Aid, Social Metabolism and Social Conflict in the Nicobar Islands[1]

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Abstract

This chapter investigates the impact of humanitarian aid on the Nicobar Islands in the aftermath of a catastrophe. The tsunami of December 2004 not only took away the lives of thousands of indigenous Nicobarese inhabiting the archipelago, but also destroyed their material artefacts, livestock and the coconut economy. Humanitarian aid and in appropriate interventions that followed led to a situation we term 'complex disaster', reinforcing vulnerability in social and ecological terms. A society that previously lived off hunting, gathering, fishing and copra production, with a very low throughput of material and energy, as well as low labour inputs, was transformed to one of dependence on continued aid, the external market, and higher material and energy needs.

Keywords: humanitarian aid, complex disasters, material and energy flows, working time, property rights, community ownership, subsistence economy, natural disasters

Introduction

Located in the Bay of Bengal, some 1200 km from the east coast of India, the Nicobar Islands are one of the lesser known parts of the country. This is despite the enormous publicity the archipelago received during the 2004 tsunami when thousands of indigenous Nicobarese, together with their physical artefacts, were wiped out in a matter of minutes. Aid efforts that followed, while essential and valuable in the immediate aftermath, boomeranged to create a condition we term 'complex disasters', rendering the Nicobarese more vulnerable than what they had been before and after the catastrophe. Five years after the traumatic event, it is time to evaluate the aftermath in relation to what is termed as the worlds' largest fund-raising exercise. Well-intentioned efforts were exhibited not only by the aid sector, but governments, corporations, academic institutions and hundred of thousands of individuals involved themselves in some way or other to bring relief and rehabilitation to the victims. In short, very few on this earth remained untouched by the enormity of this disaster. In this chapter, we explore the impacts of humanitarian aid on the Nicobarese society, and outline some of the challenges the islands now face with respect to social and ecological sustainability.

The Nicobar archipelago consists of 24 islands spread over an area of 1841 km² and administered as a union territory. Of these 1542 km² are protected tropical forests and the remaining are mangroves, undulating grasslands, coconut plantations and settlements. Relatively flat, the highest point is Mt. Thullier on Great Nicobar with an elevation of 642 metres. These islands are not only home to a rich tropical biodiversity with several endemic terrestrial and marine species but 12 of the islands are inhabited by an indigenous community, commonly referred to as the Nicobarese. Mongoloid in origin and having migrated from the Malay-Burma coast over 2,000 years ago, the Nicobarese have remained relatively isolated for a long time. However, owing to their geographical location on an important sea route, these islands were often visited by passing vessels with the aim to replenish food and water

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supplies in the long and arduous sea voyages of colonial times. Consequently, a small amount of barter trade took place where the Nicobarese exchanged food and coconuts for cloth and iron, and later rice, tobacco, and other consumables from time to time. The British colonised the islands in 1869 and for the first time regulated trade and set up an administrative system under a colonial state. In 1947, the islands became part of independent India, and since 1956 the islands have been protected and access regulated under the legislation Andaman and Nicobar Protection of Aboriginal Tribes Regulation (ANPATR).
With a largely **subsistence** way of life, the (pre-tsunami) Nicobarese lived off hunting, gathering, fishing, coconut production, and pig and chicken rearing, with some maintaining horticultural gardens to grow fruits, vegetables and a variety of roots and tubers. Their link to the market was via the production and sale of *copra* (dried coconut flesh used in the extraction of coconut oil) in exchange for rice, sugar, cloth, fossil fuels, toiletries and other consumables. Thus, coconuts comprise an important source of livelihood, both on a subsistence level (a third of their coconut production is fed to pigs) and as an exchange item in the market in the form of copra.

Living in villages along the coast, their population numbered 26 565 (2001 census). As with most indigenous cultures across the world, the various segments of the **socioecological system** of the Nicobars are inextricably linked with each other. In other words, the socio-cultural and economic arrangements of the Nicobarese play an important role in maintaining and regulating the use of resources. Elaborate festivals, rituals and ceremonies, some lasting for months, reproduce society in terms of power relations, hierarchies, and access to and regulation of resources. For example, the shifts in the winds are marked by the *Oliov* festival. Although there are some variations on how different islands and villages organise this festival, even calling them different names, the main idea is to ensure abundance of fish, pigs, chicken and forest produce for the coming season by invoking nature spirits and those of the deceased. With the organisation of *Oliov*, several restrictions like the consumption of some varieties of foods during the last season, hunting and fishing of certain species etc. are lifted, and new ones imposed. These restrictions are invariably based on the occurrence and availability of the different food varieties. Such regulation through cultural expressions and **social institutions** ensures the availability of resources year round and prevents the overuse and eventual extinction of a particular food when it is scarce. Thus, any intervention into the Nicobarese socio-ecological system, if not carefully understood and designed, can trigger undesired dynamics with severe consequences. In the aftermath of the tsunami, this was precisely what had happened.

The urge for self-help

The tsunami of December 2004 literally turned the world of the Nicobarese upside down. Owing to their close proximity to the epicentre and their flatness, the islands and their inhabitants were subject to immense devastation. In a matter of minutes, thousands had been swept away by the gigantic waves and the villages were either completely destroyed or affected beyond recognition, together with their material property, livestock and cultural artefacts - some of them hundreds of years old. All of the coconut trees (the main basis of the local economy) standing along the coast within a kilometre from the sea were washed away or rendered dead as the sea water passed over. Further, the loss of anchored boats led to a breakdown of communication between villages and the administrative headquarters. The earthquake and the consequent sinking of the islands resulted not only in the destruction of more than half of the mangrove forests and about 40% of the coral reefs (that had been a main

source of protein-rich sea food) but also large areas of land were lost to the ocean, creating a new coastline and making navigation difficult.

While the disaster was in itself traumatic, the post-disaster phase has been no less. Confronted for the first time with the idea of aid and **development**, the Nicobarese have found it difficult to grasp its dynamics. Since the islands have been protected under the Andaman and Nicobar Protection of Aboriginal Tribes Regulation (ANPATR, 1956) and entry to them highly regulated, the Nicobarese' interaction with the outside world has been very limited. Now for the first time, they were approached by large donor organisations each of whom gave the impression of fulfilling a large part of relief and rehabilitation needs single-handedly. Originally, this was not what the Nicobarese wanted. Unable to work and rebuild their lives, they were extremely agitated and suffocated in the relief camps that were set up for them. 'Leave us alone. We can manage on our own. We don't need biscuits and chips. We need to make our homes and plant our gardens. Give us tools, if you wish to help us', is what some had started to say. Some were even of the opinion that outside interference and non-indigenous settlers caused the Tsunami. 'This is our land. Please leave us alone. Otherwise we are sure to die', was the remark of a leader from Katchal.

Time and again the Nicobarese demanded tools so that they could begin making their shelters and plant their gardens to ensure food for the coming year. Kephus, the 50 year old chief of Bompooka Island, was unable to understand why he could not return to his island. The Administration considered the island unsafe and as it had only a few inhabitants, they had moved the Bompooka islanders to the neighbouring Teressa Island where relief camps had been set up. But the inhabitants of Bompooka were clear on what they would do upon their return. After building their shelters, they would establish a horticultural garden with bananas, pineapples, jackfruits, and other fruits and vegetables. "If we plant these before the monsoon, we can feed ourselves from next February. We will sell fish, fruits and vegetables to the non-tribal population living in the villages of Teressa, and with the cash we get, we can buy a few necessities from the market…but we have to hurry. This is a good time to start planting", said Kephus in consternation. Unfortunately, what stopped Kephus and his people was the lack of boats and permission to leave the relief camp on Teressa. It was the same for the people of Chowra Island. Jonathan, the chief of Chowra made it clear that they had to go back. According to Jonathan, the government was using the lack of water as a pretext to keep them on Teressa. For centuries Chowra faced water scarcity; until recently they were even transporting water in coconut shells from Teressa. Jonathan failed to understand why water was now an issue. They would manage as they always did.

In a written request to the Chief of Nancowry, Jonathan begged for boats "to return to Chowra for at least 10 days to collect our left belongings… before the [southwest] winds, because then there will be many problems once the wind starts. We have to reach Chowra before that". Despite this frustration, in the 18 months of 'exile' on Teressa, the persistent Chowrites built about 100 small canoes and 10 festive ones. Further, the men made regular voyages to Chowra to plant their gardens well before the monsoons. Within a month of their return to Chowra, it was incredibly touching to see how quickly they had repaired their houses and cleaned the debris. In fact, it was the only island that actually resembled the past. The anxiety to begin a new life and fend for themselves, despite a trauma not so long ago, reflects the resilience of the Nicobarese in the face of tragedy along with the ideology that life must go on, and singularly so, aid or no aid.

Meanwhile, the Chief of Trinket, Fortifer, gazes for hours at his island in total blankness. He cannot believe that his village located in the low-lying parts of the island is no more. Once a

merry village with festivities, games and cheerful people is now split into three parts and all you hear is the roaring ocean amidst a handful of standing palms. His people wish to return, but where. The village land is washed out. Some families who own parts of the high grasslands are keen to return and set up a plantation before the monsoons. But there is no water until the monsoons that will eventually charge the small seasonal streams. The thought of his village disintegrating is something most distressing to Fortifer. Fortunately, he has enough land on Kamorta, facing Trinket, which he has offered to the people for setting up a new Trinket. At least they can all be together, and maintain their plantations on Trinket. However, grief still grips most of them. "I wish to send my two little sisters to Port Blair to school. They have stopped playing" says Samson, the son of the former chief who was taken away by the waves. Eventually they hope to return to Trinket one day but until then, all they can do is to occasionally cast a glimpse on what is left across. But some cannot wait. In the words of Amber, the young leader of Trinket, "We do not need anything. We are happy to die here if we cannot manage. But I want to be on my island."

Indigenous people across the world are very much part of the ecosystem that has nurtured them. Their entire world-view and identity are inextricably linked to the life-support system that surrounds them. In comparison to the death of a family member, being alienated from their land is much more traumatic. For example, a father who lost his son in the Tsunami, when asked what he would like to do with the dead body that lay at his feet, simply replied, "He is dead. What should I do with him?", and he went off to collect the remains from the debris where his hut once stood. While death, in their understanding, is a natural process, the loss of their lands is not. It means the very extinction of their roots, and hence their being in the world. Despite being part of a nation state for over 60 years, some Nicobarese still feel responsible for protecting their lands against foreigners. Kephus is worried that the Indonesian poachers who regularly visit Bompooka may come and take over their lands in their absence. They must, therefore, return soon and protect their "homeland" before they lose it. Jonathan of Chowra has categorically stated that, "We may die but we have to go back. What will we do here? We need to work...We have our plantations there and we cannot think of leaving our island".

Ever since the catastrophe, Thomas Ton, the 60 year old Chief of Kamorta Island has been frail with depression. His village, Munack, is one of the very few places where one finds remnants of the once inhabited houses, stilts half under water. "It is a miracle, even though the waves crashed in as high as 20 meters" whispers Thomas. Thomas had heard from his grandfather that the Tsunami will come again. "After the earthquake everybody ran out of their houses and gathered on the seashore. I remembered the warning given by my father. I warned them to move away from the seashore. Then everybody went into the jungle". Fortunately, there were no casualties in Munack. Yet, the loss of so many other lives and the present anguish of those surviving are more than he can handle. The once lively chieftain sits melancholic, and smoothens feebly a piece of wood that will be part of his new shelter some 100 meters inland. "The people are fighting," he nods sadly. "They think that the world is coming to an end. They are scared. They feel insecure. Hence, they are fighting among themselves. Little things make them agitated". Thomas is extremely sad and tries to advise his people not to fight. "Some people [outsiders] are just waiting to attack and take away our land. So we should not fight. We must stay united. Otherwise outsiders will take advantage and attack. We are too few. We cannot fight back". Gripped by despair, Thomas still finds a ray of hope, that is, the revival of the old system based on values and traditional way of life, "If the old system is not adopted, things will go from bad to worse."

Eager to help: The role of aid organisations

Dozens of local, national and international aid organisations established their offices in Port Blair. Unable to get permission to go to the Nicobar Islands, most of them catered to the few relief camps in town. Despite the fact that the government was providing food to the tsunami victims, the aid organisations were keen to provide add-ons such as noodles, cheese, chicken, soups, chocolates and cola, wrote Mohammed Abid, then Director of Social Welfare in his evaluation report. Competition among the various NGOs was evident. Each wanted to give more than the other. With such good care and no work to engage in, the Nicobarese took to alcohol that triggered several conflicts and cases of sexual harassment in the camps. It was reported that even the female police constables were not spared. Local people noticed the huge volumes of food and commodities the aid organisations purchased (not without a whiff of commissions), the wastefulness of food supplies rotting in warehouses due to mismanagement, the exorbitant salaries of the staff coming from the mainland, and the extravagant lifestyle in the best local hotels with extraordinary food bills. It did not take long for the tsunami victims and the local population to get the impression that aid organisations had an incredible amount of money and their biggest problem is under-spending. In Car Nicobar, it was widely reported that NGOs liberally distributed presents to the indigenous leaders to remain on the island and work there. Word went around that the need of an aid organisation is no less than the victims when it came to spending.

In the Nicobars, aid organisations had been engaged primarily in the distribution of relief materials (household goods, tools, clothes, boats, etc.) and in organising a few training and capacity building workshops in the first few months after the tsunami. Apart from this, most of the major interventions in the Nicobars were state-driven since aid organisations were not permitted to work there directly, except through or in cooperation with the government. This was mainly in the form of contributions to housing and infrastructure costs or undertaking similar projects planned by the government. There were a few exceptions though, such as Oxfam India who was able to strike a direct partnership with the indigenous council of the Central Nicobars. However, a year of working together was unsuccessful and the Council refused to renew the contract that terminated at the end of 2005. According to them, working with Oxfam revealed to them the hypocrisy of the aid sector that while propagating the ideologies of participation, transparency and accountability, do not actually practice these themselves. A Nicobarese leader once remarked, 'They [aid organisations] are fooling both the donors and the community. They are great actors who come, create temporary sets for shooting, like in a film, and once the shooting is over, they leave, and the sets disintegrate. The toilets made by UNICEF fell down in no time, but look at the photo of the toilets in their annual report, they look so beautiful'. Abid notes in his report as well, 'The toilets introduced by UNICEF-OXFAM, have been a virtual disaster since they did not take into account prevalent practices and water resource availability.'

With little leverage to operate freely on the Nicobar Islands, several organisations turned to acting as watchdogs to government activities and as a pressure group, along with the media. Unfortunately, these activities were often misused in self-interest which not only discredited the aid organisations, but was unjust to those it was intended to help. For example, several dubious surveys were undertaken and results publicised to enhance their bargaining power with the government to implement projects (read products) they had ready "for sale". In most instances it was clear that projects were **'supply-driven'** rather than **'need-driven'**. The large volumes of money that had been collected had to be spent, no matter how, and tangible results reported back to the donors. This 'one-size-fits-all' approach was also criticised in Abid's

report, ‘These organizations are driven by their own agendas and they have heedlessly introduced new concepts, ideas, schemes and projects without taking into account the socio-cultural milieu of the district.’ Sensational news is what the media of the day are after. And who could be better than the present aid organisations to report on the shortcomings of the government. Headings like ‘Deadly Administration’, ‘India Islands Relief is Denied’, ‘Anger Over Two Rupee Tsunami Aid’, etc. were splashed in the national and international media thus raising eyebrows against the ruling government. In order to circumvent the ensuing assault from opposing political parties and thereby the risk of giving rise to negative public opinion, the government was placed under much pressure to overemphasize their own role in rehabilitation. Thus, large amounts of money were allocated under various schemes to infrastructure, housing and as compensation to all victims.

The impact of State interventions

The role of the State added another dimension to the problem. Soon after the tsunami, the government announced an immediate relief package of Rupees (Rs) 2000 per family. When local officials realised that Nicobarese live in large extended families, they suggested (in good faith indeed) splitting up their families into nuclear units that could each be entitled to the sanctioned amount. It took quite a while to educate the Nicobarese on the concept of a nuclear family quite alien to them. The list, when finally ready, became the blue-print of all compensation packages that followed. Bank accounts were opened for all heads of nuclear families for the issuance of cheques related to several forms of compensation. This was the beginning of the disintegration of the extended family system and future conflicts.

In compliance with the national policy, the Government announced a package of cash compensation to the next of kin for each person missing or dead due to the tsunami. Another package that was offered was to compensate land and crop loss per hectare. Put together, most families received amounts up to hundreds of thousands of Rupees. Conflicts arose in both cases since traditional rules did not match with the Indian legal framework. For example, in the Central Nicobars, it is the norm that the husband must go and live with his wife as *ungrung* (slave). This being so, he has no right over the wealth of his wife or her family. Now according to Indian law, the next of kin in case of the death of the wife is the husband. Without due consideration of the traditional system, cheques were issued in the husband’s name creating conflicts. Indeed, the possibility of receiving large sums of money further spawned greed and jealousy, visible in the conflicts over who is next of kin for those dead.

What’s more, compensation for land and crop loss (also payable to nuclear families alone) caused the splitting of land which was previously jointly held, thus leading to conflicts in several households. Traditionally, land is owned by the joint family and only **use rights** are given to members when they start a new nuclear family. As a rule, only uncultivated forest land can be given away. Plantations are invariably owned by those who planted the trees, but in special circumstances, for example, in exchange for a service, usufruct rights for a period of time may be given. The Nicobarese have their own system of **complex and often overlapping property rights**, making a distinction between land-ownership and plantation-ownership. A family may own the land, but the harvest will go to the one who actually planted the trees. In this sense, a family may theoretically own the land, but to all practical purposes the benefits are reserved for those who planted the trees. In this new situation where land had to be translated into cash compensation, the confusion and conflicts between **ownership** and **usufructs** quite often arose.

Last but not least, the overt benevolence of the Government in compensating losses with cash was a predicament in itself. Never before had the Nicobarese had so much money at a time. Pre-tsunami, whenever something was required from the market, copra was made and immediately sold. In other words, **capital accumulation** in such amounts among the Nicobarese was rather rare, if not unknown. At the same time, the concept of investment and savings for future needs was also incomprehensible. When large amounts of cash are made available at once to a society where the concept of time is compressed to the present, there are repercussions. What we saw immediately was an increase in the purchase of consumer goods such as motor-bikes, TVs, DVD players, mobile phones, music systems and junk food. A Nicobarese village now is no longer a place where leisure time was used in fishing, playing, festivities and visiting neighbours. What strikes a visitor now are the long rows of motor-bikes, the young clinging to their mobile phones or watching television in splendid isolation. A visitor, if not an aid giver, is only a nuisance. The Nicobarese have a special liking for "red alcohol" (whisky and rum) and large amounts of money is used to purchase cheap "red alcohol" at exorbitant prices due to the fact that these bottles must be brought into the islands illegally. Besides the damage it does to their health, the money has been a burning hole in the tribal pocket as Nicobarese end up paying two to three times the going price to immigrant traders.

Consequently, the availability of sufficient money provided little incentive to engage in economic activities. The government's agriculture and 'cash for work' schemes suffered heavily. Of the coconut and cashew saplings that arrived, not even half of them were planted before the first monsoon. At the end of one year, hardly a quarter of the budget allocated towards the revival of agriculture was used due to the simple fact that manpower was not available. At a time when food rations were still being provided free of cost and money was lying in the bank, the willingness of the Nicobarese to work was rather low. In the understanding of an average Nicobari, one works when one needs food or money, something that can be easily misunderstood for laziness.

Humanitarian aid and intervention in general had a detrimental effect on **social institutions.** The death of a large number of elders in the community was in itself a great social loss. The institutions and individuals that survived were not only rendered ineffective but at times even contributed to further instability. Discontented families who received less than others began to stir up turbulence in the society. A large part of the discontent was shown by younger people who had got into the habit of alcohol and had realized that it was easy to make quick money with all the aid organizations around and the free distribution of cash by the government. Village captains were under pressure to contain this, but at times, the captains themselves were young and incompetent. In some villages, old and experienced captains that had died in the tsunami were replaced by temporary captains (cynically referred to as 'tsunami captains') who were ill-informed of the history of land-use and family structures. Nevertheless, their importance increased since they were the only ones authorised to deal with the aid organisations and the government. During land surveys, it was usually the captain who accompanied the officer and arrived at agreements. Several instances were reported when the captain agreed areas of land with the government for development projects and the revival of infrastructure such as school, hospital and shelters without consulting the community or the actual owners of land. Arbitrary decisions by such leaders only aggravated the problem, especially in cases where loss of land had to be compensated with cash. Claims to land were not always fixed on the basis of actual ownership or usufruct rights, but subjectively fixed for either personal gain, or to settle an old dispute, or to favour friends and family. The temptations were simply too high and social containment too weak.

Aid and sustainability

The word 'aftermath' has its roots in agriculture, meaning 'a second mowing' of grass or crop. Indeed, the aftermath of the tsunami is characterized by a second mowing of what has survived the disaster itself. The Nicobarese are unaware that they are not only subjects of a catastrophe, but of an aftermath, a phase dominated by the aid industry that thrives on it. The issue here is not reconstruction, but *reshaping* everything, using the desperation and fear caused by a catastrophe to engage in radical social, ecological and economic engineering that Naomi Klein calls "disaster capitalism". The major concern is not so much the material remains such as buildings and streets, but the immaterial attributes inherent in nearly all societies, that is, the ability to reorganize and rebuild one's future. Unfortunately, the logic of aid not only underappreciated these attributes, but contributed to their systematic elimination. The Nicobarese former anxiety to take control over their lives and rebuild their future is now hardly visible among them. Instead, the focus has shifted to acquiring more and more through aid, and in the continued experience of reckless spending.

Increasing dependency on aid and the new affluent lifestyle does not come without consequences on the society and the environment. Research by the authors and colleagues at the Institute of Social Ecology reveal striking results. Instead of supporting the Nicobarese to construct their traditional dwellings as they always have, the Administration (in league with large construction companies) have taken it upon themselves to provide 7,000 houses for nuclear families made from materials not available on the islands. Construction materials for building these "permanent shelters" are brought in from the neighbouring Andamans or from the Indian mainland, which amounts to an estimated 200,000 MT, an eight times increase in the amount of **built stocks** per capita as compared to pre-tsunami figures. Needless to say, the maintenance of these houses will also require a ceaseless **flow of materials** in the future—at the expense of the Nicobarese. Once the permanent houses are complete, the per capita demand for water and energy will rise substantially. According to the Andaman Public Works Department (APWD) water consumption is likely to go up to 70–100 litres per capita per day (as compared to the Indian average of 40 litres). **Energy load** is estimated to increase from the present 300 KiloWatt Hours to 500 KWH by 2011 as predicted by the local electricity department. Preliminary calculations reveal that there is already a 30 times increase in the consumption of fossil fuels as compared to pre-tsunami figures, much of it used to produce electricity, and the remainder for motor-bikes, cooking gas and boats. Last but not least, there is a six times increase in the import of **biomass** (mainly as food) as compared to pre-tsunami, much of it goes waste in warehouses, or sold back into the black market by corrupted leaders.

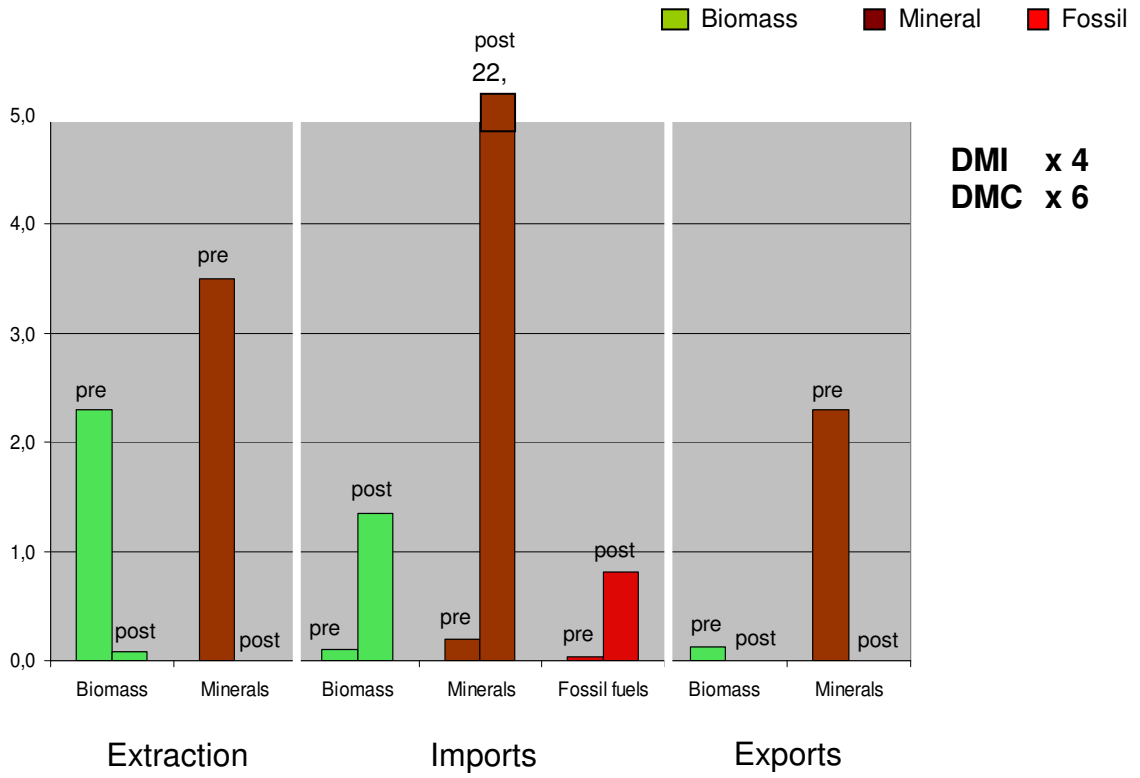

Figure 1: Changes in metabolic throughput of materials – pre-and-post tsunami (in tons / capita / year)

Four years of incessant aid flow have led the Nicobarese to adopt a new way of living based on consumption that is much higher in quantity and fundamentally changed in quality compared to what is was before. The issue here is that hardly any of this is locally produced but must be obtained from outside as aid, subsidy, or trade financed by compensation money. Change in lifestyle is thus accompanied by an increased dependency on resources from outside the islands, a **socio-ecological transition.** It has been made clear by the administration that the Nicobarese will have to begin paying their electricity bills once they occupy their houses. This concern is further heightened when pondering what their new economy will be. As mentioned previously, the Nicobarese are a hunting-and-gathering society producing copra for the market only when there is a need for commodities. An economic activity such as this did not require a disciplined investment of working time. Coconut trees, once planted, provided fruit for nearly a hundred years all the year round without much maintenance and without having to worry about seasons. The pigs scavenged the forest for three-quarters of their diet, and hunting and fishing were combined with leisure. Most of the coconut trees, the main source of cash, were lost to the waves.

So how will the Nicobarese sustain a newly-adopted lifestyle once the compensation money is utilized and food aid stops, given the fact that to replace lost plantations with new ones will take about 10 years before copra trade can resume? Results from the computer model developed at the Institute of Social Ecology reveals some interesting facts. Presumably, the only means of livelihood that is readily accessible to the Nicobarese is the selling of a variety of vegetables, fruits and fish for the local market. Unfortunately, very few know how to grow vegetables and fruits, and this will entail not only learning how to do that, but working with seasons and an investment of time. Another problem is lack of a market. Local consumption (by non-Nicobarese) can potentially absorb only 1,000 kg of vegetables and 500 kg of fish per

day. Assuming the Nicobarese do produce all of that and manage to sell it, it would still meet only 40% of the total household income required to keep present consumption level up. This requires a time investment of 3 hours/adult/day which is close to the maximum 'willingness to work' as indicated by the Nicobarese in their interviews. A further interesting question to the model was, if it is possible for the Nicobarese to sustain their newly-adopted lifestyle once the coconut palms begin fruiting in 2015. The Nicobarese could then in 2015 actually meet their entire household income from the production and sale of copra, albeit at a high working time investment – 8 hours/adult/day. This is equal to the maximum disposable working time (leaving no time for festivities and rituals), and a six to eight times increase in the working time as compared to the pre-tsunami scenario.

Another issue is the impact on the environment as a result of this new lifestyle. Modelling results indicate that to meet present household demand (of cash and subsistence) would require between 3,500 – 4,000 hectares of land on Kamorta Island alone for coconut plantations. Consequently, forest and grassland would reduce by 15% and 10% respectively over the next 30 years with a high level of forest fragmentation. The combined effect of this will be a negative impact on drinking water quality and quantity, on soil erosion leading to lower productivity, on the availability of forest products and the conservation status of some of the endemic fauna and flora elements found on the island. The water situation could get even more critical if we consider the decline in water availability with a scenario where water demand is likely to increase due to population growth, and that agriculture would have to move from being rain-fed to irrigated due to climate change predictions. Finally, the erosion of the top soils might not only lead to land degradation but also have an undesired effect on the coral reefs surrounding the islands.

Conclusions

Apparently, the logic of sustainable development (based on scientific concerns and reinforced by political rhetoric) and the logic of humanitarian aid (market driven and embedded in the world political and economic structure) seem presently non-reconcilable. Aid programmes of the government and international aid organizations have changed traditional social and power relations, leading to an erosion of traditional institutions, values and rules of resources use. As a result, conflicts arise at various levels and the mechanisms to deal with them are few. Aid money has accelerated the **transition** from a formerly hunting-and-gathering subsistence based economy towards an economy linked more to the global market and dependency on aid money and goods. While on the one hand this entails **changes in land-use**, at the same time we are faced with serious cultural constraints in terms of willingness to work. In other words, the only way to maintain a higher consumption lifestyle would be to establish new patterns of society–nature interactions that can provide higher productivity (from land and sea) by introducing new technology, establishment of a functioning market, while at the same time cope with the 'willingness to work' constraint on psychological and physical levels. Whether this is possible or not, and how long it will take, is yet to be seen. In any case, the original affluence of the Nicobarese with their **'limited wants and unlimited means'** seems to be replaced by a condition of unlimited wants and insufficient means; from abundance to scarcity. Seemingly, the Nicobarese now tread on a ceaseless quest to overcome a state of permanent scarcity, the starting point of all modern economic activity. For the moment we can only observe the hopelessness of the Nicobarese with their 'bourgeois impulses and Palaeolithic tools' as they attempt to pull themselves out of a '**complex disaster'**.