along the Mandovi river. It's overgrown with mangroves so dense I cannot see beyond the first few branches. From here, the voices of two men come back to me. I peer into the undergrowth and, unable to see them, walk onto the shed.

It's full of equipment to control the water level in the ponds. There are switches and motors for pumps. Outside, in a recess in the wall, is a small cross blackened by years of burning candles for inspiration by day and illumination by night. The sluices that control the water ingress from the Mandovi are in another shed next to this one. They aren't the hinged variety that I saw at Bordem but wooden slats placed inside the grooves of concrete piers, like the one at the tollem. Nylon ropes to raise or lower them lie scattered on the floor of this shed.

The pond water level is higher than that of the river at the moment – its low tide. The slats are down, but water gushes between them into the river from the ponds. It's a trickle compared to the volume of water in the ponds and will only lower the level by a foot till the tide turns and the river comes pouring in. There are fishing nets lying around as well – the men who keep the place make a little on the side by catching fish and selling them in the local market. I get to see their catch a little later.

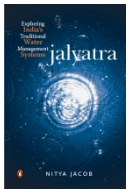
Crossing the sluices carefully – there is a single plank of wood across them – I emerge on the bund once again. It's been recently 'mended'. A misnomer, if there was one. There is wet mud on top, and my foot again sinks into it.

"Shit. I just got out of one mess," I say to myself. The choice is to circle all the way back. I choose sticky feet. The stickiness lasts a few steps and then the mud is dry enough to take my weight. The bunds have been repaired in several places, usually where the mangroves protecting them from the river have disappeared. The repairs are shoddy and look like they won't stand the next rains. At the end of the bund, a few steps lead down to the water. I sit on them and rinse off my sandals, yet again and then dry them in the sun.

A path from the prawn ponds leads into the Goltim to one side of Diwar island. I side step a house with a pair of extremely vicious dogs and reach the road. It's a relief to walk on terra firma again after the muddy field. A group of women look at me curiously – my trousers are muddied and sandals are still gooey despite the wash. I am thirsty and sweaty. One of them directs me to the bus stand, a good kilometer's walk uphill.

I leave Goltim and Xavier materializes out of a house, waving goodbye to me. I wave back. A little further, I spy a coconut vendor and a cold drinks trolley. I have both but, not satisfied, walk into the village – its Piedade now, the name changed somewhere on the way – and have a half-litre bottle of Coke.

"Where do I catch a bus to the ferry?" I ask the shopkeeper.



He vaguely points south, to the center of the island. I walk on and see a large general store, next to which a minibus is idling. I get on and eventually get to the ferry for Rs 4. A pretty women in a printed floral dress contrasts with the bleakness of the landscape – the brown Khazaans and total lack of trees.

Diwar island is mostly covered with Khazaan lands and the fields lie below the high-tide level. Houses have been built on higher land on the hill in the center. Unlike Sotter's fields, these are cultivated – I am there in the wrong season. But here again, the paddy-prawn alternation is slowly giving to prawn monoculture. In a few years, the locals would have succumbed to the temptation of quick gains from prawn farming and more or less given up paddy. Most families have at least one member working in the tourism industry and aren't as dependent on farming as they were a few years ago. The decline of the Communidades has seen to that.

Menezes is a case in point. He is from Piedade village and a member of the Goltim TA as well as the Piedade Communidade. Only land-owners are members of TAs; Communidades remain the inclusive village institution that they have always been, but are quite defunct. He runs a wholesale agency for Nestle in Panjim so agriculture is far from his mind. His family owns five fields on Diwar island but cultivates just one, mostly with vegetables, because paddy and grains have become uneconomical – he looses Rs. 2,000 every year for every field cultivated.

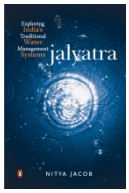
He says, "Some farmers have started prawn farming but it's being done on the quiet because of a Supreme Court ruling against converting paddy land to prawn farmland. But who is to check?"

On 11th December 1996, the Supreme Court directed all district authorities in India's coastal states to demolish prawn and aquaculture farms that violated the Coastal Regulation Zone rules (these broadly state that no commercial activity, including fish processing units, can happen within 500 metres of the high tide line of a coast). It also directed the prawn and aquaculture industry to pay compensation on the 'polluter pays' concept.

Sadly, after the initial euphoria and spate of demolitions, the CRZ rules were diluted. As happens with all rules in India, this one is also observed more in the breach. Prawn farms have mushroomed up and down the Goa countryside in the last few years. Many are owned by the relatives of politicians or large industrial houses, both of which have the clout to force the law to look the other way.

I take a bus to Cortalim, a village on the banks of the Zuari river about 20 KM south of Panaji, to meet Antonio Francisco Fernandes. He is a politician-turned-activist, like Sotter, but worked more at the local level. Like Sotter, Antonio is an ever-smiling man and rides a two-wheeler. Unlike Sotter, his is a scooter and considerably more beat up than Sotter's bike. I get off the bus immediately after the Zuari bridge as instructed to do to meet Antonio.

There is a Christian shrine to the west of the bridge which stands empty, the cross a silent sentinel to the barges plying up and down the Zuari, ferrying iron ore from the interiors of Goa to ships in the harbour. On the other side is a small Hindu temple with a flower girl at the head of the stairs. She speaks no English or Hindi and I have obviously disembarked too soon – Antonio told me to get off at the Cortalim circle. A policeman at the shrine to atone for his bribes guides



me to the circle. My sandals broke earlier in the day and my friend me his beach sandals. They might be good for beach bumming but are totally unsuited for regular walking. Traffic whizzes by – this national highway 17 is part of the Golden Quadrilateral project of the government but has a long, long way to go before it gets there. It's a narrow road right through the highlands of Tiswadi and widens slightly after the Zuari bridge.

Antonio detaches himself from a bus shelter at the roundabout and kicks his scooter to life.

"Nitya Jacob?" he asks me, driving up. I nod and he extends a large, weatherbeaten hand. He is nearly 60 but his black hair belies his age.

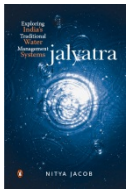
We ride back to the Zuari bridge. The tide is out and I can see the piers of the Konkan Railway line bridge, running alongside the road. Barges pass under the two bridges, built very high to let them sail under even at high tide. Antonio points east, towards Marcaim, a village surrounded by Khazaans at the junction of the Cumbarjuna canal and the Zuari river.

"Those are Khazaan lands," he says. "They belong to my village and extend all the way up the canal. But very few people grow anything now. It's slowly being taken over by prawn farms in violation of the Supreme Court's order.

"The barges are one of the main reasons why the Khazaans are being destroyed. There is so much mining in the Satari and Sanguem blocks that barge traffic has increased in the last few decades. Nearly 300 of them come downstream every day loaded with iron and manganese ore. Then they return when the tide is low. The bow waves from the barges weaken the bunds and the mangroves. The leak oil and this pollutes the water and also kills off the mangroves. The waves also flood low-lying land."

We hop on his scooter and he very carefully maneuvers into the traffic charging up and down Zuari bridge. The road winds along the Zuari river. Before the bridges came up, the ferry was the only way across – it still runs for the locals who have to get from side to the other. The river is nearly a kilometer wide at this point. Antonio parks on the roadside and leads me into some fields – the first paddy fields I have seen in Goa. This is Goa of the tourism brochures – lush paddy fields of light green set against low hills with a fringe of darker green coconut palms, the hills themselves clothed in the dark remains of tropical rainforest. In a corner of the field stands a well; the fields are protected from the Zuari river by a thin line of mangroves and a wide bund. The bund's condition is not encouraging – the dwindling mangroves have left it open to erosion.

We clamber over bushes and uneven ground as Antonio takes us to see a large prawn farm, tucked away behind fields and bunds and invisible from the road. A bund stretches away to the left. It was a massive outer bund, separating the Khazaans from the river. It has been demolished with dynamite – I can see the stone foundations and the entire cross section of the bund, as well as bits where mangroves still cling to it. The tide is still out so there is no water here but the general muddiness and wetness of the soil shows I am below the high tide level. The owners of the prawn farms up ahead destroyed the bund so they could create their farms. In the process, several acres of paddy fields have been affected by the salt water.



We reach an old sluice gate – a towering structure made of stone and wood. It has slats for gates, not the hinged doors, drawn up and lowered by nylon ropes. The gates are useless, with no walls around them to stop water. When the tide comes in, the fields behind them get flooded inspite of the farmers' best attempts to raise stone walls around their fields.

"When they do, the prawn farm owners destroy the walls. They want to take over the fields here," says Antonio.

From the sluice gates, a path leads to the farms. They are new, possibly less than five years old. They are made of stone with a gravel path on top and are around 14 feet high. I can see two ponds from where I stand; Antonio says there are more towards the north.

Both the ponds are large, each covering around 25 acres. They have all the trappings of industrial prawn farming – a generator, lights around the perimeter, guards and a pump-house to control water levels. The bunds have been built across fields – the prawn farm owners have evidently taken possession of parts of several fields and built bunds across those they haven't bought, to force owners into selling.

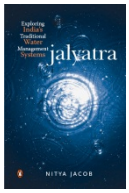
The fields around the prawn farms get fresh water from a little stream that flows down the hills around. It's barely enough to keep the salt water at bay. Paddy sprouts a luminescent green in the fields as we walk back to the scooter. Antonio drops me back to the Cortalim circle from where I take a bus to Porvorim.

The Khazaan lands are under threat from several quarters. The root cause is the need to get-rich-quick, and damn the future. Prawn farming, increased river traffic and pollution, unremunerative farming, the decline of the old social order and the boom in tourism are some of the reasons that these lands, whose creation was a feat of engineering, are slowly disappearing. However, all is not lost and if the remains of the Communidades have their way, a substantial portion of the Khazaans may life to see another millennium.

Kumar Kalanand Mani's organization, Peaceful Society, is in the Ponda block, about 20 minutes by bus from Panjim through Old Goa. I pass the famous church of St. Xavier, where the holy man's body lies in state in a glass coffin. Since he died in 1552 in China, his embalmed body has drawn Christians of all denominations and a church of fitting proportions has been built in Old Goa. From here, the bus wends it way to Cundaim, where I get off to find a rider (motorcycle taxi) to take me to Peaceful Society in Madkai village. Instead, I catch another bus that takes me to the Madkai ferry point on the Cumbarjuna canal where I spend 30 minutes waiting for the bus to fill and return so I can get off.

"You should have told me you were on the bus. I would have stopped it," says Kalanand, when I narrate my travails. "Come, let's see the campus."

It's a pretty campus, sprawled over some 10 acres. Beyond it lie paddy fields, again cultivated and a pleasing green. Peaceful Society runs courses on sustainable livelihoods with respect to water conservation and researches related stuff in Goa. It is also a rich resource on Goa's



ecology. There are residential facilities, a common dining hall and lecture rooms, interspersed with an incredible variety of flora.

Kalanand Mani is just under 60, bright-eyed and of dry wit. He has traveled all over India, he says, studying water systems and collating the best of them into his courses. The two storeyed office building also has a large dining area where the campus cook dishes out delicious Goan fare. We relax upstairs, waiting for lunch.

"I have an intricate water harvesting system on the campus that channelises rain water into troughs, from where it is used to water the plants. We have a large surface tank for water storage, and I have put frogs and fish into it so that mosquitoes don't breed.

"You have seen the Khazaan lands that are important to Goa's plains ecology. I will show you what happens in the plateaus that are crucial. They are the watersheds of the state. The government is just not bothered and is systematically destroying them by making them into industrial estates," he says, switching channels on the TV.

We have a lunch of fried fish, beans, sambar, rice and chapatti followed by desert. It's a real bellyful.

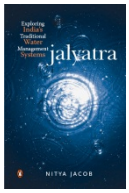
"You expect me to walk around after this?" I ask Kalanand.

"It will digest your food, and then you can have more," he says.

We head for Borim village about 5 KM away where Goa's tallest peak Siddhantha hill stands. There are plantations of arecanut, coconuts and pepper with a sprinkling of vanilla that cover most of the hillside. It's radically different from what I have seen on the other side of the country, in the War Khasi hills of Meghalaya. They also grow arecanut but in a completely different manner.

Kalanand parks a little way up the hill, near a colourful temple. A small shrine opposite the main temple building appears to be the reason for the temple – it's old and has a stone carving inside. The spire of the shrine is painted a bright orange. To one side is a tap – the local municipality's water supply – and a handpump – the locals' water supply. The handpump is broken and rusty. A girl fills water from the tap. Strange, considering that the hill has two ponds and plenty of green cover.

We enter the plantations and start our ascent. The arecanut trees are tall and thin, with a small head of leaves dangling the nuts. The nuts look like mini-coconuts, yellow when ripe and in sprays of 30 or so fruit. They have just been harvested so only a few trees actually have nuts on them. The trees are planted on a grid on terraces cut into the hillside. The terraces cover most of the hillside like giant steps. Between rows of trees run the water channels – shallow troughs that run the entire length of a terrace with smaller channels that take water near individual trees, but never to their roots directly. The smaller channels empty into a circular trough around individual trees; the plant itself grows on a small rise in the centre of the trough. Some of the smaller



channels end in bowl-shaped depressions where the water stands and slowly percolates into the ground, moistening it.

The water in the main channel flows constantly – excess water simply feeds the fields or runs off to the Zuari river. When a section of the plantation needs watering, the plantation labourers set up a small earthen block on the main channel to divert water to the plants. Once these plants are irrigated, the water is diverted elsewhere. The labourers also use leaves that the arecanut trees shed – these are like large elongated mugs with which they scoop water out of the channel and pour it into the troughs surrounding the plants. The terraces are intersected with an elaborate network of channels, fed by the two ponds higher up.

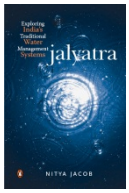
Water falls from one level of the terrace to the next down stone channels – pretty little waterfalls that gurgle out from behind rocks and trees. There is luxuriant growth at the base of these mini falls, left there deliberately to arrest soil erosion. The hillside is moist – I can see where the myriad streams that feed Goa's nine rivers come from. We climb a steep slope between two terraces, Kalanand finding the going hard. Sotter, who has joined us, makes better time of it. Kalanand helps himself to a fallen branch, using it as a walking stick. The sun is blotted out by a canopy of arecanut trees interspersed with taller hardwoods of the tropical rainforest. Some of the older arecanut trees that have stopped yielding nuts serve as bases for pepper vines, dangling small bunches of green pepper. The terraces descend steeply to a stream – I can hear it but it's invisible in the undergrowth that covers the base of the valley.

We trudge uphill in the humidity. It's not hot but the climb makes us all sweat. A boy across the valley calls out; he is scooping water up in arecanut leaf and throwing it down the valley, where a new terrace has been carved but does not have water channels yet. He waters plants one by one, singing as he does. The sunlight catches the water cascading from the leaf, flashing in the semi-darkness.

We make it to the first pond. It's an artificially created water body, roughly square. Walls of made of red laterite blocks impound rainwater. It is quite deep and; frogs and fish abound. I can hear the frogs and see the fish swimming in small shoals. To one side, from where we emerge from the plantation, are the sluices from where water is released into the plantation. They are some 20 feet deep, made of plastic – a departure from tradition where sluices are wooden slats – and raised or lowered with nylon ropes. They are all closed but water pours out from between the lower sluices and flows into the plantation below.

"If the sluices are so deep, the pond must also be at least this deep," says Kalanand. "They would design the sluices to retain some water even after all has been emptied for irrigation so that the fish don't die and people have some drinking water left."

There are no plantations up here, only forest. It's dense with tall trees and dense shrubbery. Plants that I pay a handsome amount for in Delhi grow wild on Goa's hillsides – a good business proposition is to take them back and sell them, but they would not survive Delhi's dry searing summer. We are on the way to the plantation keeper's house further up.



There is a lovely badh tree outside his house, encased in vines that make a tracery right up the trunk. It's like a giant hand has caught the tree in a vice-like grip for life. The keeper's house is a large, tiled roof, old building, with a tulsi plant in front. I walk around to the back where there are more plantations. These are watered by a pond further uphill – I haven't the stamina to climb further up as it's a long walk. He lives in the middle of the jungle with his family – wife, two sons and a daughter. The man isn't home and the children come out shyly to meet us.

"His mother used to work with me. She would walk all the way from here to my office every day through the forest. There were no roads then, about 20 years ago. She would come alone and work for me," says Kalanand.

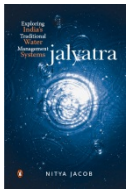
This is the other tradition water resource of Goa. Hillside ponds, called tollems, built to impound rainwater, in a cascade so that one feeds the other. The ponds keep the hill streams going in the dry weather and the wells filled so people would have enough water to drink and water their plants and animals. They are multi-purpose ponds unlike what I've seen elsewhere in India where different structures to store water serve different needs. The tollems are linked to the Khazaans though; the water from these ponds eventually reach the Khazaans and are vital to flushing the fields clean of salty water. They are also important for prawn farming as a source of fresh water.

We leave the forests, plantation and tollems behind and emerge on a different landscape. It's an ugly sight with nary a tree to be seen. The crown of a plateau almost directly across the Zuari river from the Zuari Industries chemicals factory has been made into an industrial estate. The state government in its wisdom is converting several plateaus into industrial hubs. This estate has a steel furnace and several rolling mills. A little distance away are giant spheres of a liquefied petroleum gas filling facility owned by Indian Oil. The air is heavy with smoke from the steel furnace. The barren plateau stretches for several square kilometers. I cannot understand why, when converting land for industrial use, old native trees have to be clear felled and replanted, usually with some exotic crap. Trucks by the dozen ply up and down the narrow roads. It's a scene from the orc factory in the Two Towers of the Fellowship of the Ring.

The next plateau is also earmarked for an industrial estate but nothing has come up yet. Shrubbery covers the plateau and a deserted ceremonial hall stands guard at the top.

Goa's abundance of rain concentrated in the four monsoon months of June, July, August and September, is a blessing and a curse. The rain has generated the incredible flora of the state, that is vital to preserving its environment. Once cut, the forests seldom regenerate because the torrential rain washes the topsoil away. This is the problem in the Satari and Sanguem talukas where mining has destroyed several hundred hectares of forests. These have been left to their own devices, enormous gaping holes in the landscape. Untreated, they have become artificial lakes that cannot support any life for at least the next several decades.

The protective mangroves do their job well where people have not destroyed them. This is most evident in the condition of bunds around Khazaan lands – the bunds stand where the mangroves do and erode away where there are no trees. Taken together, they make an amazing eco-system created by human beings who understood how to make nature work for them, rather than



controlling nature as modernity has taught us to do. Maybe one day soon Goa's rulers will wake up to discover that their golden goose is nearly dead – then they might, just might, try reversing the decline.

Nitya Jacob

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