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<p>Since 1971, the Office of Housing of AID has been conducting preinvestment surveys in countries where housing investment guaranty programs are anticipated in order to provide the background and framework for its intervention. These surveys are, in fact, increasingly sophisticated analyses of the shelter sector of each country. Each report is intended to provide the Office of Housing with the information necessary to enable it to answer three primary questions about a specific country:</p> <ul style="list-style-type: none"> <li>. What is the country's capacity to undertake a large-scale housing program?</li> <li>. What is the effective demand for housing at a given price level?</li> <li>. What is the country's capacity to repay a foreign loan?</li> </ul> <p>To paraphrase the introduction to the scope of work for a recent survey, its objectives are to determine the need for housing at all socio-economic levels of society, to determine the ability of each socio-economic group to pay for housing; to assess the capabilities of the Government to plan and manage large scale housing programs and projects; to analyze the impact of large scale foreign borrowing on the country's economy and its ability to repay; and to assess the ability of the country to absorb large sums of money into the shelter sector industries.</p> <p>These objectives have been realized with varying degrees of success. Some of the more recent surveys, in particular, provide broad panoramas of the country housing sectors. Some of the earlier ones are more limited in scope and cover only a part of the sector. These reports provide valuable orientation for anyone becoming involved in housing sector in one of these countries. They should also be useful for comparative studies of housing programs and policies on a regional or world-wide basis.</p>		
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HOUSING GUARANTY REPORT

REPUBLIC OF NIGER

HOUSING DEVELOPMENT AND INVESTMENT POTENTIALS

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NIAMEY, NIGER  
FEBRUARY 24 and 25, 1971

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HOUSING DEVELOPMENT AND INVESTMENT POTENTIALS  
REPUBLIC OF NIGER

Highlights of three meetings, February 24 and 25, 1971

Near-Term Housing Goals

The government of Niger has decided that the most important immediate housing objective is to provide suitable accommodations for governmental officials living in Niamey, particularly the younger ones who are moving up into positions of substantial responsibility. At present there is insufficient good, modern housing, so that many governmental employees do not have shelter commensurate with their socio-economic rank. (In young, developing nations where there are few, if any, established wealthy families or large industrialists, governmental officials and employees command the highest prestige ratings).

In order to meet this housing need, the government has already selected a site for 44 new villa-type houses which will be sold on a lease-sale plan, with financing provided by Credit du Niger, using French funds furnished at 3-1/2 percent interest. The "villas" which correspond generally to moderate income detached homes in the U. S., will involve construction costs ranging from 2-1/2 to 4-1/4 million CFA francs, or from U. S. \$10,000 to 15,000. Undeveloped land is understood to be furnished without charge, since raw acreage at the urban edge is tantamount to being a free good in Niger. However, the provision of water, sewers and electricity -- or urbanism as it is called in French West Africa -- is very expensive.

The government has a fund to subsidize urbanism, and it is understood that sites for the first 44 villas will have water, sewers and electricity

extended from the adjoining installations which are not far from the U.S. and French Embassies and the higher income "foreign colony" of embassy staff housing. The cost of urbanism facilities was roughly estimated as ranging from 12-1/2 to 50 percent of total housing construction expenses, with the percentage varying inversely with housing size and cost. Where existing water, sewer and electrical lines are not close at hand, costs could rise very significantly.

A private builder has already been selected to proceed with the first 44 houses (in fact, work has already been started), but Credit du Niger, which functions as the developer, has calculated that construction costs can be reduced from 20 to 30 percent on future projects by assuming the builder's role and eliminating the diseconomies and profits of private contractors. To this end, arrangements have already been made to purchase and stockpile sizable quantities of those plumbing, electrical and other items which have to be imported.

#### Intermediate Plans

A list was furnished (Exhibit A) of 85 public officials who have requested new homes; presumably the first 44 houses will go to the highest income officials on this list, and the balance will be housed in the next project, which has already been designed as a group of 26 duplex units. Note that salaries range from CFAF 36,000 to 96,000 per month (U.S. \$130 to 350), and that 30 percent of the salary is expected to be used for housing purchase payments.

A study was published on February 8, 1971 of the salaries of all government employees. Starting with those earning CFAF 20,000 and over, the distribution is as follows:

Monthly Income		No. Employees
CFAF	U.S. \$	
20,000 - 25,000	\$72 - 90	1,218
25,000 - 30,000	90 - 108	1,068
30,000 - 40,000	108 - 144	1,517
40,000 - 50,000	144 - 180	553
50,000 - 70,000	180 - 252	404
70,000 - 100,000	252 - 360	155
over 100,000	Over 360	79
Total with incomes 20,000 and over		4,994

Undoubtedly some of this group of 5,000 employees will remain indefinitely as renters and not try to acquire a home under lease-sale arrangements, particularly those at the lower end of the income scale; others toward the higher end may already be homeowners. But it is the goal of the government to afford all of this group an opportunity to occupy housing commensurate with their position and income.

Besides the government employees, including those in the Niamey municipal government (Niamey has a Mayor), there are salaried employees in local private industry who could qualify under homeownership plans. However, no studies of salaried incomes in the private sector have been made, and no estimates were offered. At this time, the government has no near-term or intermediate goals to provide ownership housing for the private sector, but those who have sufficient resources can (and do) have houses

constructed by private builders. We saw a significant number of homes under construction on scattered locations in the better neighborhoods where utilities would be available.

#### Long Range Objectives

Because Niger is one of the less prosperous nations of former French West Africa and has trade deficits partly due to its land-locked location (i.e., no rail or water transport), France continues to support the Niger balance of payments through loans to Credit du Niger and through French participation in the Central Bank of the CFA currencies. A very large proportion of the goods used for urban consumption and investment must be imported at considerable cost, either by air or truck. At present, exports are confined to agricultural products, e.g., dates, cotton, hides, peanuts etc., and some minerals. Developmental work is underway to produce and refine some uranium deposits that have been discovered in the desert area, and there is active oil exploration underway. Mineral resources could become important in the future of the economy of Niger, but they are as yet undelivered.

As indicated above, the need for utility installations precedes and exceeds the need for lower income housing in this hot, dry climate where temperatures over 150°F in Niamey have been experienced. Foreign capital, with long-term, low-interest rate loans will be needed to extend water and electricity to low-income, non-salaried families in Niamey. No plans were mentioned for any other Niger towns, many of which are small desert settlements with nomadic populations.

As urbanism can be installed in and around Niamey, the government would like to construct more modern types of rental compounds, emphasizing the use of concrete blocks and cement, instead of the traditional mud blocks. Health and sanitation are the first goal; housing per se, second. There seemed to be an implied recognition that mass rental housing compounds would not be economic, but that the government would have to make major capital contributions unless some rich, benevolent foreign nation chose to play angel.

Apparently French interest extends to financing housing projects which are sound and marketable and to supporting Niger's balance of payments in the common currency central bank, but not beyond. Unlike the Ivory Coast, other developed nations such as Norway, West Germany and Israel have not offered to assist in Niger housing projects. A frank appeal for U. S. aid with direct loans at low interest rates was made by the Secretary of State

#### Meetings with Officials in Niger

Immediately upon our arrival, Mr. Charles E. Myers, AID Program Development Officer set up a meeting with M. Abdoulaye Diallo, High Commissioner of Development, and M. Oumarou Youssoufou, First Secretary of the Niger Embassy in Washington. The AID Housing Investment Guaranty Program had been discussed with M. Youssoufou in Washington, and he arrived in Niamey two days before the team. It had been understood that M. Youssoufou would have discussed the AID Housing Program with officials of the Niger government and would try to gather certain information before the team's arrival. However, his delay in leaving Washington apparently precluded such advance work.

M. Diallo assembled several of his staff and other officials, including M. Youssoufou, the Director, Credit du Niger, and two economists. The team attempted to explain the program and identified the kinds of information which would assist in evaluating the scope of the market and levels of construction costs. However, it later became evident that M. Diallo was thinking in terms of direct loans from the U. S. Government at low interest rates. A second meeting at 5 p.m. was arranged by M. Diallo, to include the Secretary of State, the Mayor of Niamey, the Director of Public Works, and the Economic Adviser of the President.

Between the first and second meetings, the team was received by U. S. Ambassador McClelland, and explained to him what had been learned thus far. He understood local needs and problems, and expressed encouragement for the team's efforts.

At the second meeting, the operation of the AID Housing Investment Guaranty Program was described step-by-step, with M. Youssoufou serving as translator. After interest rates and charges were explained, the Secretary of State pointed out that France provides direct loans at 3-1/2 percent, and that his government would be ill-advised to use U.S. private capital at around 8 percent. All that the U.S. offers is foreign exchange to a deficit-burdened nation, and perhaps some technical assistance. It was later indicated that French loans are expected to be available in sufficient amount to meet the near and intermediate term housing goals. When French low-cost money is exhausted, U.S. funds would be welcome, but preferably for land development preceding home building, and in the form of direct loans between governments.

During the course of the second meeting, it was pointed out that there are several steps that a country starting an urban housing program must take before it is ready to break ground, viz:

1. Establish its housing goals and select or create an agency to administer its program.
2. Examine its laws and make needed enactments.
3. Develop urban land-use plans, and institute zoning or other land-use controls.
4. Survey its residential construction capability, both public and private, and take steps to recruit and train technicians and workers, if necessary, or invite foreign participation, or both.
5. Study the potential market demand in the light of its housing goals, and adjust its financing and construction schedules accordingly.
6. Organize and staff an agency to administer housing projects and the related loans or purchase contracts, or select a private agency or system to perform such functions.

It was evident that parts of this process had been considered by elements of the Niger government, but the concept of a national housing program and the linkages involved had not been fully or clearly formulated. If nothing else develops with Niger in the near future, at least this discussion was a contribution.

#### Credit du Niger and Housing Finance

This agency appears to be an independent bureau (according to the telephone directory) but must have close ties to the Ministry of Finance. It is understood to be the administrator of funds loaned by the French

government for various kinds of development, now including housing.

M. Bontemps, the Deputy Director, explained some of their plans for housing finance during a pre-arranged meeting on the second day. (Note: February 25 proved to be a national holiday because of the state visit of the President of Nigeria; all governmental offices were officially closed).

When the French funds are used for lease purchase contracts for new housing, these will be the terms:

Basic interest:	
Purchase contracts under 1 million CFAF	5%
Purchase contracts from 1 to 1.5 million CFAF	6%
Purchase contracts over 1.5 million CFAF	7%
Rental projects	3%
Additional charges:	
Financing	1.4%
General administration	2.5%
Maintenance	2.0%
Insurance	0.15%
Total additional charges	<u>6.05%</u>

Thus the monthly charges to a purchaser will range from 11.05% to 13.05%, when using French funds costing 3-1/2%. Presumably if U.S. funds costing about 8% were used instead of French funds, the rates to purchasers would be some 4-1/2% higher.

The Credit du Niger expressed strong feelings against allowing purchase contracts or mortgage terms running longer than 10 years. Similar opinions were frequently heard in the Ivory Coast. Maturity patterns followed by Credit du Niger permit maximums of 4 years for ordinary mud block houses, 7 years for better class mud block, and 10 years for cement block construction.

The reasons why longer maturities are distrusted in French West Africa are not clear. The rationale usually offered is that the structures may not

last longer or the people (and the neighborhood) may move away, as does happen in rural villages. Apparently there are several missing ingredients in this appraisal of urban housing investment risks.

1. The concept of housing market demand is not understood because there is practically no real estate market except in the very highest price class of houses bought or rented for foreign diplomatic staffs, and these are negotiated directly by the parties to the occupancy turnover.

2. Locational advantage in a growing urban center is not realized, partly because vacant land at the fringe has practically no value, and partly because much developed urban land was initially donated as raw acreage from the public domain.

3. Economic freedom is not more than 10 years old in many former Colonial states; political stability has been uncertain or uneasy in a number of the newer nations; and the urban growth process is not recognized as a force associated with the freedoms of economic choice and mobility.

4. Longer lending terms were not used in Colonial years, and are regarded as untried or unsound by banking and financial officers who -- as Europeans -- helped to administer or witnessed Colonial affairs, and have remained.

Certainly these aversions to 20 year contracts -- and longer -- will have to be overcome by experience as a teacher, if monthly payment rates are ever to be reduced to reach the far broader market of middle- and lower-middle income families who, as urban residents, would even now prize the privilege of ownership. It seems likely, also, that the various fees and charges being loaded onto basic interest rates are excessive for the stated

purposes. High financing and administrative charges are a function of both small volume and inefficiency. These should begin to decline as volume grows and productivity rises; but the risk exists that in the absence of private competition, high overhead charges may become frozen as a governmental tradition, just as maturity concepts were in the colonial years.

Little if anything was learned about the capital markets existing or used in Niger. It is understood, however, that as in other former French colonies, there are local commercial banks to serve the needs of business. However, these institutions are not authorized to accept savings deposits and there is no institutional structure for collecting thrift accumulations except the postal savings system. This system was reported as both cumbersome to use and distrusted by those with small liquid holdings.

Niger is a sparse, poor country and any monetized savings would be largely in Niamey. In the U.S., a city of 90,000 to 100,000 can support one or more separate savings banks; but possibly not more than one-third of the families in Niamey have money to save. Certainly thrift accounts would not fit the government's plan to encourage homeownership by lease-sale, where downpayments are not required and closing costs are deferred until the end of the contract when purchase is completed.

While the brief duration of the team's visit (practically only one day) did not allow an inquiry into thrift practices and related institutional needs, it seems to be quite marginal as to whether it would be useful to discuss the establishment of a savings bank at this stage of Niger's economic development.

It was reported that a World Bank team recently completed a study of the economy of Niger, and their report is expected to be available in

Washington in about four months. This report will certainly provide a wealth of economic and institutional information not available to the team during its brief visit. It is highly recommended that the World Bank report on Niger be given close attention by the AID Office of Housing in Washington and others who will be required to make investment policy recommendations regarding the Republic of Niger.

#### Prefabrication Proposals and Building Materials

At the initiative of the government of Niger, U. S. consultants studied the possibility of producing pre-cast modular cement panels which could be used for side walls, roofs, and interior separations. Their report indicated that such a plan was technically feasible, using locally available materials; two bedroom units could be readily manufactured for about U.S. \$4,640 if 1,000 units a year were produced. The cost would drop to \$4,240 if 5,000 were built in a year. See Exhibit B.

However, as one of the consultants noted in a dissenting report (Carlson), the proposal would be a move from labor-intensive techniques to capital-intensive methods in a nation where labor is cheap, under-employment high, and capital is scarce. Suitable machinery to produce the precast panels would cost more than potential market demand could amortize; the Niamey market could not absorb 1,000 units a year, let alone 5,000. Hence it would be preferable to continue to utilize conventional cement blocks as the primary building material.

While the glamour of machine production is not easily set aside by the officials who initiated the request, the consensus of opinion seemed to be

to continue with usual construction materials and methods. However, the team was informed that recently the production of fired clay tile for roofing and other components has commenced, and the cost is competitive with corrugated galvanized iron which must be imported, while sand and clay are literally free products.

#### Comparative Construction Costs

M. Bontemps of Credit du Niger provided the following cost information about the 26-unit project of duplex houses to be built as their next project. Each unit would have two bedrooms and two stories, containing about 625 square feet. If the project were to be built by a large (by Niamey standards) private construction company, the cost would run CFAF 18,300, or about \$6.66 per square foot, not including utilities. Average unit construction cost would be about \$4,165 for the 26-house project. Utilities for a small project of, this size would cost about \$1,275 per lot, but the cost per unit would decline if the project were larger, because economies of scale are involved. Also, since the government has some funds to subsidize urbanism, only part -- if any -- of the utility cost would be passed on to the purchaser.

In comparing the two methods of construction, it is of interest that the 2-bedroom unit of pre-cast panels would contain only 387 square feet -- vs. 625 for the conventional duplexes -- and would cost nearly \$12 a square foot at a production rate of 1,000 a year. This is nearly twice as much as the cost of conventional construction by a private-builder, and obviously is not competitive in Niamey's small market.

The 44 larger villas now under construction vary in size and appointments. The biggest contains about 1,120 square feet and will cost about \$17,000, while the somewhat smaller units will sell for \$13,800; this is in

the cost range of \$14 to \$15 a square foot. However, there will be a smaller, economy model which will cost about \$8,360 at \$9.30 a square foot.

After studying the foregoing proposals by private builders, Credit du Niger estimates that some 20 to 30% of the cost can be reduced through direct construction by a government agency. Accordingly, it has made a decision to assume the role of residential builder in Niamey in those projects built for government employees or with governmental support.

#### Outlook and Conclusions

The officials of the government are making a number of decisions that are correct for Niger.

- use cheap French capital as long as it is available;
- turn to other nations, including the U.S., when French capital becomes insufficient;
- study and observe the emerging process of urbanism in Niamey before making marked changes in financing practices, charges and reserves;
- emphasize labor intensive methods of construction and the use of indigenous materials in order to reduce costs and imports;
- develop construction capability within the government, buy imported materials in quantity and stockpile them in order to avoid the high costs, profits and risks inherent in the use of small-scale private construction firms.

The government of Niger urges U.S. AID to find a way to make short-term (10-year) self-liquidating capital development loans to expand their urban utility systems of electricity, water and sewers. This takes a far higher priority than financing housing without the utilities, since the government

and its growing middle-income urban population cannot afford both on the needed scale. This might require new AID legislation or new administrative policy determinations, but the need is reported as common to many developing nations.

At this time, there are no housing projects planned which cannot be financed at lower interest costs by the French government. It would be well, however, to have the able AID staff in Niamey keep a close over-view of progress on the housing projects, and be prepared to advise Washington of any change in course or needs.

The use of development loan funds to assist in funding the cost of electric and water utilities for residential purposes warrants further exploration through the regional approach. It might be possible to provide funds to the African Development Bank or some other regional agency which in turn could make loans at moderate interest rates to those nations which have specific project proposals for low- and moderate-income housing ready for execution as soon as urbanism is installed. The provision of housing is truly developmental, since urban workers must have adequate shelter near their place of employment.

LIST OF PERSONS IN ARRANGED MEETINGSNiger Government

- M. Abdoulaye Diallo, High Commissioner of Development  
M. Mai Maigana, Secretary of State  
M. Moussa Bako, Director of Public Works  
M. Mohamane Ousmane, Mayor of Niamey  
M. Bayle, Economic Adviser to the President  
-----, Director, Credit du Niger  
M. Bontemps, Deputy Director, Credit du Niger  
M. Oumaron Youssoufou, First Secretary, Niger Embassy, Washington, D. C.

Several staff engineers and economists who were not identified.

U. S. Government

- Ambassador Roswell D. McClelland  
Miss Sarah Jane Littlefield, AID  
Mr. Charles Myers, AID  
Miss Marilyn Johnson, USIS

EXHIBIT A

N O M S

		Age	Ep.	Enf.	A charge	Salaire de B.	30%	Type Villa	Case	
1	- DANKASSOA BAKO									
	Chef Division Ministère AECI	24	1	+ 1	= 2	47.500	14.250	ECO 112	V	20.302 (demandé)
2	- BARRY JOACHIM									
	Ingénieur I.R.A.T Kolo	27	cél.			96.000	28.800	H T 90	V	14.492
3	- BOMBERY SALEY									
	Infirmier ATS HOPITAL ind.240	34	1	+ 5	= 6	38.000, + 3.000	12.300	H T 74	V	26.194 11.276
4	- DIALLO MOCTAR									
	Electronicien O R T N Contrôleur Technique	28		1	= 1	70.211	21.063	M S 100 ECO 112	V IV - V	23.670 (demandé) 20.302 19.460
5	- MAHAMAN BARADI									
	Contrôleur P. T. T Chèques Postaux	24		2	= 2	43.500	13.050	M S 100 H T 74	V V	23.670 11.276
6	- HAINO MAIGUIZO									
	Inspecteur Principal P.T.T	32	1	+ 3	= 4	70.000	21.000	M S 112 ECO 112	V IV-V	26.194 20.302 - 19.430
7	- ALI KANE AMADOU									
	Assistant A S E C N A	28	1	+ 2	= 3	42.000	12.600	M S 100 H T 74	V IV-V	23.670 (demandé) 12.810 - 11276
8	- AMADOU LOUMD									
	d°	28	1	+ 3	= 4	42.000	12.600	M S 100 H T 74	V IV-V	23.670 (demandé) 12.810 - 11276
9	- ALI SOUMAILA									
	Infirmier	33	1	+ 4	= 5	42.000	12.600	H T 74	IV-V	12.810 - 11.276
10	- HOUTONDJI DENIS									
		32	1	+ 3	= 4	40.000	12.000	H T 74	IV-V	12.810 - 11.276
11	- MODI BOUBOU									
	Fils du Prés. BOUBOU HAMA							M S 112	V	26.194
12	- DIFFO MAGAGI									
			1	+ 3	= 4			M S 112		
13	- MOUNTAILA HAMA									
14	- BAGNOU SANDA									
	Instituteur Animateur T.V	30	1	+ 5	= 6	47.000	14.100	H T 90	V	14.492 (3 pièces)
15	- BAYERE MOUSSA									
	Officier des F. A. N (LT)	31	1	+ 1	= 2	60.000	18.000	M S 112 ECO 100	V III-IV-V	26.194 (demandé) 21.564 - 18.618 17.775
16	-ABDOULAYE HOUDOU									
	Animateur O R T N	26	Cél.			70.000	21.000	ECO 112	V	19.460
17	- NAMEOUA DANDARE									
	Inspecteur des P. T. T	31	1	+ 2	= 3	67.000	20.100	M S 112		26.194
18	- SIDIBE MAHAMAN									
	Adj. Comptable COPRO-NIGER	38	1	+ 1	= 2	80.000	24.000	M S 112 ECO 112	IV- V IV - V	31.094 · 30.124 23.344 22.376 ( 15 ans )

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19 - ALIMATOU MARCEL	Instituteur	38	1 + 6 = 7	72.099	21.200	ECO 112		21.879 (17 ans)
20 - TEGAMI ALFARI	Météo A S E C N A	38						
21 - DIOULDE LAYA	Sociologue Educ. Nationale	33	1 = 1	70.500	21.150	ECO 112	IV - V	20.302 - 19.460
22 - SOUMAILA OUMAROU	Mécanicien S. N. T. N	30	1 + 4 = 5	72.000	21.000	ECO 112	IV - V	20.302 - 19.460
23 - CISSE AMADOU	Ingénieur Génie Rural	32	1 + 2 = 3	61.000	18.300	ECO 100	IV - V	18.618 - 17.776
						ECO 112	V	19.460
24 - MAYAKI IRO	Dir. Adm. Aff. Economiques	33	Cél.	72.000	21.000	ECO 112	IV - V	20.302 - 19.460
						ECO 100	III	21.564
25 - SADDAY NAMARAN	Inspecteur des P T T Niamey	27	Cél.	50.000	15.000	H T 90	IV - V	15.334 - 14.492
27 - NOGA AMADOU T.	Inspecteur TRESOR	30	1 + 2 = 3	58.000	17.400	ECO 100	V	17.776
28 - MAIGA AEDOULAYE	Moniteur E. N. I	29	1 + 2 = 3	45.000	28.500	M S 112	IV - V	27.036 - 26.194
	<i>Direction Sec Agriculture</i>			+ Epou. 50.000				
29 - DOURAMANE MOUSSA	Ingénieur Travaux Agricoles	28	1 + 2 = 3	50.000	15.000	H T 90	IV - V	15.334 - 14.492
30 - HAMANI TIECOURA	Officier de Police							
31 - ADAMOU HAMIDOU M.								
32 - MCUNKEILA AROUNA	Commis. Gén. au Dév.	32	1 + 2 = 3	53.000	15.900	ECO 100	V	17.776
						H T 90	IV - V	15.334 - 14.492
33 - AMADOU MAMADOU	Chef de Div. DOMAINES	28	1 = 1	55.000	16.500	ECO 100	V	17.776
						H T 90	IV - V	15.334 - 14.492
34 - MALAM ANNOU M.	Economiste Com. Gén. au Dév.	26	Cél.	53.000	15.900	ECO 100	IV - V	15.334 - 14.492
35 - MALIKI AMADOU	Contrôleur aux P. T. T	26	1 + 2 = 3	43.000	12.900	H T 74	IV - V	12.810 - 11.276
36 - ABARA DJIKA	Com. Gén. au Dév.	25	1 + 2 = 3	38.000	11.400	H T 74	V	11.276
37 - ABOUBA HASSANE	P. T. T	28	1 + 1 = 2	55.000	16.500	ECO 100	V	17.776 (demandé)
						H T 90	IV - V	15.334 - 14.492
38 - HAMED HABIBOU	Inspecteur du TRESOR	27	Cél.	53.000	15.900	ECO 100	V	17.775
						H T 90	IV - V	15.334 - 14.492

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39 - KOUSSOU IBRAHIM	Chef de Dion TRESOR	25	Cé1.		53.000	15.900	ECO 100		V	17.776
40 - SADI DOMA	Officier de Paix	32	1 + 1 =	2	45.000	13.500	H T 90	IV - V	V	15.334 - 14.492
41 - ALI BOUKAR	Contrôleur des P. T. T (N7)	27	1 + 1 =	2	44.000	13.200	H T 74	IV - V	V	14.492
42 - TCHEERNAKA	Commis. Gén. au Dév.	32	Cé1.		56.000	16.800	H T 90	IV - V	V	12.810 - 11.276
43 - OUMAROU MAGAGI	Juge d' Instruction	30	2 + 4 =	6	39.000	11.700	ECO 100		V	17.776
44 - ABOUBAKAR IBRAHIM	Contrôleur des P. T. T	29	1 + 1 =	2	45.000	13.500	H T 74	IV - V	V	15.334 - 14.492
45 - ISSOUFOU IBRAHIM	Chef de Div. TRESOR	26	1 =	1	53.000	15.900	H T 90	IV - V	V	11.276
46 - KAOUGE MOUMOUNI	Géomètre	27	1 =	1	44.000	13.200	H T 74	IV - V	V	12.810 - 11.276
47 - SALEY MOUNKAILA	Contrôleur des P. T. T	22	Cé1.		36.000	10.800	H T 74		V	11.276
48 - TALEB SIDI MOHAMED	Agent Technique A S E C M A	29	1 + 3 =	4	79.000	23.700	M S 112		V	26.194 (demande)
49 - ADAMOU SOULEY	Inspecteur I E M	27	1 + 3 =	4	50.000	15.000	M S 100		V	23.670
50 - BAKO ASOUBAKAR	Finances					15.000	H T 90		V	14.492 (demande)
51 - AMADOU IBRAHIM	Service TOPO									
52 - ALZOUNA SIDIKOU	Service des Mines									
53 - SAO MARANKAN	Président Tribunal	33	1 + 1 =	2	65.000	20.400	ECO 112		V	19.460
54 - ISSOUFOU MAIGA	Inspecteur P. T. T	27	1 + 2 =	3	61.000	18.300	ECO 100		V	17.776
55 - MAMAN CHAWAYE	Agent Tech. des T. P	27	1 + 2 =	3	50.000	15.000	ECO 112 HT 90		V	14.492
56 - ZEZI BOUBACAR	Ingénieur des T. P	26	Cé1.		66.000	19.800	M S ECO 112		V	19.460
57 - DAMBELE ABOULAYE	Adj. des T.P	29	1 + 2 =	3	44.000	13.200	H T 90		V	14.492

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- 4 -

58 - GAGARA MAYAOU	Hydrologue	31	1 + 2 = 3	64.000	19.200 ECO 112	V	19.450
59 - ALHASSANE ZOURKALEINI MAIGA		26	1 + 2 = 3	58.000	17.400 H T 74	V	11.276
60 - ISSAKA DANKOUSSOU		28	1 + 2 = 3	47.000	14.100 H T 90	V	14.492
61 - KATZELMA MAHAMAN T.		24	Cél.	38.000	11.400 H T 74	V	11.276
62 - KAILOU MOHAMED	Aide Hydrologue	26	1 = 1	43.000	12.900 H T 74	V	11.276
63 - SEINI ALI	Ingénieur Génie Rural	32	1 = 1	52.000	15.600 H T 90	V	14.492
64 - ALGABIT HAMID	Stagiaire I I A P	29	Cél.	52.000	15.600 H T 90	V	14.492
65 - INSA ABDOU	Chef. Div. Adm.	32	1 + 1 = 2	50.000	15.000 H T 90	V	14.492
66 - GOUBA AMADOU	U. N. C. C						
67 - LAWALI NAATTAMOU	Député						
68 - NIANDOU IDE							
69 - HAMIDOU MOUMOUNI	Officier de Police						
70 - KELESSI TAHIROU							
71 - ABDOU SANDA							
72 - ISSA BOUBACAR CAMARA	Agent Technique de Santé	36	Cél.	46.000 <sup>1</sup>	13.800 H T	V	11.084 (19 ans)
73 - TINI IBRAHIM JEAN	Moniteur (Menuisier)	37	1 + 5 = 6	60.000	18.000 ECO 100	V	18.554 (18 ans)
74 - BOUKAR LALOUMI	Adj. Adm. Com. Fleuve Niger	43	1 + 8 = 9	80.000	24.000 H T 90	IV -V	22.526-21.288 (10 ans)
					HT 74 II III IV V		24.600 23.146 18.810 16.690
75 - ARAMI CHEGOU	Contrôleur des P.T.T	40	1 + 3 = 4	41.000	12.300 H T 74	V	12.832 - (15 ans)
76 - Mme LE BIHAN MARIE	Institutrice Adj.	37	1 + 7 = 8	41.500	12.500 H T 74	V	11.593 -(18 ans)
77 - SOURGHIA ASSAN	Comm. Gén. au Plan	42	1 + 4 = 5	58.300	17.500 H T 90	V	17.753 (13 ans)

.../...

78 - CHAIBOU ABACHE	Professeur (Log. de fonction)	33	Cél.		89.000	24.900 M S 100	IV	24.512 (20ans)
						ECO 112	1	25.100
79 - VIAS FRANK	Int. Dir. Ecole ZONGO	37	1 + 3 =	4	59.000	17.700 H T 90	IV	16.121 (18ans)
80 - KANDO DJIBO	Enseignant	35	1 + 4 =	5	59.000	17.700 ECO 100	V	17.776 (20ans)
						H T 90	IV	15.334
						HT 74	I	17.608
81 - KOBA MAMANE		36	1 + 5 =	6	77.677	23.303 M S 100		
						M S 156		
82 - BA BOUBAKAR	Professeur							
83 - Mme DAN DIKO								
84 - OUMAROU ISSOUFOU	Ambassade NIGER à WASHINGTON )							
85 - Mme R.C MAYAKI	Chef de Sce CREDIT DU NIGER	25	Div. 1 =	1				

CM/A3  
REPUBLIQUE DU NIGER

MINISTERE DES TRAVAUX PUBLICS  
DES TRANSPORTS & DE L'URBANISME

DIRECTION DES TRAVAUX PUBLICS  
ET DE L'URBANISME

Service Central  
de l'Urbanisme, de l'Architecture  
et de l'Habitat

NOTE TECHNIQUE

CONCERNANT UN PROJET DE 1000 à 5000 LOGEMENTS ECONOMIQUES

PROMOTEUR : John Schurko Associates Architects  
Engène V. Dotter Consulting Engineers

## A - ETUDE DES PRIX

### 1/ ETUDE DES PRIX PAR LOGEMENT

#### 1.1 Tableau des estimations par logement

1 \$ = 275 CFA

##### 1.11 Séjour + 1 chambre : 30,87 m<sup>2</sup>

	par unité d'habitation	prix au mètre carré
5 000 logements	3 699 \$ = 1 017 225 CFA	32 951 CFA
1 000 logements	4 099 \$ = 1 127 225 CFA	36 516 CFA

##### 1.12 Séjour + 2 chambres : 38,71 m<sup>2</sup>

	par unité d'habitation	prix au mètre carré
5 000 logements	4 239 \$ = 1 165 725 CFA	30 114 CFA
1 000 logements	4 639 \$ = 1 275 725 CFA	32 955 CFA

##### 1.13 Séjour + 3 chambres : 46,55m<sup>2</sup>

	par unité d'habitation	prix au mètre carré
5 000 logements	4 758 \$ = 1 308 450 CFA	28 108 CFA
1 000 logements	5 158 \$ = 1 418 450 CFA	30 471 CFA

### 1.2. Relativité des coûts des logements entre eux

1.21 Les logements S + 2 et S + 3 sont plus économiques en valeur absolue, l'adjonction de chambres supplémentaires ne nécessitant pas de dégagements particuliers.

Le coût des installations de base : cuisine + sanitaires s'amortit sur une superficie plus grande.

1.22 Rabais obtenu en passant de 1 000 logements en un an à 5 000 logements en 5 ans.

S + 1:9 %  
S + 2:8 %  
S + 3:5 %

Ce rabais est obtenu uniquement à partir d'un calcul d'amortissement des installations fixes étalé sur cinq années au lieu d'une seule.

.../....

1.3. Répartitions des différents postes de dépense pour un programme de mille logements par an

1.31 Amortissement sur un an

1.311 Tableau de répartition

Installations fixes		500 000 \$ =	137 500 000 CFA
Frais de production	1 280 \$/j. avec 228 j. ouvrables	290 000 \$ =	79 750 000 CFA
Matériaux	1 012 \$/logement	1 012 000 \$ =	278 300 000 CFA
Montage d'une maison	2 297 \$/logement	2 297 000 \$ =	631 675 000 CFA
		<u>4 099 000 \$ =</u>	<u>1 127 225 000 CFA</u>

1.312 Répartition des pourcentages par logement

4 099 \$ = 1 127 225 CFA

Béton par logement	549 \$	
Engrenages	202 \$	
Pièces insérées	36 \$	
Dalles	1400 \$	
	<u>2187 \$</u>	soit 53,30 %
Equipement intérieur	225 \$	soit 5,50 %
Mécanisation levage	225 \$	soit 5,50 %
Frais de production	500 \$	soit 12,30 %
Frais de main d'oeuvre	200 \$	
	+ 672 \$	
	<u>972 \$</u>	soit 23,40 %
	<u>4 099 \$</u>	<u>100,00 %</u>

1.313 Relation entre les différents postes

Matériaux et matériels	58,80 %	Matériaux	58,80 %
Frais mécanisés	17,80 %	Frais	<u>41,20 %</u>
Frais de main d'oeuvre	23,40 %		

.../...

1.32 Amortissement sur un an

1.321 Tableau de répartition

Installations fixes	100 000 \$ =	27 500 000 CFA
Frais de production	290 000 \$ =	79 750 000 CFA
Matériaux	1 012 000 \$ =	278 300 000 CFA
Montage d'une maison	2 297 000 \$ =	631 675 000 CFA
	<hr/>	<hr/>
	3 699 000 \$ =	1 017 225 000 CFA

1.322 Répartition des postes par logement

3 699 \$ = 1 017 225 CFA

Béton par logement	549 \$	
Engrenages	202 \$	
Pièces insérées	36 \$	
Dalles	1 400 \$	
	<hr/>	
	2 187 \$	soit 59,10 %
Equipement intérieur	225 \$	soit 6,00 %
Mécanisation levage	225 \$	soit 6,00 %
Frais de production	100 \$	soit 2,90 %
Frais de main d'oeuvre	290 \$	
	+ 672 \$	
	<hr/>	
	962 \$	soit 26,00 %
	<hr/>	
	3 699 \$	soit 100,00 %

1.323 Relation entre les différents postes

Matériaux et matériels	65,10 %	Matériaux	65,10 %
Frais mécanisés	8,90 %		<hr/>
Frais de main d'oeuvre	26,00 %		34,10 %

2/ EXAMEN DES PRIX

2.1. Salaires Il est indiqué un salaire horaire moyen uniforme de 4 \$ soit 1 100 CFA.

2.11 Aucune indication n'est fournie pour expliquer cette base de rémunération:

- catégorie,
- charge sociale,
- salaires d'expatriés,
- salaires locaux.

2.12 Le promoteur prévoit une production de 1 000 maisons par an avec une cadence de 4 logements par jour.

Ceci suppose 250 jours de travail : soit le versement de :  
250 x 1 280 \$ = 320 000 \$

Pour établir le coût de la main d'oeuvre de fabrication de type de logement, il semble qu'il se soit appuyé sur une appréciation moyenne.

2.2. Béton 25 \$ par yard cubique soit 0,7 645 m<sup>3</sup> à 6 875 CFA  
ou 1 m<sup>3</sup> = 8 992 CFA arrondi à 9000CFA

Ce prix est avancé sans aucune justification ; en particulier le pourcentage de ciment entrant dans la composition n'est pas précisé ainsi que le prix du ciment.

### 2.3. Mécanique, électricité ect...

Un chiffre de 225 \$ soit 61 875 CFA est précisé. Il n'est fait allusion aux différents corps d'état intéressés par ce montant :

- assainissement : puisard, fosse septique,
- électricité : nombre de lampes et de prises,
- plomberie sanitaire : type d'appareil ,
- menuiseries : type de portes et de fenêtres,
- peinture.

### 2.4. Taxes, droits et impôts

Les prix indiqués ne marquent pas s'il a été tenu compte des textes en vigueur au Niger concernant les taxes, droits et impôts.

### 2.5. Frais financiers

La lettre de présentation du responsable du Bureau Régional de de l'AID indique que cet organisme pourrait garantir une partie du prix de revient de ce genre de logement pour l'obtention d'un financement bancaire.

Cette éventualité est abordée de manière très évasive ; il serait utile que des précisions soient apportées pour déterminer l'incidence des prêts sur le coût de la construction de chaque logement.

### 2.6. Production de masse

Dans le cas de production de 3 000 logements, le promoteur avance le prix de :

- 3 250 \$ soit 893 750 CFA pour S + 1
- 4 125 \$ soit 1 134 375 CFA pour S + 2
- 5 000 \$ soit 1 375 000 CFA pour S + 3.

Cette proposition en supposant une production annuelle de 1 000 logements par an devrait s'amortir sur trois ans.

Ces prix ne s'intègrent pas dans le tableau 1.1. :

dans le cas du S + 1 : ils sont inférieurs à ceux obtenus avec une production de 5 000 logements,

dans le cas du S + 2 : ils sont inférieurs à ceux obtenus avec une production de 5 000 logements,

dans le cas du S + 3 : ils sont supérieurs à une production de 2 000 logements et inférieurs à ceux d'une production de 5 000 logements.

Un complément d'information est indispensable.

...../.....

## 2.7. VRD

La viabilité générale du terrain (voirie, eau, électricité, assainissement) n'est pas évoqué dans le coût du projet.

## B - ETUDE TECHNIQUE

### 1/ LE MATERIAU

Les panneaux préfabriqués sont composés de ciment d'agrégats calibrés de frein granulométrie d'adjuvants comme la poudre d'aluminium pour alléger leur poids :

-- poids présumé d'un panneau de couverture.

Si densité = 2 500 kg

Si densité = 1,5 375 kg.

-- poids présumé d'un panneau vertical.

Si densité = 2 215 kg

Si densité = 1,5 150 kg.

Il faudrait une étude approfondie qui tiendrait compte des caractéristiques de ciment de MALBAZA (en particulier du temps de prise).

### 2/ MISE EN OEUVRE

2.1. La mise en oeuvre s'opère obligatoirement avec des moyens de levage, à l'exception peut être des poteaux raidisseurs.

2.2. Les dalles et fondations sont préfabriquées. Quelle peut être leur tenue avec la pluviométrie du Niger (pointe 80 mm en une demi-heure de précipitation) et l'affeuillement des eaux provenant de la toiture qui jaillissent au pied du logement.

Il semble qu'aucune trémie n'est prévue pour les alimentations d'eau et les évacuations d'eaux usées et d'eaux vannes.

2.3. Les cloisons sont constituées d'une double paroi de panneaux préfabriqués perforés. Cette disposition judicieuse pour obtenir une bonne protection thermique doit être examinée avec attention en ce qui concerne l'incidence des pluies et des vents de sable et de terre.

Le volant thermique des panneaux doit être étudiée avec soin à cause de la présence de poudre d'aluminium.

2.4. Second-oeuvre.

L'insertion du second-oeuvre dans le Génie Civil semble difficile. Les cloisons ne sont pas lisses à cause du relief des poteaux raidisseurs tous les 70 centimètres d'où la difficulté de poser les canalisations d'eau et d'électricité.

Elles ne pourront jamais être encastrées.

- Aucune indication n'est fournie sur les menuiseries,

- Il sera difficile de peindre les panneaux qui seront très lissos.

2.5. La couverture est constituée de panneaux tenant par gravité. Les joints sont garnis d'épousey (renseignements à fournir) et l'étanchéité des panneaux est assurée avec une pellicule de silicone vaporisée.

Le comportement des panneaux dans le temps avec les sujétions inévitables de dilatation et de retrait provoquées par les amplitudes journalières de température, n'est pas connu.

Le volant thermique de la couverture thermique est à examiner avec soin parce qu'il n'y a aucun faux-plafond et aucun système de ventilation transversière.

### 2.6. Mise en oeuvre des panneaux

Le système de pose est simple mais nécessite une main d'oeuvre mécanisée pour la pose des dalles de plancher, des panneaux de cloisons et des panneaux de couverture.

L'encastrement des raidisseurs dans la dalle assure un liaisonnement transversal. Le raidissement latéral est obtenu par l'insertion des panneaux entre les poteaux raidisseurs.

Les panneaux de couverture reposent par leur seul poids sur ces cloisons. La jonction entre la couverture et les murs devra être étudiée avec soin.

Des extensions au goût de l'occupation du logement peuvent être envisagées. Elles semblent difficilement réalisables économiquement et techniquement :

- a/ Elles seront beaucoup plus onéreuses. Elles demandent une intervention particulière des services mécanisés ;
- b/ La liaison avec le bâtiment peut être envisagée en couverture mais la liaison des fondations (indispensable au contreventement général) ne pourra être effectuée à partir de la dalle d'origine.

## 3/ ARCHITECTURE

Le système de construction ne permet pas d'obtenir une grande liberté dans la conception architecturale.

Le projet présenté est la traduction brutale d'un besoin exprimé. Il s'en dégage une très grande pauvreté dans la construction qui sera aggravée par la difficulté de peindre les panneaux qui seront d'une couleur grise soutenue (ciment de MALBAZI).

## 4/ LCTISSSEMENT

Il a été retenu un parcellaire de 600 m<sup>2</sup>. Il faudra définir l'incidence des VRD sur le coût total de la construction.

Dressé par  
le Chef du Service Central  
Technique

Présenté par  
le Directeur des Travaux Publics  
& de l'Urbanisme

B. ZEZI.

M. BAKC.

Construction Costs only -

Results of bids for the construction of Houses  
 ETAT DES OFFRES POUR LA CONSTRUCTION DES VILLAS  
 DE L'OPERATION "JEUNES CADRES"

EXHIBIT C

TYPES de villas	By Small Nigerian (COMPANIES OR CRAFTSMEN)		* (PRIVATE CONTRACTORS IN NIAMEY) in the operation of "Young Functionnaires"										
	Tâcherons	*	S I N C O	* D E D R Y	* N A V A L O N	* P A T E R	* R G C F & T P	* S A T O M					
H T 74-M <sup>2</sup>	1.410.000	:	2.764.690	:	2.128.410	:	2.200.000	:	1.800.000	:	2.902.581	:	3.100.000
H T 90-M <sup>2</sup>	1.710.000	:	3.278.943	:	2.588.670	:	2.500.000	:	2.250.000	:	3.445.200	:	3.920.000
ECO 100-M <sup>2</sup>	2.100.000	:	3.577.073	:	2.951.300	:	3.000.000	:	2.700.000	:	3.832.350	:	4.440.000
ECO 112-M <sup>2</sup>	2.300.000	:	3.903.471	:	3.321.000	:	3.300.000	:	3.025.000	:	4.212.915	:	4.650.000
M S 100-M <sup>2</sup>	2.800.000	:	4.486.698	:	3.700.000	:	4.000.000	:	3.700.000	:	4.783.434	:	5.600.000
M S 112-M <sup>2</sup>	3.100.000	:	4.061.098	:	4.144.000	:	4.400.000	:	4.145.000	:	5.268.979	:	6.100.000

Approx -

HT = 740 M<sup>2</sup> - @  $\frac{7,06}{\text{sq. m.}}$

1,410,000 CFA = \$ 5,222