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INSTITUTE OF CURRENT WORLD AFFAIRS

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(No Longer) Blowin' in the Wind

Dakar, Senegal

28 February 1985

Mr. Peter Bird Martin
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Dear Peter,

In mid-February the Harmattan winds off the Sahara Desert are still blowing strong in Niger. In Niamey the air is full of brown dust, but farther east, hard driving winds blow gritty sand through the Majjia Valley. Quite literally the desert seems to be on the move, engulfing the countryside. The true desert is farther north, but the sparse Sahelian vegetation and omnipresent sand suggest a closer presence. Combatting desertification is a high priority of the Nigerien government. Increasingly emphasis is being given to forestry and soil conservation efforts, particularly since last year's national conference on desertification held at Maradi.

"Majjia" is a Hausa word for "valley". The Majjia Valley is located in southern central Niger (see map on page 2), over 500 kilometers (300 miles) east of Niamey. An ancient sea bed, the Majjia is a fertile agricultural valley. From the plateau to the north of the valley, the Majjia looks bleak and desolate, with few trees in evidence. The descent into the valley from Bouza is steep and rocky, passable only to four-wheel-drive vehicles, donkeys, and camels. There is no permanent river flowing through the valley: the floodplain has water only after the rains. Yet the valley is not as difficult as it initially appears. An estimated 33,000 people live in the Majjia, comprising twenty-seven villages. The area's residents make their living from growing crops, such as millet, sorghum, and a little cotton, and raising livestock, such as goats, sheep, donkeys, and camels.

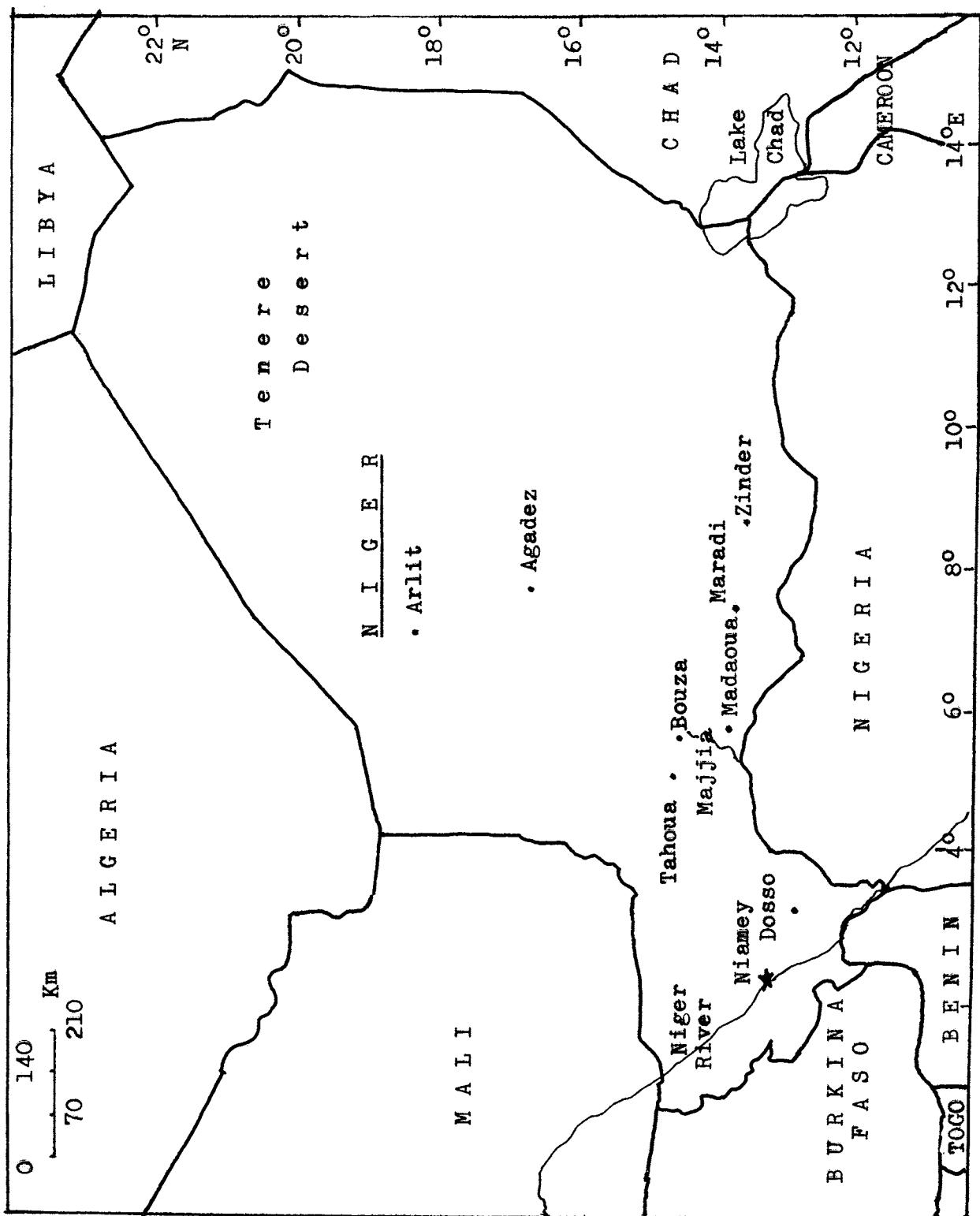
The strong winds that blow through the Majjia threaten the villagers' livelihood. During the long dry season, from November to May, little vegetation covers the ground: the Harmattan blows almost incessantly, carrying away valuable topsoil. During the rainy agricultural months, the wind continues to blow, drying out young sorghum and millet plants.

Among development foresters, the Majjia Valley has become quite celebrated as a successful social, or community, forestry project. For the past ten years, CARE International, a private

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MAP OF NIGER

(Adapted from: Atlas du Niger, Editions Jeune Afrique, Paris, 1980,
pp. 6-7.)



voluntary development organization, has promoted tree planting in windbreaks¹ in the valley. The project was designed to protect and conserve soil, protect agricultural production, and to produce wood for use as fuel and poles.

The windbreaks consist of double rows of trees, planted 4 meters (13 ft.) apart, with 100 m (330 ft.) between the double rows. Many windbreaks exceed 1 kilometer (0.6 mi.) in length: some are perhaps 2 km long. Since 1975, 314.7 km (195.6 mi.) of windbreaks have been planted, using 121,600 trees, and protecting an agricultural area of 3147 hectares (7776 acres). An average of fourteen to sixteen windbreak lines have been planted each year.²

The first windbreaks were planted in the northern part of the valley, near the three villages of Garadoum . Subsequent lines have been planted extending southward. More recently, windbreaks have been put in near Tabo  and have been extended northward. Within a couple of years, the two sets of lines will meet and the valley will be protected for a distance of 20 km (12 mi.). The size of the project is a bit difficult to conceptualize in the abstract. The visual impact of seeing the project on the ground, however, is quite impressive: the rows of trees go on and on. What is particularly significant is realizing the numbers of people that have been involved in planting all of these trees, both in terms of the laborers and the landowners.

The project began when a Nigerien forester, Daouda Adamou, and a Peace Corps forester, Don Atkinson-Adams, approached CARE in 1974 for financing. Daouda had been the forester for the Bouza Arrondissement³ for several years. Having excellent rapport with the villagers, Daouda had already persuaded many local residents to plant individual woodlots and trees. Bouza, Daouda's base as well as his home town, has a marked abundance of trees lining the streets and shading a town park.

The valley's residents were themselves interested in planting the windbreaks, as they were concerned about the wind erosion in the valley. They had great confidence in Daouda and had already experienced the success of the woodlots, in producing wood needed locally for poles.

The project was set up with CARE providing the financing, and the villagers the labor and land. CARE established three small nurseries to produce tree seedlings, which involved digging wells, purchasing metal fencing, seeds, fertilizer, and other supplies, and paying the salaries of nursery workers. CARE has also provided transport for the seedlings, technical assistance (in conjunction with Peace Corps and the Nigerien Service of Forests and Fauna), and paid guardians to protect the trees -- for the first three years after planting -- from livestock grazing.

The project began towards the end of the last major Sahelian drought. Initially some workers were given food for their labor, through a Food-for-Work program. The majority, however, has been voluntary labor. Young men's groups, called Samaria, have planted the trees. The work involves two phases: the holes for the trees are dug late in the dry season, and the trees are planted after the first major rain. The work parties generally have large turnouts and the air of a festival. Women sometimes cook for the work parties. Often a local griot, or hereditary musician, will beat his drum to encourage the workers.

Although the villagers wanted to establish the windbreaks, many were initially reluctant to give up some of their own land to the project. To be effective, however, the project needed to cover a lot of land and required coordination among adjacent landowners. As individual fields in the valley are small in size, many landowners were involved. The project was fairly arbitrary: trees were planted in straight lines, in parallel double-rows, perpendicular to the wind, for a minimum distance of at least 200 m (660 ft.). Consequently, it was not possible to curve or wiggle the windbreak lines around reluctant landowners.

The fact that the project has worked is testimony to the charisma and hard work of Daouda and his colleagues, in convincing villagers and local government officials of the validity of the project. The support of local authorities was particularly crucial in winning over the valley's population. Daouda himself has said that the fact that he was always accompanied on his field trips by the Sous-Prefet was a significant factor. The Sous-Prefet's presence impressed both villagers and other government officials of the project's importance.⁴

As the project has progressed, villagers have come to believe that the initial layout of the lines was wise. Furthermore, they are convinced that the windbreaks are improving their agricultural productivity. Nearby residents have expressed interest in starting their own planting programs. CARE has recently begun financing programs in five nearby areas.

Development workers have also grown increasingly interested in the project, in understanding both the project's actual impacts and the possibilities for replication elsewhere. A small study undertaken by a Dutch graduate student in 1980 suggested that the windbreaks had increased agricultural productivity by 23 percent.⁵ This year a major evaluation study, financed by CARE and the U. S. Agency for International Development, is underway. The study began in March 1984 and is scheduled to be completed by fall 1985.

According to Dr. Steven Dennison, the forest economist heading up the evaluation, the study has four purposes. The evaluation is being undertaken to assess whether the project objectives have been met, whether the project is integrated into the local

communities and to what degree it is accepted, whether there are costs and benefits unforeseen in the original project design that warrant evaluation, and how the project may be improved. To answer these questions requires a sociological survey, a technical study examining the regeneration rates of trees to three different types of cuts, soil and meteorological conditions, and the impact of the windbreaks on crop production, and an economic and financial analysis.

The sociological survey, supervised by James Delehanty, Marilyn Hoskins, and James Thomson, was conducted between May and July 1984. Six local Hausa-speaking interviewers, three women and three men, questioned 211 local women and 209 local men on the project's desirability and on other agroforestry practices. In-depth interviews were conducted with a smaller number of informants. As much livestock in the valley is raised by women, they were found to have suffered disproportionately from the project, as their animals could not graze in the project areas.

The social researchers found that most local residents do not believe that they own the trees -- most think that the trees belong to the local forester or to the government. As wood production begins to be managed and exploited from the windbreaks, the distribution of benefits will need to be well worked out.

This year's experimental cut provided the first step in that direction. Under the supervision of CARE's foresters, 205 trees were cut to assess the impacts of various cutting methods -- coppicing, pollarding, and partial pollarding⁶ -- on regeneration. The trees were cut just before the rainy season, the optimal time to get resprouting.

The wood was cut by village men from Garadoum . When the wood was cut, the Sous-Prefet announced that the wood belonged to the villagers. Those doing the work were given the wood to distribute as they saw fit. Some wood was given to the village chiefs, the rest distributed among the woodcutters themselves. Although obtaining firewood is women's work here, the women did not participate in the firewood distribution. Project staff are hoping that the free distribution of wood will convince villagers that the trees do belong to them, and not to the project, forester, or government. Project staff are also hoping to enhance women's participation in future project activities.

Despite the villagers' interest in the project, it seems unlikely that the project could be carried out by local farmers themselves, if CARE financing ends. The project has been costly, in terms of paying guardians and raising tree seedlings. The windbreaks will need to be managed through cutting and replacement of trees as they age. CARE is exploring the possibility of establishing a cooperative of the valley's residents to manage the windbreaks, financing their activities through the sale of firewood. Whether this is a realistic option remains to be seen --

rural residents themselves may not have the money to purchase firewood. Transport costs to outside markets would be high.

In a few cases, individual farmers have extended the wind-break lines by planting trees on their own land. In general, however, this type of project cannot be easily undertaken by individuals, as it is a large-scale resource management strategy. CARE plans to expand the project scope, by building terraces and dikes on the hillsides above the Majjia. These efforts would be directed at stabilizing the slopes, to minimize soil erosion, and thus complement the impacts of the windbreaks.

CARE's foresters attribute the project's success to a number of factors. First, the local forester, Daouda, had excellent rapport with the villagers, and second, he also had the backing of local authorities. Third, the project responded to a problem that the valley's residents themselves had identified -- the need to combat wind erosion. Fourth, the area was a fertile site, where the agricultural productivity was worth protecting and the trees planted had done well.⁷ Finally, the project began on a small scale: only after encouraging results were obtained was the project expanded. CARE has started similar projects in five other areas in Niger, but it is too early to tell if they will be as successful as the Majjia Valley project. Thus, it is not yet clear whether this project can be replicated elsewhere, or whether it was merely a fortuitous combination of circumstances.⁸

Although overall prospects of combatting desertification in the Sahel seem very bleak, the Majjia Valley project holds out hope. For many Sahelian residents, for whom daily existence can be very precarious, the windbreaks offer hope that human action can mitigate climatic conditions ---- that people are not helpless when confronted with the blowin' of the wind.

Sincerely,

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Dr. Steven Dennison and Steven Long, CARE's foresters working on the evaluation study, were both extremely generous with their time in explaining the project. I particularly appreciated Steve Long's tour of the Majjia Valley and his warm hospitality in Bouza. Information was also graciously provided by Judith Collins, CARE'S country director, and by CARE's two staff foresters, Michael Ahern and Amadou N'Tirgny Maiga. Anyone seeking more information on the project can contact staff members at: CARE International, BP 10155, Niamey, Niger.

NOTES:

1. Technically, the trees constitute "windscreens" rather than true "windbreaks" because they do not totally stop the wind. Usually windbreaks are designed with several layers of vegetation, rather than a single canopy stratum, to block the wind. The windscreens permit the passage of some air: this may be advantageous in reducing field temperatures, so that the cereal crops do not bake in the sun as they grow.
2. The principal species planted has been neem (Azadirichta indica), but Acacia seyal, Acacia scorpioides, Prosopis chilensis, Prosopis juliflora, and Eucalyptus camaldulensis have also been used.
3. The government of Niger is administratively organized into Departements, which are subdivided into Arrondisements. The government officials for these two levels are appointed by the central national government. At each level, the head official is the Prefet, and his assistant is the Sous-Prefet. Arrondisements are furthered divided into Cantons, composed of several villages. The Canton Chiefs and village chiefs are chosen on a local, rather than national, basis.
4. Daouda made these remarks at the Atelier Multidisciplinaire sur la Planification Forestière au Niger - Phase Niamey/Dosso (Multidiciplinary Workshop on Forestry Planning in Niger), in Niamey on 13 February 1985.
5. Els Bognetteau-Verlinden. 1980. Study of Impact of Windbreaks in Majjia Valley, Niger.
6. Coppicing is cutting the tree trunks close to the ground, whereas pollarding consists of cutting the branches out of the crown, above the trunk. Partial pollarding consisted of cutting the outer branches that extended over the fields. For the seven to nine-year-old neems that were cut, the best regeneration rates were obtained with the full pollard cuts.
7. Due to low rainfall in 1984, the trees planted this past season only had a 30 percent survival rate. These windbreak lines will probably have to be replanted this coming rainy season.
8. Comments of Steven Dennison and Michael Ahern, made at the Atelier Multidisciplinaire sur la Planification Forestière au Niger (see note 2), and of Amadou N'Tirgny Maiga, at the Seminaire PNUD/CONGAD sur le Reboisement (Seminar of UNDP/ CONGAD on Reforestation), in Dakar on 26 February 1985.

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