SASOL FOUNDATION
FIELD OFFICE
Tel: 254 044 22873
P. O. Box 85-90200 Kitui, Kenya
Along Kalawa Road
Email: sasol@kenyaweb.com
LIAISON OFFICE
Tel: 254 20 8560772
P. O. Box 14333 Nairobi, Kenya
Email: muticon@wananchi.com

COMMUNITY PARTICIPATION

JULIUS NZOMO MUNYAO
MATHEW IKUTHU KITEMA
JOSEPH MUTINDA MUNGUTI
SAMMY MUTHOKA MUTISO
GIDEON MAKAU MUTISO

1. INTRODUCTION

The Kitui sand dam programme rests on a partnership, like the typical African three-legged stool. Each leg of the stool represents one of the partners responsible for its stability. The Kitui community, funding organizations and SASOL, form the partnership. The three-legged stool is stable on smooth and level ground. It is very unstable on rough and uneven ground. Each of the partners has a specific role to play, just as each leg of the stool renders support. Removal of any leg makes the whole sitting system unstable. It topples!

Leg one is the participating Kitui community, which implements the construction of the sand dams and supports other social and physical structures and processes. To achieve these objectives, the Kitui community mobilizes and organizes its local resources. It owns the social and physical structures and processes. This manuscript is about the mobilization, organization and ownership of the resources. The stool stability primarily varies depending on social grounds of particular sub-catchments. When sand dam sites for development offer smooth grounds, in terms of mobilization and creating new organizational forms, the stool is stable. Where sand dam sites mobilization and creation of new organizations is problematic, the stool is unstable.

Leg two, is a composite of the funding organizations. They create an enabling environment by providing financial resources beyond the capability of the participating Kitui community. These resources provide a critical input required for speeding up realization of the programme.

Leg three is SASOL, whose role as the facilitator/intermediator brings the two sets of resources together. It synthesizes water physical and social knowledge, as well as logistical support, and offers it to the participating Kitui community for use in implementation of the programme. Synthesizing indigenous and scientific knowledge is the key role in facilitation/intermediation.

2. WATER IN ARID LANDS DEVELOPMENT

Without water, growth and development cannot occur in the dry lands. Inhabitants of the arid lands will escape from poverty only after enhancing and securing their water resources. Hitherto, life in the arid lands has been adaptation to the dry conditions. Taking appropriate actions to enhance and sustain available water can modify these conditions thereby improving the fragile life support systems.

In Kitui, as well as in other ASALs (arid and semi arid lands), the inhabitants know that there is need to address the cyclical water shortages. During the short wet seasons, many arid lands have abundance of water. In the long dry seasons however, there are severe water shortages. It is obvious therefore that assuring temporal distribution of available water is significant for survival. A shift into systematically managing received precipitation is necessary. Achieving this shift is the key, and thus priority number one, to the development in the ASALs.

In the past, many technologies for addressing water shortages have been tried. Most of these have been extractive. Water is obtained from existing natural aquifers using wells and boreholes leading to depletion of available ground water. This clearly is not sustainable. Neither are surface dams whose lives are limited by high evaporation, silting and contamination. What is required is a shift embrace technologies, which capture and store water at times of abundance. Stored ground water can be used in the dry periods.

The ground offers very large water storage capacity. However, this capacity can only be useful when water is slowed down to facilitate its percolation and infiltration into ground storage. Slowing down water involves runoff control by building different kinds of barriers to the flow. Such structures extend the time water is held in a catchment. Rampart runoff is driven by high intensity precipitation. There are only a few schemes in the ASALs designed to ensure that a small portion of the total precipitation is retained in the receiving catchments. ASAL population growth has led to a water demand beyond the capacity of natural recharge. Therefore, the ASAL communities need to develop and adopt technologies that increase ground water storage. These *inter alia* include sand dams, retention ridges, terraces, re-vegetation and increased ground cover.

The current global climate change trends of increasingly short wet seasons and higher precipitation intensities make slowing runoff in catchments mandatory. Failure to do this is condemnation of ASAL inhabitants to more severe water shortages in the lengthening dry periods predicted. Using technologies that retain rainwater, where it falls, is the only sustainable method of enhancing livelihoods in the ASALs. It is the first step to fighting poverty. It is the only avenue to food security in these communities.

3. THE ORIGINS OF KITUI SAND DAMS

In Kitui, there were a handful of sand dams built in the 1950's and 1960's. Some were constructed using community forced labour. Colonial government employees also constructed some during this decade. A few sand dams were constructed by development agencies between 1970 and 1990. Some were built by church related organizations with communities being asked to contribute ten percent of the monetary cost. Contractors, all from outside the district, hired by the Government of Kenya and its bilateral donors, constructed others.

The beginning of the SASOL Kitui sand dam programme was a plunge into a deluge of unknowns. Although SASOL did not invent the sand dam, globally there was no systematic knowledge about their construction techniques. Existent manuals were sketchy. This was the first unknown.

The second unknown was about their functions in water supply given the then usual categorization of rural water supply into domestic and livestock uses. Sand dam water has many more uses usually ignored by development experts.

The third unknown was impacts of sand dams on ephemeral river ecological regeneration. The extant dams were isolated and far apart. Their regeneration impacts were localized. It can be argued that they, by concentrating abstraction –human and livestock- attracted more usage than the fragile ecology could tolerate. This resulted in localized desertification. To address this issue, SASOL decided to build sand dam is cascades. Free flow of water is from a higher to a lower gradient. Construction of sand dams interferes with this free flow by creating barriers to flow. When a single sand dam is full, the water overflows into a lower sand dam. A consecutive sequence of sand dams along a channel forms a cascade.

Each sand dam functions by holding water in the sand reservoir upstream of the dam wall. An initial flow of water in the sand dam, after a dry period, will raise the water level in the sand higher than surrounding area. This is the result of the differential rate of water percolation between sand and the surrounding soil. Higher levels in the sand create a potential pressure

gradient enabling the water to percolate into the soil and raise the water levels in the surrounding soil. Thus the sand dam holds water not only in the channel but also in the surrounding area. Extra water, which cannot be held in the reservoir, flows down the stream to the next barrier or is lost from the catchment totally, mainly through evaporation and transpiration.

In a series of dams each dam will act exactly the same. However, whereas a single dam's downstream shows a large water level difference in comparison to the upstream, these differences are much lower for dams in a cascade. This means that a single sand dam in isolation would be losing much more water into downstream flow. The same dam in a cascade situation would hold much more water. This is the synergistic effects of a cascade, where the total amount of water held by the cascade in a stream exceeds the sum total of what would be held by the individual sand dams. Thus the impact of a cascade increases greatly the amount of water held and hopefully eventually makes a continuous aquifer in the stream. It therefore provides multiple water points relieving environmental pressure on isolated points and bringing water nearer households.

The fourth unknown was institutional, in terms of linkage to Government of Kenya. Financing of sand dam construction by Kenya government and its bilateral and multilateral donors, since independence, 1963, was through ministerial projects subsumed under very large multi year funding programmes. Supervision, typically, was by the district representatives of many ministries *inter alia,* agriculture, water, planning or provincial administration.

Since the creation of the District Focus for Rural Development policy, by the Kenya Government, in 1981, NGOS had the possibility of linking their community based development activities to the District Development Committee system envisaged in this policy. However, this did not militate against some of the sector ministries claiming proprietary rights over NGO programmes. Further, international NGOs, bilateral and multilateral donors, familiar with the system of GOK district staff supervising their programmes, had great difficult in accepting that local NGOs could run projects linked to the DDC system. So did GOK sector oriented district staff. Some sought sector proprietary rights over NGO programmes, which were multi-sectoral. Perhaps more important were those sector district staff who saw their role as active programme development and supervision over NGO projects. The issue was simply that many had had contracts (some would say rents) in such activity before over and above their normal pay. For more than ten years SASOL implementation was hounded by this problem.

The fifth unknown was the possibility of a new local NGO raising development finances. Given the lack of scientific knowledge on the

functioning of dams, funding organizations were skeptical. The second source of donor skepticism was the large amounts of financial resources that had previously been invested in the search for water in Kitui with only meager results. As a result finding funding was extremely problematic. When donors asked SASOL about the source of design and construction expertise, it could only present Eric Nissen Petersen's manual (*Rain Catchment And Water Supply In Rural Africa: A Manual.* Erik Nissen-Petersen. London: Hodder & Stoughton, 1982). Other comments were on the Utooni sand dam experience derived from consultants' reports. (*"Media And Money Are Not For Grassroots: The Utooni Experience*". Prof. G-C. M. Mutiso, Paper prepared for the Alan Shawn Feinstein World Hunger Program, Brown University and Interaction: The American Council for Voluntary International Action Second Annual Hunger Research Briefing, April 5-8, 1989 Providence, Rhode Island.).

Asked how SASOL knew it would work, references were made about the few existing dams from the fifties. Asked how much water would be stored, SASOL initially talked about channel storage, which later proved to be a gross under-estimate of recharge and storage capacities ("Kitui Sand Dams: Construction And Operation". Julius Nzomo Munyao et. al. Kitui: SASOL, 2005). Questions on water safety were answered in terms of well water being safer than open scoop hole water. We should however note that as experience and funds improved, SASOL constructed sealed wells.

SASOL could not intelligently answer the question on numbers served by each dam for the simple reason that it did not have detailed knowledge on how many people would be in the sub catchments for they did not fit the provincial administration or the CBS mapping of population. SASOL based its arguments on that primary schools seemed to fit into water sub-catchments. This was from consulting data developed for two bilateral donors in active in Kitui district development between 1980 and 1990.

The fifth, and possibly the greatest unknown, was how the variety of Kitui communities would react to the sand dam programme. Donors were asking two very basic questions: What would be the level of community participation? What methods would be used in mobilizing local resources? Recall, that many Kitui people still had memories of forced community labour of the colonial period in creation of public infrastructure. Recall also that contractors or government employees, without any community participation, built many of the earlier sand dams. Recall also that one very large church NGO, which demanded ten percent of the monetary cost up front, had also built some.

SASOL did not know for sure how various slices of the Kitui community would respond to the high labour and organizational demand necessary for successful participatory sand dam construction. SASOL drew courage on this issue from the experience of Utooni community in the adjoining Machakos

district. Utooni had built many dams from as early as 1977. Over and above this, knowledge about the Kitui community self help traditions, gleaned from basic social science studies and consulting reports to donors in the district, showed that water was the top priority need in the district. These sets of judgment and data also suggested that communities would be willing to invest their resources in developing more reliable sources of water. Year after year, these communities got together to re-scoop what are called survival scoop wells. Kitui traditions also showed that this effort was ritualized and very tightly administered in some of the local communities.

In summary then, SASOL did not have concrete answers to all the questions thrown up by financiers, local and external, and public officials. However, from logical deduction and observing the few functioning dams, SASOL saw the potential of this technology in securing community water in Kitui and other ASAL areas with similar conditions. In addition, the local inhabitants had knowledge that water is found under the sand. The last resort water sources, in these areas, are scoop holes in sandy riverbeds. Thus, on the point of communities deciding on the technology, SASOL is on the view that they did based on historical experience. What SASOL did was to improve on existing technology.

Scoop hole water is found where a natural impermeable layer runs across a river channel thereby cutting off flow and forming a natural underground sand dam. Therefore, it was clear to SASOL that increasing the height of the subterranean barrier would increase the amount of water held. Further, building many barriers in a sandy river channel would increase the offtake points, thereby limiting local desertification. Numerous water points would reduce the distances and time spent on water chores. Many barriers would also have synergistic ground water storage effects impacting not only the riverbed but also land abutting the riverbeds in rolling land, the spread effect would be limited but in flat lands it could be very extensive.

Given these logical deductions, SASOL decided to concentrate dams in cascades-defined below. It also decided to build only in one district. The envisioned objective was to test the social and scientific basis of providing water through sand dams to ASAL communities. A secondary objective was to reduce project management costs. SASOL and the first donors knew clearly that these were risky objectives.

The pilot activity was five dams on the Kiindu River. These were casually financed by a newly appointed Chief executive of a UK based NGO, on his way from India to UK, before formally taking over! The trigger had been one of the many open-ended funding request letters SASOL sent blindly to very many organizations. The financing was intermediated by the local branch of the organization. If this pilot had failed, the envisaged sand dam programme would have died. The pilot was an invaluable learning process in community

mobilization and organization. Sand dam site communities and eventually the beneficiaries were defined. Sand dam site management mechanisms were also defined.

On community mobilization, a strategic decision was made that the unit of mobilization would be the sub-location. In SASOL's view, a sublocation was socially and physically compact, had shared institutions among which the major integrators were schools and water points, mainly scoop holes. Further, and perhaps most significant, from a national government development politics point of view, GOK had recognized sublocations, since 1981 formulation of District Focus for Rural Development Policy, as the premier grassroots level development institution. Historically, it had the lowest formal government administrator, the Assistant Chief. There also was a project management need of bunching SASOL staff in one area to minimize field supervision costs.

The argument is not that SASOL was to take over the Sublocations' District Focus committees. It also is not that SASOL was to create SASOL development groups, as many other development agencies do, and had done, in Kitui. SASOL was to task sublocations to organize their populations into many sand dam communities initially and later sand dam committees. This would clarify which of their populations' beneficiaries would belong to which sand dam sites. These would be *sui generis* new community organizations. SASOL was not to be involved in constituting them.

On sand dam construction management, two novel ideas were paramount: community sand dam committees and community record keeping. The first was to be the key in planning and execution of site works. That is, collection of local material- stone, sand and water- and storage of externally sourced materials. Community based record keeping on stores' withdrawals and workday attendances were identified as important for construction and future operation and maintenance of the dam. These had to be put in place. Delivery of externally sourced materials- cement, timber, construction tools and reinforcement bars- to a community store, typically in somebody's house, agreed by the community, was seen by SASOL as a strong incentive to specific slices of communities owning a particular dam. The trust bestowed on the specific sand dam communities by SASOL, to store and control the material delivered to them, was expected to elicit the particular sand dam community's commitment for rightful use of the dam benefits. It initially was also a test on whether a community was sufficiently agreed about the project. Given the history of "walking" materials, it was explained in detail that materials would be used only as authorized by the local community for the common good, not for individual benefits. Where materials walked, SASOL would terminate activity in the community until restitution. SASOL believed that proper community management of external materials was key to participation. It would show that external development

resources were for the many. It would also show sand dam communities they can organize and manage internal and external resources to solve other community problems over and above facilitating the sand dam construction.

Village record keeping enables communities to monitor their contribution to development projects. In Kitui and Kenya in general, it has been taken that the local materials and community members' time have no monetary value when accounting for project costs. Consequently, many communities involved in development activities devalue their labor and other contribution to solving local problems. They believe that they are powerless to change their situations.

SASOL had the standpoint that as people objectively know that they have invested, they would get an incentive to protect their investment, in this case sand dams. No wanton destruction or damage would therefore be condoned. Such knowledge begets project security. It also empowers the community in other ways. It shows that local materials can be used to change local situations. Used creatively, local materials and labour can be converted to infrastructure, which is a base for subsequent development. Investing community time and energy in a worthwhile cause is not losing time but investing in the future of the community. This calls for organizing projects in new ways. By keeping sand dam development activity records, and discussing them publicly, communities were surprised that their contribution was almost equivalent to the external input in monetary terms. Never in their wildest dreams did Kitui communities imagine their contribution was so much! Donors were also surprised when SASOL monitored and reported back to them community contribution in terms of their materials and labour! Some formally protested that this was not necessary!

In summary then, it is important to flag that strategic decisions were made on the physics of the dams and community mobilization on the basis of historic knowledge. Donors and governments do not recognize such knowledge as essential components in project and programme appraisal for it calls for extensive historical knowledge. Development theory models do not acknowledge such histories! We next comment about the overarching social ideas about the Kitui society.

4. COLLECTIVE SELF HELP FROM TRADITION TO NOW

Communities exist over time and traditions. Philosophically, Kamba society, of which Kitui was a part, historically defined each individual as a unique member of the community as well as a representative of the totality of the Kamba community. The survival of the community depended on its individual members whilst, in turn, the survival of the individual depended on the

actions of the community. This was assured through the palaver- extended discussion to reach a publicly accepted consensus, philosophy and process, which assured that each was treated fairly. The philosophy and process assured and was driven by collective or communitarian concerns.

SASOL believed that this was still the basis of collective decision making, in Kitui, in spite of the hundred-year colonial and postcolonial interlude with its forced social organizational changes, which ignore traditions (*Citizen and Subject: Contemporary Africa and the Legacy of Late Colonialism*. M. Mamdani. Princeton: Princeton University Press. 1996.). However, one must recognize that even in postcolonial collective self-help there is a bifurcation of the roles of the individual. Firstly the individual persons or households have selfish roles aimed at their survival *per se*. Secondly, there are actions, which are still undertaken by the individuals and individual households in conjunction with others. Several levels of interactions exist.

The lowest (micro) level, which is the smallest unit in traditional communities, is the neighborhood or village, historically made of clansmen but currently made up of members of mixed clans. The intermediate (meso) level is historically the lineage or clan but currently made up of a mixture of lineages and clans in sublocations, locations and even districts, tied together by localized socio-political processes, including but not limited to, local and national politics, production and marketing as well as educational processes. The highest (macro) level of interaction, which is tantamount to the global level, is the tribe made up of the many clans. Socio-political processes referenced at the national levels drive its interactions. Tasks, which need to be undertaken, for individual and collective survival are matched with the appropriate structure and level.
For example when there is an attack by another tribe-with its attendant destruction of tribal property- the matching calls the tribal warriors to action, for organized warfare and its ideologies exist only at the global level. On the other hand, social reproduction, economic production, accumulation and nurture of property take place at the individual, household, and neighborhood levels. For example if an individual's homestead is on fire, it is the family and neighbors who come to the rescue. Further, Kambas say you do not set up a cattle camp alone *(Mundu ndatwaa kyengo e weka.)* thereby affirming that the process of accumulation is collective even for the village rich.

These interactions are undertaken under a traditionally derived value system, which is communitarian. It orders all and sundry, towards assuring life. This standpoint is not peculiar to Kambas, but is generally African. In *The Ethical Dimensions Of Community: The African Model And The Dialogue Between North And South* (Nairobi Paulines, 1997.), Benezet Bujo states:

*“Numerous studies have sufficiently shown that African thought and action are deeply determined by the community. Foundational to them is the concept of life. The individual knows him or herself to be immersed in the community to such an extent that personality can develop only in it and through it. This development does not take place in an asymmetrical way but is based on mutuality. It also includes a giving back of what one has received from the community. In concrete terms, there is interdependency, which is based on the fact that all members have the task of increasing the life force. Everybody’s behavior and ethical action have consequences for the whole community; the good contributes to the increase of life, while evil destroys or at least reduces life”(*p. 182).

Interpreting this, one concludes that since water is life, all work related to it, in the Kitui traditions, including the sand dam project, are done within a framework, which binds the community and individuals. So far, for the construction of sand dams and their initial utilization, the community is involved at the individual, family and village level. The individual has the dual role of participating in the communitarian activity as well as developing the individual land to enhance the harvesting of water in the catchment hence increasing both green and blue water potential in the locality.

The SASOL intermediation role is organizing the Kitui district wide community, a slice of Kamba society, found in three other districts, for structural development. Such a development is the process of sensitizing local communities to mobilize the local resources in order to improve the quality of life through collective self-help.

The key is to facilitate communities to put in place organizational structures, which are functional and conducive to achieving individual and collective goals. In the case of the sand dam construction, the immediate goal is to alleviate the scarcity of drinking water for humans and livestock. It is only when there is surplus water that there is diversification into utilizing water for expanded production.

The availability of bulk green, blue, brown, and white water opens vistas, which have not existed before the construction of the sand dams. Green water is the water used for plant growth. Roots from the soil pick it up and leaves transpire some of it. Blue water is water flowing down streams or held in reservoirs. It is available for use in economic activities, for example brick making. Brown water is water held in ground storages. These can be either shallow or deep. Exploitation of shallow storages is through construction of wells. Deep storages can only be utilized by digging expensive boreholes. White water is water in the atmosphere-typically clouds but most of the times experienced as humidity.

Availability of water challenges the historic community organizational formats and processes. The adventurous individuals in the specific sand dam communities lead the way in taking the opportunities provided by the water. This leads to the diversification of existing production systems. This, in turn, gives new opportunities to those who have been left out in the historic colonial and post colonial models of social change and accumulation as they see new opportunities in the utilization of the water. A notable example of the adventurous is Mrs. Kavuu Kyalo. (PIC) She has less than an acre of land since either the clan; family and/or husband did not accumulate in the colonial or postcolonial accumulation roulette. She was able to save for her son's high school fees during the first year by bucket irrigating vegetables with dam water! Her market was local. By finishing high school, she hopes that her son would be launched onto the accumulation escalator. This is born out, for her, by the narratives of the local accumulators she knows.

After evaluation of the activities of the adventurous in a community, other members of the same community join in the fray and structural changes begins in the community. This happened in the sand dam programme. Its palaver- a communitarian debate and consensus making effort, spread faster than SASOL was able to implement sand dams. The new tentative changes in production, begun through this palaver, changed the collective outlook to life. Attention was paid to conservation as land become a precious commodity and is subsequently seen as a serious pathway leading to individual, family, neighborhoods and the community riches.

This transformation needs new community organizational structures. The organizational structure, which was instrumental in building the sand dams, is not deemed suitable -by the community- for carrying it forward, given its new global- and thus different- goals. The reasons are simply that technologies, markets and distribution channels are global i.e. beyond the village and even the district.

Communities tell SASOL that when they chose the sand dam committees they needed only supervision of what they were doing locally. Now they need warriors to the globe- equivalent to the traditional *Athiani,* usually translated as spies- who went to live and work among other communities in historic times to see what would be of use to the local community. This view is not out of the rational for it acknowledges the global interdependence. One of the major thinkers about this, ex Chairman of President Clinton's Council of Economic Advisers, ex World Bank Chief Economist and Nobel Prize for Economics Winner in 2001, Joseph Stiglitz, in *Making Globalization Work-The Next Steps To Global Justice* (*London: Penguin, 2006)* notes, *inter alia*: "Most of us will always live locally-in our own communities, states, countries. But globalization has meant that we are, at the same time, part of the global community." p. 22.

SASOL recognizes that building new Kitui wide community based and owned institutions will be the core business of a next SASOL after completing the construction of sand dams. In classical development literature, such activity is called capacity building for new tasks. SASOL adds the proviso that this classical thinking assumes that it is external organizations, which create these organizations

The sand dam experience negates this thinking for sand dam communities are ahead of SASOL for they have begun to create new organizations to market vegetables for example. Other examples are construction of community meeting places, joint procurement of farm inputs etc. The desired innovation is that its content will have to relate to individual and community accumulation as was in classical Kamba traditions. In the Kitui case it is envisaged that a future SASOL will enable the Kitui wide community to design and fabricate such organizations.

5. SASOL ROLE: COMMUNITY ORGANIZING INTERMEDIATION

Evolving Development Theory And Practice

Since WW11, mainline development theory is modernisation theory and it emphasizes top to bottom approach. Its basic premise was that outsiders and their institutions knew what development was best for specific communities. This was so, even when particular community insiders were agents of external development organisations. This approach has been proved untrue by the large number of failed projects and facilities, which are of no use whatever to the intended community beneficiaries. Top to bottom practices are very much with us for authoritarian rulership structures, funding and implementation systems leave no room for either African traditional communitarian processes.

Currently, the favoured development theory, as opposed to practice, is bottom to top. All developmental activities, under this approach, originate from communities. Although obeisance is paid to this new thinking, most discussions of this approach mainly centre on the defining of beneficiaries and use of their traditional knowledge but not on community organising.

To ensure that community based projects succeed and are sustainable, base communities must organise themselves to block local elites, national and international others from hijacking their priorities. Communities must have total vested interest on all projects processes in their area. Collective self help- a communitarian process, nurtures community vested interests, as drivers of new community organisations.

Collective Self Help

Community organization is the process of mobilizing and sustaining communities to act in order develop through collective self-help. Therefore, development can only be a process of change using local and external resources to improve the standard of living in a community. Within this, change is a function of time, knowledge and materials. Logically then, the rate of development is proportional to time input, quality of knowledge, and expenditure of materials.

Since the operative clause in community organization is collective self help; community based organization elicits the involvement of all community members without favor or rancor. Such an organization is necessary if the community to tackle issues larger than an individual's or a household's capacity.

Conventional wisdom dictates that people get involved in an activity in which they have a vested interest. Different people will get involved for different reasons. To keep the interest of all the people, an organizational structure, which caters for all people, must be grown-to use current management jargon. It is not just an organizational structure for behind its construction is a string of issues elucidated by, among others, Kung Chung-wu as follows. *"In man, the producer, motivation derives from consciousness, which in turn comes from social practice. Motivation is the source of moral energies--."* ("Cultural Revolution in Modern Chinese History" in *China's Uninterrupted Revolution*. Victor Nee & James Peck; New York, Random House, 1975 p. 292.)

The value of creating this organization is equivalent to the direct benefit it brings to the community, in terms of motivation towards its redefinition and production. In the case of the sand dams, such an organization is the sand dam site community organization.

A base community is a collection of individuals and households. Each has their aspirations, hopes and fears. They are, however, bound together by sharing common resources by virtue of the locality where they live. These shared resources necessitate communitarian action to tackle issues, which affect the whole of the community. For effective communitarian undertakings, a total commitment by all members of the community is necessary. A communitarian system of decision-making, about resources, is therefore mandatory for the smooth functioning of collective functions. It enables personal and household aspirations, hopes and fears to be articulated and communitarian aspirations hopes and fears to be generated though discussions. This leads to agreements on the future actions. Anytime one group predominates, in the definition of such activities, the community cannot function effectively until access for the many is re-established.

Since communities share resources, they also share common problems. The communitarian mind is usually at par with the community's state of

development. A change agent/ intermediator should therefore aim at catalysing the communitarian mind to action rather than focussing on any particular group in the community. The communitarian mind, in the sense that individual minds deliberate together to find solutions for the existent problems, is the source of motive energy in the community and should be nurtured by development activities in preference to individual minds and their accumulation of either power or riches, in isolation. Together the community will be able to change their world whilst individually only minimal change can be achieved in particular communities.

SASOL As Intermediator

At the beginning of the sand dam programme, it was extremely difficult for SASOL to engage the grass root communities for several reasons. One, the approach to upscaling traditional water provision technology was new to the base communities without extensive local track record. Two, until the early 1980's when the District Focus policy change was instituted, planning and implementation of development was by high authorities. Third, payments for doing development activities had been used liberally in the past to drive development projects in Kitui. Fourth, the communities had not internalized the concept of cost sharing, fiated as GOK policy in early 90's, as the new mode of financing government operations including indirectly base community development.

To facilitate a community to institute a truly operational bottom to top approach, the change agent or intermediator, must, together with the community, identify its problems/needs, prioritise them, plan the appropriate actions to be taken and specify who is to do what and when. In all these actions, the external change agent should remain in the background and never be the leader. In this way the community will initiate, implement and evaluate its' programmes thereby negating dependency.

The intermediator, who is an outsider, should mobilise the community to choose its own leaders. The community mandates such leaders to carry out whatever tasks they are assigned including the day-to-day running of their programmes through mandatory consultations. Ideally the leaders should be chosen by consensus or by election by the community and carry its mandate in their actions. The former is the tradition but pseudo elections of the colonial and post-colonial periods tend to give preference to verbal elections these days!

SASOL, as a development intermediator, strictly adheres to the principle of participative development. This is a major pathway to sustainable development. True participation empowers the community by galvanising them to action as they retrieve and build on their knowledge distilled over

many years. This knowledge ensured their survival in the harsh environment. However, two problems exist. First, many people have forgotten the traditional knowledge mainly because of irrelevant and irreverent colonial and postcolonial schooling, which defined traditional knowledge as irrational. Second, community historical knowledge must be adapted and applied in new and novel ways in order to cope with the changing socio-political global arena. There often is also need to introduce knowledge from without.

State Structures In Intermediation

Community organizing is also within the context of state structures for states are jealous Gods! Administratively, Kenya is divided into provinces, districts, divisions, locations and finally sub-locations. From the experience of organizing the five pilot sand dams, SASOL established that the sub locational community was the ideal size for undertaking the programme of ensuring and enhancing local production of water resources.

The Government of Kenya, like other governments elsewhere, is a major stakeholder in base community development. Its policies, since District Focus in 1981 and more germainely, the Water Act of 2002, increasingly dictates that development should originate and be coordinated at the grass roots level. To argue that this is policy should not be misunderstood as claim that it is reality. It also is not to argue that policy concretely defines entry points to grassroots development.

For SASOL, the entry point, defined narrowly as the first public meeting between it and a locations population, is a forum convened by the Chief of a location. The chief entry was selected for it is a more robust office than the Assistant Chief in law. It is robust in the sense of administrative and development reporting processes.

SASOL is aware that many development practitioners and even national politicians see the Chiefs as autocrats. That maybe so but in our experience, it is important to get the public recognition through the Chief. The logic is simply that the Chief has immediate connections to all the local stakeholders. Apart from acting as the security officer in the location, he, and occasionally she, has the support and collaboration of all line ministries. S (he) interacts directly with political parties and any other organization, which exists in the location. Additionally, the Chief is always chosen from the local community. S (he) is a member of the community with the same needs problems and aspirations of the community in general. S (he) can empathize with the community with more ease than most outsiders.

For SASOL entry to a location, Chiefs organize fora in their capacity as the area administrators of all stakeholders in their locations. Key local stakeholders are Assistant Chiefs, tribal/clan, political, religious, group and

traditional leaders, officers from line ministries, youth, community members, politicians of all species and levels and the locational development committee members. The function of this forum is to generally discuss with the location's population and its leadership the sand dam programme aims and aspirations, in relation to the local needs, problems and priorities. The Chief is the facilitator of the meeting given his role as the chair of the locational development committee, which sets the development agenda in the location. If this committee does not want a particular project in its area, there is nothing one can do.

Since the location has several sub-locations, a starting sub location is identified in these initial fora. There usually is conjunction on having a pilot sublocation between SASOL's interests and locational fora interests. For the former, it is not good project management to start in all sublocations given field supervision costs. Many of the fora always seem to like one sublocation to try first. The choice is driven by need of water most of the times At other times, the decision seems to be driven by perceived competence of Assistant Chiefs and/or communities of particular sub locations. We revisit this of leadership issue under the case studies.

After entering and getting blessing from the locational leaders and the locational community at large, it becomes possible to focus on the sub-locational communities one at a time. Planning is initiated at this level.

Discussion Of Planning At Sublocations

The sub-location offers an ideal project area since the population and geographical extent render easy contacts and communication. In addition since the area is small, priority problems and needs affecting the community are shared. There is higher-level of homogeneity than can be found in a location. People know each other due to proximity of dwellings, schools and water points. There is more empathy in the group. There is much more similarity in topography and landforms than in a location.

The immediate coordinator of development at the grassroots is the Assistant Chief whose realm authority extends over a sub-location. Remember that this is the smallest formal administrative unit in the government administration structure. At the sub-locational level the Assistant Chief is the supreme ruler and protector of persons and coordinator of all activities in the area. Weekly, Assistant Chiefs meet with their Chief to submit their reports and discuss issues of common interest. Assistant Chiefs are empowered by law to hold sublocation wide fora just as the Chiefs do for the location.

One such forum, to start sand dam project planning, is called by the Assistant Chief. Two major issues, of utmost importance in the success of the project, village baseline data gathering and identification of dam sites, are

initially addressed in this general and open meeting. Although the Assistant Chief is the lowest government paid functionary in the hierarchy, a sub-location is further divided into villages. Most villages consist of between 40-100 households. The elder is the focal point for government programmes in the village.

Planning: Data Gathering At Village Levels

It is the villagers who plan and develop sand dam sites in their village. The village leader is an elder, appointed by the Assistant Chief, as the conduit of information from the village to the office and back. Detailed planning therefore is at the village level.

The first real planning activity is the collection of village baseline data. A questionnaire is distributed for each village to collect and fill in the data for their village. This has two implications. One, the village collects baseline data to refer to in future an assessment of their development. Two, it is a very useful planning tool for immediate action. As many people as possible meet to agree on the data needed to fill this questionnaire. They meet under the leadership of the village elder. These assignments on collecting village data, usually take one to two weeks. During this time the villagers start seeing their environment from viewpoints they had not experienced before.

After the village based data-gathering interlude, there is a second sub-locational meeting in which the villagers bring the filled questionnaires for discussion and also a list of their preferred dam sites for discussion. The data from each village is analyzed and its implication on their livelihoods discussed, in public, from their viewpoint and also from SASOL project staff viewpoint. This meeting is mainly for sublocation wide coordination of the data for village boundaries are typically not cast in concrete.

So as to nurture participation, it is crucial that sites picked for construction of sand dams are the ones agreed upon by the people. Failure to ensure this will lead to non-cooperation by the community. Criteria for picking a suitable site by the community include potential water capacity; accessibility; utility for the majority of the people; proximity to sources of construction material-stone and sand and water- and information of ground water storage e.g. where scoop holes are found as this indicates impermeable barriers down stream.

Village And SASOL Technical Site Evaluations

Villagers and SASOL staff make arrangements for subsequent appraisal of the sites identified by specific villages. This is for confirmation of sites on technical grounds. SASOL Water Technician checks on river morphology and

geology to confirm whether a successful barrier can be constructed and function effectively. Some sites might be moved a distance from the original point whilst some may be not developable at all. Decisions on these are made in public and with participation of all.

Sand dam sites, which are confirmed on technical grounds, including agreement by the sand dam communities, must carry out the following functions in sequence:

- Register site participants who henceforth become the sand dam community, which is a subset of the larger sub-locational community.
- Election of a sand dam site committee by the sand dam community.
- Draw agreements with adjacent landowners to ensure access during and after construction.
- Delineate boundaries of the sand dam site.
- Develop sand dam site rules and regulations to be used in the future in cases of conflict.
- Discuss the rules and regulations with the Assistant Chief.
- Ensure that the Assistant Chief registers the rules and regulations and forwards them to the Chief who in turn forwards them to the District Officer and District Commissioner.
- Formulate sand dam site work procedures and activities.
- Identify a store for external material delivered to the community for use in its dam.

The SASOL's Community Organizer helps the community to accomplish these tasks by guidance and training on the various issues. Two critical areas are the roles and responsibility of committee members, and formulation of rules and regulations for dam site development. His role is strictly facilitative. In no circumstances does he make decisions. His facilitative role is to outline options, which the community may not have considered in making decisions.

Defining Sand Dam Communities And Committees

Sand dam communities are the ultimate carriers of the construction programme through their committees. It takes a long arduous effort to get to create these new sand dam community organizations but it is difficult to see how one could start from another standpoint. Sand dam communities are all-inclusive organizations. No person is barred from joining due to his or her religious, political, and ethnic or any other pretext. In most cases those who do not join at the beginning do so by paying a fee set out in the rules and regulations, usually with a penalty payment of generally 10-15%!

It should be repeated that SASOL does not take part in the both the delineation of the sand dam communities or the selection of specific sand dam committees. The reason is simply that it is counter-productive from a

participative intermediation point of view to have organizations whose birthing and life is only an appendage of the intermediator.

It should be further noted that initially SASOL only specified that a sand dam committee of 13 was desirable. The figure resonates with classical Organizational Development theory prescriptions. It did not specify the ages of those to be elected to the sand dam committees. However, it became clear, after two years, that committees did not generate literate committee members for the tendency, from tradition, was to select only the trusted old and experienced who had not got formal schooling. Literacy is especially important for village record keeping. SASOL then started specifying that committee members should have representatives in the age brackets 20 to 30; 31 to 40; 41 to 50 and above 50. Whereas this was targeted to capturing literacy, the surprise very positive outcome was that it had gender impacts. A lot of literate young women made into the committees. This unplanned outcome has been extremely beneficial to committees for many the young women are high school graduates with significant modern skills.

Initially all the capacity building trainings were carried out at the sub-locational community level. SASOL field experience showed that it was more beneficial to use the dam site community for training.

6. THE USES OF THE SAND DAM COMMUNITIES AND COMMITTEES

Water as District Wide Priority

The Kitui District community has known for long that their priority need/problem is water. Colonial and postcolonial public records show this. Every grassroots development meeting has water as the priority agenda. This awareness negated the need for prioritization of problems in these communities at the initiation of the present phase SASOL. After the first cascade, by observation and communication between communities, which already have sand dams, new communities willing to solve their water problems are aware of the potential use of sand dams. This is why a lot of communities make requests to SASOL now. At the beginning this was not so. Many meetings were held in many villages to discuss how the sand dam approach could solve their water needs. Programme success, in the early catchments, has led to communities viewing sand dams as the best option to give them respite to their water shortages.

Taking into account that there are few people who can develop a private sand dam in many communities in Kitui, it stands to reason that people should cooperate in building community sand dams. Where a person develops a water source or even a sand dam, tradition makes it extremely difficult to deny neighbors and other community member’s water in case of severe drought.

Since the community faces the water needs/ problems together, water is a community issue. The community must tackle it. Logically therefore everyone should be involved in someway in solving water problems as each is also a beneficiary.

Once the community has resolved to solve their water problem, they subsequently create a development agenda which is piloted through the sub-locational development committee to the locational development committee and then onwards to the divisional development committee ultimately reaching the District Development Committee. This is why some wrongly argue that SASOL uses the formal GOK development committee system. What has really happened is that those empowered by the sand dam palaver continue into other development positive pathways! All NGOs, in the Kitui District are members of the Locational and Divisional Development Committees of the locations and Divisions where they work. It is easy to pick or sell an agenda for intervention from these committees by communities.

Prioritizing Sand Dam Sites

Above we noted that one of the roles of the village community is to pick development sites for sand dams. To do so it draws on intimate knowledge of the area, which can only be found in the community. The sand dam site is the basis on which the participants/beneficiaries are defined. It calls for agreement by all village interested parties to choose and deliberate on a site, which is acceptable to all. It should be accessible to all. It must fulfill the aspirations of the village community. It should be achievable by having enough households for providing construction labour, local materials, sand stone and water. Where these materials are difficult to obtain it might be very difficult for the sand dam community to develop a site.

Once the village community chooses a sand dam site and it is technically checked and deemed possible, by them and SASOL, it enters into the activity planning stage. The community registers site participants. The sand dam site community is made up of the participants who are to be the beneficiaries of the sand dam. A sand dam site register of all the households is made. A member of each household represents it when there are activities at the sand dam site or meetings related to it.

Selection of preferred sand dam sites is based on consensus principles. The most ideal site is the one with the following properties: with the largest reservoir, easy accessibility, servicing the greatest number of households, greatest estimated potential, promoting highest participation and expected high water retention. To reach this consensus the process of dialogue expressing the attributes of the sites must be undertaken, difficult opinions taken and a large proportion of the community involved. This will bring

people together lest their views would not be heard and they would be required to be involved in areas where they have objections. Discussion is not only in public meetings but also in households, markets, bars churches, indeed in all phases of the community.

Once consensus (note that it is not majority voting) on the sand dam site has been reached, the selection/election of the sand dam committee takes place. People who are known in the community to be able to move issues are usually elected in these committees. All sand dam community households select/elect, usually by verbal consensus, the sand dam committee, in a public meeting, presided over by the elder and occasionally with the Assistant Chief in attendance.

This committee is charged with the management of the day-to-day activity at the san dam site, as we discussed before. It keeps an attendance register of the participants. It assigns duties and tasks to be carried out. It liaises with provincial administration for any matters pertaining to the site. It, together with the sand clam community, makes rules and regulations to govern the site. It also chooses a store for keeping external materials and maintains stores records.

The sand dam committee and the sand dam community draw agreements with landowners bordering the site. Although the river channel itself is common land, the surrounding land is individually owned. This calls for some legal mechanism to protect collective asset of the sand dam. All prepared agreements are given to provincial administration for authentication, registration for referral in case of conflicts during construction and after. The process is that the Assistant Chief verifies them, stamps them and forwards copies to the Chief who repeats the process and sends copies to the District Officer who in turn sends them to the District Commissioner.

Armed with the specific sand dam site rules, developed together with the sand dam site community, the committee is then in a position to plan activities necessary at the site and assign duties accordingly.

It is important however to realize that the sand dam committee members are not overlords but part of the working crew at the site. Everybody works to make the development a reality and achieve a water source, which is available and accessible water throughout the year at a short distance of each participation household.

Sand Dam Construction

Sand dam site works start in earnest after the election of the sand dam committee with the breaking and collecting rubble stone at the site. This is extremely arduous work. It is all done manually. It is men who break the

stone and carry the larger pieces to the site generally although there are some dams constructed by women alone. Women carry the bulk of the smaller stones. Along with the collecting of stone is the piling of sand at the site. At most sites this is done by women. The sand dam site secretary keeps records of time, in days, worked by each household.

When SASOL community organizer, technical supervisor or masons, establish that enough construction materials-sand and stones mainly- have been collected at a site, a trench, which will form the sand dam base, is marked out. This trench is excavated to reach a firm impervious base on which the dam is rests. Some sand dams are more than six meters deep. Men carry out most of the trench digging with women helping in removing the loosed soil.

When the trench is ready, it is filled back with rubble stone and mortar making an impervious barrier and forming a dam storing water and sand on the upstream side. Activities here are mixing mortar and moving building stone and placing them in the mortar slurry. After construction to ground level the facing walls are built using rubble stone and the space between the walls filled. This continues until the design height is attained when the upper facing wall of the dam is plastered.

This then is an account of activities showing a sand dam community participation in the building of their sand dam. Community participation is therefore defined as involving people in collective self-help activities to solve problems they define as obstructions to envisioned needs.

In summary then we see the community using its knowledge of the environment to pick suitable sites for sand dam development. These might be sites where scoop holes for drawing water have been found to exist even after a long period after the rains have stopped an indication of a subterranean barrier to flow. Applied also is the knowledge that the sources of last resort for water is found under the sand.

We also see communities using their labour and materials mixed with external inputs to create a community asset.

Community Empowerment

Empowering sand dam communities involves giving space to be able to act in order to improve their situation. Opportunities for empowerment abound in the sand dam site development programme. The sand dam community initially independently identifies sand dam sites. Together with SASOL it evaluates the technical potential of the sites. It creates a sand dam management committee to plan and supervise the sand dam construction. This committee evaluates construction activities of the sand dam community

members as well as the activities of SASOL masons and other staff. It keeps records of all maters pertaining to the village and the sand dam. From these records, their contribution of the project is evaluated. Their analysis always shows that their contribution is to the project is significant. Typically it is 40-50% of total project cost. The realization that sand dam communities make such a big contribution is an affirmation that they have the potential to use locally available materials to change their environment. Communities also learn that they have inherent ability to organize and execute massive projects using collective self-help principles.

Storing external material for the project is another community lesson about collective responsibility. When material is delivered to a community it becomes the property of the community. Trust, bestowed on the community to care for the material creates a sense of responsibility to protect the material and maintain records of use ensuring appropriate usage. The ownership of the material leads to ownership and protection of the project in the long term.

When people are deemed to be helpless, they lose their dignity. By discovering that they have a major contribution to their projects, communities regain their dignity. Building confidence in communities' abilities and their recognition of the same will provide impetus to acting on future development challenges of creating community assets.

7. CREATING COMMUNITY ASSETS

For any meaningful and lasting development to occur, the community must know, in sequence: What they want to do; Why they want to dot it; Where they want to do it and When they want to do it. At each stage, in this process, the value of resources employed must be counted and accounted for in order to arrive at the true value of the undertaking.

The realization, by a community, that they have invested their effort and resources into an asset of great value, which is their own, is an incentive for its protection and gives enormous satisfaction and sense of achievement. That is not all, Joseph Stiglitz, the famous economist, quoted above, writes further that: *"----the people in the village know better than anyone else what will make a difference to their lives: they know how the money is spent, and any corruption hurts them directly. Having invested in the planning and execution of a project, they are more likely to feel ownership, a commitment to see it through to success, and therefore are more likely to see it receive the funds required to maintain it"(Making Globalization Work-The Next Steps To Global Justice,* (London: Penguin, 2006) p53.

To get to what should be done, the community must form an organization, which will identify the collective problems and prioritize them. In the problem identification stage, audience/input must be sought from all members of the community. It is paramount that no one feels left out; everyone has to be assured that his problem will be addressed. Of course a lot of personal problems are discussed and discarded in the process of agreeing on collective problems. Such a process is also useful in creating an actively thinking community.

Once prioritization of community needs and problems is done according to collectively agreed criteria, the most important of which is the number of people afflicted by the problem, solutions can be sought. Up to this point, what and why are answered. What follows this is planning to effect whatever action has been collectively deemed necessary.

Convenience of location of a facility, to solve the identified problem, is the answer of the question where. Mis-location of a facility for the benefit of a section of the community will generally lead to poor participation in its planning, construction, operation and maintenance.

Time is of essence in any undertaking. It becomes more so, if there is competition between normal chores and collective chores. It is therefore necessary to plan collective activities not to clash with peak labor demand periods in the community. SASOL's experience in Kitui shows that peak labour demands are for planting and harvesting. To do intensive construction work in such periods is to court dissent and boycott of the construction activity.

To answer the question how, it to specify the mobilization of human and material resources, which are required to accomplish what needs to be done, and carry out the necessary activities to completion of the project.

Apart from giving the satisfaction of solving a problem and fulfilling collective need, an asset needs to be owned or it would fall into the tragedy of the commons. It is only investors who have claim on collective assets. In a poor community, the most important resource is community labour; it is their major investment in projects.

Organized communities using their local resources, combined with external assistance in the form of financial and managerial inputs, can achieve great progress in a short time. This is the result of the knowledge that in doing so, communities are expanding their resource base by creating assets, which will impact on their livelihoods. As they create insurance for their future, they not only protect their current assets, but also expand their asset base. They are on the march to creating capital. Hernando de Soto points out that "---*for accumulated assets to become active capital and put additional production*

in motion, they must be fixed and realized in some particular subject---" (*The Mystery of Capital.* Hernado de Soto. London: Black Swan, 2001 pp 39-40). For the sand dam communities this is the future. Such communities shout to us that they liberate and manage themselves. Do we hear them?

8. CONTENT OF CAPACITY BUILDING AND TRAINING

Salience of Land Degradation

Ameliorating availability of water is the key to the survival of the of the dry lands life forms. Land degradation is a major feature in the dry lands where the human population has increased. Its exploitation of the sparse vegetative resources for fuel wood and charcoal and clearance for cultivation depletes plant soil cover. The resultant rampart erosion further degrades the land. That is not all; the attendant baking of the bare soil further depletes its productive capacity. These degrading processes, coupled with the increased stormy rainfall, over short to very short time spans, aggravate the situation since ground water infiltration is reduced. This results in continuously worsening water situation even as demand increases. This is the existing scenario in many dry lands.

If dry land human populations are to survive, this degradation scenario must be arrested. Knowledge and technologies for its reversal exist both in traditional and scientific knowledge systems. Historic dry lands management systems, which have enabled dry land inhabitants to survive albeit with less population pressure, are known. Many of these have been neglected with the advent of supposedly new knowledge, which has not been wholly beneficial. In addition there is a whole body of scientific knowledge, which applied appropriately, is useful in managing the dry lands. What is required is the integration of scientific and traditional knowledge for recovery of the environment in order to support the increasing number of inhabitants.

Role of Ground Water Storage

The total precipitation in the dry lands is deemed adequate to support life forms. However, life in the dry lands must be adapted to the existent conditions or it will perish. One major form of adaptation in the dry lands is the storage of water during the short wet periods for use during the long dry periods. Water collected during the wet season must be stored for human use and ecological recovery during the dry season. The ground offers a large reservoir for the storage of water. However, to use the potential of groundwater storage, water received during the short wet season must be held over the land where it falls to facilitate infiltration and percolation into the soil's storage.

Rivers have no water of their own. They are channels or conduits of water flowing from the land. In the dry lands, rivers and streams flow at full spate during the short wet season. As soon as the rain stops, the water flows away and rivers are left as dry streams of sand. Traditional knowledge stipulates that there is water in the sand. Indeed a traditional saying states that *a river without sand holds no water*. The sources of last resort of water are found underneath the dry sand in these riverbeds. These sources are found where a barrier to flow occurs under the dry sand surface. This barrier forms a natural sand dam on the upstream holding water underneath the sand. The water is normally extracted from these reservoirs by making scoop holes. A lot of labour is spent on them for they must be re-scooped after every flash flood.

Adoption of the phenomenon of natural sand dams is possible. By using technological methods and materials made by modern science, it is possible to multiply this naturally occurring phenomenon. Construction of sand dams uses both traditional and scientific knowledge. It uses observation and deduction from traditional knowledge. It integrates this knowledge with scientific material and technological processes to enable inhabitants of dry lands to adapt to the rainfall regimes existent and projected into the future for the dry lands from the many studies on climate change.

Merging the traditional knowledge with existent technological knowledge to construct a sand dam is also a practical demonstration of making a water source. It is made using available local materials - stone, sand and water- together with cement and iron reinforcement, which are products of science and technology. Communities, which harness water using this method, can see immediate results as soon as there is a storm when the dam traps and holds water. There is thus an impetus to do more.

Natural Resource Management Training

To help the Kitui sand dam community members understand the mechanism of working of the sand dam natural resource management training is undertaken. The curriculum includes water and soil management. The four main resources the inhabitants of dry lands need to focus on are land, water, trees and people.

Land is the basis of production for the inhabitants of the dry lands. Majority of the inhabitants are small-scale agro-pastoral practitioners. Soil management is therefore extremely important for continued survival and development. The soils in many areas in the dry lands are shallow and sandy. Soil erosion depletes the production base of these inhabitants. Of special interest is the topsoil, which is the most useful portion of the soil. Each rainy season carries away many tons of this rich soil making the dry lands poorer. Soil conservation measures are thus extremely important if the communities

are ever to move from abject poverty. Focusing on erosion control and preservation of the most important part of the soil profile the topsoil is an important contribution to survival.

Water is the greatest limiting factor of production in the dry lands. The tragedy of water shortage is that it is not an absolute the lack of water but its loss from the catchment area. Runoff of the received rainfall is the main method of the loss. In addition, run off is the major cause of erosion and loss of soil. Run off control is therefore the most important factor in assuring regeneration and improvement of the dry lands.

Sand dam construction for; harvesting water in streams and rivers; retaining water in the dams, is a starting point. However, the water in the streams comes from the land, which suffers from runoff and erosion. Development of water retention structures, on the land, slows down run-off and checks erosion. The retained water percolates into ground storages and nurtures more vigorous natural vegetative growth. Apart from slowing runoff, retention of water in the land, which extends the vegetative growth period, is instrumental in achieving food security in these lands. Other areas of focus are the growing of suitable crops, which tolerate water stress. This is extremely important since one of the difficulties to be overcome is intra seasonal drought, which often occurs during the wet season. Drought resistant crops will survive where high demand water crops fail. Planting the right crops, coupled with water harvesting to enhance moisture content in the soil, is insurance for production and standard of living improvements. Enhancing food security is the pathway to improving livelihoods in the dry lands.

Vegetation and trees have been denuded in the dry lands due to extreme poverty. Most of the big trees have been cut for firewood, charcoal, carving/timber and crop production. Part of the reason for decimation of trees has been due to the historically low value of tree products emanating from the dry lands. These values have been depressed due to the unfavorable terms of trade in the context of the national economies. Trees are a means of survival during extreme adversity when there is excessive charcoal burning. However, the inhabitants of the dry lands do not benefit much, as the middlemen and transporters make the bulk of the profits. For example, in December 2006, Kitui farmers were selling a bag of charcoal at Ksh. 100; it was selling for Ksh. 800 in Nairobi.

The commercial potential of tree and vegetation products is however great. Due to shortage of wood for timber, from wetter parts of the country in Kenya, there is growing demand for hardwoods from the dry lands at very competitive rates. Depletion of carving wood also has propped up prices. Other products, which have high potential, are honey; medicinal fruits and animal feed products. Revegetation of these lands is therefore absolutely

important. This can be made possible by having permanent water in sand dams, which facilitates the raising of tree seedlings for out planting during the rainy season. Issues of tree nursery management and ideal out planting systems for survival are adequately covered in the natural resource training.

The fourth element in natural resource management is the population itself. People have to invest time and energy in the control of run-off, soil and water conservation and revegetation. There is some argument that there is a threshold population density for land to be systematically managed and higher productivity achieved as documented for the Machakos District, Kitui's neighbor in More *People Less Erosion: Environmental Recovery In Kenya*: (Mary Tiffen, Michael Mortimore and Francis Gichuki: Chichester: Wiley 1994.). Kitui clearly has reached this threshold, which its neighboring district, Machakos seems to have reached at an earlier period. Investment in land improvement regenerates it and facilitates higher productivity per area of land. Taking care of the land and environment is tantamount of taking care of the people. The survival of the people is dependent on water harvesting, land conservation and revegetation.

Project Management Training

Project management training focuses on the running of both personal and collective self help projects. All projects need to be planned to analyze both required resources and time for implementation, considering expected outcomes possible promoters and constraints.

Issues dealt with in project management training are: evaluation of past performance and aspirations for the future; leadership, conflict and conflict resolution, roles and responsibilities of community members in project management; problem identification and prioritization; resource identification, mobilization and utilizations; communication and message delivery.

Many projects fail because of poor leadership and lack of definition and clarity of resource requirement and their sourcing. Another factor is communication failure, which often leads to conflict. If improperly handled conflict has torn apart many good projects. A community with good project management skills is well on its way to development.

Many of the inhabitants in the dry lands do not have/keep records of their villages. As a result, only a hazy knowledge of the village exists in the collective mind. For example, when people are planning for a water point development, it is not immediately possible to know, how many people and livestock it is meant to serve. Additionally, it is virtually impossible to find out how much food is produced in a village because individual harvest figures

are non-existent. Records are important in order to gauge food security levels for the community.

An initial activity in the sand dam programme is the development of village baseline data. This is a very important exercise for the programme. It serves three main purposes. First, is that of a planning tool to enable the community to divide its households to fit potential sand dam sites. Second, it enables the community to see itself as it is. For example though people say they have built terraces, the community has a chance to inspect and decide how many functional terraces exist. Some of them are not maintained therefore do not functionally exist. Third, the community prepares a record, which can be used as a baseline on which future development is measured.

Throughout the sand dam programme, record keeping by the community is promoted. Registers of participation are maintained. Store issues and material utilization records are kept. Contributions by the sand dam community are systematized. Since accurate records do not lie, the community builds a true picture of the progression of their work. Each individual effort, in creating a community asset, the sand dam, increases the self-esteem of the individuals well as the sand dam community. This serves as important tool in empowering especially the lowly in the community who can see their contribution as an important part in community development.

The sand dam records of materials use and the daily attendance register form the basis of monitoring and evaluation of the sand dam project. If the work is behind the agreed schedule, it is either due to low attendance and /or people working a few hours. With these records the sand dam committee can correct the situation accordingly. In relation to the dam design, the material usage can be tracked and stealing avoided.

At the end of the sand dam construction, an appraisal of the project is carried out. This spells out the time the community spent in the development of their sand dam, and the local and external materials used. When all the calculations are made, it is clear to the sand dam community that their contribution to the construction of a dam is typically between 40 and 50% the total dam cost. This knowledge empowers the sand dam community enormously. Whereas they may have thought that they do not have resources to change their situation, they discover that their resources are very important in their development. They also realize that by making their contribution they establish a claim to the facility they have so laboriously developed. Therein lies the motivation for maintenance and operation or sustainability in other wards. Record keeping thus drives empowerment and sustainability.

With sand dam water, improvements in hygiene and sanitation become possible. The sand dam community has more water in the house from less

effort. It then becomes possible to wash hands, clothes and utensils often. Food is cooked better. Households are maintained in a more hygienic manner because of the available time. However, there is a danger of contaminating the newly developed water sources, principally by excreta from the households and animals, especially donkeys. One of the baseline records developed is that of waste disposal by establishing number of household latrines in the community. Through a participatory hygiene and sanitation training, the community is empowered to use peer pressure to ensure that waste disposal does not contaminate their water making everyone sick.

9. MULTIPLE PATHWAYS TO COMMUNITY ORGANISATION

Voluntary And Mandatory Community Demands

Communities are made of individuals who belong to a multitude of groupings and organization depending on affiliation and interest choices. Some organizations, like a household, family and clan, are obligatory. Females born in one clan cannot marry in the clan, whereas those married into the clan partake in all the rituals of the clan.

Very complex relationships exist in any community, depending on any number of different categories of activities and occupations that can be defined. Also these categories have age and gender implications. Children normally stay near the households under the benevolence of the family and the community at large. The youth belongs to several groups at once. This is according to the African philosophy that one is inadequate alone. Life itself is defined, as that one needs other people. One therefore always relies on people who share the same interests and interact socially on frequent basis. These groups are based on individual preferences and are not mandatory as required by the community at large.

However, there are organizations, which are mandatory in the community. These are the ones on which survival of the community is based on. Chief among these, for traditional societies, is when there is an external threat to the community. All young and able-bodied men are required by society to go to war despite their individual inclinations. There is no choice and one has to adhere lest they be ostracized from the community in which case no life is possible. Another area where mandatory association is invoked is during undertakings, which require collective effort where neither the individual nor the household nor the family will suffice. In poor communities water provision is still in this realm.

Most of the collective development efforts fall in this second category. Neither the individual nor the household or the family can master enough resources to develop a sand dam. Typically it calls for a community made up of on average 30 households. As there are several sand dam sites developed

in a catchments, it is possible to link several of these sand dam site communities to form a supra organization to monitor a series of sites in the future. This is possible since the wider catchment community has similar problems and aspirations. Further, what happens in one part of the catchments is likely to have an effect on the catchment as a whole. This supra organization in a small catchment with largely similar conditions and homogenous population is deemed ideal to managing and maintaining the developed water facilities for the larger population.

Community Development Drivers

Development is a process of change in a community employing local as well as external resources. As a process, it has time and spatial dimensions. It is both a dynamic and a circular continuum. Energy and resources are required inputs for the different outputs, which lead to a change from the present. Different outcomes, in turn, demand energy and resources to get to other planes. Without this energy input, a status quo or an equilibrium situation is maintained. Then the resources, which a community owns, will remain as raw materials without undergoing the necessary transformation to make a difference in social, economic or environmental terms.

Community development occurs in a community made of individuals. Each community has a set of resources at their disposal any point in time. Of these, the human resources are the greatest assets in the community. Any community, which belittles its human resources and its collective body of knowledge, remains in a state of underdevelopment.

Communities exist in contact with and interact with, not only neighboring communities, but also with people from far away places who visit them or transmit knowledge to them through mass media. These face-to-face and non-contact knowledge interactions facilitate exchange of ideas, information, knowledge, technologies and learning about cultural values and ethics of the other. External messages are thus constantly being added to the body knowledge of the community i.e. to the collective mind.

Most of the individuals in a community exist in harmony with the existing socio-physical conditions. They maintain stability and want to cover themselves in the blanket/hide of the known. They are afraid of and cannot deal with change. If all the members of a community adopt this strategy, such a community becomes doomed. However, in every community there are few restless and adventurous souls who are ready to try new ideas. They assimilate and encompass new information and take risks in instituting new values and ethics in their community. It only takes a very small number of persons with special characterizes to shape the future of a community. These are the people who drive development in a community.

Among this special group sociologists have generally classified them into the following categories: (SOURCE)

1. Influence moderators or visionaries who establish the community behavioral value and ethical normal.
2. Problem solvers, whose ability to face and tackle problems ensures the survival of the community in face of adversity.
3. Information processors, who gather information for its own sake and seek to know everything in the community.
4. Privilege dispensers who use knowledge, influence and organizational ability to move issues.

It is apparent, therefore, that a community will develop at a rate proportional to the effectiveness of the specially endowed members whose vision, drive leadership skills and organizational abilities propel it forward. Energy and enthusiasm emanating from these members is infused into the community, which in turn is energized. It is therefore absolutely necessary to seek and harness these people to development activities targeted to a community. Failure to identify these community drivers is to condemn any development project to failure. Community drivers are capable of using their superior energy and skills to fight any outsider who ignores them. They have the capabilities to manipulate the communities to comply with their whims and desires whether positive or negative. When identified and recognized, their combined energy will overcome the inertia against change in the community. They will mobilize their leadership resources to effect the necessary change. SASOL has been privileged to work with many Community leaders. Examples of the four categories of drivers encountered in the sand dam projects are briefly described below.

1. Katingu – Wii
2. Jennifer Mutia - Nduni (Kwa Muli)
3. Kisome and Kivungi - Councilors
4. Kasilia - A Chief Tungutu
5. Dina and Gideon Ngambi - Couple Kawongo
6. Mutinda Kingo'to - Coordinator Maito
7. Esther, Anna or Rose - Tungutu
8. Matulu - Acting Chief Nzambani
9. Anna - Mutui Nzambani
10. Katithi Muthembwa - Kyuusi/Yiuta (Kyambiti)
11. Jacqueline Peter - Makusya Youth