



## Climate Risks and Development Projects

Assessment Report for a Community-Level Project  
in Guidan Ider, Tahoua, Niger

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*Bread for all* is the Swiss Protestant Churches' development agency. It supports 400 development projects and programmes in 57 countries in Africa, Asia and Latin America. It also participates in development policy activities aimed at achieving more equitable international socio-economic structures, protecting "Creation" and building peace.

## I. Executive Summary

Climate change affects poor people in particular, because of their weak adaptive capacities. Development projects of all kinds can strengthen or weaken those capacities. At the same time, they can influence greenhouse gas emissions, the main cause of climate change, positively or negatively. It is therefore important to evaluate the impacts of development projects on adaptive capacities and climate change mitigation, in order to find measures to improve projects in the face of climate change.

This Assessment Report presents the results and the lessons learned from the climate change analysis of a community-level rural development project in the area of Tahoua, Niger. The analysis was conducted with the Climate Proofing Tool from HEKS and Bread for All. The analysed project is run by the local NGO GADR-RA, and financed by HEKS.

The evaluation shows that the beneficiaries of both projects suffer from a lack of rainfall, rising temperatures, floods, parasite attacks and bush fires. Rising temperatures can be associated with climate change with certainty, whereas the lack of rainfall and floods might be related. It is clear that climate change aggravates the threats from natural hazards. Since people's livelihoods heavily rely on subsistence agriculture and natural resources, particularly scarce water resources, they are highly vulnerable to climatic risks.

The analysed project mainly focuses on strengthening natural resources, and has a beneficial impact on adaptive capacities. In fact, various activities directly try to reduce the impacts of climatic hazards. Still, much more should and could be done. This report suggests that natural resources be strengthened further, particularly regarding ongoing climatic changes, that the incomes be diversified, and that housing, health services and early warning systems be improved.

The analysed activities probably also have a beneficial impact on greenhouse gas emissions, mainly through soil recovery and tree plantations. Larger mitigation actions could benefit from carbon credits or other mitigation payments, which could be taken advantage of to finance measures with high synergies in adaptation. It has to be noted, however, that carbon markets are virtually inexistent in Niger today.

This second test application of the Climate Proofing Tool allowed some further lessons to be learned. First, difficulties when consulting beneficiaries without reading or writing skills were observed. Translation into local languages was also necessary. New research methods including separate consultations with women and men were tested. The need for an integration of disaster risk reduction approaches with adaptation was identified. Furthermore, the tool seems to be too difficult to use for less educated local project coordinators.

## II. Acknowledgements

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- The project beneficiaries for participating actively in the workshops, which allowed most of the information in this report to be gathered.
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- The developers of CRiSTAL, a tool which forms the basis of the HEKS and *Bread for all* Climate Proofing Tool.

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## 1. Introduction

Climate change and development are highly intertwined: The risks of global warming could jeopardise decades of development efforts, particularly in the poorest regions of our planet. It is therefore vital to ensure that development projects strengthen their beneficiaries' capacities to confront climate change. It is also important to make sure that the same projects do not lead to excessive emissions of greenhouse gases.

HEKS supports community-level projects in rural areas in poor countries across the planet. Many of their beneficiaries are heavily threatened by climatic risks, mainly because of their high economic, social, environmental vulnerabilities. Even though HEKS does engage in specific climate change projects, it has grasped the need to consider those threats and the related vulnerabilities.

In order to gain experience for HEKS as a whole, Marius Keller, a consultant, carries out climate analyses in community-level projects supported by HEKS in various countries. In October 2009, he visited Niger and evaluated a rural development project in Guidan Ider, in the region of Tahoua (see Figure 1). The following assessment shows that beneficiaries are very vulnerable to climate change.

The analysis was executed with the HEKS and Bread for All Climate Proofing Tool, which is based on CRiSTAL, a tool jointly developed by the International Institute for Sustainable Development (IISD), Intercooperation, the International Union for the Conservation of Nature (IUCN), and the Stockholm Environment Institute (SEI).



Figure 1: Map of Niger and the Project Area of Guidan Ider (CIA, 2009).

This report is organised as follows. First, both projects and their context will be briefly described. Then, the climate context in Niger is discussed. Third, the as-

assessment results projects will be presented, following the structure of the Climate Proofing Tool. The last section discusses some lessons learned from the application of the Climate Proofing Tool.

## 2. The Project

The analysed project aims at improving food security and sustainable development in the area of Guidan Ider, in the region of Tahoua, Niger. It is run by the Nigerien NGO « Groupe d'Appui au Développement Rural – Recherche et Action » (GADR-RA), which has activities in various areas of the country. The project is solely financed by HEKS. Christian Aid finances, with HEKS, another project with GADR-RA.

The project's overall objective is to improve reactive capacities against food insecurity and vulnerability of households. The following activities are meant to contribute to achieving this objective:

- Strengthening capacities of producer organisations: Analysing functionality of existing social organisations; consolidation of associations and cooperatives; constitution of federative unions; collaboration with village chiefs.
- Agricultural, sylvicultural and pastoral production: Development of sustainable practices; renewing resources; raising awareness among the population; protection of resources (water, synthetic fertilizers. Specific activities include pedal pumps, organic fertilizers, composting, organic fertilizers, seed banks, cultural diversification and commercialization.
- Irrigated cultures: Agro-forestry and gardening, including rotating cultures.
- Rain-fed agriculture: Supply of improved seeds with shorter cycles, higher resistance against droughts, and with higher yields (e.g. millet, cowpeas).
- Revenue generating activities for women: Small-scale and intensive animal husbandry. Goal: Stabilising families and women's associations, income.
- Strengthening productive capital: Defence of natural resources, restoration and conservation of water and soils; information, creating awareness and formation in composting, small stone barriers, zaï, and plantations; these latter activities are also implemented through cash for work programmes.

The overall objective of the project is to improve living conditions and food security for the population of Guidan Ider and its surroundings, who lives mainly on agriculture and to a lesser extent on animal husbandry. More concretely, the project aims at achieving the following objectives:

- Improving organisational capacities of local structures (associations, interest groups)
- Support communities in gardening, income generation and soil recovery.

- Improve and strengthen the productive capital through the promotion of agricultural, sylvicultural and pastoral production.
- Promote hygiene, basic sanitation, nutrition, HIV/AIDS prevention and conflict management.

The project is triennial and lasts from 2009 to 2012, following a pilot phase that started in 2008.

Regarding the project context, one has to mention the government, which is present in the area mainly through the mayor, the municipal council (both institutions were formed during the recent decentralisation programme), a livestock agent (veterinary and other functions), an agricultural agent, as well as correspondents for two early warning systems, including the food crisis unit which was formed after such a crisis in 2005.

A number of other organizations are operating in the area. CARE (in malnutrition and microcredits), Sadel (gardening), IFDC (fertilizers) and SNV (commercialization) as well as the institutes INRA (quality seeds) and ICRISAT (adapted varieties) and the Red Cross are present in some villages of the area. In addition to that, local groups (for example for hygiene or women's associations) are present as well as the local power structure including village chiefs and their entourage. They and the structures of the Nigerien state constitute a dualist political framework with a coexistence of the traditional and modern structures.

Demographic growth is very rapid, with over 3% per year. The climate is often dry and very hot (up to 45°C). About 400mm of rain fall per year. The main language is Hausa, even though Niger's official language is French.

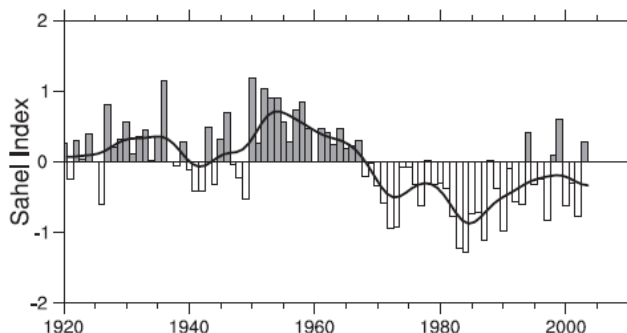
### 3. Niger and Climate Change

#### 3.1. The Impacts of Climate Change in Niger

Between 1900 and 2005, the Sahel has dried up considerably. However, since the 1980s, it seems that rainfall increases again. Precipitation varies a lot in space and time, which means that the tendencies are not very robust.

### *Sahel Droughts*

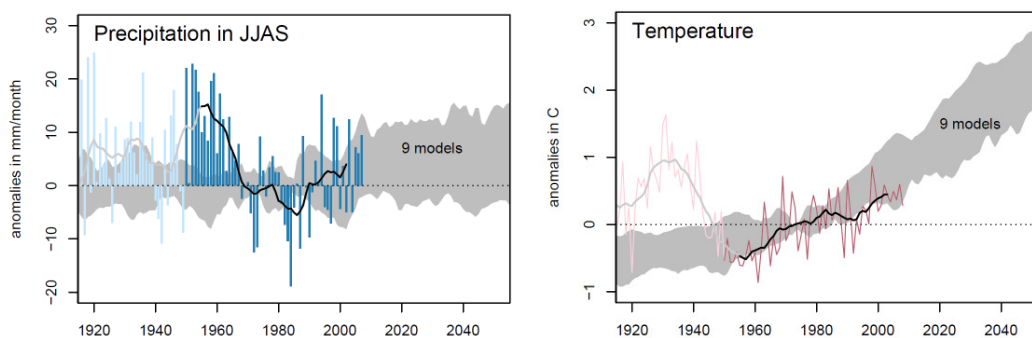
From the 1970s through the 1990s, average rainfall in the Sahel has decreased with devastating effects on the area (see Figure 2). The causes of this drying are not completely understood yet, but they probably include a combination of socio-economic factors leading to desertification, and a change in ocean surface temperatures. With the current scientific understanding, it is impossible to predict future tendencies of rainfall.



*Figure 2: Evolution of rainfall anomalies in the Sahel from 1920 to 2003 according to Dai et al. 2004*

### *Projections*

Warming in Niger will continue at around 0.3°C per decade, which is roughly comparable to the global average during the past decades (IPCC, 2007). Due to this warming, a higher frequency of droughts is a possible perspective.



*Figure 3: Observations of precipitation (GPCC, Schneider et al. 2008) and temperature (CRUTEM3v, Brohan et al. 2006) in Niger as well as simulations with 9 global models which well reproduce the annual precipitation climatology. Greenhouse gas emissions follow scenario SRES A1B.*

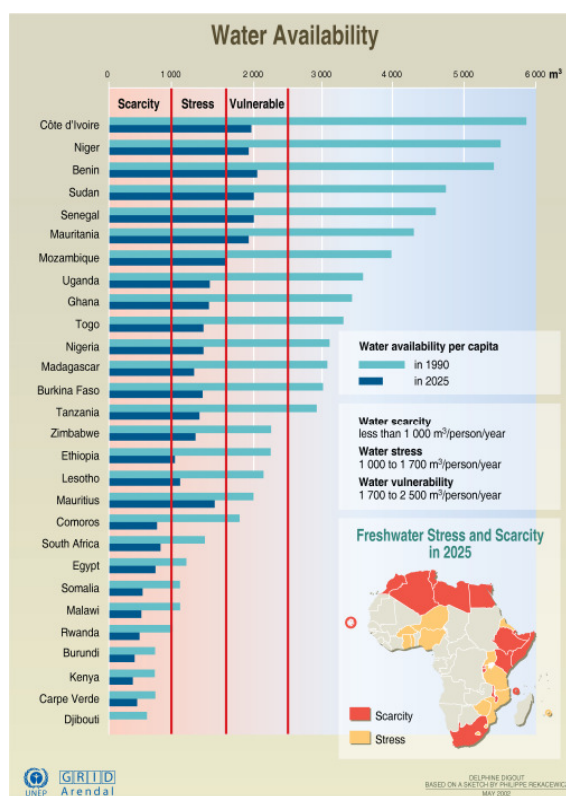
According to the IPCC, projections on future rainfall patterns in the area are very uncertain, because global climate models cannot explain observed changes in the

Sahel (Figure 3). Heavy rainfalls are likely to become more frequent due to higher temperatures. In addition, variation in rainfall patterns will increase, which can lead to more extreme climatic situations, including more droughts and heavy rains (IPCC, 2007).

*Impacts of Climate Change in Niger*

Climate change affects socio-economic and natural systems. For Niger, the following impacts are to be expected:

- Water resources: Due to the higher interannual variability of rainfall, subterranean water is becoming more important as a source. Projections of average rainfall are difficult, yet the rising temperatures and the changing rainfall stability increase evaporation and lead therefore to a reduction of water flows. In addition to that, population growth increases water needs (Figure 4). The reduction of water availability generally leads to a reduction in water quality. In particular, floods lead to silting of wells.
- Agricultural production and food security: IPCC scenarios show that the Sahel zone could see its agricultural period reduced by over 20% until 2050. In addition, floods and storms lead to erosion of valuable soils and cause crop damages. Droughts also lead to reduced revenues. They still constitute the worst climatic phenomenon.
- Animal husbandry and fishing: Increased climate variability affects the health of animals and the access to fodder. This will lead to more conflicts over scarce resources. Fishing yields will diminish due to lower water quality and warming.



Source: United Nations Economic Commission for Africa (UNECA), Addis Ababa ; Global Environment Outlook 2000 (GEO), UNEP, Earthscan, London, 1999.

Figure 4: Predicted pressure on water resources (www.grida.no)

- Health: Climate-sensitive diseases such as meningitis, measles, malaria, cholera, etc. are expected to spread more easily due to extreme climatic events such as floods, droughts, sand storms and heat waves.
- Biodiversity: Climate factors such as warming and increasing variability and socio-economic reactions to these changes such as the expansion of agricultural surface endanger many species.
- Desertification: Increasing climate variability and more extreme events favour desertification. However, it is important to note that this risk is not only due to environmental factors. Agricultural practices and livestock contribute to desertification and thereby to socio-economic and environmental vulnerability, too.

### 3.2. Niger's Contribution to Climate Change

According to greenhouse gas inventories, most of Niger's emissions in 1990 were due to deforestation (6082 Gg). Other sources include agriculture (emissions from cultivated soils) and the energy sector (fossil fuels) with its subsectors industry, transport and mining (PCN, 2001, see Figure 5).

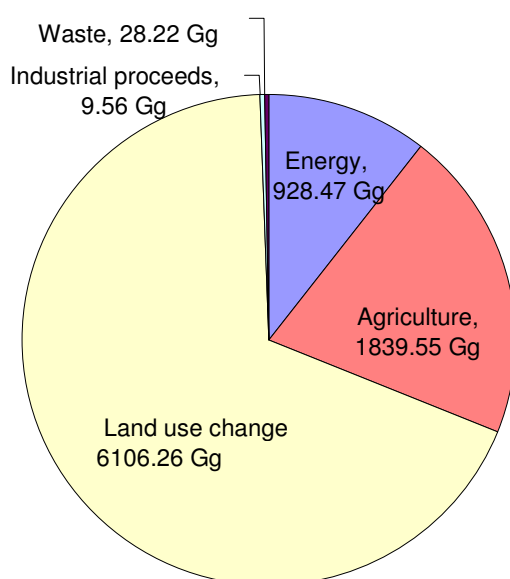


Figure 5: Greenhouse Gas Emissions in 1990 (Source: PCN, 2001)

Compared to other countries, Niger's emissions are very low with only 1100 kg CO<sub>2</sub> equivalents per person. In 1990, global average per capita emissions stood at 3.9 tons, with the United States at 22.2 tons per head.

Per capita emissions in Niger decreased slightly between 1990 and 2000. Considering that population growth totalled 35% over the same period (INS-NIGER, 2009), total emissions still increased. Currently, population growth is therefore the main determinant of how emissions evolve in Niger.

In spite of having very low emissions on an international scale, some aspects still deserve some attention. First, most emissions result from an increasing pressure on natural resources (fire wood, forest clearance for agricultural production, etc.). These emissions will increase with continuing population

growth and without sustainable development. In addition, deforestation leads to higher vulnerability to climate change. Second, low emissions in the energy sector go hand in hand with extreme poverty in Niger. The desirable reduction of poverty

will lead to higher energy demands, and could lead to increasing emissions (particularly in the transport sector, where little alternatives exist to fossil fuels).

## 4. Assessment of Activities in Guidan Ider

This section presents the results of the analysis on climate change conducted in October 2009. The presentation follows the structure of the Climate Proofing Tool which was used for the analysis. First, the project specific climate context is analysed. Second, current coping strategies are identified, followed by an analysis of livelihoods in the climate context. Then, the project's impact on adaptive capacities and on greenhouse gas emissions is evaluated. The last section looks at possible project revisions.

### 4.1. Climate Context

#### *Scientific information*

Chapter 3 has already dealt with the impacts of climate change on a regional and national level. Scientific information on a more local level is not available. Therefore, the results of consultations with project representatives and beneficiaries as presented below have to help to identify the consequences of climate change on a local scale.

#### *Information from Stakeholder Consultations*

The information on the impacts of climate change was collected during two 4-hour workshops with the local population, one with women and another with men. The workshops took place on 5 October 2009. The lack of rain, increasing temperatures, floods as well as parasite attacks were mentioned as the main natural risks by both groups. Bush fires were mentioned only by women.

In an exercise on the impacts of those risks, participants identified the following consequences.

The *lack of rain* leads to:

- Food insecurity
- Conflicts between households
- Lack of pastures
- Soil degradation
- Declining groundwater levels

*Increasing temperatures* lead to:

- Diseases affecting human beings
- Parasites attacking animals (animal diseases)
- Drying of garden plants
- Strong need for water

*Floods* lead to:

- Loss of life (human and animal)
- Loss of property and habitats
- Loss of crops
- Food insecurity
- Diseases

*Parasite attacks* lead to:

- Loss of animal life
- Famines/food insecurity

Parasite attacks are, according to the beneficiaries, also a consequence of rising temperatures. This shows how different risks can be interdependent.

*Bush fires* lead to:

- Destruction of tree sedimentation
- Destruction of granaries
- Loss of animal life
- Turning away of wild animals
- Loss of human life

Generally, the workshops with men and women lead to very similar results, except that women identified bush fires as an additional risk.

The different risks are consistent with scientific information as mentioned in chapter 3. Rising temperatures in particular, and low rainfall and floods with a certain probability, are linked to climate change. Considering climate predictions, some or all of the mentioned risks might increase in the future. It is very certain that temperatures will increase further, and this will also lead to higher evaporation rates. As a consequence, even in case rainfall should not decrease, water shortages can be expected to worsen.

More detailed results of the workshops, including a seasonal calendar, can be found in the annex.

## 4.2. Current Coping Strategies

In the same workshops mentioned above, participants were asked to explain how they react currently to the impacts listed above.

Regarding the impacts of the lack of rainfall, participants identified the following coping strategies:

- Water pumps and water retention constructions (mini barriers) are a reaction against declining levels of groundwater. While these measures can reduce the plight of the person concerned in the short-term, they don't resolve or even worsen problems in the long run.
- Exodus (mainly men), gardening and various income generating activities (such as small-scale animal husbandry) are measures against food insecurity. Emigration is not desirable. This is at least what particularly women said during the consultations, since the absence of men during difficult times makes them even more vulnerable. The other measures, while reasonable, are themselves negatively affected by the lack of rain, and can therefore not be considered particularly sustainable or effective.
- Buying fodder, collecting hay and crop residues to mitigate the lack of pastures. These measures are probably sustainable, yet in reality can't make up for the increasing lack of pastures.
- Selling off animals in order to buy fodder for the other animals (see measure above): This measure can have a certain positive effect, yet it is not sustainable, since it reduces the assets of people, which makes them more vulnerable in the mid-term. In addition, the price for animal is lower in the periods where food insecurity occurs.
- Better management of stocks against food insecurity and to manage conflicts between households. This measure seems reasonable, but considering that stocks are simply insufficient in most years, it's hard to imagine how it solves the problem in reality.
- Transhumance against the lack of pastures: This old strategy works, even if it brings about its own problems. In addition, the lack of rain can affect animals everywhere.
- Cleaning wells against the sand: Thanks to this measure, wells work better, and the problem of declining levels of groundwater is less important. It is to a certain extent sustainable and effective.

Regarding the impacts of increasing temperatures, participants identified the following coping strategies:

- Traditional and modern care to reduce negative effects of diseases, for humans and for animals. These measures certainly have some positive effects, but in the end they only fight symptoms rather than causes.
- Bush and tree plantations to improve the microclimate and to temper high temperatures for plants in gardens. This strategy is sustainable and efficient to the extent that is put in place.
- Against the strong need for water, no one came up with a response.

Regarding the impacts of floods, participants identified the following coping strategies:

- Traditional “Habanayé” systems, according to which people that lose their animals can borrow some from others and keep the products and offspring. This strategy is sustainable and efficient but doesn’t work if too many people lose their livestock.
- Agriculture on previously flooded lands to take advantage of the floods. This measure is efficient and sustainable in the sense that it doesn’t bring about any negative effects for the future.
- New stone and clay constructions are more stable, so to some extent this measure is efficient and sustainable.
- Modern and traditional medicine can reduce disease symptoms. These measures certainly have some positive effects, but in the end they only fight symptoms rather than causes.

Regarding the impacts of parasite attacks, participants identified the following coping strategies:

- Transhumance, exodus and external aid (public and from NGOs) can prevent possible famines. Yet these measures are not particularly effective.
- Early warning systems on a national level help to warn people from looming parasite attacks, yet even if this system works, people have no means to protect themselves.
- Generally, people had troubles finding any strategies against parasite attacks.

Regarding the impacts of bush fires, participants identified the following coping strategies:

- Fertilise seeds can counter negative effects of bush fires on tree sedimentation. This measure can be efficient, yet it is not sustainable as it has to be repeated each time.
- Public and NGO aid to reduce negative consequences of animal and crop loss. This is not sustainable, nor preventive.

Analysing these coping strategies shows that the local population has few autonomous means to reduce negative effects of the lack of rain, rising temperatures, floods, parasite attacks or bush fires. The responses to risks are often neither sustainable nor effective. For some impacts, they depend entirely on external aid. As a consequence, local adaptive capacities can be considered weak, and the vulnerability of the population as high.

### 4.3. Livelihood Resources

This section first presents the most important resources for the local populations’ livelihoods. In a second step, the impact of climate hazards on those resources are

analysed, and in a third step, their importance for the current coping strategies is evaluated. The first two parts were identified by project beneficiaries in the workshops mentioned above. The last section was analysed by the author based on the field visit conducted in the context of the present evaluation.

### *Identifying Livelihood Resources*

Participants of the two workshops identified the following resources as their most important livelihoods. The categorization into five different types was undertaken by the author:

- Natural resources: Water, animals (mentioned by both women and men in the consultations) as well as agricultural and pastoral land (only mentioned by women).
- Physical resources: Dwellings, Agricultural material (mentioned by both sexes) as well as good seeds from research institutes (only mentioned by women).
- Financial resources: Sales of beignets, vegetables, cheese, handicrafts and working in restaurants (all mentioned by women), animal trade (mentioned by both sexes), cereal and manufactured product trade, work on fields and gardens (mentioned by men).
- Human resources: Health (mentioned by both sexes), willingness to work (mentioned only by men).
- Social resources: Local associations with various interests, and peace (the first one mentioned by women, the second by men).

### *Impacts of Climatic Risks on Livelihoods*

In the same workshops mentioned above, participants were asked how the different risks identified above influence their livelihoods.

- All *natural resources* are heavily affected by almost all risks. Water, the scarce basis of life of the local population, is negatively influenced by the lack of rain and rising temperatures. The other natural resources, land and animals, depend crucially on the availability of water. Floods can threaten animals and destroy land. At the same time, agriculture can sometimes benefit from floods by planting vegetables where the flood has receded. Parasite attacks are mainly a threat to animals and agricultural land.
- *Physical resources* are less affected. Agricultural material is hardly affected by any of the risks. Houses can be destroyed due to floods and can be affected by bush fires. However, this latter risk is not occurring often according to the project coordinators.
- Almost all *financial resources* are very much affected by natural risks, because they depend very much on the vulnerable natural resources. The only exception is trade with manufactured products (gasoline, pumps, etc.), which how-

ever also suffers if other businesses are in crisis, as people have less money to buy their products.

- *Human resources*, namely health, are also very dependent on natural risks. The lack of water harms health directly and through food insecurity. Parasites and floods bring about diseases, and all risks can cause loss of life. The willingness to work also depends on health.
- *Social resources*, namely associations and peace, can also be negatively affected by risks. Associations do not work well in crisis as many people emigrate. Peace can be endangered by conflicts over resources due to food insecurity, for example between nomads and sedentary peasants.

Almost the whole livelihoods system is very much affected by natural risks: Natural and financial resources, health, dwellings and conflict management are probably the elements deserving most attention in the climate context.

### *Importance of Livelihood Resources for Coping Strategies*

The importance of resources for coping strategies was evaluated by the author on the basis of the results and discussions in the workshops mentioned above.

- All *natural resources* are very important for many coping strategies, as for example for gardening, hay collection, all the actions requiring financial means, because even trade depends on natural resources, the plantation of trees and bushes as well as the traditional systems such as “Habanayé”.
- *Physical resources*, to the extent that they are used for agricultural, pastoral or trade activities.
- *Financial resources* for all coping strategies that depend on financial means, as for example buying fodder or medication.
- *Human resources*, namely health and the willingness to work, are crucial for all adaptation activities.
- *Social resources* can have a positive influence on the feasibility of many coping strategies, as associations can help to facilitate social organization, and peace guarantees collaboration between people.

Almost all resources have some importance for coping, yet the most crucial ones seem to be natural and financial resources, as well as health and social collaboration.

#### 4.4. The Project and Adaptive Capacities

This section analyses the impact of the project on livelihood resources that are considered either heavily affected by natural risks or very important for current coping strategies, in order to evaluate the projects influence on adaptive capacity of its beneficiaries. Following the analysis in the previous section, natural and financial

resources, health, housing and social collaboration (i.e. local associations) are considered particularly important in the context of adaptation to climate change. The analysis was conducted by the author.

*Impact of the Activity “Strengthening Capacities of Producer Organisations”*

This first element of the GADR-RA project has probably a positive impact on associations and thereby on social collaboration and conflict management. To the extent that activities of supported organisations deal with resources such as health and the environment, the activity can also have a positive effect on other livelihood resources. It has probably no negative effects.

*Impact of the Activity “Agricultural, Silvicultural and Pastoral Production”*

This second project element seems to influence resources as follows:

- Natural resources are positively affected, in particular land and water, but through those animals as well.
- Financial resources, as they depend heavily on natural resources. One exception is trade with manufactured products.
- Health is not directly influenced, but can benefit from better availability of water and increased food security.
- Housing is not affected by the project.
- Social collaboration is not directly targeted by this activity, but it could benefit from a reduction in conflicts thanks to better food security.

*Impact of the Activity “Revenue Generating Activities for Women”*

This third element of the project seems to influence resources as follows:

- Animal husbandry directly benefits positively. Other natural resources are not affected.
- Financial resources are positively affected thanks to the support to trade with animals and other goods.
- Social collaboration is improved through supporting female groups.
- Other resources are not particularly influenced by this activity.

*Impact of the Activity “Strengthening Productive Capital”*

The fourth element of the project seems to influence resources much in the way the second one does, that is a very positive influence on natural resources and through them also on financial resources, health and social collaboration.

### *Evaluation of the Overall Impact on Adaptation*

It is obvious that the project does improve adaptive capacities of the local population in a very positive way, without any discernible negative impact on livelihood resources. IN fact, almost all resources considered important in the climate context are positively affected by one or more activities of the GADR-RA project, the only exception being houses. At the same time, this does not mean there is no room for improvement: In the section "Project Revision" below, areas where continued improvement is required are identified.

### 4.5. The Project and Mitigation

This section deals with the project's impact on greenhouse gas emissions, and essentially consists of looking at some potential sources or sinks for greenhouse gases, and analysing what the project's impact on those sources is. The evaluation is purely qualitative, as no emissions or sink measurements have been conducted.

The project appears to be influencing the greenhouse gas balance of the zone as follows:

- *Reduction of gasoline combustion* in fuel-powered pumps by implementing pedal pumps.
- The conservation of soils through activities soil recovery and conservation activities, organic fertilizers and better irrigation improve the soils capacity to absorb greenhouse gases.

*Organic fertilizers* are used and can replace the use of synthetic ones, which reduces emissions from the production and application of the latter.

The *protection of trees*, by encouraging the protection of soils and the plantation of trees as well as through agro-forestry, improves the absorptive capacities of greenhouse gases in trees.

The project does not have any impact on electricity, energy use in stoves and on waste. It might have a slightly negative impact through vehicles used by the NGO and the strengthening of animal husbandry, yet these effects are inevitable and offer no potential for emissions reductions considering the needs of the population.

In sum, the project has probably a slightly positive effect on climate change mitigation, due to the strengthening of carbon sinks, namely soils and trees. This effect can, however, not be very large, due to the small scale of the project. Yet it is important to take those effects into account, particularly in view of a possible extension of soil recovery and conservation and tree planting activities.

One also has to note the large part of emissions due to land use and forestry in the national greenhouse gas inventory. The local situation shows that there are in fact reduction opportunities regarding the improvement of natural carbon sinks.

#### 4.6. Project Revision

Based on the previous two sections on the project's impact on adaptive capacities and mitigation, this section seeks to identify areas where this impact could be improved by means of project revisions or the design of new activities. The analysis according to the project revision cycle provided in the Climate Proofing Tool is not discussed here, as it has been left to the project managers to decide how to move on regarding new or revised activities.

##### *Suggestions for Improvements Regarding Adaptive Capacities*

In spite of the above mentioned positive effects on adaptive capacities, a lot more can be done to render populations more resilient against natural risks. The following list proposes a number of activities which could reinforce those capacities.

- Continued efforts to strengthen *natural resources* are indispensable. The most critical resource in the area of Guidan Ider is water. Groundwater levels are declining because of low precipitation. It is therefore important to take further measure to retain and save water. Extending soil recovery is important as such, but particularly with respect to water retention. Much more reforestation should be done, considering its positive effects on water and tempering the microclimate. Considering the further rise in temperatures, measures protecting the population from the consequences of another 2°C warming should be conceived.
- *Financial resources* benefit from every improvement in natural resources, yet it is important to think about alternative revenue flows which are less dependent on the local environment. Currently, natural risks affect livelihoods almost entirely. As a result, the population should be rendered more resilient through other income generating activities.
- *Dwellings* do not benefit directly from any measure, yet they are vulnerable against natural risks.
- *Health* of both human beings and animals is a big worry of the local population, so more concrete measures should be taken, particularly against parasites, as people currently have no means to protect their livelihoods against them.
- Regarding *social resources*, it seems that early warning systems could be improved. The Nigerien state is present in the area with a correspondent of the national system, yet it is important to ensure that pertinent information reaches all villages.

##### *Suggestions for Improvements Regarding Mitigation*

The reduction of greenhouse gas emissions or the improvement of sinks is not the primary concern of the rural poor, as they only minor emitters of greenhouse gases. Yet it is still worth considering emissions reducing or sink improving measures, for

two main reasons. First, they could benefit from high synergies of mitigation and adaptation measures. Second they could become part of a mitigation project obtaining carbon credits on the international market. Thanks to this, adaptation measures with strong synergies in mitigation could be financed by carbon credits.

In the area of Guidan Ider, soil recovery and reforestation measures could obtain carbon credits, or at least some other sort of mitigation finance. Unfortunately, Niger and Africa in general have hardly attracted any carbon credit projects so far. However, it is possible that this will change in the future, since the UN is developing a system through which it will be easier to establish projects against deforestation or land degradation, as well as less market-based finance mechanisms, since these tend to direct few financial flows to Africa.

### 4.7. Conclusions

The analysis of a project run by the “Groupe d’Appui au Développement Durable” (GADR-RA) in the area of Guidan Ider, in Niger, showed that the population is highly vulnerable to a number of risks, the most important being the lack of water, which is caused by the lack of rain and rising temperatures, of which at the very least temperatures are a certain consequence of climate change.

The local population lacks sufficient adaptive capacities, due to endemic poverty, environmental degradation, and rapid demographic growth. The project’s activities undoubtedly strengthen those capacities, yet further measures are needed, particularly considering the ongoing climate change. These measures should aim at increased protection of natural resources, help to diversify financial incomes, render dwellings more resilient, protect human and animal health and reinforce early warning systems.

Mitigation programmes aiming at further soil recovery and reforestation activities would have strong synergies in adaptation and could bring in the needed finance for adaptation precisely because mitigation has a value on international carbon markets and in new programmes on reduced emissions from deforestation and soil degradation.

Nothing is lost for the population in the area of Guidan Ider, and the presence of NGOs such as GADR-RA is very important for the population in their fight against the effects of climate change and other natural phenomena. At the same time, this fight’s intensity will increase. It is therefore crucial that adaptive capacities be improved further, with possible positive side effects for mitigation.

## 5. Lessons learned from the application of the tool

The climate change analysis presented in this report is the second one conducted with the HEKS and Bread for All Climate Proofing Tool. Besides evaluating a specific project, the application of the tool also aimed at testing and improving it. The following lessons were learned:

- The first application in an African country proved the tool's suitability also for this context. Its flexibility allows the user to adjust the application to local environments.
- Widespread analphabetism in the area posed specific difficulties during stakeholder consultations. It is, for instance, hardly possible to conduct group exercises in which the people have to write themselves. Yet the difficulties can be tackled. However, one has to inform oneself in detail about the education of locals before doing the analysis, and prepare the exercises accordingly.
- Language can also pose problems. In the present case, most consulted people didn't speak the national language, French. This means translators have to be present, and the time to translate needs to be added. One also has to consider the fact that translators, particularly those who aren't disinterested in the results of the analysis, can distort the expressed opinions of the participants.
- New methodologies have been used to gather information, the seasonal calendar for instance. This experience has been very positive. The next version of the tool could therefore include a choice of such methods.
- Contrary to the first application, separate consultations were held with women and men, in order to better take into account the opinions of both genders. This approach proved to be useful for the project context, but can also be recommended in general.
- The research team also became aware that the application of the tool requires a certain level of education and a specific training on the tool. This can pose some problems regarding the envisioned wider distribution of the tool among HEKS-supported projects.
- The differentiation of climate risks and other risks in the consultations with the local population is difficult and possibly needless to explain. Therefore, an integrated approach on disaster risk reduction and climate change adaptation is envisioned for the next revision of the tool.

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## V. Annex

The protocol of the workshops held with project beneficiaries is available as an annex to the original French version of this report.