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Labor Dynamics in Montrouis and Limbé

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LABOR DYNAMICS IN MONTROUIS AND LIMBE

PROJECT CONSULTANT REPORT

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ACRONYMS

APB	Association Paysanne Agricole de Bas Limbé
APCHA	Association des planteurs de Château neuf
APDB	Association des pêcheurs pour le développement de Bas Limbé
APDDL	Asosyasyon Plantè Devlopman Délugé-Lanzac
AJFH	Association des jeunes femmes haitiennes
AJTAPP	Association des Jeunes Techniciens en Apiculture de Pierre-Payen
APKA	Asosyasyon Plantè Komin Akaye
APKBA	Association des Planteurs de Café à Bassin
APWOLEM	Asosyasyon Pwodiktè Lèt Mamelad
ARN	Agro Forest Regional Nursery
ATRACOPAG	Association des travailleurs contre la Pauvreté de Grison-Garde
CML	Coopérative Makandal de Limbe
CUPEC	Coopérative l'Union des paysans de Ca-Louis
FACN	Fédération des Associations Caféières Natives
FECCANO	Fédération des Coopératives Cacaoyères du Nord
GRADSPA	Groupe de recherche et d'action pr le dév social de la production agricole
HSSA	Haiti Solidarité SA
IDEJEN	Initiative pour le développement des jeunes en dehors du milieu scolaire
KOREPA	Konbit pou relansman pwodiksyon agrikul
MODAB	Mouvement pour le développement agricole du Bas Limbé
MODEPROVES	Mouvement pour le Développement Économique, la Promotion des Valeurs Environnementales et Sociales
ODES	Organisation de développement et d'encadrement social
ODS	Organisation pour le Développement de la Soufrière
OPD 8	Organisation des Groupements Paysans pour le développement de la 8 ^{ème} section communale de l'Arcahaie
OPD 8	Organisation des Paysans pour le Développement de la 8 ^e section Ilet à Corne (Limbé)
MARNDR	Ministère de l'Agriculture, des Ressources Naturelles, et du Dév Rural
ORE	Organization for the Rehabilitation of the Environment
PPA	Public-private alliances
RACADAMA	Rassemblement des comités d'action pr le dév des mornes de l'Arcahaie
SHAISA	Société Haitienne Agro-Industrielle SA
SOLANO	Société Labadee Nord

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INTRODUCTION

This report examines current labor dynamics in targeted watersheds. It serves as a baseline for promoting alternative labor opportunities and patterns as the project evolves in keeping with Result 3, Alternatives to Hillside Farming Increased (area under improved management), particularly Requirement 3.4, Alternative Forms of Labor Identified for Hillside Farmers. The alternative labor objective is also linked to the promotion of increased employment by non-farm businesses (Requirement 3.1), and identification of downstream tenant farming arrangements (Requirement 3.3) - all with a view to reducing agricultural pressures on fragile slopes in targeted watersheds.

Data in this report are drawn from the following sources: Quantitative baseline data collected during the first quarter of 2008 including data not previously reported,¹ qualitative data collected in field interviews,² and various documents including concept papers and proposals for PPA and grants, and DEED data on large holdings in Montrouis.

The report first examines overall use of labor in targeted watersheds. This sets the stage for reviewing labor alternatives to erosion intensive cultivation of annual crops on slopes (deliverable 3.4.1), and finally, mechanisms for information regarding alternative forms of labor (milestone 3.4.1). The report briefly assesses the prospective labor impact of current proposals and agreements for DEED funding of public-private alliances (PPA) partnership with private sector investors, and project grants to grassroots organizations and producer groups. Finally the report examines sectors of special interest for labor alternatives in targeted watersheds and market sheds, such as increased reliance on livestock and forage, agroforestry associations, and the processing of perennial crops.

As operating assumptions for this report, rural smallholders are viewed as economic actors who make livelihood and investment decisions akin to other private sector investors, including large landholders or well to do urban residents with rural holdings. It is further assumed here that alternative employment includes investments and activities that do not necessarily require upland farmers to move downstream, either temporarily or permanently. Therefore, exploration of labor alternatives includes the option of increased small farmer reliance on perennial crops, or decentralized processing of locally produced raw materials. Finally, given the overwhelming predominance of poor rural households in targeted watersheds - an estimated 80 percent of the rural population, the following analysis also takes into account the small peasant farmer's paramount concern for managing risk over maximizing gain; poor farmers privilege day to day survival over long term maximization of profits. It is equally clear that small farmers are willing to invest for the medium and long term once they have ensured day to day household needs, especially for food. Therefore, labor alternatives to erosive annual crops must ensure near term as well as longer term benefits to small farmers, and must not increase the level of near term risk beyond what the small farmer can tolerate.

¹ Previously unpublished quantitative baseline data shown here were provided by Frisner Pierre (personal communication). For other baseline data see F. Pierre, ed. (April 2008), *Etude de base de pré-évaluation du bassin versant de Montrouis*, and, *Etude de base de pré-évaluation du bassin versant de Limbé*.

² Qualitative data for this report were collected by Glenn Smucker and Vernande Joseph via individual and group interviews with workers, employers, investors, project personnel and peasant farmers in both watersheds using qualitative and ethnographic methods of data collection. See list of interviewees and contacts in Annex A.

MAKING A LIVING IN TARGETED WATERSHEDS

Men versus women. *How do people make a living in targeted watersheds?* Both watershed zones are overwhelmingly agricultural and farmed primarily by small peasant farmers; however, the rate of full time agriculturalists is somewhat higher in Limbé than Montrouis, and higher generally for male compared to female household heads in both areas (see Table 1 below). As a corollary, women rely on other livelihoods at somewhat higher rates than men. Over a fourth of households surveyed rely heavily on a second economic activity in addition to agriculture. This suggests that the population in both areas is open to alternative livelihoods if the incentive is right. Secondly, women are already more engaged than men in alternative livelihoods. Due to their enterprise management skills, such women should be viewed as a valuable resource in project efforts to increase alternative livelihoods, including value added activities as well as commerce.

Variation by subzones within watersheds. There are statistically significant differences by subzone within watersheds. In Montrouis, lowlanders closer to the national road combine agriculture with other economic endeavors at a much higher rate than upland areas. The same pattern holds for households surveyed in the Camp-Coq area of the Limbé watershed, also along the national road. Concomitantly, rates of fulltime agricultural work are also lower near the national road in both watersheds.

This may be linked to a population trend in which people from highland areas have been moving downstream to be near the national road. This trend may tend to reduce agrarian pressures on slopes; however, landholders living farther away from their upland agricultural sites may also continue to farm these sites at a distance, or turn over such sites to tenant farmers. Such land use strategies may also increase the level of erosion risk on these plots. This suggests in turn that project efforts to displace agrarian pressures on steep slopes, and to increase the amount of steep land devoted to perennials, require a special effort to reach *landowners* on upstream slopes.

Coastal fishing. Fishers are a special case. Along the coastal littoral in both areas, sole reliance on fishing or other non-agricultural pursuits is far higher than sole reliance on agriculture in agricultural zones, i.e., 94% for men at the mouth of the Limbé watershed, and two-thirds of household heads along the Montrouis coast. In short, fisher folk in targeted watersheds are not much involved with agricultural pursuits.

Mangroves. Theoretically, fishers have an inherent vested interest in protecting coastal mangroves and fishing areas; however, such resources are not privately owned and are subject to the “tragedy of the commons” in which resources belonging to everyone are managed by no one and simply mined. Therefore, the inherent vested interests that fishers, pole harvesters and charcoal makers have in actively managing mangroves require an organizational strategy based on collective agreement, local resource management plans, and the means to enforce controlled use and harvest. Actively managing and harvesting mangroves is an important alternative labor option in coastal areas; however, this requires a grassroots initiative and technical assistance for organizational development (*animateur*).

Agricultural daily wage labor. The 2008 baseline survey collected data on labor arrangements including the buying and selling of agricultural daily wage labor and piece-work, and non-monetized forms of labor exchange (see Table 2 below). These data reflect labor arrangements that are largely between small peasant farmers within all subzones of the watershed; however, the data also show evidence that lowland irrigation works attract significant numbers of agricultural workers from upland areas within the same watershed as well as other areas more distant. This pattern of upland labor

traveling downstream for agricultural day labor sets the stage for project investments to further expand and deepen this preexisting labor trend.

TABLE 1. PERCENTAGE OF HOUSEHOLD HEADS RELYING ON AGRICULTURE AND OTHER LIVELIHOODS BY GENDER AND ZONE

Livelihood	Montrouis		Limbé	
	Male %	Female %	Male %	Female %
Full time agriculturalist	53	49	62	56
Other livelihood along with agriculture	29	26	23	28
Other livelihood predominant	19	25	15	16
Total	101	100	100	100

In both watersheds, the majority of households *purchase* daily wage labor on a seasonal basis, and women household heads do so at significantly higher rates than men, including 85% of female headed households surveyed in Montrouis. This is not surprising since men traditionally do most of the heavy work in field gardens, and women with field gardens generally hire daily wage laborers. According to the baseline survey, fisher households in Montrouis also hire daily wage laborers at a fairly high rate.

Agricultural labor exchange. Households in both watersheds also rely heavily on non-monetary forms of exchange labor, especially indigenous rotating labor groups. This is roughly a third of all households surveyed, including the remarkably high rate of 44% of women household heads surveyed in Limbé. Limbé households also tend to rely more heavily on exchange labor than households surveyed in Montrouis. On the other hand, Montrouis has more household heads who make a living as agricultural laborers, including women heads of households. Willingness to work as an agricultural laborer is almost invariably an indicator of poverty but rarely a full time job in peasant Haiti.

Local labor economy. The labor economy appears to be more highly monetized in Montrouis than Limbé. The economy of Montrouis also appears to be more diversified than Limbé including hotels, a number of large lowland holdings, significant levels of commerce along Haiti’s major national road, a larger population of fishers, and a far more significant concentration of lowland irrigation works.

TABLE 2. PERCENTAGE OF HOUSEHOLD HEADS PARTICIPATING IN LABOR EXCHANGE AND BUYING AND SELLING LABOR, BY GENDER AND ZONE

Labor arrangement	Montrouis		Limbé	
	Male %	Female %	Male %	Female %
Labor purchaser	56	85	49	57
Exchange laborer	31	11	36	44
Wage laborer	14	4	15	-
Total	100	100	100	101

LABOR ARRANGEMENTS

This section summarizes labor arrangements and trends that are described in more detail in *Annex B. Notes on Local Labor arrangements and Costs.*

Ebb and flow of labor in agricultural zones. Farmers in Camp-Coq (Limbé) point to a shortage of local agricultural labor during peak labor seasons. Agricultural workers come from Labranle (Gros-Morne), Pilate, and Plaisance to prepare land for beans in December and March, and other crops including manioc, *igname*, plantains, corn and cane. In Milot (Acul du Nord), agricultural workers come from a distance (Plaisance, Artibonite, Ti Bourg au Borgne) for peak labor seasons in August-September and February-March to plant corn, beans, sweet potatoes, and manioc.

Young men in both watershed areas, but especially in Limbé, travel across the border to seek work in the Dominican Republic. Farmer interviews suggest that an estimated 80% or more of young men from these

communities work seasonally in the Dominican Republic, and some also find seasonal work in the rice paddies of the Artibonite. Therefore, seasonal shortage of local labor during peak labor periods is due in part to the growing trend for single young men to seek more highly paid agricultural or construction work in the Dominican Republic.

Labor costs. The going rate for agricultural labor in both watersheds is around 100 *gourdes* per work day plus food. If the work arrangement is negotiated by task rather than work day, it may be measured by arm breadths (*bwas*) or weeding area (*bout zèb*). The reliance on piece work negotiated by the task rather than the day reflects the high demand for agricultural labor during peak periods in the agricultural cycle.

Labor exchange. People in Milot (Acul du Nord) occasionally work together in the form of a work party (*koumbit*), defined here as unpaid work by invitation in exchange for food and drink and a general expectation of reciprocity. This is a form of labor exchange but it is not an organized group. In addition, highland farmers in both watersheds commonly join together in organized, rotating labor exchange groups called *ranponon* in the north and *kolonn* or *koumbi* in Montrouis. These are generally men's groups although there are also rotating labor groups composed entirely of women.

In the Limbé area, women's labor groups plant and weed paddy rice and taro in lowland areas, and sweet potatoes and manioc in upland areas. Interviews with members of labor exchange groups in Montrouis indicate that such groups commonly work together on a daily basis throughout most of the year, although not necessarily for a full day's work.

Labor exchange groups and local investment funds. Labor exchange groups sometimes raise money by selling their labor as a group to purchase animals for slaughter, meat commerce and access to meat for end of the year celebrations. The ability of rotating labor groups to generate group savings from their own resources suggests opportunities for such groups to raise investment capital and invest in other economic ventures.

Labor costs and patterns in Montrouis irrigation zones. High demand for labor in irrigated land attracts workers from a distance, including the Artibonite, especially for the tomato and bean planting season October-December. In irrigation land farmed by members of AIPM (Association des Irrigants du Périmètre de Montrouis), agricultural workers come from nearby mountain zones during peak labor seasons including the localities of Ivoire, Lakolin, Fond-Baptiste, and Mare-Rouge, and also from the Nord-Ouest department. Farmers interviewed in Ivoire confirmed that local work groups travel to Montrouis, Cabaret, and Saintard during peak labor periods to work as agricultural laborers on irrigated land. In short, there is a well established pattern of highland farmers and agricultural workers finding temporary employment as daily wage laborers in lowland areas, especially on irrigated land.

Charcoal makers. Charcoal is an important component of the local labor economy in Ivoire and other dry areas of Arcahaie and Cabaret. In Arcahaie, makers of wood charcoal (*charbonye*) state they rely heavily on *bayahonn* (*Prosopis juliflora*), a re-coppicing shrub or small tree that can be harvested in a sustainable fashion. Charcoal making is primarily men's work; however, women fill sacks with charcoal and also sell.

Local demand for non-agricultural labor. Other types of work encountered in field interviews include plank sawyers, goat herding, construction, fishing, boat transport, moto-taxis, cooked food (*chyen janbe*) vendors along the national road, handicrafts, metal workers, land managers (*jeran*), and various forms of petty commerce including traveling intermediaries (*madanm sara*),. There is little salaried employment

except for schools, government jobs including local elected officials, clinics, and the hotel industry in beach resorts of Archaie/Montrouis.

Members of the hotel association of the Côte des Arcadins (Montrouis) employ around 400 people full time, and another 1,600 people on a part time basis in response to the seasonal ebb and flow of guests. A significant increase in hotel clients would undoubtedly generate additional employment. The hotel association includes the following members: Hotel Xaragua, Club Indigo, Moulin sur Mer, Kaliko Beach, Wahoo Beach, and Ouanga Bay.

Some women's groups such as OPD-8 (Ivoire) and APDDL (Asosyasyon Plantè Devlopman Délugé-Lanzac) have undertaken value added activities including fruit preserves (guava, mango, passion fruit, pineapple, soursop, *abriko*), various types of flours (breadfruit, plantain, corn), tomato paste, peanut butter, citrus juices, sweets, and remedies. There is prospective demand for these products by the local hotel industry. The hotels are also a prospective market for local agricultural products; however, these hotels currently procure few or no products locally, although the six hotels noted above purchase an estimated 60 million gourdes of meat and produce annually. Obviously, this is a very significant but thus far unmet opportunity for local producer group partners of DEED.³

LARGE HOLDINGS & LABOR OPPORTUNITIES

Prospects for alternative labor opportunities from large landowners in Limbé. The 2008 baseline study showed little evidence of large holdings in the Limbé watershed; however, consultant interviews in the upper Limbé watershed identified a number of larger-than-average holdings on state land under leasehold (*domaine privé de l'état*) in Bassin (Marmelade), primarily absentee leaseholders who turn over the land to subleaseholders. These state leaseholds generally include coffee groves in association with fruit and hardwood trees as well as annual crops. They are generally managed by small farmers who serve as land agents or managers (*jeran*) by agreement with the absentee landlords.

State leaseholds observed in Bassin-Marmelade are good targets for enriching or expanding fruit production and protecting coffee association with fruit trees. Expanding perennials on these sites, including grant proposals under consideration by the DEED Limbé team, interrupts a current tendency to shift away from perennials into annual crops in this area, and effectively reverses the trend. The FACN juice processing plant in Marmelade provides incentive for increased planting of fruit trees, and the APOLEM dairy operation provides incentive to plant forage species and manage pasture in a sustainable fashion. The FACN factory may eventually increase the number of workers required to process higher volumes of oranges and other fruits for new markets; however, the current phase of growth in factory demand for labor will serve first of all to retain the existing work force for longer periods rather than recruit new workers, i.e., reducing down time and processing a greater diversity of fruit over a longer period of time. Therefore, current agro-forestry investments by DEED/Limbé build upon other Marmelade and Bassin investments already underway to process orange juice and milk, and increase labor investment in perennials via agro-forestry plantings.

³ At the time of this writing, Vernande Joseph (DEED/Montrouis) and the president of the hotel association (Tony Augustin) are organizing opportunities for local producer groups to demonstrate their produce to hotel buying agents.

Large holdings in Montrouis. The DEED team has collected information on 47 large private holdings in Montrouis.⁴ Most such holdings are heavily occupied by heirs, renters and sharecroppers, especially on irrigated lands and other productive sites. In general, there is little *unoccupied* land of current agricultural interest to upland farmers for alternative labor. Non-irrigated portions of larger holdings in Montrouis are generally characterized by dry climate vegetation including *Prosopis juliflora* and other arid species, and limited agricultural use including millet (*pitimi*) and some grazing. Low rainfall holdings in this area are subject to unauthorized and uncontrolled free range grazing, and illicit harvest of wood products including charcoal, especially in sparsely populated areas.

There is an unusually high number of larger holdings in these dry land zones. Some of the dry land zones are potentially irrigable. Others lend themselves to sustainable production of charcoal and other wood products, and more efficient animal husbandry including forage and pasture rotation, and dairy operations. There is also a local history of commercially viable production of sisal for rope fiber, and vetiver, aloe, limes, and amyris for production of essential oils. One large holder has already invested in energy plantations (Bois Neuf). Another has shown an interest in producing aloe and mangos on dry sites (Wahoo Bay). Some have applied for DEED support to gain a higher return from these underutilized dry land zones, including investments in irrigation, fruit and energy trees, beekeeping and other livestock.⁵

Therefore, DEED has a vested interest in the information that the Marché Project intends to collect in a forthcoming consultancy relating to the essential oils sector in Haiti, and its utility in informing investments in dry land zones of Montrouis. The recently expanded DEED inventory of large holdings definitely shows evidence of significant potential for investing local labor in significantly expanded land area devoted to perennial crops including fruit and forest species, sustainable charcoal production, and other sources of renewable bio-energy including moringa and jatropha.⁶

Irrigated land. Perhaps the most significant opportunity for alternative labor downstream will be expanded opportunity for tenancy and employment in lowland irrigation works, especially in the Montrouis-Arcahaie area. These irrigation systems already generate high demand for agricultural labor. The Arcahaie system is generally more productive than the smaller systems around Montrouis. The six Montrouis area irrigation systems include around 1,000 hectares of irrigated land in Montrouis, Délugé, Lanzac, Pierre Payen, Bois Neuf, and Dupin. Field observations and DEED reports note that these irrigation works are inefficient, poorly managed, and underutilized as a resource.⁷

There is evidence that these irrigation works could be expanded to irrigate additional land. Significant investment in these artisanal irrigation works by DEED, the European Union, and the Ministry of Agriculture will undoubtedly generate heightened demand for tenants and agricultural labor. Farmers interviewed in drier mid-range elevations of the watershed (Ivoire) stated strong interest in gaining access to irrigated land downstream in order to increase their income and decrease agricultural risk.

⁴ See G. Smucker, January 2009, Assessing Contract and Tenant Farming Opportunities in Montrouis, DAI-DEED (20 holdings), and a more recent, expanded inventory of 27 additional holdings by Edy Tout-Puissant (April 6, 2009, DEED/Montrouis).

⁵ These cases will be discussed in the next section below.

⁶ See Tout-Puissant expanded inventory, *op cit*.

⁷ Joseph, Vernande. Décembre 2008. Rapport de Synthèse : Les Petits Périmètres Irrigués de la Zone de Montrouis.

DEED GRANTS & ALTERNATIVE EMPLOYMENT

To what extent are DEED grants able to leverage alternative employment? It is still too early to provide a definitive answer since DEED grants have not yet had time to demonstrate their effectiveness in generating long term alternatives to erosion intensive cultivation of slopes; however, rapid review of current and proposed DEED grants in both watersheds shows significant promise.

See Annex C for a summary of current and proposed grants.⁸ Table 3 below summarizes prospective categories of alternative employment related to DEED grants, including public-private alliances (PPA) with the private sector and grants to grassroots producer groups. Table 3 analysis is based on projections rather than actual implementation, since these activities are either proposals under serious consideration, or approved activities in the beginning stages of implementation. Hence, the Table 3 exercise seeks to weight various categories of investment with a view to assessing their prospective impact on labor.

The DEED investment fund is undoubtedly the project's most powerful tool for promoting alternative employment. Therefore, analysis of its prospective impact on labor at current stages of implementation is a useful exercise; however, for a more accurate assessment, the labor impact of investments should be systematically monitored over time via verifiable reports and on-the-ground observations of actual land use and employment.

Table 3. Current and proposed grants by category, value, and projected employment

Activity	Montrouis		Labor Direct	Labor Indirect	Labor Total	Limbé		Labor Direct	Labor Indirect	Labor Total
	No.	\$				No.	\$			
Perennials and agro-forestry associations	6	552,480 19%	506 20%	250 5%	756 9%	13	1,229,144 49%	1,712 89%	5,316 71%	7,028 74%
Livestock and associated forage & tree crops	5	344,287 12%	99 4%	200 4%	299 4%	4	172,278 7%	137 7%	1,301 17%	1,438 15%
Processing and value added employment	8	850,926 30%	171 7%	5,000 92%	5,171 65%	5	894,620 36%	77 4%	920 12%	997 11%
Irrigation agriculture	1	1,100,000 39%	1,738 70%		1,738 22%	-	-	-	-	-
Other	-					2	203,709 8%	-	-	-
Totals (see note)	10	2,847,693 100%	2,514 101%	5,450 101%	7,964 99%	18	2,499,751 100%	1,926 100%	7,537 100%	9,463 100%

32/68%

20/80%

NOTE: Grant totals are not column totals. Labor estimates are column totals. Some current or proposed grants fall into more than one category of activity, e.g., dairy cattle, forage, and value added milk processing. In such cases, cost numbers are

⁸ This is a working list as of 6/23/09 and is subject to change in keeping with the review process by DAI-DEED and the USAID Mission.

assigned only to the primary activity. Project activities may be attributed to more than one category, but cost and labor impact figures are counted only once. Employment figures should be considered rough estimates drawn primarily from grant proposals or concepts and may not be realistic.

The grants portfolio in both regions seems to fall into four basic categories of alternative labor: (i) agro-forestry associations including nurseries, fruit and forest trees, and oil bearing perennials, (ii) forage and perennials related to livestock production, (iii) processing and value added employment including honey extraction, milk processing, and biofuels, and (iv) irrigation agriculture. In both regions, the indirect impact of these investments touches a far larger number of people than those directly employed, according to the projections by grant proposals.

As noted earlier, both regions are composed primarily of rural agriculturalists; however, the two program areas have distinctly different agro-climatic characteristics and this is well reflected in the emerging portfolio of grants. In terms of funding, a far higher percentage of the Limbé portfolio (49%) emphasizes agro-forestry associations and touches the overwhelming majority of beneficiaries (89%), primarily mountain farmers. The impressively high figure for Limbé is largely attributable to significant investment in expanded production of cacao, and plant associations with cacao. On the other hand, 39% of the Montrouis portfolio, and the largest single investment, focuses on downstream irrigation and also touches the vast majority (70%) of farmers served. In both cases, small farmers and agricultural laborers are the primary beneficiaries of environmentally beneficial labor alternatives within the local agricultural systems.

Processing and value added enterprises constitute roughly a third of both portfolios and but will directly employ a much smaller number of people in alternative labor opportunities (less than 6% of those directly employed); however, processing also generates demand for raw commodities at higher levels. Indirect labor impact of processing is significantly higher in Montrouis, although the high figure (92%) shown for indirect labor in Table 3 (in this case jatropha growers) is attributable largely to a grant proposal that assumes jatropha will be produced by all 4,000 members of a regional peasant organization - RACADAMA (see Haiti Fuel Crops in Annex C).

In principle, livestock and related plant associations are an excellent alternative labor strategy for mountain zones, although a relatively small proportion of the grant portfolio is presently vested in this area. The portfolio of projected investments related to animals is actually higher than it appears in this table if the category of value-added enterprises including honey extraction and dairy is taken together with forage plantings under agro-forestry. This argues for greater investment in linkages between the processing of animal products and perennial plantings associated with livestock production, including fish, bees, poultry, cattle and goats. This strategy is consistent with recent policy statements by Michel Chancy, Secrétaire d'État pour la Production Animale, MARNDR.

Given the DEED objective of making a discernable impact on the watershed, the question might be asked, is the alternative labor impact of proposed investments in the DEED portfolio enough to significantly decrease the risk of downstream disaster due to upstream erosion? According to grant portfolio projections, the estimated direct and indirect impact of the portfolio summarized in Table 3 will generate alternative labor for a total of 17,400 people in both watersheds. Yet, according to the 2003 census, the rural population of Arcahaie alone is 90,000 people, including over 20,000 households, and the rural areas of communes affected by the Limbé watershed include over 28,000 households. Certainly, DEED has

other tools besides its grants mechanism, including training and technical assistance; however, the fundamental presenting problem is economic, and the project's most powerful tool for generating labor alternatives is undoubtedly its investment portfolio and the ability to leverage private sector investments.

Given the sheer scale of the rural population in these watersheds, it seems clear that the projected number of beneficiaries is not enough to attain a critical mass of people, especially of those living in fragile zones. Furthermore, according to current projections, DEED has already allocated most of its investment fund. Therefore, to answer the question posed above, the alternative labor impact of the proposed portfolio is not enough to adequately mitigate the risk of disastrous downstream flooding.

PROMISING SECTORS FOR LABOR ALTERNATIVES

Paul Duret recently listed 25 prospective DEED-PPA investments for the north of Haiti.⁹ Four of the 25 prospective investments show evidence that private sector co-funding is available. These include the following: (i) sustainable production of charcoal on 100 hectares of reforested land (Limbé), (ii) production and processing of vanilla planted in association with cacao (Plaine du Nord nursery, outplanting with cacao producer groups in the Limbé watershed), (iii) development of an industrial park in Acul du Nord, including a juice processing plant, and (iv) factory processing of pineapple juice (FACN in Marmelade).

The latter three are already listed as prospective PPAs in the Annex C summary, as well as sustainable dairy production which also appears on the Duret list. They effectively leverage pre-existing investments in cacao and fruit trees, and they serve to shift additional farm labor into expansion of perennial gardens. Other prospective PPA investments identified by Duret include beef, breadfruit flour, production and processing of sugar cane, vegetables, fish farming, fruit trees, precious woods, poultry and egg production, palm oil, honey, coffee, *igname* in association with trees (*yanm granbwa*), tourism, and vetiver. Fish ponds and beekeeping are already being developed in DEED zones, as are fruit and forest tree propagation, and *igname*/tree associations in the Limbé watershed.

Charcoal. Charcoal plantations (see "i" above) elsewhere in Haiti have proved to be a sustainable labor alternative to erosion intensive mountain agriculture. DEED has land, labor and capital available in both watersheds to underwrite significant increases in sustainable charcoal production; however, the project should better document the existing base of experience in Haiti and the charcoal value chain in order to better inform additional investments in this sector.

Livestock in association with forage: a case study of alternative labor. Linking perennials with livestock, including dairy operations, is an economically viable labor alternative to annual cropping on unprotected slopes. Both DEED regions have dairy related proposals; however, as a source of information on labor impact, a proposal is not nearly as accurate as an actual dairy operation. Therefore, it is instructive to examine the labor impact of the APWOLEM dairy, a mountain based operation in Bassin-Marmelade. APWOLEM is a DEED partner for other purposes, but not for its dairy operation.

APWOLEM has operated its dairy since 2006. According to the director of APWOLEM, the cooperative dairy has 345 members, 145 of whom sell milk to the dairy. Another 10 non-members also sell milk to

⁹ Undated listing of 25 prospective investments, circa May 2009, *DEED/Région Nord, Liste des PPAs possible*.

the dairy. During dry seasons milk production drops, and the number of milk suppliers (local farmers) also drops, perhaps as few as 80 suppliers. This small dairy produces a maximum of 60 gallons of milk per day. The raw milk is processed into the following products: sterilized milk, yoghurt, and cheese. The dairy pays salaries to 6 people. Eighty percent of its milk is sold to the PNCS school canteen program, and the remaining 20% is sold on the local market (Marmelade), including 12 local people who have buying agreements (abonnement) to purchase milk on a regular basis. The cheese is sold to Veterimed. To ensure an adequate supply of milk, the dairy sends out two buying agents (*voltijè*) to neighboring areas including Plaisance. They are paid a percentage of the milk they purchase. In addition, at least 15 APWOLEM members also purchase milk from others for re-sale to the dairy cooperative as a way of ensuring their share of end of season dividends (*ristourne*). Some 15 local veterinary agents sell their services to cattle owners including vaccinations and other animal health services. The local market for milk has helped create a market for animal forage (*zèb elefan*). Around 15 people sell forage grasses as feed and seed stock (vegetative propagation) to cattle owners. Seven small scale vendors buy milk from the dairy for retail sale to customers in Marmelade, Platon, and Pilboreau. These vendors in turn hire 5 or so daily wage laborers to transport milk for them, generally on a seasonal basis.

Therefore, for a production level averaging only 60 gallons per day, this small, decentralized dairy pays salaries to only 6 people directly but generates employment for another 60 people, and buys milk from 155 suppliers – small peasant farmers who own milk cows. Some of the cattle owners hire also caretakers to feed and care for a cow in exchange for a 50% share of the offspring. In sum, direct employment of 6 people generates work for well over 215 people. This is a very significant labor impact and a viable alternative to annual crops on slopes.

Orange juice factory & fruit trees. Likewise, the FACN orange juice operation in Marmelade pays salaries to 33 people, including three professionally trained employees, but purchases fruit from 800 farmers in the area. In addition, some 45 people have been trained in grafting, and occasionally sell their services for grafting.

Essential oils. In general, Haiti offers a comparative advantage for certain niche crops including essential oils such as vetiver, bitter orange oil used in high end liqueurs such as Cointreau and Grand Marnier, lime (*Citrus aurantifolia*), amyris (Bois Chandelle, *Amyris balsamifera*), and Ylang-Ylang (*Cananga odorata*).¹⁰ According to the Paul report, Haiti has the potential to be one of the world's primary suppliers of essential oils (2005, 40). The most important of such oils in Haiti has traditionally been vetiver for the perfume industry. In 2005, vetiver was grown by an estimated 50,000 producers in Haiti, mostly small peasant farmers in the south. The oil was extracted by 16 distilleries, and exported by 4 buyers.

For Haiti's internal market, a small Haitian firm (Belzèb) sells soap and other products derived from the oils of vetiver, almond, parsley, basil, sesame, eucalyptus, castor bean, and neem. Rosemary (*romarin*) is also grown in Haiti, and locally produced rosemary products are available in Haitian pharmacies and beauty parlors.

¹⁰ Paul, Gary. 2005. Identification de créneaux potentiels dans les filières rurales haïtiennes : filières des huiles essentielles. MARNDR/BID.

In the Montrouis area of DEED programming, Roseau produces thyme and Fond-Baptiste produces lemon grass (*citronèl*). Drier zones of the Montrouis area also produce castor bean and some artisanal castor oil. An essential oils plant (La Perle SA) in Arcahaie which belonged to Jean Oden, now deceased, closed a generation ago (circa 1970s). The oil extraction equipment was moved to a similar plant in Croix des Bouquets by the Oden heir, Mme Vonn. The Arcahaie plant extracted oil from vetiver, lime, and amyris, and alcohol from cane (*clairin*). Both the Arcahaie and Croix de Bouquets plants now produce *clairin* only.

The essential oil industry has been strongly affected by the current world economic crisis. Haitian industrialist Fritz Leger has temporarily closed his vetiver plant in Les Cayes, reportedly the largest vetiver processing plant in the world. Leger states he intends to re-open his plant in December 2009.¹¹ Paul (2005) takes note of the bitter orange oil market including 20 firms outside of Haiti that purchase orange oil used in the manufacture of liqueurs and other spirits; however, in recent field interviews in Cap-Haitien, Nons Zephir stated that three producers of bitter orange oil in Cap-Haitien have closed their extraction operations, although Novella still buys and exports unprocessed orange peel.

SUMMARY FINDINGS & RECOMMENDATIONS

Agricultural labor markets

1. There is a lively labor market in all localities studied, primarily for agricultural labor. This includes traditional forms of non-monetary exchange labor going by various local names, and paid labor arrangements including daily wage labor and piece work negotiated by the task.
2. There is evidence of seasonal labor shortages in targeted watersheds. The rural labor market includes people who come into targeted watersheds from other areas of Haiti.
3. Agricultural workers in DEED watersheds, generally young men, also travel elsewhere in search of unskilled work, including seasonal cross border migration to the Dominican Republic. The Dominican Republic is undoubtedly the single most important market for alternative labor in DEED watersheds, particularly for unskilled labor in agriculture and construction.

Monitoring labor trends

4. The going rate for agricultural labor in both watersheds is around 100 *gourdes* per work day plus food.
5. DEED can monitor labor trends by conducting field interviews during peak labor seasons to elicit the origins of agricultural workers, especially in irrigated zones, and to identify lowland labor links to upland portions of the watershed. The going cost of labor can readily be monitored on an annual basis.
6. There is good evidence from field study that increased demand for agricultural labor downstream attracts upstream agricultural workers. This presumably displaces some production pressures on

¹¹ *Le Nouvelliste*, 15 Juin 2009, « Le vétiver, victime à son tour de la récession. » Port-au-Prince, Haïti.

the upland landscape; however, this premise should be more closely examined in terms of upstream land use patterns related to out migration, since there is also evidence, for example, that farming of beans from a distance, or pole/*ignames* from a distance, tends to be more destructive than farm practices in field gardens located close to farm residences.

7. Some thought should be given to avoiding the creation of upstream labor magnets that would increase pressures on fragile slopes.
8. The labor impact of project investments should be systematically monitored over time via verifiable reports from grant supported activities, and annual alternative labor reports based on site specific observations of land use and employment.

Irrigation works

9. In the Montrouis area, the most promising opportunity for significantly increased labor alternatives downstream, including increase in high value cropland available for tenant farming, will be more efficient irrigation works and an increase in the amount of irrigated land.
10. In terms of constraints, aside from investment funds, the primary constraint to more efficient, expanded irrigation works is the weakness of water user associations. This will require a significant project investment in animation and training support for institutional strengthening.

Absentee landlords and local management plans.

11. Evidence from other field studies suggests that absentee/diaspora landlords are more inclined to invest in perennials. Therefore, project facilitation of local land use plans in micro-catchments of both watersheds should include the identification of local absentee and diaspora landholdings (generally small holdings) with a view to promoting perennial crops on such sites.

Old coffee & fruit groves in fragile highlands.

12. The project should target coffee groves in fragile highlands for protection, enrichment and expansion (e.g., Bassin-Marmelade), including *domaine privé de l'état* farmed by *jeran* for absentee landlords in Bassin. In the Limbé watershed this includes sites not readily accessible to major roadways, e.g., areas that still have fairly dense tree cover adjoining the Rivière d'Oré and its headwaters – marked by sizeable stands of coffee/fruit/shade/*ignames* presently under heavy pressure for wood harvest and expansion of erosive pole/*ignames* and beans in lieu of tree-associated *ignames* (“yanm granbwa”).

Producer groups & agro-forestry

13. Overall, smallholder investments are likely to generate more labor alternatives than large holder investments in targeted watersheds, including beekeeping, organized dairy operations, expanded highland production of fruit and vegetables, expanded cacao production, sustainable charcoal production, and a range of agro-forestry plantings.

Sustainable charcoal production

14. There are a significant number of people who make their primary living from charcoal, especially in the Montrouis-Archaise area. The agro-climatic conditions of Montrouis, including significant portions of large holdings, lend themselves to sustainable production of charcoal. Therefore, DEED should adapt sustainable models of charcoal production already well established in other areas of Haiti such as Fond des Blancs and the Cul-de-Sac.
15. There is little written documentation of sustainable charcoal production in Haiti. The project should seek additional information on the charcoal value chain, and charcoaling in targeted watersheds including large and small holdings of Montrouis, and any local evidence of sustainable forms of charcoal production.
16. The project should also document the Fond des Blancs approach to sustainable charcoal and wood harvest. The Fond des Blancs strategy could be adequately documented in a short period of time including fieldwork and write-up by a trained observer.
17. DEED should organize site visits, including farmer-to-farmer visits (Deliverable 4.1), with a view to promoting sustainable charcoal harvest in drier production sites such as Ivoire.
18. Project facilitation of local land use/producer group plans (Requirement 4.2) should include investment in tree crops and improved tree management including charcoal gardens as appropriate (4.3).

Institutional weakness of producer groups and associations

19. There are ample opportunities for sustainable forms of production in targeted watersheds; however, an important challenge to success in meeting the project's ambitious objectives is the scarcity of producer groups with the institutional and money management capacity to develop and manage viable entrepreneurial activities. This will require, among other things, (i) labor intensive investment in animation and institutional strengthening, and (ii) careful targeting of economically viable investments based on inherent rather than external or artificial economic incentives.
20. The project should target women entrepreneurs and women's groups already engaged in value added activities, especially those based on local fruits and other crops.

Rotating labor and credit groups

21. It would be useful to explore the integration of well functioning *rotating labor groups* ("kolonn") into higher value economic ventures, especially those with experience managing their own money. Likewise, the process for selecting producer groups should take into account member experience with traditional *rotating credit groups* ("sol"), such as the women's groups in Délugé (Montrouis) who generate significant capital from their own resources for commerce, agriculture, and construction via the organization of *sòl* rotating credit groups. The proven ability of such rotating labor and rotating credit groups to generate savings from their own resources suggests opportunity for such groups to raise investment capital for economic ventures facilitated by the project.

Grants portfolio

22. The DEED investment fund is undoubtedly the project's most powerful tool for promoting alternative employment. Review of the grants portfolio in relation to investment opportunities suggests that there are far more opportunities for investment than there are project funds available to invest. There is also evidence that current alternative labor opportunities are not sufficient to attain a critical mass of watershed workers and mitigate severe flooding downstream. This argues in favor of a significant increase in funding levels for PPA and other grants.

Leveraging other investments

23. There is considerable advantage and a heightened impact on alternative labor when project funds are able to *leverage pre-existing investments* such as FACN and the APWOLEM dairy operation (agro-forestry, expansion of perennial plantings, new products for processing, etc.).

Agro-forestry

24. The project should continue and expand its investments in agro-forestry and tree farming, including fruit, forest, forage, and energy plantations that effectively leverage farm level resources, especially land and labor. This is a highly efficient investment in alternative labor.
25. Accordingly, the project should view small peasant farmers as private sector entrepreneurs in keeping with the PPA assumption that project funds match private sector investments for tangible economic returns with positive environmental benefits. Small peasant farmers can supply land and labor in such partnerships, but they have very limited cash resources for high quality seedlings and seed stock.
26. There is strong evidence that small peasant farmers in Haiti are willing to invest heavily in land and labor to plant large numbers of trees on their own land – if they receive subsidized seedlings and other plant material. Therefore, the growing project investment in nursery operations should be fully leveraged to expand large scale planting of economically viable trees by peasant farmers on their own farms– with special attention to concentrating such plantings on fragile upland slopes.

Irrigation works as prime targets

27. DEED/Montrouis is heavily vested in small irrigation works. DEED/Limbé should also target the few artisanal irrigation works located in Limbé area subwatersheds, e.g., Lombart and Morne Deux Têtes. In both regions, DEED investment and partnerships should establish strong links between these small irrigation systems and other DEED activities including institutional strengthening of local water user associations, a focus on upstream/downstream joint planning based on *local micro-catchment systems*, local participatory mapping, and local level resource management units.
28. In many cases, irrigation farmers also farm nearby upland gardens. This is a natural opportunity to link the two farming systems – shifting upland parcels to perennials, and intensifying lowland irrigation based production – all within the context of micro-catchment planning.

Links to IDEJEN (or other USAID manpower development projects)

29. IDEJEN should be leveraged for practical training of local partners in areas of DEED interest including vegetable production, agro-forestry, beekeeping and beehive construction, fishing and aquaculture, and nursery operations.

Links to Marché (and other Agriculture Development Projects) .

30. There is a natural convergence of interest between DEED concerns and market sectors promoted by the Marché Project, including Marché plans to review the essential oils sector.

Local producer groups and the hotel association on the Arcadins coast.

31. The project should make a special effort to facilitate producer opportunities to sell vegetables, grains, tubers, animals, fish, eggs and milk to nearby hotels that presently spend 60 million gourdes annually on meat and produce, primarily in Port-au-Prince and Kenscoff.

Mechanisms for diffusing information on labor alternatives

32. This should be done on a case by case basis linked to the particular characteristics of grants and the project's technical assistance and training activities, therefore, a diversity of approaches linked to specific program activities rather than general publicity campaigns.
33. Every effort should be made to link the various project activities (training, technical assistance, grants) to micro-catchment planning around micro-catchments that are sufficiently local to ensure face to face contact between upland and lowland agriculturalists – oftentimes the same farmers with field plots both upstream and downstream.
34. Labor alternatives to erosive annual crops on slopes should not be defined by conditions such as a farmer commitment to set aside upland plots for fallow. The reason for this is that fallow is a normal and temporary stage in the agricultural cycle and intimately linked to erosive farming of annuals. Therefore, rather than promoting fallow, DEED should promote a permanent shift in land use from annual cropping to economically productive perennials.
35. CASEC and ASEC members may participate on local level watershed management committees; however, they should not be expected to enforce project expectations that land be left in fallow. There is no legal basis for this. CASEC members do have a legal basis for enforcing rules against the use of fire, cutting trees behind springs or along stream banks, and uncontrolled grazing.
36. Efforts to promote shifts to perennial crops should target individuals within local catchment zones who have an inherent incentive to plant trees, for example, absentee landlords, sawyers, farmers interested in a retirement fund (trees managed as a store of value), and downstream farmers with nearby garden plots on slopes.
37. The project should promote outreach and extension strategies based on economic incentives to establish and protect perennial plantings rather than emphasizing restrictions and micro-management of labor allocation.

Summary of Primary Areas for Investment in Labor Generation Congruent to DEED Objectives:

- Irrigated agriculture in the piedmont and lower watersheds
- Agro-forestry intensification: tree nursery production
- Rehabilitation and expansion of extant coffee and fruit plantations
- Large landholdings (currently under-exploited) – targeting Diaspora landlords
- Sustainable charcoal production

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ANNEX A. INTERVIEW & CONTACT LIST

Christophe Grosjean	LGL/MARNDR
Guerda Prévélou	IDEJEN
Paul Duret	ARN, Groupe 73
James Kishlar	ARN
Hans Broder Schutt	Habitation Tozia SA, SOLANO
Pierre-Richard Dortilus	Agronomist, factory manager, FACN
Steve Mathieu	Kermi SA
Guy Mathieu	Agronomist, MARNDR, Director, Village-Planete
Morales Jn Baptiste	APCHA
Tilori Rony	Agronomist, Vice-President of APCHA
Ivrouise Bazil	APWOLEM
Nons Zephir	Novella
Maurice Wiener	Marché Project
Nancy Fombrun	President, SHAIISA
Tony Augustin	President, Hotel Xaragua & Arcadins Hotel Association
Isidor	Manager, Xaragua
Tony Saieh	Large landholder
Carol Stoney	DEED consultant, forester
Regine Aléxandre	Projet Marché, tourism
Cyril Pressoir	Tourism operator
2 freres Mourra	SHAIISA
2 workers	clairin factory, Arcahaie
1 worker	clairin factory, Croix des Bouquets
Warren Jackman	Jatropha Foundation
Group of farmers	Camp-Coq
KOREPA members	Camp-Coq
3 CASECs	3 communal sections of Marmelade
A group of farmers	Platon, Rivière d'Oré, Marmelade
A group of farmers	Ivoire
A women's group	Ivoire
A group of farmers	Délugé
A women's group	Milot (Acul)
Charcoal makers	Ivoire and Digue Matheux (Montrouis-Arcahaie)
Irrigation farmers	Members APDDL

ANNEX B. NOTES ON LOCAL LABOR ARRANGEMENTS & COSTS

Ebb and flow of labor in agricultural zones. Qualitative interviews with farmers in Camp-Coq (Limbé) point to a shortage of local agricultural labor during peak labor seasons. Agricultural workers come from Labranle (Gros-Morne), Pilate, and Plaisance to work as agricultural laborers, especially to prepare land for beans in December and March, and other crops including manioc, *igname*, plantains, corn and cane. Farmers negotiate piece/task work (*djob*) with agricultural laborers. In Camp-Coq this is called buying *ranponon*, a term that refers elsewhere to rotating exchange labor, but refers here to buying and selling agricultural day labor. These arrangements do not necessarily require the employer to provide food, although food is sometimes negotiated as a part of the agreement.

Labor costs. The current cost of agricultural daily wage labor in Camp-Coq is reportedly 100 *gourdes* (2.56 USD)¹² per work day plus the cost of food, and lasts from 7:00 AM to 2:00 PM. A morning's work is called a *veye*. If the work arrangement is negotiated by task rather than work day, it is measured by *bwas* or arm breadth. Roughly seven *bwas* are the equivalent of a day's work. The reliance on piece work negotiated by the task - rather than by the day - suggests high demand for agricultural labor during peak periods in the agricultural cycle, and possibly a labor shortage for such work.

In Milot (near Acul du Nord), rotating labor groups are called *ranponon*, also *lavey* or *kare*. Piece work may be measured by arm's breadth (*bwas*) as in Camp-Coq, also called *bout zèb* (weeding area) for weeding, which costs 15 *gourdes* for 1 *bout zèb*. A person can do up to 7 *bout zèb* in a day depending on the person and the site, and earn the equivalent of 105 *gourdes* for a day's work.

Labor exchange and non-monetary labor arrangements. People in Milot (Acul du Nord) also continue to work occasionally in the form of a *koumbit* or work party, unpaid work by invitation in exchange for food and drink and the general expectation of reciprocity when invited workers choose to sponsor their own *koumbit*-by-invitation at a later date. In mountainous areas above Milot (Acul), farmers commonly work together in rotating labor groups called *ranponon*. There are also rotating labor groups composed of women who plant and weed paddy rice and taro in lowland areas, or sweet potatoes and manioc in nearby mountainous areas.

Labor exchange groups and local investment funds. In Milot (Acul), the *ranponon* group sometimes raises and spends money from its own resources, e.g., selling one day per week of the group's labor power in lieu of non-monetary labor exchange. This practice is called *lavey gronèg* and allows the group to create an investment fund to cover the cost of slaughtering an animal to have meat during end of the year festivities and selling surplus meat to others. The ability of such labor groups to generate group savings from their own resources suggests opportunities for such labor-based groups to raise investment capital and invest in economic ventures promoted by the project.

Patterns of labor migration. In Milot (Acul), agricultural workers come from a distance (Plaisance, Artibonite, Ti Bourg au Borgne) for peak labor seasons in August-September and February-March to plant corn, beans, sweet potatoes, and manioc. Similar to patterns of labor migration in Camp-Coq, young men from Milot (Acul) commonly cross the border to work in the Dominican Republic. In both areas, farmer interviews suggest that an estimated 80% or more of young men from these communities

¹² Cost estimates are based on the currency exchange rates at the time of various field inquiries varying from 1 US dollar for 38 *gourdes* in 2008 and 1:41 in June 2009.

work occasionally, often seasonally, in the Dominican Republic, and some also seek work in the rice paddies of the Artibonite. Clearly, there is an ebb and flow of agricultural labor in these communities.

Farmers complain of a shortage of locally available labor during peak labor periods. This is due in part to a growing trend for single young men from the area, traditionally the primary local source of daily wage labor, to seek more highly paid agricultural or construction work (therefore, alternative labor) across the border in the Dominican Republic. As a result, the farmers interviewed in Camp-Coq and Milot employ outside agricultural laborers who come into the area from a distance.

Labor arrangements and costs in Marmelade. In Platon (Marmelade), rotating labor groups known elsewhere as *ranponon* are called *kolonn*. Farmers interviewed indicate that a significant percentage of local farmers are members of such *kolonn*, including women's *kolonn*; however, there is a sexual division of labor for agricultural work. Women's rotating labor groups in Platon plant, weed and harvest beans, also corn and cabbage. Women rather than men grow parsley. Piece work measured as *bout zèb* is also called *bout kod* (a cord's length) or *gol*, the equivalent of 6-7 lengths of a *manchet* (machete). Heavy garden work such as turning over the soil may cost 20-25 *gourdes* per *bout kod*, and a worker can do 4 or 5 *bout kod* in a day's work, the equivalent of 100 *gourdes* per day.

Labor arrangements and costs in Montrouis. Rotating labor groups are also common in Arcahaie, but they are called *koumbi*. High demand for labor in irrigated land attracts workers from a distance, including the Artibonite, especially for the tomato and bean planting season October-December. The going rate is 100 *gourdes* per day plus food. There are also *koumbi fi* composed entirely of women.

Labor costs and patterns in Montrouis irrigation zones. In irrigation works farmed by members of AIPM (Association des Irrigants du Périmètre de Montrouis), agricultural workers come from nearby mountain zones during peak labor seasons including the localities of Ivoire, Lakolin, Fond-Baptiste, and Mare-Rouge, and also from the Nord-Ouest department. The going rate for the heaviest work such as turning over the soil is 100 *gourdes* per day plus food (two meals). The work day is 7:00-3:00. Lighter work such as weeding may cost only 75 *gourdes* per day. Montrouis also has local rotating labor groups called *kolonn* which sell labor externally and exchange labor internally (a non-monetary arrangement). Interviews with local exchange labor groups indicate that such groups commonly work together on a daily basis throughout most of the year.

Labor costs & arrangements in Ivoire. The type of rotating group called *kolonn* in Montrouis is identified as *kwadi* in Ivoire. When *kwadi* groups work for pay rather than exchange value, they commonly work by the task (piece work) measured as *koudlin*, and a worker may do 4 *koudlin* in a day's work at a cost of 30 *gourdes* per *koudlin*, or 120 *gourdes* per day during peak labor season. For lighter agricultural work such as weeding, daily wage labor costs of 75 *gourdes* per day are comparable to labor costs for similar work on irrigated land in Montrouis. Women sometimes work in *kwadi* especially for planting and weeding. Farmers interviewed in Ivoire confirmed that local work groups also travel to Montrouis, Cabaret, and Saintard during peak labor periods to work as agricultural laborers on irrigated land. At Ka Lwi near Fond-Baptiste, people work together in exchange labor groups called *eskwad*, also *sol* or *konbi*.

Charcoal makers. In Arcahaie, makers of wood charcoal (*charbonye*) state they rely heavily on *bayahonn* (*Prosopis juliflora*), a re-coppicing shrub or small tree that can be harvested in a sustainable fashion. Charcoal making is primarily men's work; however, women fill sacks with charcoal and also sell. Charcoal is an important component of the local labor economy in Ivoire.

Local demand for non-agricultural demand for labor. Other types of work encountered in field interviews include plank sawyers, goat herding, construction, fishing, boat transport, moto-taxis, cooked food (*chyen janbe*) vendors along the national road, handicrafts, metal workers, land managers (*jeran*), and various forms of petty commerce including traveling intermediaries (*madanm sara*),. There is little salaried employment except for schools, government jobs including local elected officials, clinics, and the hotel industry in beach resorts of Arcahaie/Montrouis. There appears to be little opportunity at present for increased hotel demand for unskilled labor.

On the other hand, there is some opportunity for vegetable and flower production for hotels. Some women's groups such as OPD-8 (Ivoire) and APDDL (Asosyasyon Plantè Devlopman Délugé-Lanzac) have undertaken value added activities as a group, including fruit preserves (guava, mango, passion fruit, pineapple, soursop, *abriko*), various types of flours (breadfruit, plantain, corn), tomato paste, peanut butter, citrus juices, sweets, and remedies. There is prospective demand for a number of these products by the local hotel industry.

ANNEX C. LISTING OF CURRENT AND PROPOSED DEED GRANTS & PROJECTED EMPLOYMENT IN LIMBÉ & MONTROUIS

Grantee & Site	Status	Grant USD	Current/Actual Start Month	Product or Activity	Current/Projected Employment	
					Full time	Part time/ indirect
			2009			
Limbé						
KOREPA, Camp-Coq	On-going	\$99,458	February	Igname/trees (cacao, banane, citrus)		816
APWOLEM, Bassin (Marmelade)	On-going	\$58,546	February	Aquaculture, vegetable crops, nursery, trees planting	62	1,301
Village Planete, APB, APDBL, Bas Limbé	On-going	\$47,101	April	Mangrove restoration, nursery	150	300
GRADSPA, 1ère section Bas Limbé	pending USAID	\$53,732	May/June	Goats, forage, enclosures, living hedgerows	75	
ODES, Morne Kerou, Soufrière (Limbé)	On-going	\$70,936	May/June	Pineapple, forage crops, hedgerows, nursery	150	
APCHA, Chato Néf (3ème Limbé)	On-going	\$59,098	May/June	Nursery, fruit trees, hedgerows, beekeeping	100	
CCGRD, Limbé	On-going	\$3,709	June	Disaster committee office, 30 member committee		
MODEPROVES, Ravine des Roches (Limbé)	Concept approved	\$67,000	June	Igname/tree association, ananas, cacao, fruit trees, hedgerows, nursery	1,200	
OPD8-L, Massabiel, 8ème section Ilet à Cône (Limbé)	Concept approved	\$74,000	June	Igname/tree association, pineapples, hedgerows, fruit trees, nursery	212	1,500
MODAB, Sodo (Bas Limbé)	Concept approved	\$60,000		Reforestation, onion		
APKBA, Bassin (Marmelade)	Concept approved	\$60,000		Pineapple, coffee, citrus trees, bamboo		
MPA/MPS, Soufrière, Acul,	Concept approved	\$60,000		Pineapple, forage, milk		
APWOLEG, ATRACOPAG, Grison Garde, Soufrière	In prep	\$100,000	July	Dairy operation, cattle raising, forage	17 dairy workers, 120 dairy farmers	
CFAIM/MARNDR, Limbé	Concept approved	\$200,000	July	Rehabilitate MARNDR training center		
NOVELLA/FECCANO Cap-Haitien & cacao coop's in Limbé, Ti Bourg au Borgne, G. Riv du Nord, Port Margot	On-going	\$441,551	June	Cacao, plantains	2,400 cacao planters	
Sonje Ayiti/Kermi SA, L'Acul du Nord & 70 km radius	Concept approved	\$300,000	August	Mango juice processing plant		
FACN, Marmelade	In prep	\$494,620	August	Add pineapple, chadèque to extend factory production period, add products preserved at room temperature	800 planters, 25 workers, 5 admin	
Habitation Tozia SA, CML, FECCANO Cap-Haitien, Limbé	Concept approved	\$250,000	August	Vanilla assoc with cacao	200	
Total		\$2,499,751				

(Annex A, continued, summary of DEED grants & projected employment, Montrouis)

Grantee & Site	Status	Grant USD	Current/Actual	Product or Activity	Current/Projected Employment	
			Start Month		Direct	Indirect
			2009			
Montrouis						
OPD8, Ivoire (Arcahaie)	On-going	\$77,644	February	Dairy, pasture, woodlots 200 ha	89 dairy farmers	
CUPEC, 9 localités de la zone Fonds-Baptiste (Arcahaie)	On-going	\$52,980	March	Bananas & vegetables, conservation structures, nursery & 300 ha woodlots	306	
AJTAPP	On-going	\$66,643	March	Beekeeping, fruit & forest trees planted	200	
APKA, Courjolle: Dig Proby, Jn Dumas, Dos Malfini	On-going	\$73,075	June	Castor beans, fruit & forest species, castor oil processing	6	100 seasonal
AJFH, Foundation MARCH, Fond-Baptiste, Délugé, Pierre-Payen	Concept approved	\$30,000	July	Coffee & fruit processing, passion fruit, fruit trees	50 women	500
ARN Digue Matheux	pending USAID	\$499,500	June	Fruit trees (mango, lemon, breadfruit, coconut), energy trees (moringa); process moringa/jatropha for biodiesel, charcoal	200	250
HSSA	In prep	\$500,000	July	Fruit, starchy tubers and tree crops; fuelwood, oil bearing perennials espec jatropha; processing; cook stoves; cattle raising	100	400
MARNDR: rehabilitation of irrigation Délugé, Dupin, Pierre Payen, Bois Neuf	In prep	\$1,100,000	July	Irrigation agriculture including bananas & tomatoes	1,738 irrigation farmers	
Haiti Fuel Crops SA, RACADAMA, Ti Bois (Arcahaie)	Concept approved	\$247,851	July	Production and processing jatropha for biofuel/animal feed.	15	4,000 jatropha producers
Dubuisson/Millien	Concept approved	\$200,000	July	Beekeeping, moringa, 1,000 hives, beekeeping orchard	10 tenant farmers	
		\$2,847,693				

SOURCE: Mike Godfrey, June 23, 2009.

NOTE: This is a working list of proposals. It includes activities presently underway as well as proposals at varying stages of development that have not yet been submitted for approval as fully developed proposals. Employment projections are estimates based on the language of proposals and not from actual field counts drawn from activities presently underway