

## Climate change boosts drought and floods

There is a seemingly natural incline, among most, to an inexplicable fascination with the weather. Its mention in most casual conversations proves both a simple ice-breaker and a curious insight into human thinking. With the growing frequency of natural disasters brought about by climate change, however, the weather appears to be giving us more to talk about than we would have bargained for.



The technicality regarding the nature of climate change may be up for discussion; that there is a drastic change in our planet's climate, however, should not be. Extreme weather records are being broken every year, with the repercussions of such hydro-meteorological disasters claiming countless lives as they disrupt the integrity and efficiency of national economies.

To most Lebanese, though, the immediate effects of such drastic change in climate condition may not be strikingly apparent. To the inhabitants of the Baalbeck-Hermel region, it has become a troubling reality.

It is to this effect that UNDP, through funding from the Spanish government, has launched a project on flood risk management and water conservation in Baalbeck-Hermel.

Flooding in the area has been brought about by irregularities in the region's rainfall. There is an observed calamitous deviation in traditional patterns owing to the steady rise in global temperatures. This leads to an increase in the frequency of intense rainfall events and a subsequent alteration in the integrity of catchments and drainage basins. Effectively, the increase in the amount of rainfall during the winters leads to detrimental flood-generating rainfall events being far more frequent and destructive than had previously been the case.

"With an average of 1 to 2 cases of severe flooding occurring annually in the area," explains the UNDP project manager Hassan Machlab, the effects of climate change are contributing to "the detriment of an area already under threat, especially in regards to desertification."

The region's semi-arid land means that the rate of absorption of the excess water is too low. To add to that, the lack of vegetation means that there are no roots to absorb the water, no leaves to diffract the rainfall and no obstructions to the water flow.

The flash floods in question, the most disastrous of which occurred as recently as 2001, lead to road cuts, destruction in infrastructure, substantial damage in crop and livestock in addition to the severe soil erosion.

Having completed its first phase, the project has so far erected several large check dams in addition to numerous contour bunds and stone walls, in tactically selected locations, intended to effectively minimize the effects of the floods.

"We are being realistic about the matter. If we can cut the velocity of the flooding by 50 to 60 percent, that it would be a significant achievement" continued Mr. Machlab.

In addition to the reduction in flood effects, the soil around the stone walls provides itself as an ideal environment for cultivation. "We intend to plant cherry trees, which are common and economically beneficial in the region, around the lining of the walls so as to soak up all the surplus water and such that the locals may also benefit from the fruit" described Mr. Machlab.

The most significant change that the project has brought about, though, seems to be in the villagers' state of mind. "Thank you so much for your help," exclaimed one of the elderly farmers as he stops a motorcade of UNDP employees, "you have the whole village talking." Hopefully, such projects will give the inhabitants more optimism to replace the simple rhetoric on the region's weather.

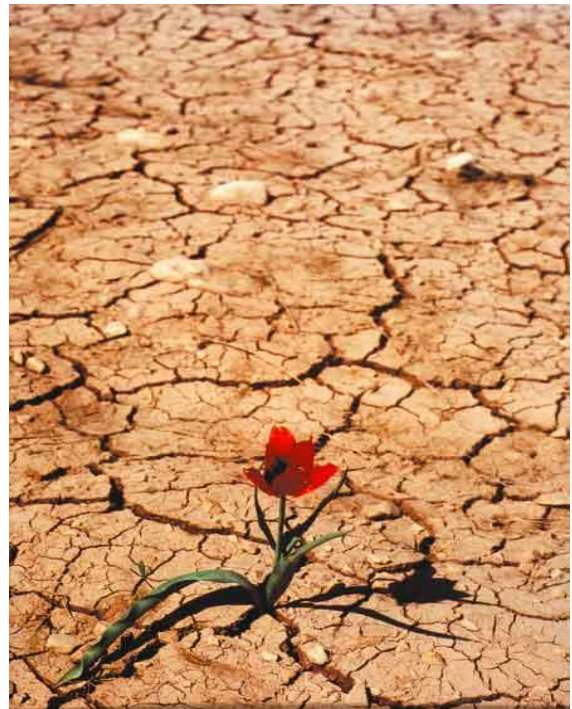
## Desertification

Ranging from the Mediterranean climate that dominates the coastal plain, to the sub-alpine climate on its snow-coated highest slopes, to the sub-desertic and dry northern plains, the pronounced variation in the climatic conditions of Lebanon spurs from the combination of a unique geography and physiography.

Despite such climatic opulence, desertification is becoming a major threat to the ecology of Lebanon; over 60% of the country is threatened by harsh desertification.

In response to the given predicament, the Ministry of Agriculture (MoA), the United Nations Development Programme (UNDP), the Dryland Development Center of the United Nations, and the German Agency for Technical Cooperation embarked on the execution of a National Action Plan, drafted by the MoA in June of 2003, for combating desertification with a direct focus on alleviating its deteriorating effect on poverty. In so doing, MoA and UNDP are implementing a project to promote rural development in drylands under threats of desertification across Lebanon. The project uses an innovative market approach that aims at poverty alleviation by providing access for selected products, made by women cooperatives in dryland communities, into the Finnish market, in the hope of eventually disseminating them into the greater EU market.

“It is very flattering to think that our products are going to make it all the way to Europe” exclaims the head of the Deir al Ahmar women’s cooperative. “It makes



us feel very proud of the work being done.”In Finland, the project is being supported by the Finnish Rural Women Advisory Organization which focuses on facilitating the process of market access as well as the provision of necessary training for the specified producers to accommodate to the demands of the foreign markets.

Following efficient research on the matter, six products were selected based on their potential marketability within the Finish market; heralding the launch of the ‘Drylands-Lebanon’ brand name. Effort is being allocated to securing fair and economical prices for the given products through the assurance of high quality goods as well as the development of attractive packaging.

The outreach benefits of the project, however, are not confined to the potential of financial independence and an ameliorated technical proficiency. The project aims to contribute to the purpose of sustainable agriculture by offering assistance and support throughout its duration; the local communities are trained in terms of technical capacities and awareness while being supplied with the necessary tools to maintain their work.

The breadth of the project goes further than its market approach. It aims to introduce additional alternative livelihoods through the linkage of the women processing cooperatives and their products to ecotourism initiatives in Lebanon.

Through an expansion into dryland-focused ecotourism, the project promotes a form of responsible nature tourism that seeks the involvement of local people. This intends to create a programme between existing ecotourism groups and rural women’s association and dryland communities.

Through this dedicated effort, the project effectively allows the most susceptible members of rural communities the opportunities to overcome the harsh impact inflicted by desertification on their livelihoods, providing them with access to increasingly growing international markets as well as the necessary exposure needed to allow for national capitalization on ecotourism in dryland areas; such that the diversity in the country’s topography may be as appreciated as the diversity of its people.

## Industrial Hemp in Lebanon

From animal bedding, to biodegradable plastics, to fiber, the breadth and scope of potential products from industrial hemp, a member of the cannabis family, are seemingly endless. The most significant exclusion, however, is recreational drug.



With very low to zero psychoactive component, Delta-9-tetrahydrocannabinol or THC, industrial hemp cultivars provide themselves as a highly effective substitute to the traditionally farmed varieties of the cannabis plant.

It is to this effect that a project, implemented by UNDP and executed by the Ministry of Agriculture, has been launched. The project intends to explore industrial hemp as an alternative to the high THC cannabis plant currently

cultivated in the Bekaa Valley with the aim of improving the livelihood of rural communities and reducing land degradation.

It is hard to underestimate the potential of the plant; hemp is a revolutionary crop in terms of its environmental efficiency and ease of cultivation.

The plant requires little water and care and has extensive root systems which contribute to its ability to exploit deep supplies of nutrients and considerably reduce soil erosion.

Hemp also requires no chemicals, pesticides, or herbicides, controls erosion of the topsoil and has high oxygen-production. Highly competitive with weeds, it can also be used as efficient as a rotational crop to control weeds with properly timed planting.

By providing for all the cultivation needs and technical assistance, the project hopes to have finally found an effective replacement to the 'hashish' plantations that have become troublingly common in the Bekaa Valley. It also aims at proposing the necessary machinery, in addition to modifications to be undertaken to the existing field crop machineries, for planting, harvesting and processing of the product.

"We hope to make the transition as easy as possible for the farmers," says Dominique Choueiter, the assigned UNDP project Coordinator. "We want to provide these farmers with a financially reliable product that is tempting enough for them to make the switch."

In this respect, again, industrial hemp justifies its appeal. Being a member of the cannabis family, the necessary technical proficiency in the cultivation of the plant is already available. To compliment that, experts in harvesting and production are being brought in to ensure the appropriate capacity building effort is put in place.

"Farmers are already very knowledgeable in planting cannabis in the area so the switch to hemp should be the simplest of all alternatives," continues Mr. Choueiter.

In view of all the potential end products to be derived from the hemp, selection has been narrowed down to those most suited to the local production capacity and market demands. Investigation of the capacity of the industry in Lebanon for utilizing hemp has identified two immediately viable products; rude briquettes to replace traditional firewood and hemp oil to be used as dietary supplements.

The investment in hemp oil has so far proved a very promising proposal; attracting significant interest from the private sector. As one of the healthiest raw foods, hemp seed is high in protein, ranging between 25 to 30%, and fibers. More appealingly, hemp seed is very rich in the Essential Fatty Acids Omega-3 and Omega-6.

The project, however, is not without its hurdles. "The concept of legally beneficial cannabis is still a hard one to grasp in this country," explains Mr. Choueiter," but once we get passed that, the potential is almost endless."

## NBC Rubble Recovery Project

Surrounded by a large patch of aging structures that constitute the new Nahr el-Bared camp lies what now amounts to an empty area of about 0.2 Km<sup>2</sup> of arid land. Remnants of a couple of war-torn buildings still stand in the old camp as UNDP construction efforts get underway. What was once an overcrowded and dilapidated refugee camp, however, has now been transformed into an environmentally conscious reconstruction site.

On the 20<sup>th</sup> of May 2007, fierce clashes erupted in Nahr el-Bared camp, a Palestinian refugee camp in northern Lebanon, with the subsequent fighting leading to the displacement of over 30,000 Palestinian refugees to other camps around Lebanon. The cessation of hostilities, on the 2<sup>nd</sup> of September, left the camp in a state of severe humanitarian, socioeconomic and environmental degradation; with estimates approximating that 95% of the camp infrastructure had been fully or partially destroyed.



With the substantial devastation of civilian infrastructure, including roads, schools, hospitals, mosques, water reservoirs and most of the 5,000 housing units in the camp, a reconstruction effort was in dire need. To add to the preliminary qualms, the ensuing waste and debris that resulted from the hostilities led to the congestion of existing roads and narrow pathways within the camp; impeding access for reconstruction activities, aid workers and refugees.

Through its Energy and Environment Programme and based on an agreement with UNRWA, UNDP agreed to undertake the implementation of the rubble recovery efforts within the camp in an environmentally efficient manner. UNDP had undertaken a similar smaller-scale pilot rubble recovery project in South Lebanon after the July 2006 conflict in Lebanon which proved to be successful in clearing the roads for local communities in an environmentally sound manner while providing them with free material for reconstruction.

"With all the experience gathered by UNDP through the rubble crushing facility in South Lebanon," proclaimed Nicolas Gharib, the assigned project manager, "the joint effort with UNRWA was put in place to maximize efficiency and to ensure that the most effective environmentally friendly steps are established in order to tackle the difficult situation in Nahr el-Bared."

The ultimate goal of all efforts carried out in the area serve to set the stage for the reconstruction of the camp by the Government of Lebanon to ensure the safe return of refugees. The project, adopted by UNDP, effectively consisted of the demolition of all remaining structures within the confines of the old camp, in addition to the transportation of the rubble to a central treatment facility, installed within the camp, for further processing and recycling.

The venture proved to be more convoluted than would be initially assumed. Armed only with aerial photos and rudimentary pre-crisis data, the project effectively proceeded to address objectives in three different areas; the environmental, socioeconomic and humanitarian.

On the environmental front, the project aimed at reducing the volume of waste to be land-filled in order to allow for the reuse of material so as to reduce pressure on natural resources and to save space in the Tripoli landfill where the rubble would have ended up had it not been recycled or reused. Much of the recycled material was invested in the extension of the Port of Tripoli, where the Ministry of Public Works and Transport have used the material for the extension and rehabilitation of the port. The material was also used for reconstruction efforts within the old and new camps themselves by UNRWA.

On the socioeconomic level, the project aimed at generating livelihoods during the reconstruction effort for both the Lebanese and Palestinian nationals in the region through the provision of a source of employment for the local labor force.

From a humanitarian aspect, the project aims at preparing the grounds for reconstruction efforts and the return of the displaced population in order to lessen the burden on the hosting camps within the country.

"It's a humanitarian aspect, the project aims at preparing the grounds for reconstruction efforts and the return of the displaced population in order to lessen the burden of those affected within the camp and the broader spectrum of our Lebanese environment" continues Mr. Gharib. "The project outcomes aim at bringing Lebanon a step closer towards ensuring environmental sustainability."