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DEUTSCHE ZUSAMMENARBEIT

nexus



Promoting change through an inclusive approach

FREXUS: Improving security and climate resilience in a fragile context through the Water-Energy-Food Security Nexus



MARCH 2023

Implemented by

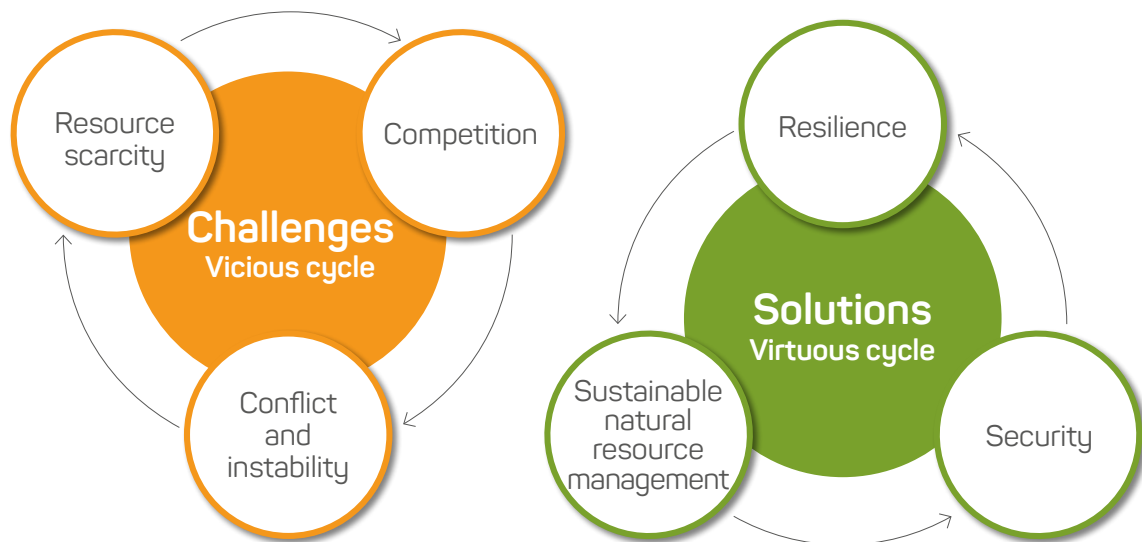
giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Frexus project

For the past few years, the Sahel region has been facing a set of challenges, consequences of political, institutional, and social fragility, while climate change exacerbates these weaknesses and accentuates the causes of conflict. These crises render societies more vulnerable, change power relations, and make peacebuilding and post-conflict reconstruction more difficult.



Resource scarcity or their poor governance, conflicts and instability are mutually reinforced to form a **vicious cycle**, and initiatives that address the latter are often lacking a conflict and security dimension.



The Frexus project has been designed to support the peaceful resolution of social tensions and conflicts between population groups, caused or exacerbated by climate change in fragile areas. The project uses a **Water-Energy-Food Security (WEF) Nexus approach** to create and promote new opportunities for long-term sustainable development and peace.

Project ID

Objective

Improve security and resilience to climate change in fragile contexts through the Water-Energy-Food Security (WEF) Nexus.

Intervention zones

- Mali** | Inner Niger River Delta, Bellen, Konna et Soboundou communes.
- Niger** | Dosso Region, rural communes of Falmey, Farrey and Sambéra.
- Chad** | Mao, Nokou and Mondo communes.

Implementation Period

July 2019 to June 2023

Budget

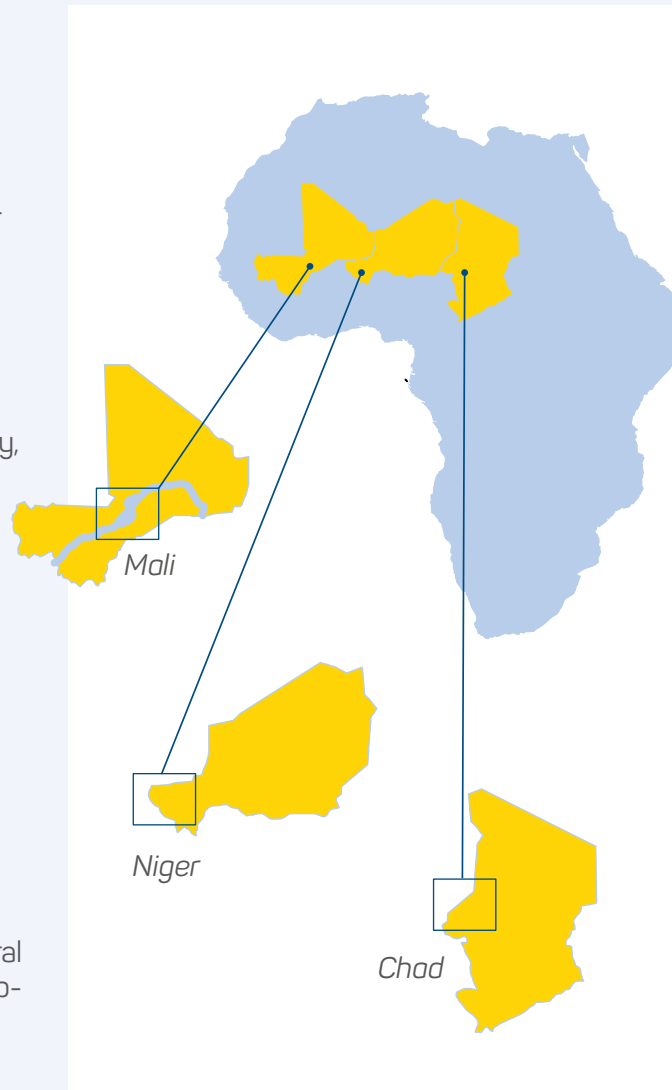
Total 5.038.785 €

EU Contribution 4.000.000 €

BMZ Contribution 1.038.785 €

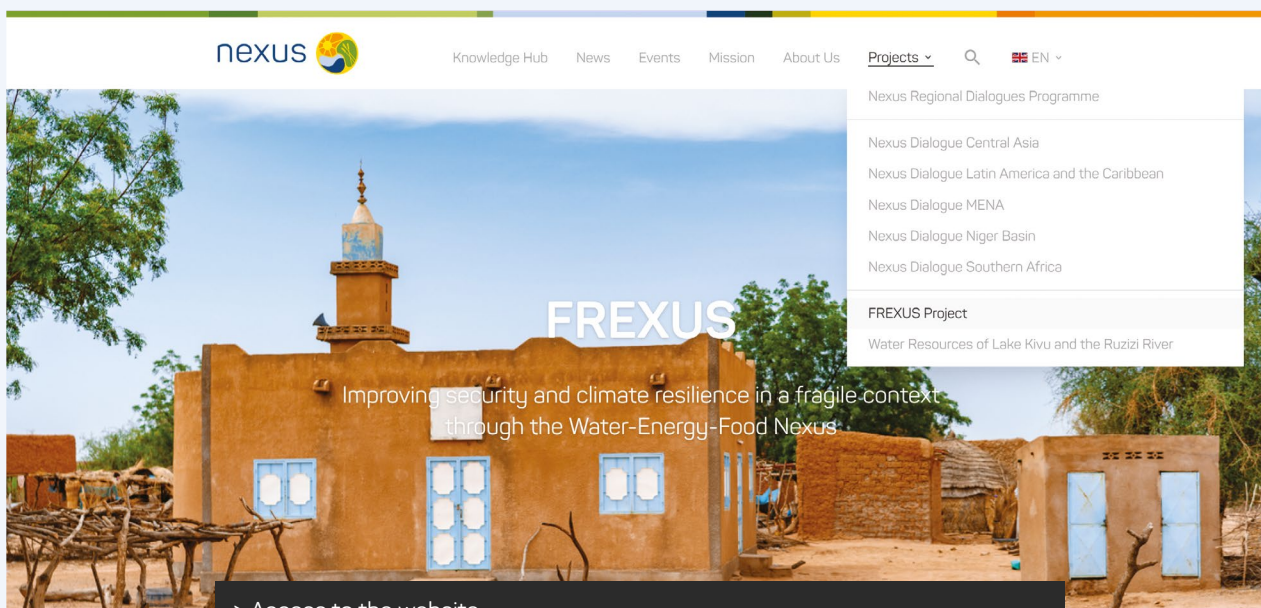
Financing

European Union (EU), DG FPI and German Federal Ministry for Economic Cooperation and Development (BMZ).



Partners

International, regional, national, and local.

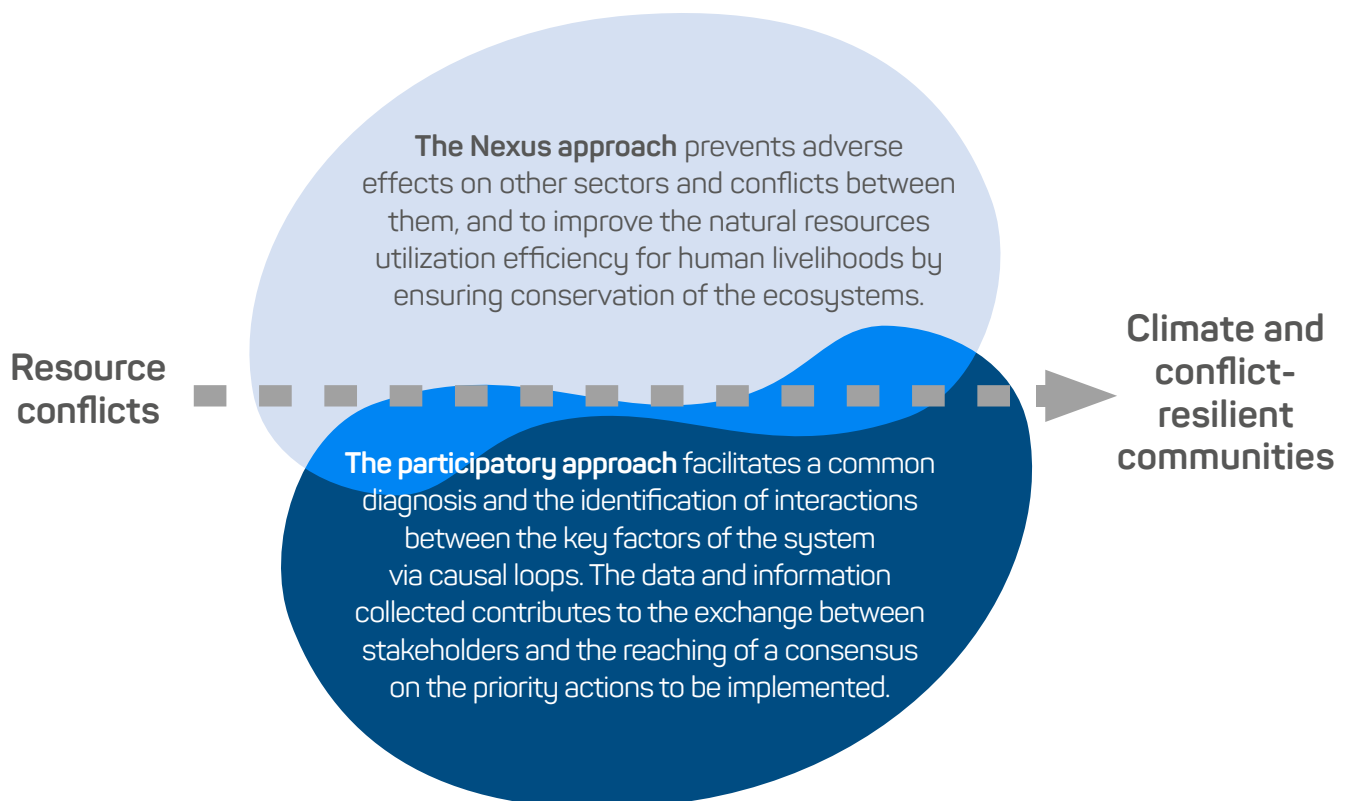


The objective of the Frexus project is to provide adequate tools to address these challenges, avoid their negative consequences and create new opportunities for peace and sustainable development in the areas of intervention.

The project covers several of the the United Nations' Sustainable Development Goals.

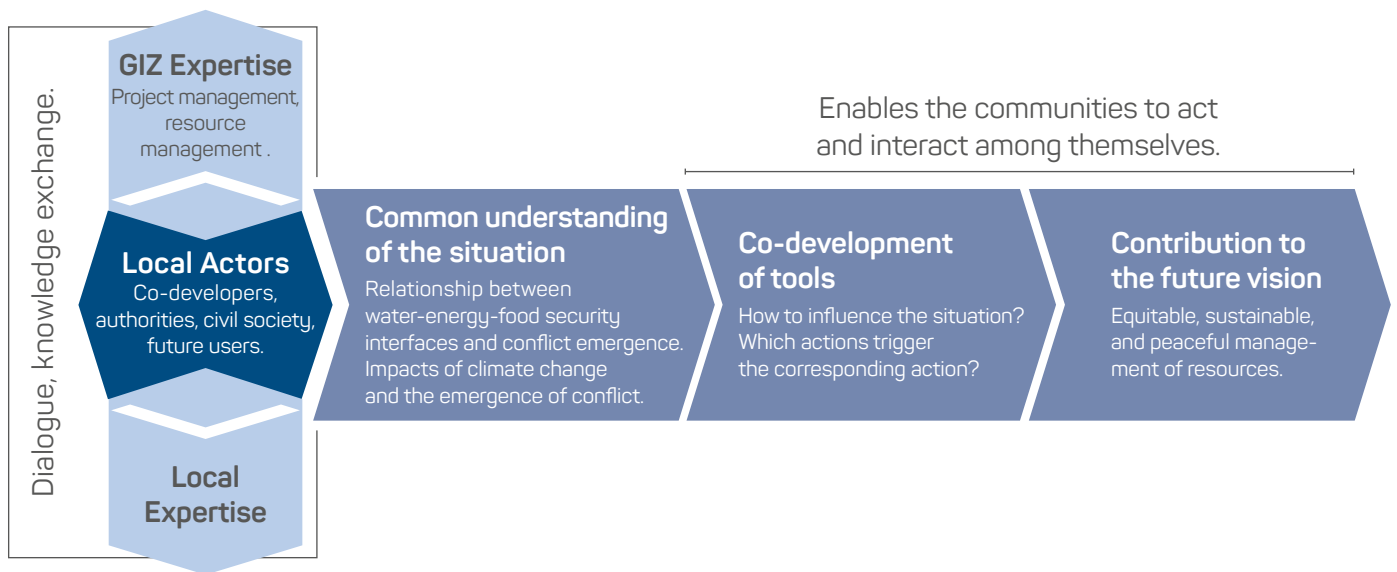


The Frexus approach combines a multisectoral approach (known as the Water-Energy-Food Security Nexus) with a participatory and inclusive approach.

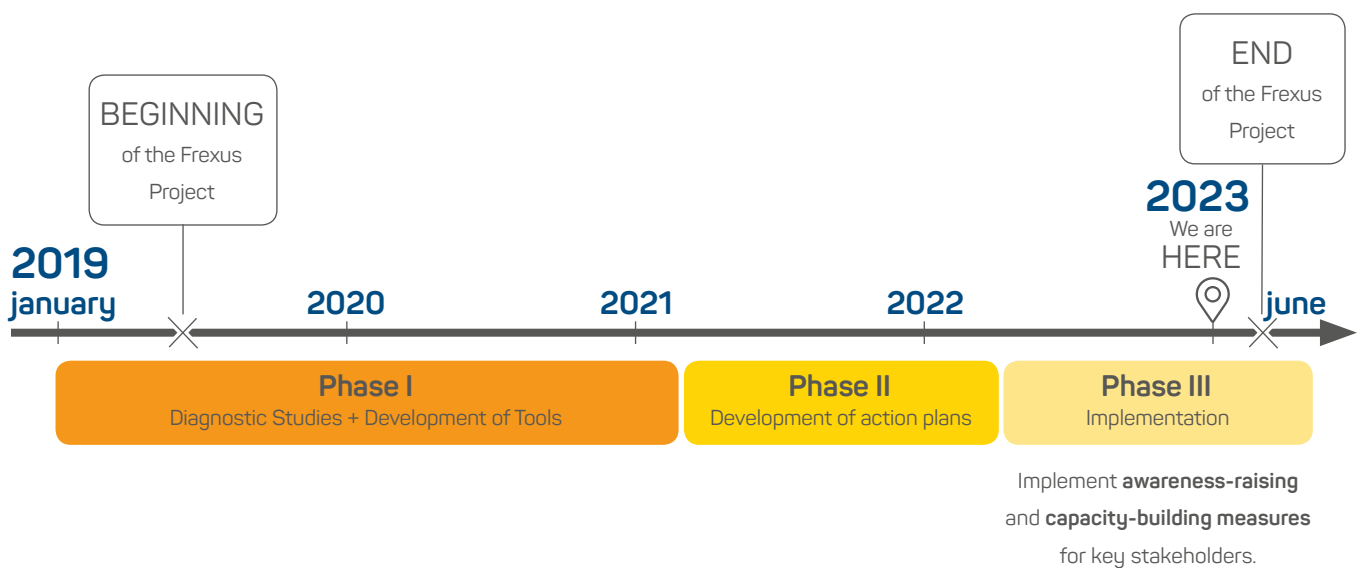


Participatory approach and its contribution to objectives

The **participatory process** is based on the definition of a common understanding of the situation. It creates a deeper understanding of the interconnection between resource scarcity and their management, impacts of climate change that affect them, and conflicts that are generated or exacerbated. Thus, **the communities are empowered to address the challenges with which they are faced**, (such as competition and conflicts over resources) and open doors to opportunities for sustainable development. Thanks to their knowledge, **communities can manage their lands, natural resources, and ecosystems in a sustainable and peaceful manner.**



Calendar



Phase I : the diagnosis

Establishing a consensus

The diagnostic phase aims to take stock of the situation at the local and global levels. Within the framework of the Water-Energy-Food Security Nexus, we focus specifically on the climate risks assessment as well as on the analysis of existing or probable conflicts.

This preliminary step must be carried out in a participatory way, in the targeted communes, with the communities: representatives of producers (farmers, breeders, fishermen ...) state administrative authorities, agents of local authorities, traditional chiefdoms, decentralized technical services, local groups, and associations (NGOs, cooperative societies, civil society: women, young people...).



Methodology

- 1.** A **climate change risk assessment** is carried out based on the data measured and collected in intervention areas, to determine the climatic vulnerability index of natural resource users and targeted social groups.
- 2.** **Conflict analysis** related to the use, access and sharing of natural resources makes it possible to identify natural resources related conflict's key factors, to know the causes and their respective correlations.
- 3.** A **participatory development of these factor's causal interdependencies** as well as their respective weight in the emergence of conflicts allow a shared vision of the situation and to identify the possibilities of mitigating or resolving local conflicts.
- 4.** **At the end of this phase**, the status and existing knowledge of the intervention area can be established. On this basis, an action plan containing various measures that can influence the causes of conflict as the result of consensus among key stakeholders can thus be developed.

These results which will be publicly released will form the basis for the next phase of the project: the development of action plans.

An example from Niger

Farray Commune, Dosso region: Validation workshop of the baseline study (August 2022).

	Identified challenges	Causes	Recommendations
Climate risks	Low water availability for agriculture	<ul style="list-style-type: none"> • Low irrigation systems efficiency • Institutional weaknesses in water resources management • High water demand for irrigation • High number of active cropland and agricultural land • Inadequate land use 	<ul style="list-style-type: none"> • Introduce good land use planning practices • Use water stress resistant crops
	Reduction of animal pastures	<ul style="list-style-type: none"> • Degradation of pastoral areas • Bushfires • Proliferation of non-palatable plant species 	<ul style="list-style-type: none"> • Apply conventions and existing texts • Develop pastoral areas
	Low water availability for animals	<ul style="list-style-type: none"> • Non-development of water reservoirs • Insufficient pastoral wells 	<ul style="list-style-type: none"> • Regulate water use • Reforestation enrichment • Create new modern water supply sources
Risks of conflict	Conflicts between natural resources user groups (farmers and herders)	<ul style="list-style-type: none"> • (Perception of) inequality in access to natural resources • Insufficient mechanisms for sustainable resources use • Ethnic lines and social divide • Feeling disadvantaged • (Perception of) decrease in exploitable natural resources • Inadequate (implementation of) state resources management • Improper and illegal land use • Inadequate management of pastoral land by customary authorities 	<ul style="list-style-type: none"> • Conduct an intervention that promotes sustainable resource management • Strengthening social cohesion between user groups • Sensitize public groups, and political and customary authorities to legal bases • Establish a pastoral infrastructure • Act in accordance with a participatory process: establish a dialogue with parties in conflict at the local level

Local and global analytical tools are developed for this diagnostic phase and following phases. They also allow the transfer of this approach to other regions, other countries, beyond the pilot areas, to provide opportunities for sustainable development.



The development of analytical tools

This participatory process is based on the definition of a common understanding of situation and natural resources and security linkages. It aims to design a tool that users can appropriate, meaning it meets users' needs by integrating the interventions they want to visualize.

The global analytic tool

It aims to present areas of ongoing conflict as well as those that may suffer from resource-related conflicts in the future.

This tool enables:

- Early identification of potential conflicts within 12 months, sufficient warning time for policymakers and other relevant actors to act.
- A sufficiently fine spatial resolution (sub-provincial or district level) implying a better understanding of local dynamics on natural resources.
- The formulation of climate-sensitive responses based on the Nexus between resources.

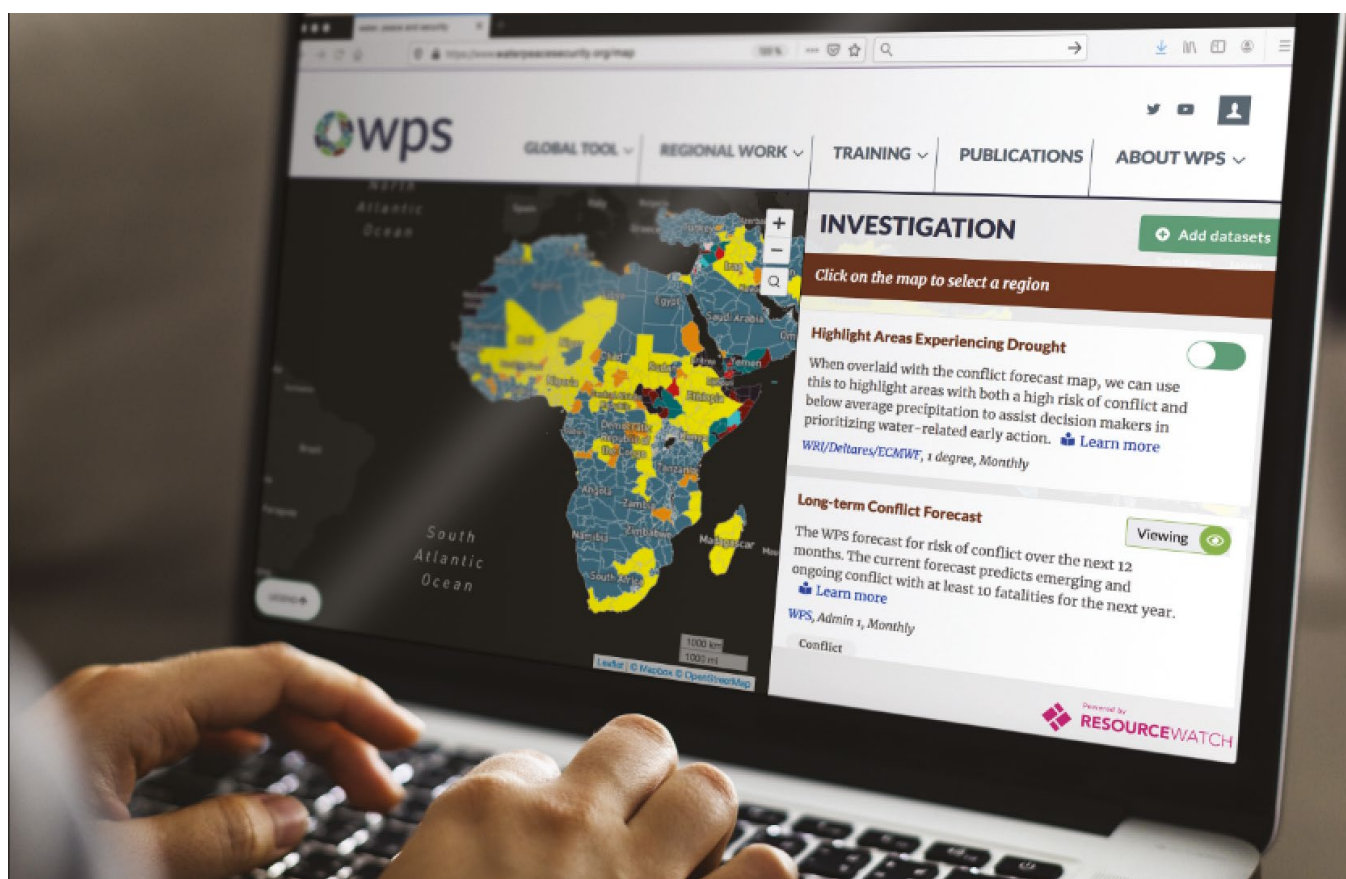
Considering the WEF approach, the following indicators proved to be the most relevant to produce forecasts and are therefore used in the current model.

Data tested in the model

Community	Percentage of male population aged 65 and over Men aged 24 to 65 Men aged 65 and over	Number of local habitants Local population density Rural/urban ratio
Conflict	Battles (number) Battles (death)	Violence against civilians (number) Violence against civilians (death)
Economy	Gross domestic product per capita	
Food	Agricultural value added to GDP (% of total GDP)	Value of rainfed crops
Health	Access to sanitation	
Water	24-month standard precipitation index anomalies Risk of river flooding	Seasonal variability Interannual variability

The results are presented in an **online tool**, including:

- Information by area as well as on different factors taken into consideration to identify conflicts.
- Over 100 pieces of contextual data organized in several broad categories that users can access to better understand the conditions in each sensitive region.



When a fragile area is identified, further analysis can be conducted using a local tool to identify the main drivers of the conflict and to develop specific responses to the problems.

The development process includes feedback loops between different steps to **jointly** identify interactions between system factors.

The local analytical tool

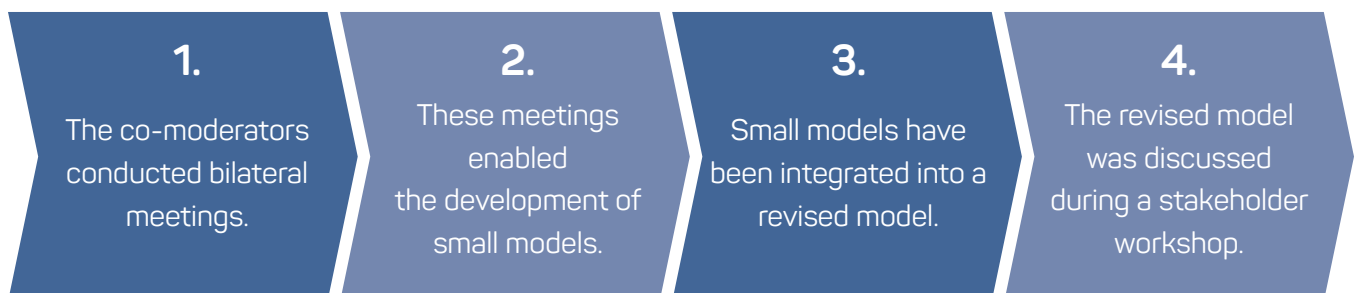
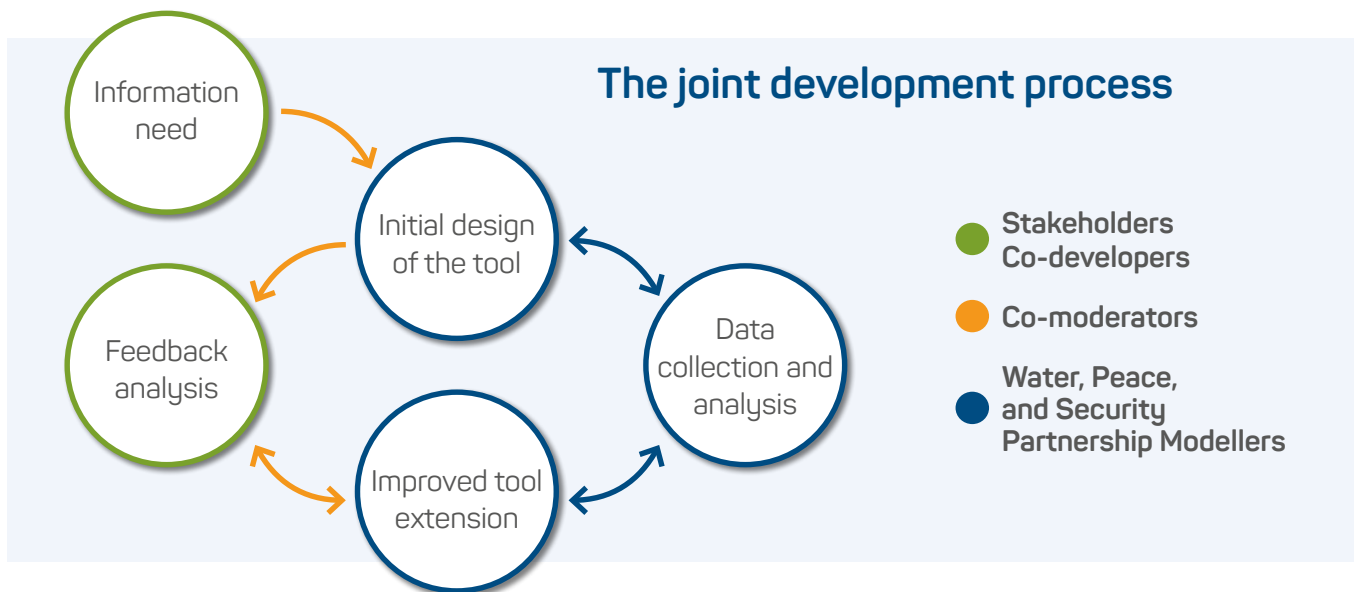
This tool is based on interconnected models including the key elements of security, water, energy, food security and related conflict risks.

It identifies and clarifies the links between conflict drivers, climate change impacts and natural resource management.

Finally, by facilitating the understanding of stakeholders in the intervention area, it is in the basis of the action plans' development.

The development of this tool is based on the Water, Peace, and Security Partnership approach, which is an iterative process jointly set up with stakeholders: **co-developers**, representatives of government authorities and civil society at national and local level. It is coordinated locally by a team of **co-moderators** trained in the preliminary phase of the project, who ensure continuous discussion with stakeholders and future users.

Thanks to this system, it is possible to better understand how WEF resources play a role in the emergence of conflict as well as to visualize the interconnections of the system.



The case of Mali

In the Inner Niger Delta area of Mali, an agent-based model was also developed to model human responses. The factors in the diagram considered most relevant were used for the development of a **dashboard** in which users can select scenarios and measures and see the impact on hydrograph, livelihoods, and likelihood of conflicts.



Dashboard, inner delta of Mali, developed through the joint development process

Benefits of the analytical tool

Through the participatory process and cross-sectoral systemic analysis, actors have a common understanding of the links between natural resources and security. Locally, the tool facilitates constructive discussion to identify the main leverage points, which constitutes one of the bases for identifying priority action plans to be applied in the intervention areas, the starting point for sustainable and peaceful management of natural resources.

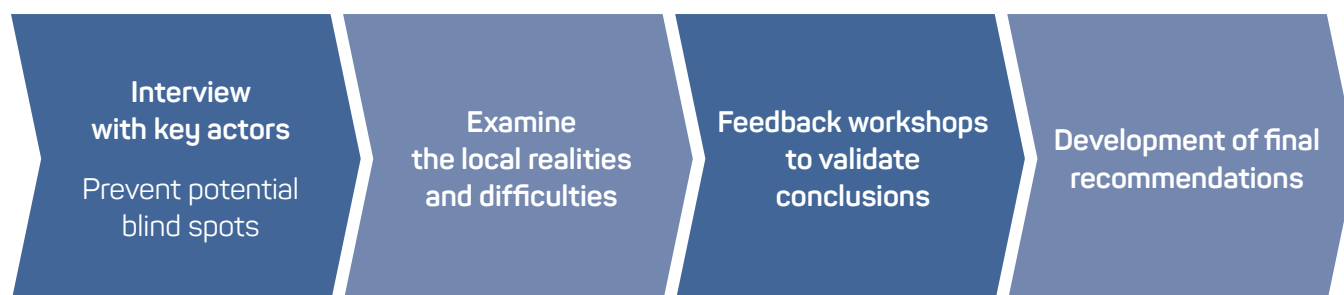
Finally, this process makes it possible to strengthen reflection on governance systems and possibly to (re)build trust between stakeholders.

Phase II : development of action plans

Based on the results of the diagnostic phase in the pilot areas (covering studies and development of tools), a dialogue around the factors of conflict is initiated with various stakeholders. The aim is to highlight the data and information of the diagnostic phase by making final recommendations, before continuing with implementation.

A participatory approach

The diagnostic studies and the presentation of the interface of the local analytical tool allow decision-makers and stakeholders involved to better understand the links between natural resource management and conflicts. Around each factor of conflicts identified during the diagnostic phase, proposals for actions are discussed in a participatory manner by the stakeholders.



Action plans

They offer a shared vision of the existing situation, allowing the identification and prioritization of action proposals deemed most influential on conflict resolution. By allowing the parameters of the implemented system to be changed, the local analytical tool is useful to test or simulate the impact of these plans.

Finally, the action plans are recorded in a local convention for the management of natural resources sensitive to conflicts and climate change.



Eau, Paix et Sécurité dans le Delta Intérieur du Niger (Mali)

Tableau de bord des politiques comme outil analytique local

[Introduction](#) [Scénarios](#) [Comparaison](#) [Carte d'inondation](#)

Un outil de dialogue et d'aide à la décision par rapport à la gestion de l'eau, des écosystèmes et des conflits

Le tableau de bord est une plateforme interactive qui permet d'explorer et de visualiser différents scénarios de développement et de gestion des ressources naturelles (plus spécifiquement le lien entre le Nexus eau-énergie-sécurité alimentaire et la sécurité) et leur impact potentiel sur la sécurité et les conflits. En tant qu'outil de dialogue et d'aide à la décision, il est développé avec le soutien du Partenariat Eau, Paix et Sécurité (WPS) et du Projet Frexus, au terme d'un processus participatif avec les acteurs locaux.

Données

Les données intégrées sont issues de modèles numériques (données hydrologiques et climatiques) et d'un modèle basé sur les agents (réponses humaines).

Le **modèle basé sur les agents** est utilisé pour simuler le comportement (simplifié) de différents acteurs dans le but d'évaluer l'impact des scénarios et des interventions sur l'échelle de risque de conflits.

Le **modèle hydrologique** comprend des aspects tels que la simulation du débit du fleuve, l'allocation de l'eau pour les différents usagers, la gestion des barrages (infrastructure hydro-agricole), et calcule également la zone inondée dans le DIN.

Pour une description détaillée, veuillez consulter le [manuel d'utilisation](#) ou l'[illustration des données et modèles](#)



En période des pluies, trois groupes se partagent les ressources naturelles apportées par les zones inondées.

Compétition pour les ressources dans le Delta Intérieur du Niger

Le Delta Intérieur du Niger est un écosystème unique et essentiel aux activités économiques telles que la pêche, l'élevage et l'agriculture. Les moyens de subsistance sont déterminés par les rythmes des saisons des pluies, la montée du fleuve Niger et les mouvements de transhumance. Des facteurs naturels et sociaux (gestion politique, infrastructure hydro-agricole, développement démographique...) impactent la disponibilité des services écosystémiques, renforcé par des changements de plus en plus marqués du climat. C'est dans ce contexte que la compétition pour l'accès à l'eau et aux pâturages a donné lieu à des conflits et peut exacerber les tensions existantes entre les différentes communautés.

Scénarios et interventions

Comparaison

Carte d'inondation



Avec le soutien de: 

Mali's Online Local Analytical tool

The dialogue process in Niger took place in Dosso during 2022. Nine dialogue sessions were organised in three municipalities of intervention of the Frexus project (Farray, Falmaye and Sambera) between February and September 2022. They have made it possible to develop Nexus action plans with priority measures to be implemented to strengthen the security and climate resilience of communities.



Phase III : implementation



The implementation of effective and accepted action plans by the community represents the next step in the process. The Frexus project will finance at least one of the priority actions decided by stakeholders and included in the action plans. The implementation plan for the local natural resources management convention with the action plan will be established in accordance with the national and local policies and development plans in force in the intervention areas of the project.

Challenges

In the current global and local context, various phases of the Frexus project face many challenges.

Deterioration of the security situation

Increased risk of fragmentation - Crisis of confidence between the population and representatives of the State - Presence of violent radical groups.

COVID-19

Difficulty in bringing stakeholders together during certain periods and travelling.

Limited time and resistance to process

Some actors are reluctant to participate in questioning conflicts - Different degrees of acceptability by local stakeholders - Local arbitration of measures deemed “effective”.

Do no harm

Concrete measures can create tension or even conflicts in the intervention area.

Results

The Frexus project is based on a multisectoral and participatory approach that allows local actors to act and interact with each other. It is based on dialogue, knowledge exchange and cooperation.

Joint analysis of conflicts and climate risks aims to create a common understanding, not only of how the system works, but also how to influence it. This provides a better understanding of how resources related to the Water-Energy-Food Security (WEF) Nexus play a role in the emergence or aggravation of conflicts.

The processes described allow communities to respond appropriately and continue their work even after the end of the project. This objective will be achieved through conflict and climate-sensitive land, natural resource, and ecosystem management in targeted communities, considering the needs of vulnerable groups.



Resources

[NRP/FREXUS website](#)

Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), 2022: **Frexus Factsheet**.
Improve climate security and resilience in a fragile context thanks to interfaces of water-food-energy security.

[IPPC report](#)

IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: Climate Change 2022 : Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–33, doi:10.1017/9781009325844.001.

Water, Peace and Security Partnership, 2022

[Global Tool](#).

[Mali dashboard](#)

Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), 2022: Water, Peace and Security in the Delta Interior of Niger (Mali) – Policy **dashboard** as a local analytical tool. Water, Peace and Security Partnership, 2022: **Global Tool Methodology**.

ND-GAIN index

Notre Dame Global Adaption Initiative, University of Notre Dame, 2022 : **Country Index**.

[Niger conflict analysis](#)

Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), 2021: Conflicts related to the use, access and distribution of natural resources in Dosso, Niger.

WPS website

Water, Peace and Security Partnership, 2022 : **Frexus Project**.

Frexus Booklet A review of the participatory approach

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