

The Nubian Vault Association

ANNUAL REPORT

2019-2020



a programme supported by
UN HABITAT
FOR A BETTER URBAN FUTURE





Cover photo: NV site in Benin

Photo p. 2: NV chicken house in Burkina Faso

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Editorial

Some things that are obvious are taking awhile to gain a foothold...

Sahelian populations have an urgent need for adapted architectural solutions that boost their resilience to economic and demographic trends and to climate and environmental changes in a lasting way.

How can we reasonably expect to achieve sustainable development in these regions facing known challenges without incorporating the issues of housing for as many as possible, as well as evolutions in the building sector?

These issues are both central and cross-cutting.

- They are central because, in these climates which are amongst the hottest in the world, we must offer families housing – and therefore living – conditions that strengthen their daily well-being, their own stabilization efforts and their efforts to adapt and to be resilient.
- They are cross-cutting because the building sector is closely linked to employment and economic consolidation, evolutions in the fields of health, education and food security, and cultural and societal structures – while also falling under the umbrella of climate and environmental emergencies.

However, while considerable efforts, which some will undoubtedly consider insufficient, are underway to support Sahelian countries' abilities to respond to the challenges they face, the question of adapted housing and transitions in the building sector remain at best one of political rhetoric and at worst an orphan topic.

At the same time, proven solutions and efficient dissemination methods are finally available.

The eco-construction techniques offered by AVN and its partners are, after more than 20 years of iterative R&D, widely proven, approved of and recognized. Without providing a global solution to all the questions raised by the construction industry, they already offer a considerable range of responses to both rural and urban and private and community expectations.

AVN has combined these architectural alternatives with an efficient approach to the widespread distribution thereof. As far as development goes, it is not a "good idea" that matters so much as the measures that allow that idea to be rapidly distributed and to favour its adoption and uptake by beneficiary communities. Thus the use of market dynamics as the main vector for expanded dissemination has proven useful and, while more than 700 eco-construction buildings were constructed in 2020, another 1,000 are expected in West Africa in 2022!

This is significant and unique... and yet, it's just a drop in an entire ocean of need.

These remarkable and growing results will nevertheless be worthless if stakeholders in both the South and North – political actors and those from civil society, private operators and those working in the field of development, decision-makers, donors and project owners – do not incorporate the essential and urgent issues linked to adapted housing into their visions, focus, agendas, projects and programmes.

Given the multiple challenges facing modern Africa and the problems resulting from climate change, and under the cheerful care of Sahelian women, one thing is clear...

Zinc roofing for all is not a solution and the emergence of a resilient and sustainable eco-construction sector is one of the cornerstones of a trouble-free future. Let us prepare for it together!

Thomas Granier
Co-founder and Director General of AVN





1 - The Programme

Impacts & Key Figures ▶ p. 7

Programme History ▶ p. 9

**Intervention Strategy
and Functional Logic** ▶ p. 10

Since 2000, the goal of the Nubian Vault Association (AVN) has been to develop a market for sustainable housing in West Africa, providing vulnerable populations access to affordable housing that is comfortable and well-adapted to climate change. It has also aimed to create green jobs, strengthen economies at all levels and develop an "adapted housing" sector.

At the centre of this programme lies an architectural concept that is both ancestral and innovative, based on local materials, economies and knowledge: **the Nubian Vault technique.**

Impacts & Key Figures



Decent housing Climate adaptation

- 44,700 beneficiaries living or working in an NV
- 4,250 worksites - 145,500 m² completed since the start of the programme
- 713 private and community buildings built in 2019-2020



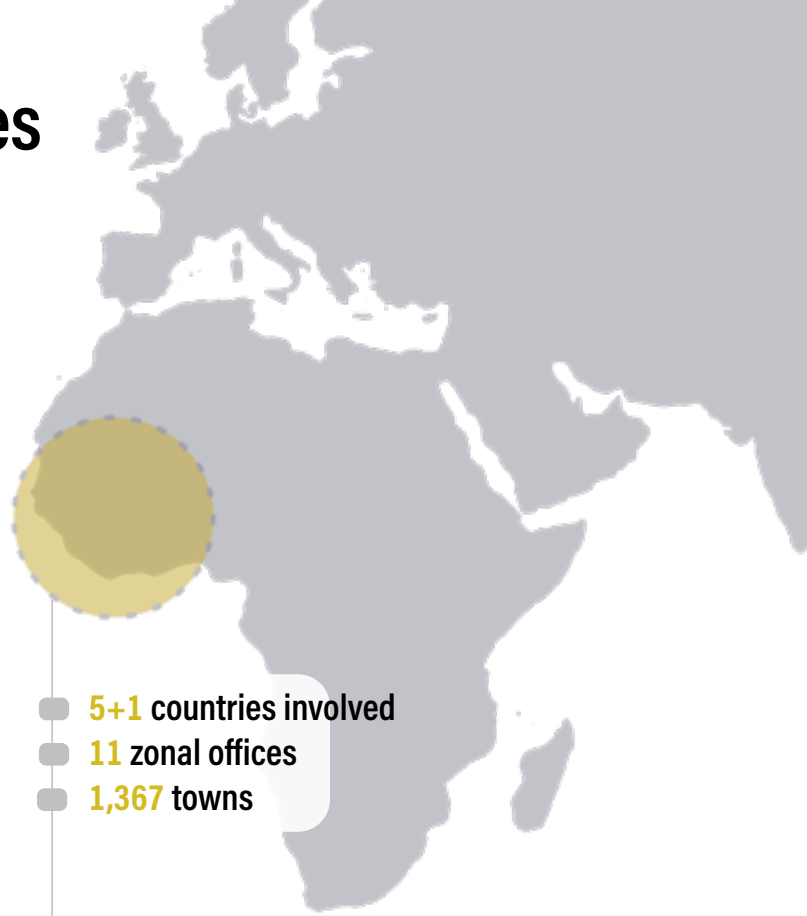
Vocational training Green jobs

- 949 active apprentices, masons, artisans and entrepreneurs including
- 383 apprentices who began their training this season
- 5,000 man-months worked in 2019/2020



Climate mitigation Environment

- 0 trees felled for building purposes
- 119,300 tons CO₂ eq. and 3,700 MWh potentially saved since the start of the programme



- 5+1 countries involved
- 11 zonal offices
- 1,367 towns

21% average annual market growth (over the last 10 years)

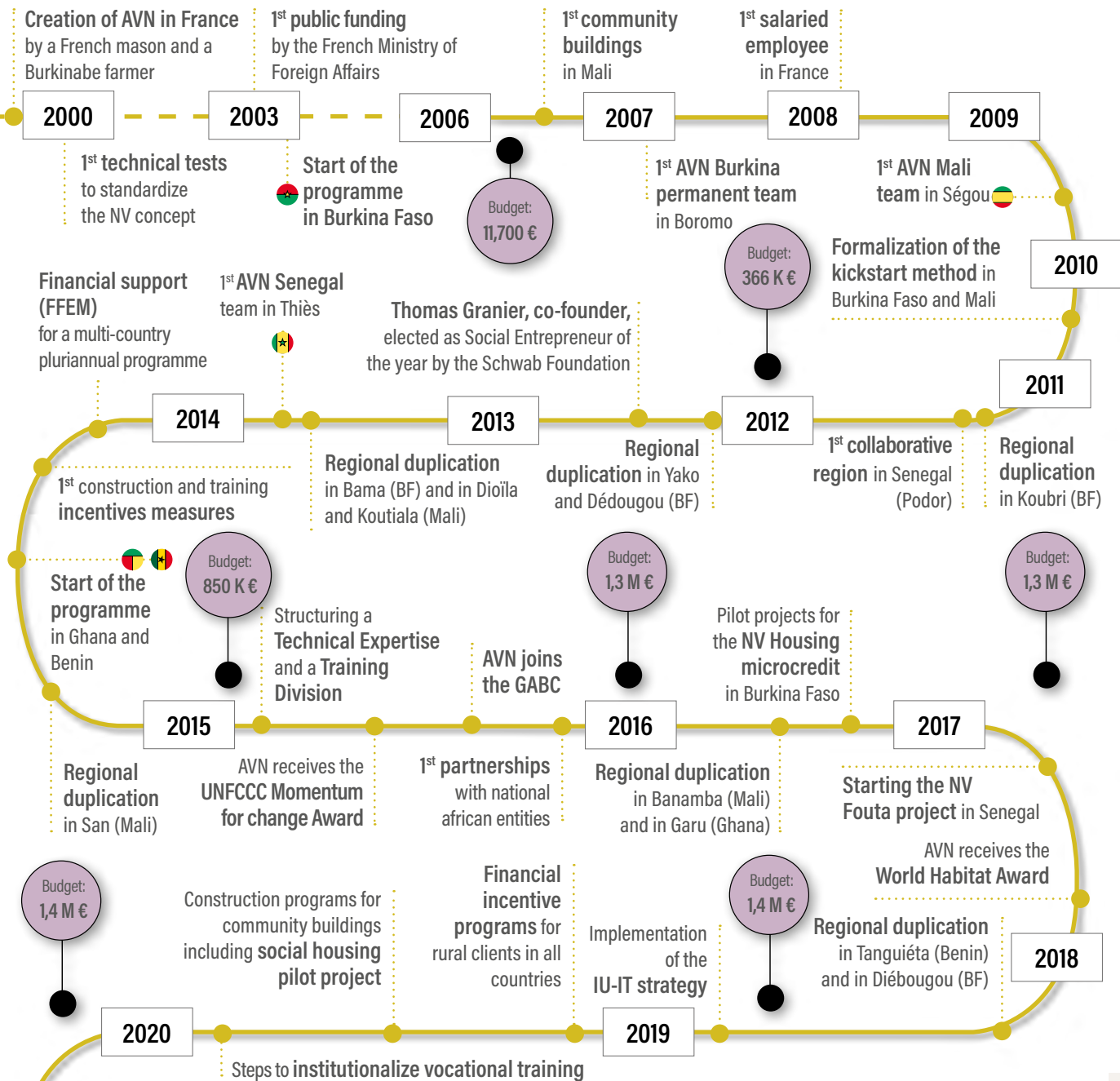


Local development

- 4,2 million euros generated on the local market
- 25 Operational Partners have incorporated outreach on NVs into their activities



■ Programme History



■ Intervention strategy and operational logic

AVN's programme in Sahelian Africa takes a market-based approach to disseminating an adapted housing solution, that of Nubian Vaults (NVs).

This architectural concept uses only local materials and is an alternative to current methods of construction that are largely ill-adapted (imported materials, primarily zinc roofing - poor thermal performance and not very durable - economic and environmental inadequacy, etc.). It meets both the expectations of private/community rural clients and the needs of public/urban clients.

Since the launch of the programme in 2000, the market for Nubian Vault buildings has demonstrated its capacity for growth. The market development methodology has gradually expanded and become more focused through contact with partners and the situation on the ground. Now mature, it is standardized and simplified. It makes good use of tested operating procedures, combining those that have

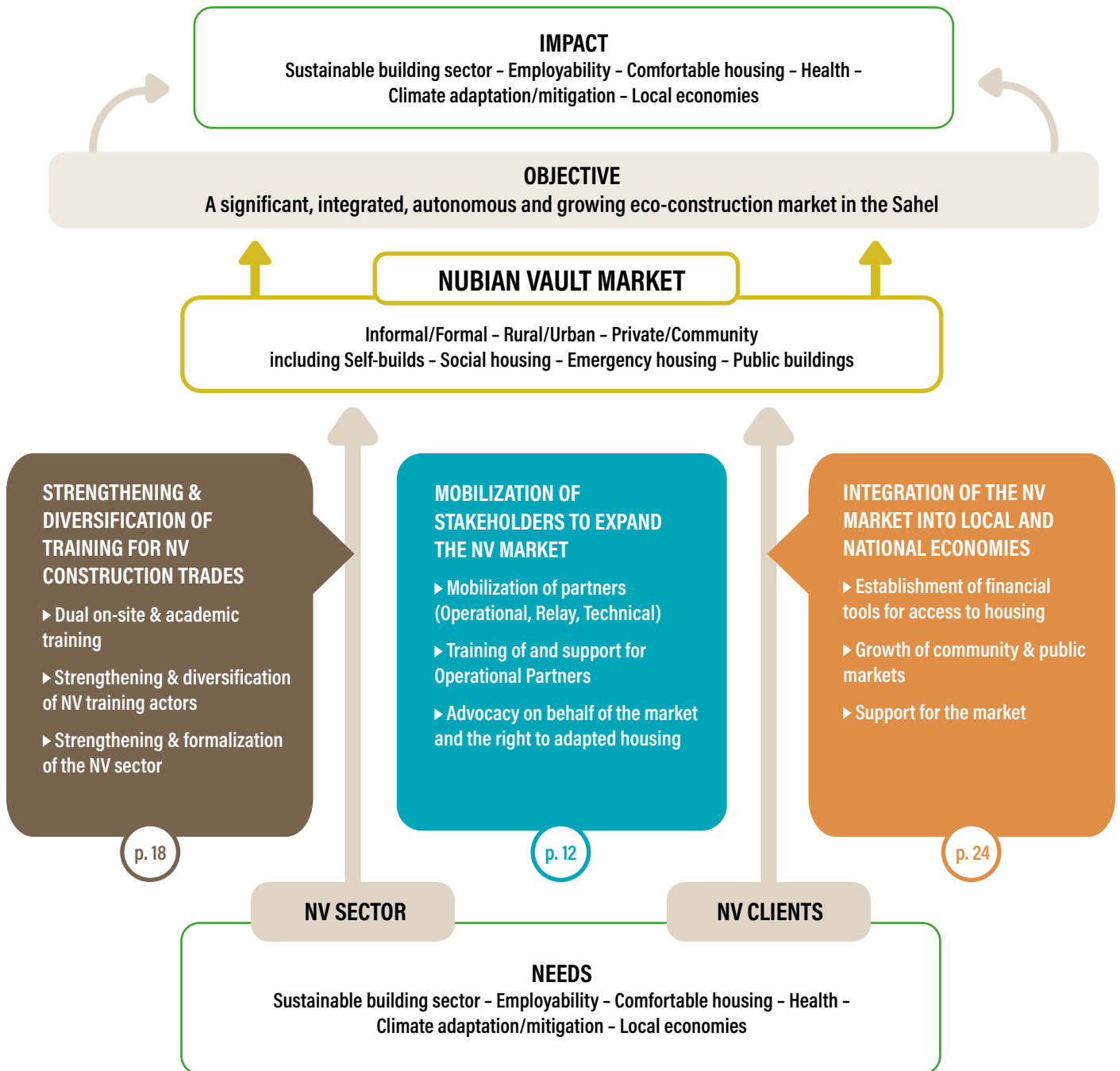
proven to be most efficient and that contribute most to the rapid development of the NV market, driven by actors acting on different territorial and thematic levels.

This new strategy, which was redefined and optimized in 2018, thus clarifying how to upscale the programme and its results, is based on three complementary levers:

- the mobilization of all stakeholders in disseminating the NV market and ensuring its perpetuation (Operational Partners, Relay Partners including political actors, Technical Partners, Financial Partners);
- the implementation, strengthening and diversification of training for jobs in the NV construction sector, in order to ensure an autonomous green professional sector;
- the integration and stimulation of the NV market in local and national economies.



NV house and beneficiaries in Diakré (Mauritania).





Preparatory meeting for the project financed by ENABEL with the Operational Partner APAGAN-B in Burkina Faso.

1 - Transfer of the NV market dissemination strategy to Operational Partners and mobilization of all stakeholders necessary for its longevity

A group of partners, mobilized on two specific territorial levels (Implementation Units, IU, and Implementation Territories, IT), incorporate responses to the housing challenge into their missions. Amongst them, Operational Partners assimilate the territorial dissemination methodology for the NV market (IT/IT methodology). AVN trains them and supports them in implementing activities by boosting this transfer of competencies with adapted methodological resources.

This transfer allows for the proliferation of NV market clusters and the associated benefits; the goal is to

eventually ensure the autonomy of the implementation zones led by these Operational Partners and hence the viral dissemination of NVs.

These actions in the field are reinforced by advocacy aimed at political and development actors at all geographical levels, to implicate multiple stakeholders to catalyse the positive transformation of the sector and the resulting transversal impacts.

This part of the programme constitutes the core of AVN's strategic evolution and the main lever to scaling up the spread of the NV market.

Mobilization of partners

>> Awareness is raised with partners and they are mobilized in order to become key actors in the emergence and sustainability of the NV eco-construction sector in their intervention zones.

■ Activities carried out this season

The NV territorial dissemination methodology as proposed by AVN has been favourably received by actors with whom awareness has been raised. Whether civil society actors or institutional actors, they have been quickly persuaded by the cross-cutting approach taken and the capacity it provides to respond to the various challenges their regions face: those of employment, economic development, improving living standards, climate change mitigation/adaptation, etc.

At territorial level (IT), there are 11 umbrella organizations of farmers' groups that are involved as Operational Partners (OP-ITs). These are:

- **25% namely 3 OP-ITs that ensured the direct management of activities in their territories:** in Burkina Faso, the National Federation of NAAM groups (FNGN) and in Benin, the Union of Pendjari Villagers' Associations for the Management of Wildlife Reserves (AVIGREF-P) and the Ouaké Communal Union of Cooperatives for Cashew Nut Producers (UCCPA-Ouaké);
- **8 OP-ITs that monitored AVN activities and participated in seeking out funding** in order to be able to implement territorial dissemination activities for the NV market in their regions starting next season.

At communal level (IUs), **14 local bodies (unions, farmers' groups and artisans' groups)** have committed to carrying out activities, including:

- **80% namely 11 OP-IUs mobilized within the three OP-IT umbrella organizations** with ongoing projects in Burkina Faso and Benin;
- **3 new OP-IUs identified** and mobilized as part of the projects directly implemented by AVN.



Results in Brief

40 awareness-raising/mobilization meetings with local authorities (as Relay Partners) and civil society organizations (as potential Operational Partners)

25 Operational Partners (OPs) mobilized of whom 60% are direct transfers

About 40 Relay Partners and 10 Technical Partners mobilized

Training of and support for Operational Partners

>> Partner organizations receive training and support in implementing the NV market dissemination methodology.

■ Activities carried out this season

AVN has optimized the activities and operating methods used over the past 20 years, leading to a complete, efficient, simple and standardized methodology that is easily transferable to local development actors, therefore providing them with new expertise and capacity building.

The methodological transfer to Operational Partners has led AVN:

- to move from a position as direct operator to one of training operators for on-the-ground teams,
- to adapt the information collection and sharing methods to the different levels of geographical and thematic intervention,
- to plan support for AVN thematic contact points depending on how projects are unfolding and on the needs of each partner.

The implementation of the first projects led by Operational Partners has necessitated the **rapid creation of training modules for methodological activities**. This body of training modules has been successfully tested under the project "Setting up of an environment-friendly habitat construction sector in the Nord region of Burkina Faso", financed by the Walloon Air and Climate Agency (AWAC), and the project "A bioclimatic construction sector for youth employment in North Benin", financed by the European Union (EU). Each of these involves 7 Operational Partners.

Support for OPs by AVN teams in the field remained strong throughout the first half of the season to ensure their training *in situ* and to hone the proposed monitoring and communication methods. That support was also adapted depending on the degree of autonomy of the actors involved, while maintaining a frequent exchange of information. This guaranteed proper implementation of activities as well as the gradual empowerment of the OPs.



Launch of the project financed by the European Union and carried by the Operational Partners AVIGREF and UCCPA in Benin.

In terms of fundraising, numerous dossiers have been submitted with the OPs and certain Relay Partners, in order to guarantee the continuity of ongoing projects and the launch of projects for new OPs.

Development meetings were held at the end of this first year of activity implementation for each project or territory, so as to share difficulties and successes and to set out ways to improve. Over the coming seasons, the plan is to bring together the OPs from different regions and countries within a **Sahelian Network of NV promoters**, thus allowing deployment practices to be shared and these practices to be continually improved upon.

Results in Brief

54 staff from Operational Partners trained and supported

15 Operational and Relay Partners received fundraising support



The AVN-Benin Training Officer assists the OPs in the administrative management of the project.

"Our cooperation with AVN as an Operational Partner began in November 2019. As an umbrella organization for cashew nut producers in Ouaké commune, we've mobilized cooperatives in the commune's six arrondissements, two of which are currently active in the programme financed by the European Union. Support from AVN has allowed us to be better organized and to expand our areas of intervention to the population in general and to cashew producers in particular.

Spreading AVN's programme has helped us grasp the true meaning of inclusive development. Through this programme, young farmers (who are often not really taken into account in projects and programmes) are now finding employment opportunities (NV masons) that do not require an academic degree. This employment also

helps preserve the environment and strengthen the rural economy.

In addition, the training and support provided by AVN is allowing us to become more and more autonomous in terms of mobilizing and monitoring the training of local masons, as well as handing out financial incentives to potential clients. These solutions work on behalf of vulnerable people. AVN's programme gives us the opportunity to contribute to the development of our society, and we hope to find the necessary financing to expand these activities to the other four arrondissements in Ouaké."

Yaya ALI YACOUBOU, contact point for UCCPA-Ouaké, an AVN Operational Partner in Benin

Advocacy on behalf of the market and the right to adapted housing

>> *Countries and local authorities have incorporated adapted housing issues and AVN's methodology into their development plans.*

>> *Organizations carry out joint advocacy, in which women and farmers play a central role.*

■ Activities carried out this season

Advocacy at local, regional and national levels is a central component of the approach to developing the NV market. It aims at the expanded take-up of the NV concept and at a manifold and cross-cutting impact of this dissemination; it also targets public and development actors at all levels of intervention (civil society, international NGOs, political actors and their cooperation partners).

AVN has created or improved upon material that supports discussion on the many issues surrounding adapted housing and on the cross-cutting responses provided by AVN's technical and methodological proposals to the challenges of housing, economic development, dual and inclusive vocational training, climate resilience, stabilizing territories and re-housing displaced populations. These last two issues are becoming more and more important in Burkina Faso and Mali. This support material helps with both advocacy and fundraising.

At the local level, the awareness raising that has been carried out with regional councils and ministerial agencies over the past several years led to the implementation of two projects this season, financed by the Burkinabe Ministry of Youth and Promotion of Youth Entrepreneurship and the Malian Office for Housing, and to the approval of a project by the Boucle du Mouhoun Regional Council (Burkina Faso), which will be launched next season. **Cooperation actors (Belgian, Swiss, German and European actors and international NGOs) are becoming more and more receptive to the programme's approach.** They relay this interest to their local institutional partners and/or take on board AVN's proposals to meet the priority objectives of the development programmes they lead directly. Next season, several projects discussed this season will be added to those aimed at stabilizing territories, vocational training, programmes for community buildings and those used for production, housing of displaced persons, strengthening of host communities, etc.



Awareness meeting with COFERSA in Mali.

This season, the first activities aimed at shaping advocacy that focuses on "the right to decent and resilient housing for as many as possible in the Sahel" were carried out. These were led by civil society organization leaders (in particular of women's associations and farmers' groups).

Results in Brief

4 local authorities and state actors have incorporated NVs into their development projects

10 actors from partner co-operators
Launching of an advocacy campaign
led by local actors

"The Nubian Vault is a building model that counters the growing lack of timber resources such as wood, straw and posts. Buildings made of earth are cool, well insulated, easy to build and made from available materials. This use of the earth reduces consumption of wood in the largely deforested Sahelian regions. (...) Mali is a Sahelian, almost desert country where wood is very rare. We live in an area where wood is rare and concrete is very expensive."

Boureïma Camara, Director General of the Agency for Environment and Sustainable Development (AEED) in Mali

Excerpts taken from the article "Mali: Eco-friendly homes against deforestation" by Lydie Hountondji, May 2020, Mediaterrre.



Right to decent and resilient housing for as many as possible in the Sahel

Living conditions of Sahelian populations, the state of the current building stock, demographic realities and rapid climate change fully justify the emergence of this right to adapted housing in Sahelian Africa, which as of today is not specifically referred to on any agenda, even though it determines how millions of families live and even though it falls under several SDGs (1-4-8-9-10-11-12-15).

While AVN employees were until now the main people carrying out advocacy on behalf of the organization, especially in the North, it is now essential that those efforts be taken up and expressed by those who are primarily concerned by the issue and who are convinced of the legitimacy of this right. This approach was launched with the mobilization of women leaders in each of the countries of intervention; they represent several hundred and some, even thousands of women farmers (COFERSA, CAFO, etc.). Next season workshops will be held that bring together these leaders to:

- collectively set out the arguments behind the advocacy efforts, based on their analyses and claims,
- determine the action's targets and the most appropriate vectors of communication,
- co-create communication support material.



NV construction site in Benin.

2 - Implement, strengthen and diversify training for Nubian Vault building trades

Technical training modules for apprentices, masons and artisans are delivered both on-site and in classroom sessions (dual training). In addition, training modules on worksite definition and management and on entrepreneurship strengthen the ability of NV chief masons and entrepreneurs to develop their local and national markets.

These training activities are possible thanks to the involvement of and close cooperation with various actors from the vocational training sector - mostly

Trainer Masons, as well as formal training actors (VTCs, ministries, etc.), with whom pilot projects are developed and implemented.

To ensure the longevity of NV market dissemination, AVN promotes structuring, diversifying and formalizing a professional sector for green construction (masons, technicians, architects, firms, consultants) and bringing together some of these actors. This approach is supplemented by the development and optimization of a technical body of resources available to all actors.

Dual and inclusive technical training for construction sector actors

>> Trainees are chosen and benefit from technical and business training over a period of several years, provided by Trainer Masons.

■ Activities carried out this season

The training methodology offered to construction actors is dual and inclusive and falls into the category of informal training: 80% of the learning takes place on actual worksites and 20% in the classroom, with training material adapted for an audience with little education. The target trainees are young people from rural areas with a basis in traditional masonry and for whom this vocational training, adapted to their profile, represents prospects for a job and additional income during the agricultural off-season.

70% of the body of training modules has been completed and optimized, prioritizing the materials necessary for the season's activities. Particular attention has been paid to raising awareness with and the contracting of trainees in order to guarantee success in choosing trainees, which is essential for the efficiency of training pathways that last several years.



"I began to work as an NV mason in 2004, and this opportunity has provided me with many advantages. The first was being able to buy myself a

bicycle to make getting around easier. I was also able to buy myself some cattle and a wagon, which improved my work in the fields. I then built my own NV house, and I got married. Today, thanks to my work, I cover my expenses and those of my family."

Souleymane Mien, NV mason in Burkina Faso

Nearly 460 trainees have followed one or several modules, either at a worksite or in the classroom, and have benefitted from having their technical skills assessed and recorded in their **Trainee Progress Booklet** by their Trainer Masons.

Most training modules took place at a worksite, with about one hundred such modules taught. 55 modules allowed trainees to build their own NV homes to serve as a model, with assistance from members of their group and from a Trainer Mason (GBT-AH). The other half were split between Reinforcement on Building Site - First Clients modules (RB-FC) and enhancement modules at community building sites (TMSS).

Nearly 40 technical academic modules allowed Trainer Masons to review techniques tried at the building sites with trainees, through the use of the Mason's Manual, a core document of the "NV Technical Standards" and one that is adapted to an audience with little education.

16 management and business modules (**Defining and Managing a Building Site, Drawing up Estimates**) helped strengthen trainee artisans' and masons' ability to organize and manage worksites, as well as the business side of things and marketing.

Results in Brief

460 trainees, including 150 new trainees

8,200 man-days of on-site training

1,300 man-days of classroom training

Strengthening and diversifying NV training actors

>> *Training actors are themselves trained about the transfer of NV knowledge and the implementation of the teaching methodology for NV construction trades.*

>> *Pilot pedagogical courses are drawn up and implemented with formal vocational training actors and Trainer Masons.*

■ Activités réalisées cette saison

The Trainer Masons (TMs) are central to transferring NV knowledge. Recognized for their technical and pedagogical skills, they are supported by AVN's Training Team in implementing and supervising the training of trainees and the institutionalization of training, which is ongoing with other actors (VTCs, ministries, etc.).

This season, all of the Trainer Masons (TMs) were mobilized to carry out training activities, both on-site and in the classroom, although the training course meant for them was not able to be provided. This objective will be a priority next season in order to significantly improve the number of operational TMs, their skills and their capacity to act, in line with the sector's training needs and the growth and diversification of demand.



Training session within the framework of the PISSCA project in Garu (Ghana).

The mobilization of other vocational training stakeholders as well as the preparation of pilot projects were fields of particular focus this season, motivated by:

- **the need to strengthen the capacities of those working in the NV building sector**, so that they can gain a foothold in the more demanding sectors of the market on the technical side of things and in terms of formalization. To achieve this, it is useful to draw on vocational training actors and measures that provide skills and resources to supplement AVN's approach;
- **a framework favourable to the reform of vocational training** throughout the sub-region, incorporating dual (including informal) and inclusive (young people from vulnerable backgrounds) learning, such as that which is at the heart of AVN's proposed training methodology. These frameworks are at times still very general, and are still struggling to find their place. AVN's proposals provide innovations that help achieve the objectives aimed at by these reforms, notably through associating the growth of the offer (trained masons) with the growth in demand for NV constructions, at the same time providing a professional career for young trained NV masons.



"The time spent on training is very important, and I take the time to do it properly. I try to reproduce as best I can the pedagogical advice given during the annual Masons' Congresses. I always say that if I train a lot of people well, I could get work

for a lot of masons. Thus far, at least 12 of my trainees have become artisans, and I'm very proud of them.

The creation of the Trainee Evolution Booklet is an opportunity for training: apprentices know where they are in their journey and that pushes them to develop their capabilities."

David Koulou, NV Trainer Mason in Burkina Faso

Two projects under preparation in Burkina Faso (one with PAFPA, the other with Expertise France) helped **delineate and co-develop the approach to institutionalizing NV training and certification of that training and of the skills involved in NV trades**, with new vocational training partners (ministries and Vocational Training Centres [VTCs]).

This significant change will allow, with support from Trainer Masons and joined by the VTCs, **certifications to be issued via two complementary methods**: through the Validation of Prior Experience (VAE) and/or by following a dual apprenticeship training programme, with time spent learning both at worksites and in the classroom (which could be carried out by VTCs).

Results in Brief

40 operational NV Trainer Masons

2 VTCs mobilized

Mason's Certificate of Basic Qualifications validated in Burkina Faso



Technical training academy in Mali.

Strengthening and formalization of the NV sector

>> *New actors (building technicians, consultancy firms, formal companies, etc.) are involved in the NV eco-construction sector and are facilitating the NV market by relying on the technical documents put together by AVN and its technical partners.*

■ Activities carried out this season

The growth of demand for NVs on the community, urban and formal markets has created a pressing need for the emergence and training of new actors in the sector who are able to carry out site management and support and who can respond to formal calls for tender, etc.

The training pathways for technicians are subject to a general methodological definition and will be offered in the form of modules starting next season, so as to be available, amongst others, to interning technicians who recently joined AVN's Technical Expertise Team (TET) and to service providers who will be recruited by GERES in Mali, in order to meet the needs for supervision on NV worksites (4 NV Electrified Activity Areas to be built in 2021).



NV construction site of one of the 5 NV buildings for social housing (pilot project) financed by the OMH in Ségou, a project supported by the AVN TET.

The possibility of developing training pathways for building technicians and/or engineers, alongside the proposals made to VTCs, was discussed in Ouagadougou with the school ESUP-J and in Ghana with the Bolgatanga Polytechnic University. The health crisis led to the exchanges with these schools being suspended, so how those partnerships would look will have to be discussed during the 2020/2021 season.

The involvement of companies took place as part of the institutional construction of buildings, in particular in Burkina Faso, at the worksites of two preschool centres financed by the mayor's office of Ouagadougou, and in Senegal, as part of a project to develop the institutional market that has been ongoing in Fouta since 2017, with the NGO Le Partenariat.

At the end of the season, in-depth reflections were held with GERES in Mali about establishing a **functional dynamic (relationship, organization, decisions) between NV chief masons from the informal sector, who are experts in NV construction, and formal construction companies that do not have experience with the NV technical concept**. The stakes in this collaboration are even higher because it concerns large-scale NV construction projects, the number of which is increasing rapidly. This approach, which is valuable to an expanded dissemination of the NV concept in the formal market, will be continued with GERES next season.

Site control by NV expert masons

To meet the supervisory needs for complex (community and institutional) worksites for the season, **NV advisor masons/experts were mobilized as inspectors**. This arrangement, which goes hand-in-hand with that to mobilize technicians and help them get started, more particularly meets the needs of certain chief masons in terms of support/training for this type of worksite; it has therefore been an apt way of strengthening the NV sector's ability to respond to this market segment.

In addition, as part of a cross-border project incorporating the construction of community buildings (carried out with the NGO WHH and financed by the PATRIP Foundation), ten Malian and Burkinabe NV masons received support in registering with the Chamber of Trades and obtaining a tax number.

The NV technical body of documents has expanded to include several reference tools for community and institutional buildings (plans), listed in a catalogue. Terms of Reference (TRs) have been drafted for the necessary completion of the NV Mason's Manual (awaiting financing) and the production of data sheets on complex techniques, about 20 of which were begun during this period. In addition, in the framework of institutional and community worksites, efforts took place to further disseminate the NV technical body of documents to worksite foremen responsible for the community building sites, as did efforts to get the "worksite quality control" supervisory tools to inspector masons and technicians. In both cases, the TET provided support in the use thereof.





Client and NV mason in Ghana.

3 - Integration and stimulation of the NV market in local and national economies

In order to help the NV market - the primary vector of the NV concept - to emerge and consolidate and to ensure its longevity, AVN and its partners are setting up a series of supplementary activities to which actors from the NV sector are directly associated.

Different types of clients and project owners, including construction firms, are made aware of the different NV products and receive support for their projects.

Financial incentive tools, an essential lever for rapid market growth, are proposed to the rural core target clientele, while at the same time microfinance operators are encouraged to join together to sustainably develop new adapted housing loan products.

In general, AVN monitors, catalogues, analyzes and accumulates data and results concerning the NV market and its growth.

An accessible, growing private market

>> AVN and its partners set out a system to facilitate access to NV housing through the use of financial tools targeting vulnerable populations, in particular women.

■ Activities carried out this season

As in the North, the NV eco-construction market is stimulated by financial incentives so as to accelerate adoption of NVs as a low-carbon, resilient housing solution. The measure is intended for a rural clientele, the programme's core target. The incentives represent 15% of the cost of the building and are mainly distributed by chief masons, for whom they represent guaranteed revenue and an important marketing tool, in particular when growing their clientele.

The financial incentives for rural clients proved again this year to be effective for the NV market in Mali and Burkina Faso, and even more so in a local context marked by tension, with the COVID-19 pandemic and security risks affecting more and more regions.

The goal is now to be able to finance major incentive programmes over several years, in order to accelerate the spread of the NV concept and its associated advantages (professional integration of young people from rural areas, strengthening of local economies, improvements to living standards, climate change adaptation/mitigation, etc.).

To do so, AVN intends to couple the financial incentives for eco-construction with those for carbon offsetting¹ on the uncertified voluntary market, thus meeting sector expectations and focusing on the development of highly energy-efficient adapted technologies with a significant impact.

¹ - To compare the different construction methods on offer, the construction of NV buildings and their use over 30 years will allow for a reduction in carbon and greenhouse gas emissions estimated at 0.8 tons per m² (0.8 t. CO₂ eq.). The value of that efficiency can be offered on the voluntary carbon offset market as carbon credits.

The project dedicated to this, the NV Carbon Adaptation Credit, will be developed next season, with:

- a communication strategy supported by the high "mitigation" value of NVs and their relevance in terms of adaptation/resilience of communities;
- an optimization of deliverables linked to the incentives/ Carbon Adaptation Credit (interactive mapping to visualize the buildings completed and a verified digital register of carbon credit stocks);
- the canvassing of donors who finance the implementation of the mechanism and of the first clients of these innovative loans.

Results in Brief

613 private houses completed of which **567 are for rural clients who have received financial incentives for eco-construction** namely **92% of all completed constructions**



"I once saw a Nubian Vault in the village square that amazed me, and I decided to have one built myself. I gathered the materials with help from my family and hired masons, who I was able to pay partly because of the financial incentives. My house is so beautiful and sturdy that it attracts visitors, and now they all want to do the same. I'm thankful to AVN for the aid that now lets me live securely in a lovely house."

Mamounata Nabi, NV client from Burkina Faso

Microfinance

Brief history: Two Loans for NV Housing pilot projects were carried out with MFIs in Burkina Faso between 2015 and 2018, intended for rural clients. The mechanism included limiting outstanding amounts (€400) thanks to materials contributed by rural clients and short reimbursement periods (24 months max). These pilot projects led to few results in terms of the number of projects begun (inertia linked to how new the product was and a lack of dedicated HR) but were conclusive in terms of the mechanism: this type of loan does correspond to the level of commitment acceptable to households and is manageable by MFIs. Since 2019, AVN has proposed that MFIs mobilize their technical and financial partners in the North in order to finance the development of this innovative adapted housing microcredit product, allowing it to take root in a lasting way in the region and eventually to be replicated.

Little time was able to be dedicated to mobilizing microfinance actors this season.

AVN presented the NV housing microcredit at an AFD conference on "financing access to housing in developing countries" and to some local microfinance bodies that expressed interest.

To further develop the NV housing microcredit project, AVN needs to continue to **mobilize actors in both the North and South to elaborate on the possibility of incorporating carbon offsetting financial tools**. In fact, the financial value of mitigation-adaptation results achieved by NV constructions built due to microloans would allow:

- specific funds to be established to feed the demand for NV loans;
- proposed loans to be subsidized (along the lines of the 0% "home improvement" loans in France);
- technical support needed by MFIs to deploy new products to be financed.



Agricultural NV conservation hut built as part of the project funded by SOS Faim / CAEB in Mali.

A growing community and public market

>> Awareness is raised with project owners and the NV construction market for community use is energized.

>> Partners are mobilized on large-scale building projects and on the implementation of pilot projects (housing, re-housing, social housing projects, etc.).

■ Activities carried out this season

Donors, project owners and beneficiaries of building projects for collective use (for agriculture, education, healthcare, etc.) are more inclined to adopt construction practices that give good thermal and environmental results. This development strengthens the more formal and institutional sector of the emerging NV eco-construction market, thus providing it with greater visibility and attracting traditional actors from the building sector (companies, consultancies, architects, etc.).

This season, the demand for community NVs grew on the Malian and Burkinabe markets. The NV building stock completed in recent years has set an example and led to replication, and the awareness raised by AVN has led to the construction of barns, public access buildings, and pilot buildings for use as social housing.

To ensure continued technical assistance and the rigorous level of formalization of some projects, AVN's Technical Expertise Team brought on board expert inspector masons (cf. p. 23) who supported and guided artisans in their work.

Results in Brief

100 buildings for community use achieved (+100%) of which:

> **43 Public buildings built** (+34%)

- schools, cultural places, offices

> **57 productive buildings built** (+200%)

- grain and market gardening storage, henhouses



Visit of the Koubri kindergarten site (Burkina Faso) in the company of officials from the International Institute for Water and Environment (2IE).

Pilot project for social housing

In Mali, discussions with the Malian Office for Housing (OMH), which have been ongoing for two years, led to a pilot project of five NV housing models being built. This exemplary and groundbreaking project is the **first eco-construction social housing pilot project to be sponsored by a ministerial agency and carried out by a development actor and those from the NV building sector.** It allowed, on the one hand, operational arrangements between the three stakeholders to be tried out and, on the other hand, possible models, workmanship and adaptations that could possibly be replicated in bigger projects to be put forward.

The goal is now to publicise the results of the project and more widely on the relevance of low-carbon building techniques in meeting the needs and expectations of the social housing sector.

AVN promoted this project at the February 2020 conference on "What types of housing for sustainable cities in Africa?", co-organized by the Department of Yvelines (France), the Yvelines International Cooperation and Development Group (YCID), the Mali Yanga Association and the housing network *Réseau Habitat Francophonie* (RHF). Action was carried out with RHF following this conference in order to raise awareness with Sahelian actors in the social housing sector who are members of RHF, and to propose partnerships to them covering:

- social housing pilot projects that would incorporate training of specialist technicians within the sponsoring body; and
- whole projects that also incorporate the development of a local eco-construction sector and the dissemination of the NV concept for the needs of local self-builds.



Reception of 5 NV buildings for social housing (pilot project) financed by the Malian Office for Housing (OMH).



Diakré (Mauritania), the first village entirely built in NV for the benefit of refugees (project carried out in the 2016-2017 season).

Pilot projects for displaced persons in the pipeline

This season was marked by interest in the NV concept expressed by humanitarian actors responsible for a refugee programme. This request echoes the so-called humanitarian-development-peace nexus approach introduced by the European Union, which encourages synergies between actors that work on humanitarian issues and those that work on development and peace, in order to deal with prolonged, predictable crises, thus leading to development in a way that boosts the resilience of host communities and displaced persons.

In Burkina Faso and internationally, discussions with these actors (Global Shelter Cluster [including UNHCR and IFRC], the NGO DRC and WHH) led to projects being prepared. Three or four of them will be carried out in the 2020/2021 season.

These projects are either:

- limited to a re-housing and cash-for-work programme for displaced populations; or
- also extended to programmes to develop the NV market, thus responding to both the housing challenge for internally displaced populations and to the need for economic development and resilience in host communities (strengthening of local economies, climate adaptation and mitigation, development of a lasting eco-construction market system with facilitated access to housing for the most vulnerable, and dual and inclusive training for sector actors).



2 - Our Countries

Summary	▶ p. 31
Burkina Faso	▶ p. 34
Mali	▶ p. 40
Senegal	▶ p. 46
Ghana	▶ p. 52
Benin	▶ p. 56
International	▶ p. 60

As the second year implementing AVN's new intervention strategy (*see p. 11*), which was redefined and optimized in 2018, and in accordance with the timetable set for the change in methodology, the 2019/2020 season was intended to close the transition phase aimed at:

- the mobilization of stakeholders – AVN teams, Operational Partners, Technical and Financial Partners;
- the deployment of the NV territorial dissemination strategy in more regions;
- maintaining a market approach in the indirect action zones in order to support jobs for artisans and masons;
- raising sufficient funds so as to achieve a significant increase in the number of regions covered and of operators by 2021.

Summary

Rollout



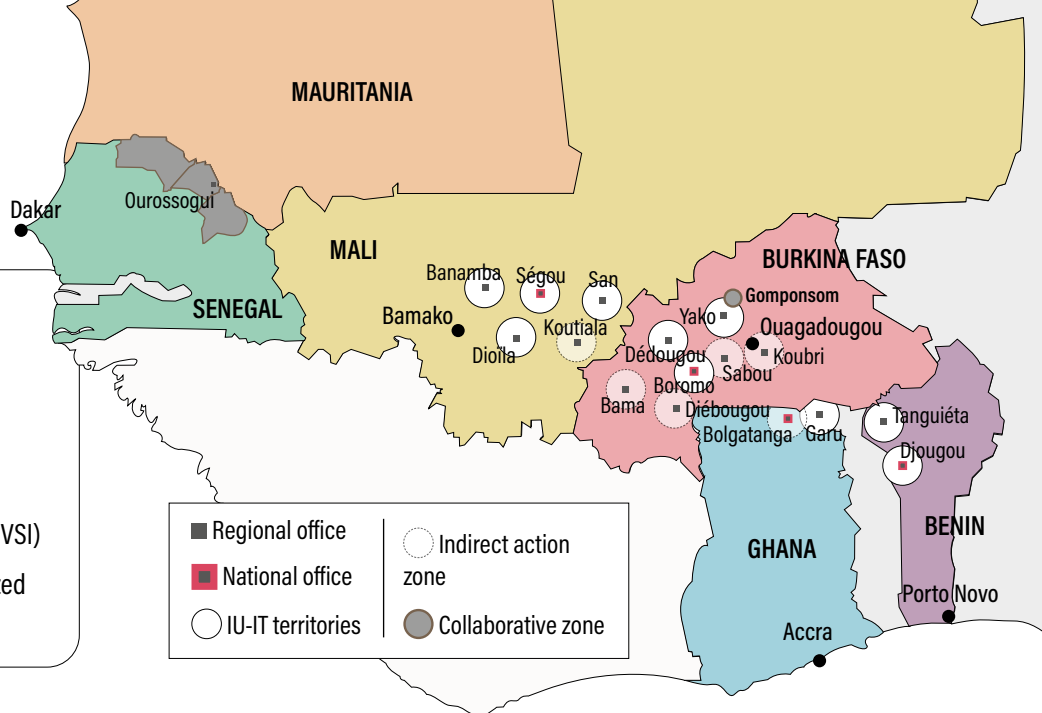
5+1 countries
12 IU-IT rollout territories
10 zones of indirect action
1 collaborative zone in Senegal



12 regional teams deployed
47 local employees (including 1 VSI)



25 Operational Partners mobilized
15 projects carried out



The gamble clearly paid off, with positive results achieved for all objectives.

Nubian Vaults are truly spreading throughout six Sahelian belt countries:

- in 4 countries – Burkina Faso, Mali, North Benin and North Ghana – the NV territorial dissemination strategy is being carried out, which is at the heart of the strategy behind the Operational Partners (OP); this aims mainly at sector actors and clientele from rural areas;
- in 2 countries – Senegal and Mauritania – the spread of NVs is mainly carried out via the more formal segments of the construction sector (procurements) and takes a more institutional approach.

In the 4 countries concerned, the territorial dissemination strategy for the NV market has been deployed in 12 Implementation Territories (ITs) and 26 Implementation Units (IUs), half of which are directly managed by OPs, with support from AVN teams. In 11 other regions, the growth of the NV market has been strengthened by distributing financial incentives and by carrying out community and public construction projects.

Of the 25 Operational Partners involved, 14 (60%) were working on issues of territorial rollout and 9 should be next season, thanks to sustained fundraising and the involvement of new Technical and Financial Partners: these are Belgian, Swiss, German, Danish and European actors from the cooperation sector, as well as international organizations (UNHCR, the World Bank) and international NGOs (DRC, SNV, WHH, SOS Faim, GERES, etc.).

It should be noted that as the accumulation of health (COVID-19) and security crises strongly constrained movement and gatherings, AVN teams and actors from the AVN building sector had to adapt their interventions; this led local Operational Partners to take on more responsibility in terms of implementing activities and therefore to become independent more quickly. There was little impact on results, thus proving that the methodology put forward by AVN can be readily taken on board and replicated by Operational Partners and can be easily integrated into regional contexts (even difficult ones); it is therefore resilient and efficient.

Buildings constructed



713 completed worksites (+20%)
86% of buildings intended for housing
21,300 m² built (+20%)
567 construction incentives (CICs) handed out



100 community buildings built, including
57 buildings for production/livestock farming



6,850 new user-beneficiaries



17,500 tons CO₂ eq. and
540 MWh pot. saved



Beneficiaries of the project financed by the European Union in Benin.

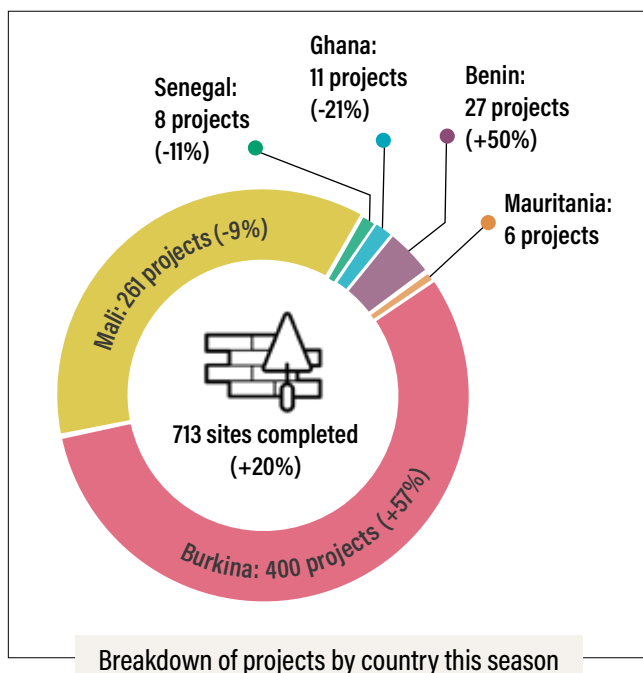
This season, the construction of NV buildings increased by 20%, with more than 700 buildings completed. More than 50% of those constructions were built in Burkina Faso (400 worksites), where a high number of methodological and construction projects were carried out.

It should however be noted that travel restrictions due to the COVID-19 health crisis had a negative impact on the productivity of NV masons in March and April, which is generally the most intense period.

Thanks to dedicated financing, the private market in rural areas was galvanized by a broader incentives programme, allowing for an increase of 78% in the number of families taking advantage of it. AVN has emphasised this aspect of its programme since 2020 because it is the main lever for the accelerated diffusion of the NV concept and guarantees earnings for NV artisans and their teams, the growth of their market, with money re-injected into local economies.

The construction of public and community buildings also increased (+9%), thanks in particular to several building programmes in Mali and Burkina Faso. Specifically, the NV concept has been popular with those involved in agriculture.

57 buildings for production were completed (three times more than last season), and their users, right from the start have testified as to the ensuing benefits: improved storage of agricultural products, increased processing capabilities and improved conditions for livestock farming.



Breakdown of projects by country this season

Establishment of supply



949 active apprentices, masons, artisans and entrepreneurs (+18%) including 383 new apprentices this saison
50% of projects were found independently



9,500 man-days of training by 40 operational NV Trainer Masons benefitting 500 trainees
508 trainee qualifications validated (+29%)

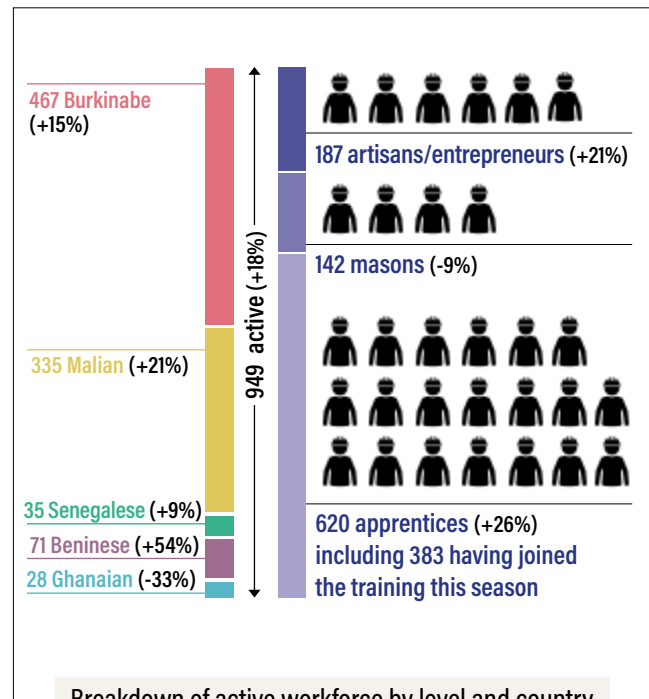
With nearly a thousand people active in the NV eco-construction sector this season, the number of paid apprentices, masons and artisans working on an NV project grew by 18%. About 50% of clients were found directly by the masons and artisans, proving that the builders are gradually becoming autonomous in the development of NV market centres.

50% of those working had a qualification level validated at the end of the season by their worksite foremen.

60% of this pool of builders benefited from activities to consolidate the training they received from Trainer Masons. All trainees receive a trainee progress booklet, in which successive Trainer Masons keep track of their acquired skills as they complete the various worksite and classroom training modules.

The on-site training modules were able to be carried out as usual and only the classroom training modules had to either be postponed until the end of the season, once COVID-19 restrictions were lifted, or until next season.

A notable step forward this season was taken toward the institutionalization of training processes and of certification of NV professions, involving formal vocational training actors.



Breakdown of active workforce by level and country

In Burkina Faso, concrete progress was made on two projects (PAFPA and Expertise France, *see p. 35*), which will ultimately allow for:

- dual training courses (technical/academic) to be set up for actors in the "green" NV construction sector with Vocational Training Centres;
- training reference tools to be drafted for two certification levels - the Certificate of Basic Qualifications (CQB) for NV masons and the Certificate of Professional Qualifications (CQP) for NV artisans.



Burkina Faso

In Brief

POPULATION (IN 2019)

20,3 million inhabitants
(70% rural)

GDP PER CAPITA

\$774 - 35th in Africa
(World Bank, 2019)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2000

HUMAN RESOURCES

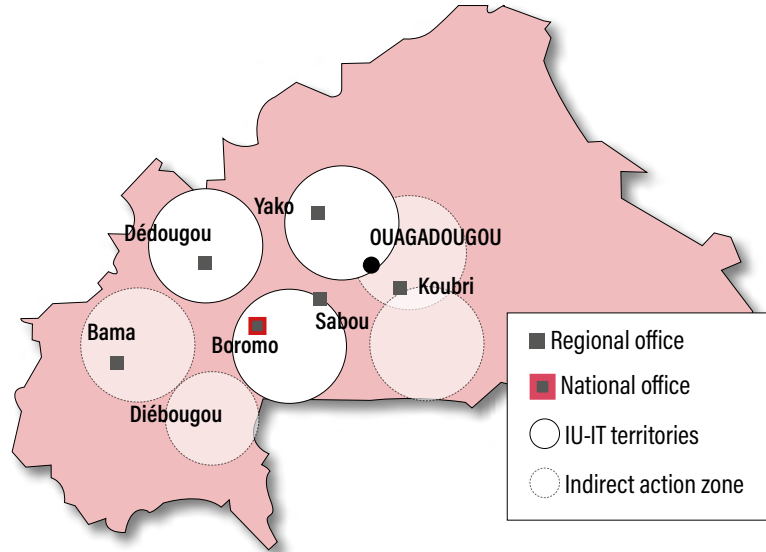
19 local employees

ROLLOUT

- ▶ 3 zonal offices opened
- ▶ 3 IU-IT rollout territories
- ▶ 4 indirect action zones

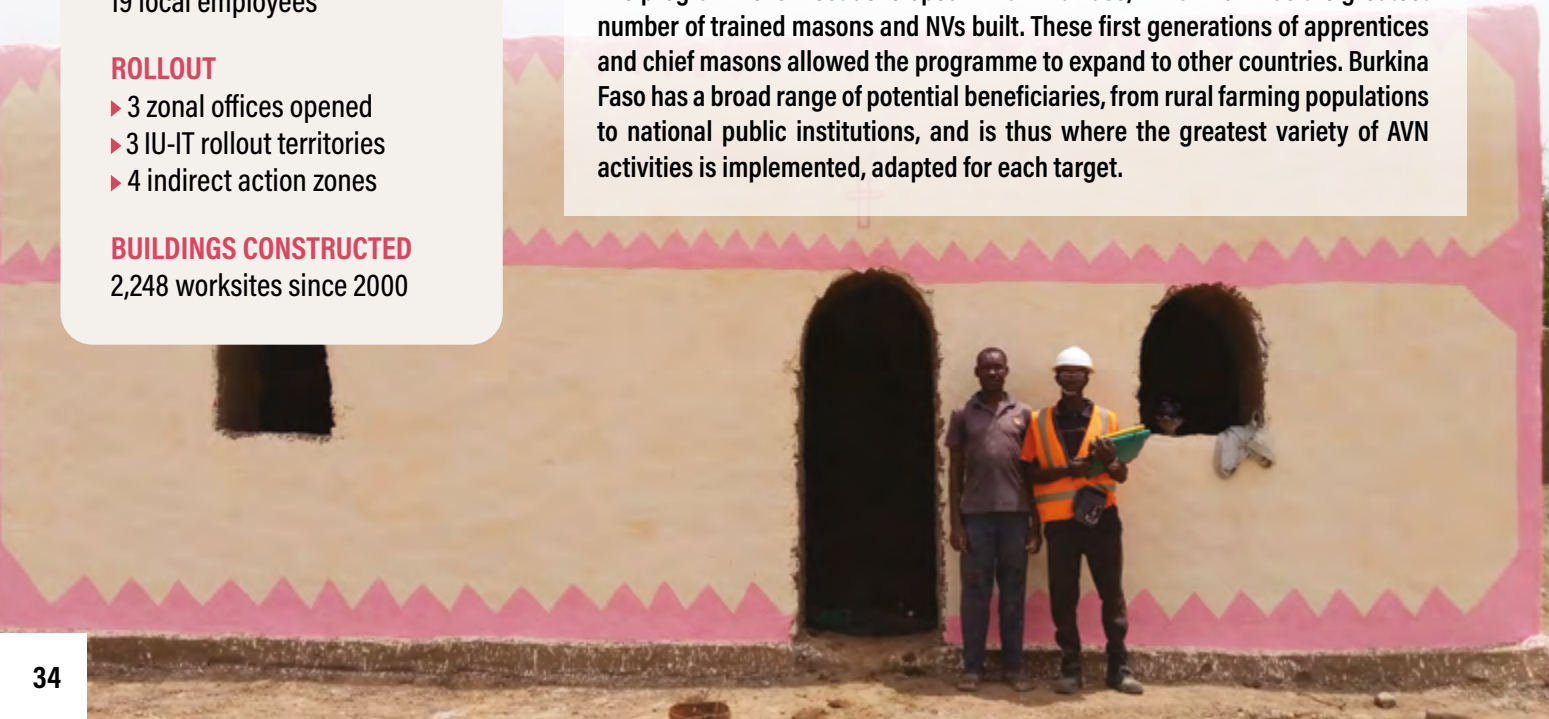
BUILDINGS CONSTRUCTED

2,248 worksites since 2000



Burkina Faso, the first country in which AVN was active, has been the site of many methodological rollouts: R&D on the NV concept and how to standardise it, the first national team, the first regional expansion, the first time working with civil society actors (FGs, CBOs), the first dedicated NV microloans, etc.

The programme is most developed in Burkina Faso, which now has the greatest number of trained masons and NVs built. These first generations of apprentices and chief masons allowed the programme to expand to other countries. Burkina Faso has a broad range of potential beneficiaries, from rural farming populations to national public institutions, and is thus where the greatest variety of AVN activities is implemented, adapted for each target.



Rollout



3 IU-IT rollout territories
10 active Implementation Units
4 zones of indirect action



13 Operational Partners mobilized
on programme rollout
6 projects carried out

Burkina Faso stood out this season thanks to a large number of projects underway or under preparation. The context therefore lent itself to the mobilization of new partners and their training, as well as the deployment of methodological activities and construction programmes extending over a large area.

Six projects were carried out this season:

- the **"Youth Employment and Skills Development" project (PEJDC)**, financed by the World Bank and led by the Ministry of Youth and Promotion of Youth Entrepreneurship, which has focused on developing the NV market in 3 communes (IUs) and on mobilizing and training OP-IUs (AEF and APGEF);
- the **final year of financing under the International Climate Cooperation Program (ICCP)**, financed by the government of Quebec through *Unisféra*, which allowed, on the one hand, an important incentive programme for the whole region to be developed, with involvement from the OP-ITs ATY and URPD in their respective territories, and on the other hand, NV market development activities to take place in a commune in the Boucle du Mouhoun region;
- the **first year of the project to develop the NV market in 6 communes in the Nord region**, financed between 2019 and 2021 by the Walloon Air and Climate Agency (AWAC), led with the Belgian NGO SOS Faim and with direct involvement of the FNGN (acting as the OP-IT) and of 6 Unions (acting as OP-IUs);

- the **first year of a cross-border project**, financed between 2019 and 2021 by the PATRIP Foundation and led by German NGO Welthungerhilfe (WHH), aimed at stabilizing 10 communes in Burkina Faso and Mali and with the intent to build 15 community buildings per year, per country;
- at the end of last season, the **start of the project entitled "Strengthening the resilience of young people and women in the border areas of the Boucle du Mouhoun"**, to run for a period of 15 months, approved by the Boucle du Mouhoun Regional Council and financed by Expertise France;
- a **project to provide project management assistance** for the 2 NV preschool centres under construction and financed by the mayor's office of Ouagadougou.

In addition, it is also in Burkina Faso that pilot projects with vocational training actors (*see p. 21*) and actors working on the displaced populations emergency (*see p. 29*) were under preparation, as are methodology projects in new regions, specifically:

- the **project providing support for companies in the green economy sector in eight communes from the Centre-Est region**, financed over three years (2020–2023) by ENABEL; this has led to the involvement of a new partner, APAK, which will act as an OP-IT alongside APAGAN-B;
- the **project to set up a dual and inclusive training ecosystem for Nubian Vault buildings**, involving all vocational training actors and boosting the employability of young people; this is a two-year pilot project (2021–2022) that falls within the Support Programme for Vocational Training and Apprenticeships (PAFPA), financed by the SDC and led by the National Council of Burkina Faso Employers (CNPB) and Vocational Training Centres;
- the **pilot project focusing on an alternative solution to housing displaced persons in Burkina Faso**, implemented at the end of 2020 in the city of Kaya in the Centre-Nord region and financed by the Danish Refugee Council (DRC).



CIC beneficiary family in front of their NV house.



Burkina Faso

Buildings constructed



400 completed worksites (+57%)
 92% of buildings intended for housing
11,940 m² built (+52%)
342 worksites (85%) completed using CICs



32 community buildings built, including
 15 buildings for production/livestock farming



3,900 new user-beneficiaries



9,800 tons CO₂ eq. and
300 MWh potentially saved

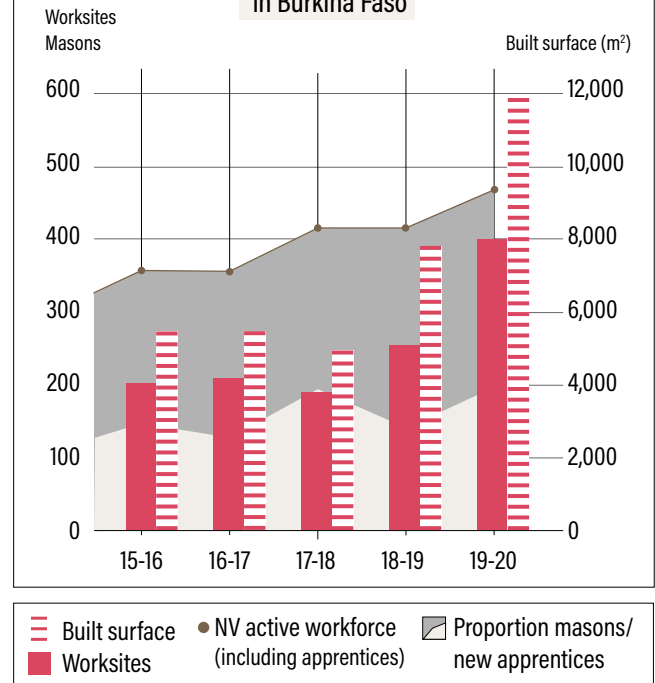
With the number of completed buildings and the amount of built surface area having grown by more than 50% (400 buildings and 12,000 m², respectively) and twice the number of user-beneficiaries compared to last season, the production results in Burkina Faso this season reached a level that demonstrates the local and likely lasting take-up of the NV concept.

Several factors were favourable to such a result:

- numerous projects (*see p. 35*) allowed the dissemination strategy to be expanded upon and transferred to local Operational Partners or at the very least for construction projects to serve as examples and therefore aid the spread of the NV concept;
- the distribution of eco-construction incentives, more widespread than in previous years, to which private rural clients were totally receptive; some of the requests were unable to be filled because of travel restrictions imposed on masons due to the COVID-19 crisis;
- an early start to the building season thanks to the availability of masons and their involvement in the incentive projects and programmes and community buildings.

Evolution of the building stock and workforce

in Burkina Faso



The number of buildings for community use is up by 70%, most of which were built as part of projects, including the PATRIP project that led to the construction of 14 buildings of 50 m² each in 5 communes in the border region with Mali, which is beset by terrorist tensions. It should be noted that a public procurement contract from the Ouagadougou mayor's office for two preschool centres of 290 m² each is underway, which necessitates continued technical assistance from the TET and the involvement of a formal construction company.

At the end of the season, various exchanges with the Danish Refugee Council, an NGO, led to the approval of a project for the rehousing of displaced persons in the Centre-Nord region. This pilot project foreshadows a paradigm shift for emergency programmes for displaced persons, focused more on finding inclusive solutions that lead to local development in the host regions, such as that permitted by development of the NV market.



TMSS training in Tansila as part of the cross-border project funded by the PATRIP Foundation and carried out with WHH.



Burkina Faso

Establishment of supply



467 active apprentices, masons, artisans and entrepreneurs including
197 new apprentices this season
38% of projects were found independently



4,700 man-days of training by
16 operational NV Trainer Masons
benefitting **230 trainees**
266 trainee qualifications validated (+33%)

The number of artisans, masons and apprentices active on the NV eco-construction market grew by 15% this season, with significant mobilization of new apprentices and full-scale participation from 150 trained artisans and masons.

60% of those working passed a qualification at the end of the season, including about 60 additional masons and artisans, thus strengthening the ranks of teams able to organize and manage worksites next season.

The vibrancy of the Burkinabe NV market led to a 32% increase in productivity of artisans (144 m² built/artisan), allowing them and their teams to earn more during the agricultural off-season.

38% of clients were directly canvassed by artisans and masons. This share is expected to climb rapidly in the coming seasons with an expansion of the use of financial incentives intended for rural clients; these are true marketing tools that help NV artisans develop their client base.

230 trainees benefitted from a consolidation of their practical and theoretical skills.

More than 70 on-site training modules (4,200 man-days) took place, taught by 16 Trainer Masons, including around

- **30 training worksites** (GBT-AHs) at the beginning of the training pathway for new trainees;
- **20 Reinforcement on Building Sites – First Clients** (RB-FC) to second-year trainees;
- **20 Technical Module on Specific Stages** (TMSS) modules for community buildings.

22 classroom (academy) (500 man-days) complemented the on-site training, via **14 technical modules, 5 modules on specifications, worksite management and entrepreneurship** and 3 modules for Trainer Masons.

As for involvement of formal vocational training actors, on the advice of the SDC (Swiss Agency for Development and Cooperation), AVN continued its exchanges with **the Support Programme for Vocational Training and Apprenticeships (PAFPA), the NGO Job Booster, the SPONG, and three regional vocational training centres,** to incorporate dual (technical/academic) and inclusive training on the NV concept. At the end of the season, an agreement was reached on the implementation of a two-year pilot project (2021–2022) on dual training courses with actors from the sector (from rural apprentices to BTP technicians and from NV Trainer Masons to technical training schools), taking a formal market approach.

As part of the preparations for this project and that financed by Expertise France, cooperation took place with **the Training Centre for Mining, Quarry and Construction Professions (CEMCA/BTP)** in Boromo to draft training reference tools that set out the certification arrangements to be put in place for these projects.



Mali

In Brief

POPULATION (IN 2019)

19,6 million inhabitants
(57% rural)

GDP PER CAPITA

\$890 - 31st in Africa
(World Bank, 2019)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2009

HUMAN RESOURCES

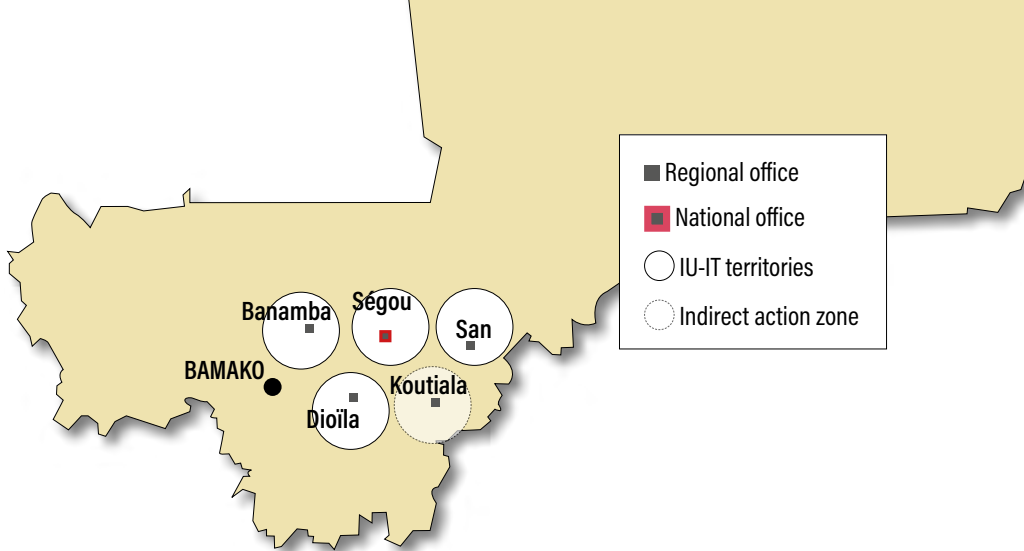
14 local employees

ROLLOUT

- ▶ 5 zonal offices opened
- ▶ 5 IU-IT rollout territories
- ▶ 3 indirect action zones

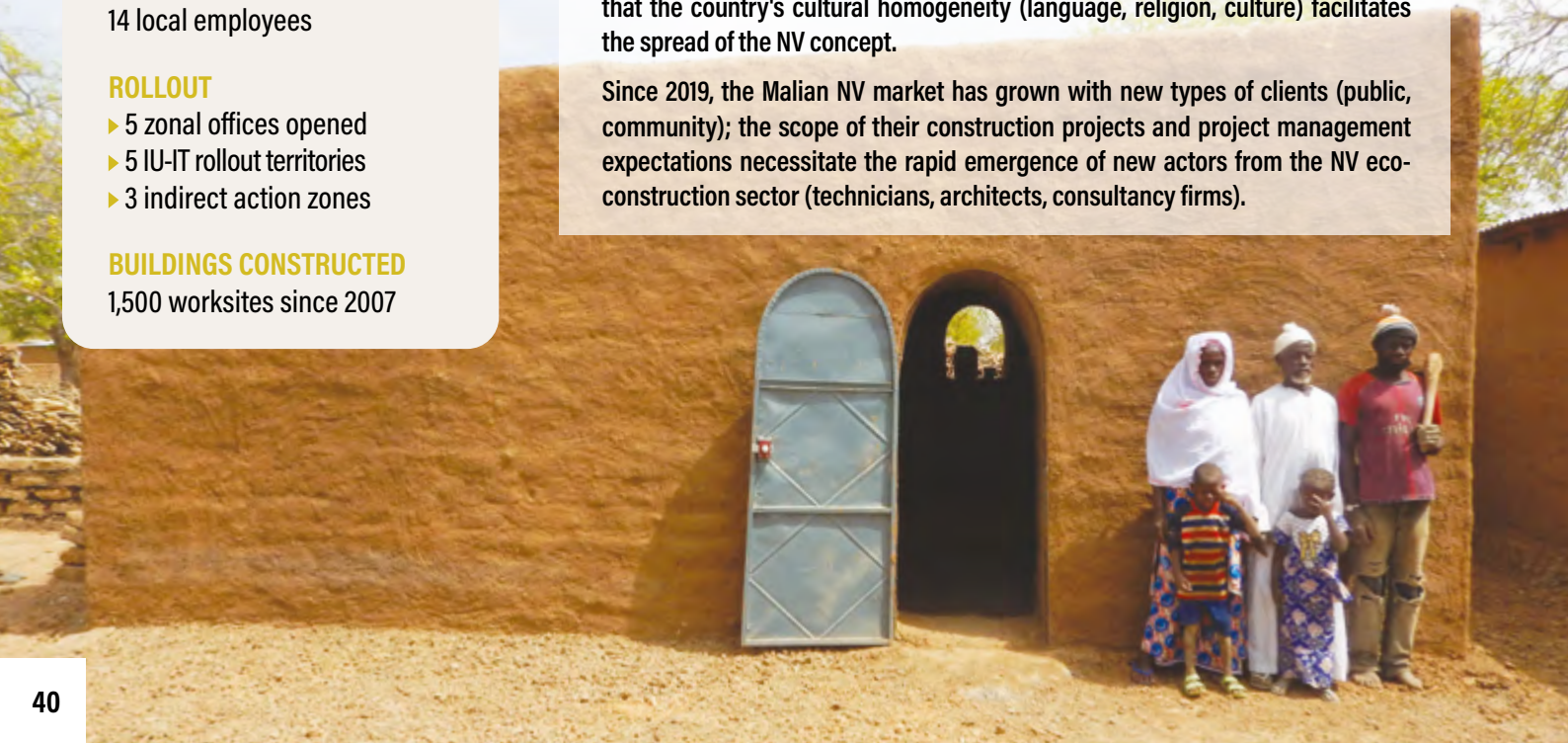
BUILDINGS CONSTRUCTED

1,500 worksites since 2007



The AVN programme was launched in Mali in 2007, thanks to partnerships with NGOs to build community buildings. Following the Ségou region, the programme expanded to three other regions starting in the 2012/2013 season. The NV concept has been very successful, especially with the rural population, the programme's core target group: NVs correspond exactly to the needs of these regions in terms of construction, cost and provision of vocational training, and it can be assumed that the country's cultural homogeneity (language, religion, culture) facilitates the spread of the NV concept.

Since 2019, the Malian NV market has grown with new types of clients (public, community); the scope of their construction projects and project management expectations necessitate the rapid emergence of new actors from the NV eco-construction sector (technicians, architects, consultancy firms).



Rollout



5 IU-IT rollout territories
6 active Implementation Units
3 zones of indirect action



4 Operational Partners mobilized on programme rollout
6 projects carried out

In Mali, the spread of NVs is being carried out by implementing 6 projects that allow methodological activities focused on developing the NV market and construction projects to be deployed:

- **the first year of a cross-border project**, financed between 2019 and 2021 by the PATRIP Foundation and led by German NGO Welthungerhilfe (WHH), aimed at stabilizing 10 communes in Burkina Faso and Mali and with the intent to build 15 community buildings per year, per country;
- **the second year of the project to develop the NV market in two communes (IUs)**, including the building of storage barns, financed by the Belgian NGO SOS Faim, to benefit 2 OPs (USCPCD and USCPCCB "Yèrènyèton");
- **the first year of the project "Training of NV construction actors and support for market development in the framework of two Electrified Activity Areas (ZAE) in two communes in Bla Cercle"**, as well as **providing the design of and worksite supervision for one of the ZAEs**, financed by the NGO GERES under the project "Access to Sustainable Energy for All" (AEDTT), which is financed by the Swedish development agency;
- **a programme to build 25 agricultural barns**, financed by the Belgian NGO SOS Faim, involving local association CAEB and benefitting many farmers' groups spread over 5 communes in the cercles of Banamba, Nara and Kolokani;

- **a pilot project for 5 NV homes used as social housing**, in the town and cercle of Ségou, financed by the Malian Office for Housing (OMH);
- **a programme of financial incentives** in 5 implementation territories.

During the season, AVN worked to mobilize two women's umbrella organizations (OP-ITs) - COFERSA in the Sikasso region and CAFO in the Ségou region - and two farmers' groups USCPCD, Yèrènyèton in the cercle of Dioïla - by holding initiation sessions on the territorial methodology of the development of the NV market. They each confirmed their wish to get involved as OP-ITs to develop the NV market as a complement to their agricultural activities, thus increasing the long-term resilience of their communities (construction adapted to effects of climate change and to agricultural needs, training in eco-construction, employment in the off-season for farmer-masons). Several fund-raising activities were launched in the season to speed up relevant activities in the target communities and to implement a campaign of advocacy for the "Right to adapted and resilient eco-construction" (*cf. p. 17*).

In addition, about 10 donors that work on national programmes were canvassed, such as the Spanish, Luxemburgish, Danish, Canadian and Belgian development agencies and international NGOs. At the end of the season, AVN won the ENABEL call for projects to train actors from the NV sector and to develop the NV market in the commune of Guegneka (Dioïla Cercle); this will take place next season. In addition, meetings with the Ségou Regional Council, the Ségou Regional Directorate for Vocational Training, the Green Climate Fund contact point at AEDD and the Malian Office for Housing (OMH) led to progress that will be further solidified next season.



Mali

Buildings constructed



261 completed worksites (-9%)
81% of buildings intended for housing
7,400 m² built (-7%)

203 buildings (77%) completed using CICs



50 community buildings built, including
33 buildings for production/livestock farming



2,260 new user-beneficiaries



6,040 tons CO₂ eq. and
190 MWh potentially saved

This season, production fell slightly, with 261 worksites completed (-9%) and 7,400 m² of surface area built (-7%). This is due to a smaller number of projects than last season and a distribution of financial incentives that came late due to cash flow difficulties.

77% of rural clients received a financial incentive (CIC). These incentives have been in place for several seasons in Mali and are therefore broadly familiar to clients, and their implementation runs smoothly. Next season, a rise of at least 50% in the number of incentives is intended, as demand from rural clients remains higher than what is offered, and AVN is working to expand and entrench the mechanism (*see p. 25*).



Bâtiment de stockage à Sao, pour le partenaire Yerenyeton, financé par SOS Faim.

The number of community buildings completed tripled this season, with particularly strong demand coming from the agricultural sector (+350% buildings completed) as a result of the exemplarity of NV buildings completed in previous years.

Between 2019 and 2020, the Belgian NGO SOS Faim financed nearly 35 NV buildings:

- in Diolia Cercle, benefitting the farmers' umbrella organizations USCPCD and Yèrènyèton, which have resolutely adopted this type of building for their storage needs and promote it;
- in new cercles (Kolokani, Nara and Banamba), where completed buildings serve as models and where the performance achieved should also favour their replication and boost both private and community demand.

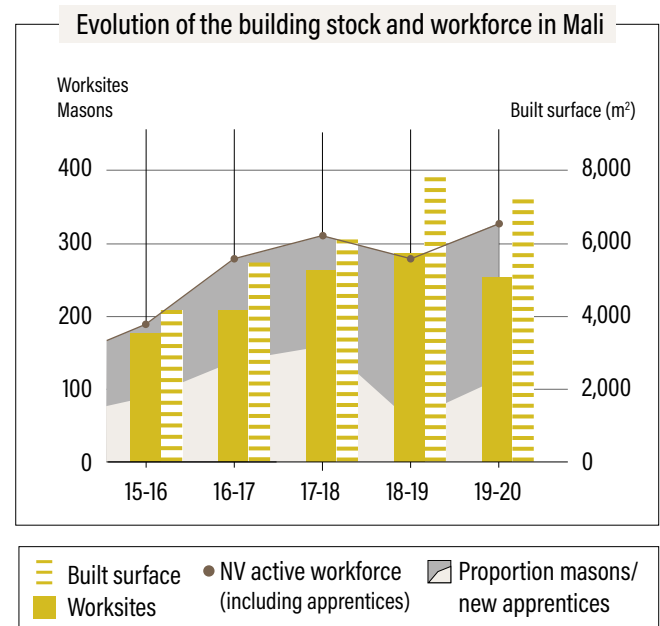
As in Burkina Faso, the PATRIP project led to the completion of 15 buildings of 50 m² in 5 communes in the border region, which is beset by terrorist tensions.

As part of the "Access to Sustainable Energy for All" (AEDTT) project implemented by the NGO GERES, which aims to build 5 NV Electrified Activity Areas (ZAE) between 2019 and 2021, AVN took responsibility for the architectural design and quality control of the worksite (works management assistance) for the first ZAE of the project (Diaramana, 400 m²).

In addition, a pilot project for 5 NV models used for social housing was completed for the Malian Office for Housing (OMH). This innovative project allowed operating methods to be tried out as well as types of cooperation between the OMH (a ministerial agency), AVN (a development actor) and actors from the NV construction sector, with a view to replicating the project for other larger scale social housing projects (see p. 28). Expanded publicity should help promote the project next season.



NV house built using CIC in Ségou.





Construction of one of the 5 pilot NV housing units financed by the OMH.



Technical training academy as part of the cross-border project, funded by the PATRIP Foundation and carried out with WHH.



Mali

Establishment of supply



335 active apprentices, masons, artisans and entrepreneurs actifs including 104 new apprentices this season
72% of projects were found independently



1,500 man-days of training by **15 operational NV Trainer Masons** benefitting **130 trainees**
140 trainee qualifications validated (+11%)

The number of artisans, masons and apprentices active on the Malian NV market is up (+21%), with 104 new apprentices recruited (+73%).

40% of those working passed a qualification at the end of the season, including 45 additional masons and artisans, thus strengthening the ranks of teams able to organize and manage worksites next season.

The productivity of masons, like general productivity, fell by 20% (91 m² built/artisan). The larger incentive programme foreseen for next season should help surpass the normal levels of production.

72% of clients were found directly by the Malian artisans and masons, who, after four years of successful implementation of the financial incentive programme, have gradually improved their autonomy and capacity to develop their markets in rural areas.

32 on-site training modules took place, taught by 15 Trainer Masons, including:

- **8 training worksites** (GBT-AHs) at the beginning of the training pathway for new trainees;



Technical training academy within the framework of the GERES project.

- **6 Reinforcement on Building Sites – First Clients** (RB-FC) modules allowing trainees to take charge of their first worksite;
- **18 Technical Modules on Specific Stages** (TMSS) on community buildings, to strengthen masons' and chief masons' skills with complex techniques.

Alongside the on-site training, **15 classroom modules** were dispensed: **12 on theory**, **2 on site specification and management** to masons and artisans, and **5 Malian Trainer Masons** benefitted from a **training module taught in Burkina Faso on the pooling of resources and cooperation of Trainer Masons**.



Senegal

In Brief

POPULATION (IN 2019)

19,3 million inhabitants
(52% rural)

GDP PER CAPITA

\$1,446 - 25th in Africa
(World Bank, 2019)

CLIMATE

Sahelian

AVN PROGRAMME BEGUN

in 2010

HUMAN RESOURCES

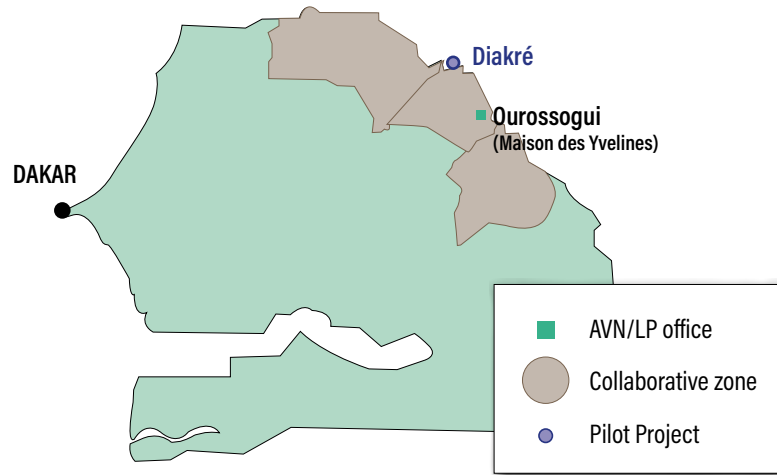
1 local employee

ROLLOUT

► 1 AVN/LP office

BUILDINGS CONSTRUCTED

109 worksites since 2010



Since 2016, AVN's interventions in Senegal focus mainly on public and community commissions through the implementation of the NV Fouta project in northern Senegal, carried out with the NGO Le Partenariat, AVN's partner since 2014. Le Partenariat also collects and monitors data about the private NV market, putting clients and masons in touch whenever possible.



Buildings constructed and establishment of supply



8 worksites completed - 714 m² built



7 community buildings built including
3 buildings for production/livestock farming



360 new user-beneficiaries



586 tons CO₂ eq. and
18 MWh potentially saved



35 active apprentices, masons, artisans and entrepreneurs including
14 new apprentices this season

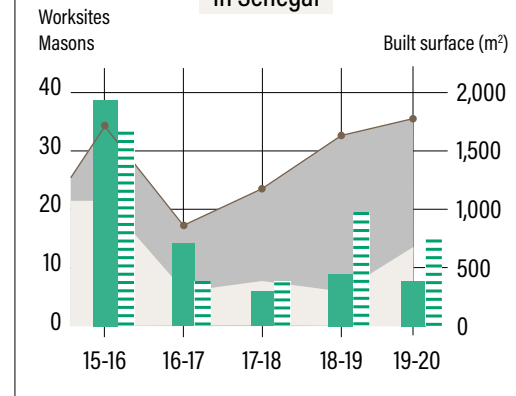
125 man-days of training
benefitting **35 trainees**

22 trainee qualifications validated (+11%)



1 Partner working
on programme dissemination

Evolution of the building stock and workforce in Senegal



■ Built surface ● NV active workforce (including apprentices) ■ Proportion masons/new apprentices
■ Worksites

This season, 8 projects were completed:

- 5 were part of the NV Fouta project (*see next page*);
- 1 health centre of 81 m² in Malem Hodar (Kaffrine Department), financed by the local Health Committee;
- 1 storage warehouse of 46 m² in Niahène (Kaffrine Department) for a women's association;
- 1 home of 26 m² for an NV mason in Goudié (Kaffrine Department).

35 apprentices, masons, artisans and entrepreneurs are active (+9%) this season, with a rise in the number of new apprentices mobilized (+180%). The training activities that took place were mostly Technical Modules on Specific Stages (TMSS) intended to strengthen trainees' skills with complex techniques, allowing them to meet the needs of the community NV market.

Local and regional public and development actors remain committed. Two meetings took place with the consultative bodies of Podor, Matam and Kanel Departments to provide information to and raise awareness with local organizations about the existence of the NV Fouta project, and to encourage them to choose NVs for their community building needs.



Guanguel ancient manuscript library construction site, building carried out in the 18-19 season as part of the NV Fouta project.



Senegal



NV Fouta Project

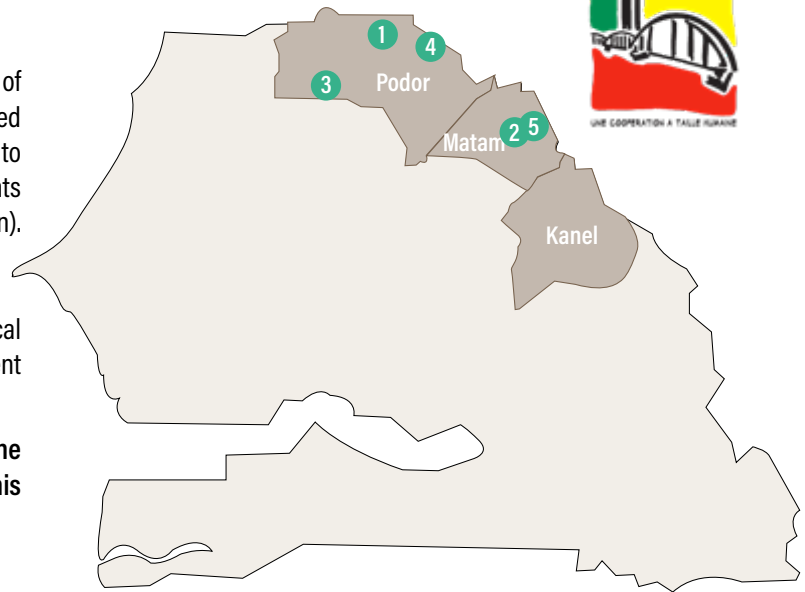
Since 2017, with financing from the Departmental Council of Yvelines, AVN and the NGO Le Partenariat (LP) have implemented a programme to promote and disseminate the NV technique to territorial bodies and associations, mainly in the departments of Podor, Matam and Kanel (in the north of the Fouta region). The aim is to accompany local collectivities and organisations in their NV construction projects and to train actors of the NV sector (masons, firms, consultants...) and to encourage local authorities to include the NV concept in their development plans.

This season, 5 buildings were completed, bringing the number of community buildings constructed under this project to around 20:

- 1 two classrooms in NV/reinforced concrete in Ndioum;
- 2 an agricultural warehouse in Thiéhel;
- 3 an Electrified Activity Area (14 shops) in Mbiddi;
- 4 a multipurpose training centre in Walaldé;
- 5 an equipment warehouse in Ndouloumadji Démbé.

In addition, several awareness-raising activities were carried out, focusing on project owners:

- the project steering committee meeting held in January 2020 was paired with the technical committee of the Matam departmental council, which was an opportunity for the different stakeholders to visit worksites under construction;
- two meetings took place with the consultative bodies of Podor, Matam and Kanel Departments to provide local organizations with information about the existence of the NV Fouta project and to encourage them to choose the NV technique for their building needs. In addition, the project managers from the departmental councils made an effort to involve the NV Fouta team during budget steering meetings.



Next season will be the last year the project is implemented. In order to continue the dynamic that now exists in Fouta, the Departmental Council of Yvelines, in partnership with the departments of Kanel, Matam and Podor, submitted a **new project to AFD for financing through FICOL**. The project aims to promote and spread NV eco-constructions, as well as to train sector actors (NV artisans and their teams, technicians, consultancy firms, companies, etc.); in particular it aims to incorporate the NV eco-construction training pathways into the the training provided by three vocational training centres. AVN and Le Partenariat will be technical operators for the project, which will be headed by the Senegalese departments and managed by the Departmental Council of Yvelines and its representative in Fouta, the Maison des Yvelines. The project was submitted to FICOL during the 2019/2020 season, with a decision to be taken next season.

Buildings completed this season



1 NV/RC Classrooms

Surface: 127 m²

Location: Ndioum,
Department of Podor

Client: ASAPEA Ndioum /
*Association amitiés les
Mureaux de Ndioum*

Project completed between
July 2019 and May 2020



2 Agricultural warehouse

Surface: 74 m²

Location: Thiéhel, Department
of Matam

Client: ONG ADOS

Project completed between
January and March 2020



3 Electrified Activity Area

Surface: 250 m²

Location: Mbiddi, Department of Podor

Client: GERES

Project completed between
November 2019 and March 2020





4 Multipurpose training centre

Surface: 91 m²

Location: Walaldé,
Department of Podor

Client: YCID

Project completed between
February and May 2020



5 Equipment warehouse

Surface: 20 m²

Location: Ndouloumadji,
Department of Matam

Client: *Association pour
le developpement de
Ndouloumadji*

Project completed
in May 2020



Ghana

In Brief

POPULATION (IN 2019)

30,4 million inhabitants
(43% rural)

GDP PER CAPITA

\$2,202 - 18th in Africa
(World Bank, 2019)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2014

HUMAN RESOURCES

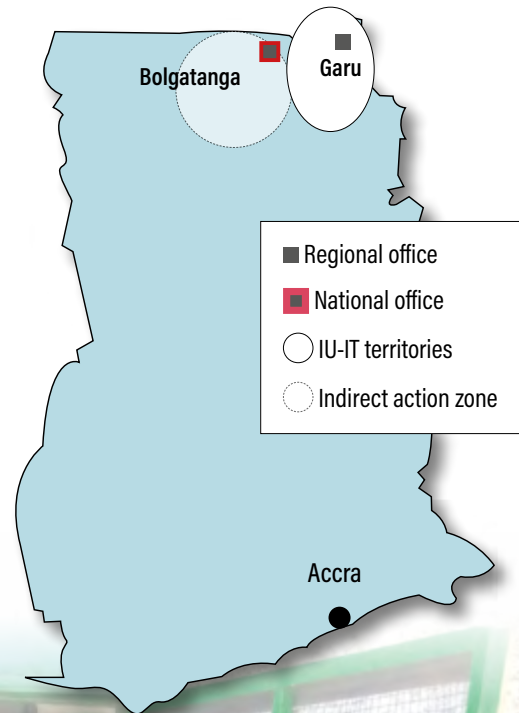
5 local employees and
1 VSI

ROLLOUT

- ▶ 1 zonal office opened
- ▶ 1 IU-IT rollout territory
- ▶ 1 indirect action zone

BUILDINGS CONSTRUCTED

79 worksites since 2014



Ghana is different from the other countries in which AVN is active because it is the only English-speaking country and also that with the highest GDP. In 2014, the northeast region of Ghana was chosen as a rollout zone for the following social, economic, climate and strategic reasons:

- a Sudano-Sahelian climate;
- earth-based architecture is traditionally familiar, but wood used for roofing is now rare and has been largely replaced by zinc roofs. The lack of housing is particularly serious due to rents and the high cost of construction;
- geographical proximity with Burkina Faso facilitates the transfer of competencies between teams of masons;
- the linguistic proximity between Frafra, the traditional language of the Northeast, and Mooré, spoken by most of the Burkinabe NV masons, allows practices and skills to be exchanged.

The interest in NVs is clear, both from private and community clients, but promotional strategies need to be adapted to the local context and socio-economic conditions.

Rollout



1 IU-IT rollout territory
2 active Implementation Units
1 indirect action zone



1 Operational Partner being identified

This season activities concentrated on the Garu region with the implementation of the PISSCA project on "adapted housing in North Ghana by training masons on Nubian Vault construction techniques using local and sustainable materials that are adapted to the local economy and respond to climate and environmental challenges". This was funded by the French embassy's SCAC for the 2019–2021 period.

This season, two events slowed the implementation of market development activities and the mobilization of Operational Partners:

- **at the start of the season, the growing security risk in the North Ghana region** (on the border with Burkina Faso) forced the national coordinator (VSI) to leave the zone and to manage things remotely from the capital, Accra, in the south. This reorganization disrupted the implementation of activities, in particular the development of institutional and operational partnerships;
- **in March, the COVID-19 pandemic** led to gatherings being banned and travel restrictions between cities being introduced. These measures had an impact on most project activities: a fall in the number of missions by the national team to support the regional team and in the number of awareness-raising sessions for partners and rural clients.

In terms of relations with public authorities, the representatives of two area councils (at IU level) are actively working on mobilizing the population, and the district representatives (at IT level) from Garu have been informed of AVN activities in the region and support them.



Visit of the representative of the district of Garu on the stand of AVN at National Farmer's Day.

In addition, AVN-Ghana was invited to the second edition of the **Climate Chance Summit Africa, dedicated to the topic "Working together to accelerate action on climate change"**, held in Accra in October 2019. This brought together 2,000 participants of 50 different nationalities (including 34 African nationalities) and a diversity of non-state actors engaged in the fight against climate change.

AVN was a speaker at the coalition workshop on "Sustainable Buildings and Construction", along with UN-Habitat, ADEME, the cities of Accra, Dakar and Pikine, the French ministry of Ecological Transition, the Global Alliance for Buildings and Construction (GABC) and Local Governments for Sustainability (ICLEI). Although the emphasis was placed on the issue of urban housing, AVN's presentation went beyond declarations of intent with an example of actual practice and concrete proposals for decision-makers and partners.



Ghana

Buildings constructed



11 worksites completed (-21%)
 100% of buildings intended for housing
282 m² built (-29%)
3 buildings (27%) completed using CICs



61 new user-beneficiaries



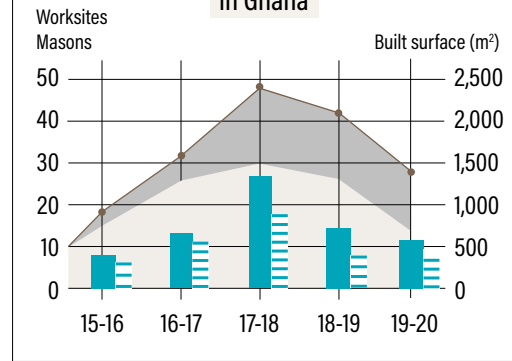
232 tons CO₂ eq. and
7 MWh potentially saved

Only 11 worksites were completed this year (-9%), all of which were for private use.

The AVN-Ghana team realized at the start of the season that the proposed incentives (CICs) would not have the leverage effect expected on rural demand, like in Mali and Burkina Faso. Several measures were taken during the season to give a boost to demand:

- an increase in the amount of the incentive and the addition of supplementary funds for regional rainfall-specific plans;
- enhanced awareness raising with clients:
 - **more awareness-raising missions held** in the communities concerned,
 - **the broadcast of a community radio show**, thus reaching a broader audience,
 - **specific missions to support masons in their marketing efforts**, to help them find potential future clients and prepare construction projects.

Evolution of the building stock and workforce in Ghana



Built surface
 Worksites
 NV active workforce (including apprentices)
 Proportion masons/new apprentices

Next season, **specific support is foreseen for Ghanaian artisans** so that they use the incentives more effectively as a marketing tool to develop their markets. All of these measures should increase demand and energize the rural private market in the Garu region.

Contracting of a NV housing project using CIC.



Establishment of supply



28 active apprentices, masons, artisans and entrepreneurs including
13 new apprentices this season
86% of projects were found independently



1,550 man-days of training by
3 operational NV Trainer Masons
benefitting **28 trainees**
14 trainee qualifications validated (-56%)

The number of artisans and masons active on the NV eco-construction market remains unchanged from last season (10). The number of mobilized apprentices, however, fell this season due to the low number of buildings completed during the season.

In terms of training, satisfactory results were obtained thanks in particular to better targeting of trainees at the beginning of their training. The small number of trainees, which represents 100% of those active, means that their needs and progress can be followed very closely.

On-site training and classroom modules were adapted in order to incorporate technical characteristics specific to the Ghanaian context (the climate, soil), in particular as regards foundations and rainfall drainage systems.

14 on-site training modules took place, taught by 5 Trainer Masons, including:

- **7 initial training worksites** (GBT-AHs);
- **1 Reinforcement on Building Site – First Clients** (RB-FC) module allowing trainees to work as site foremen for the first time;
- **6 Technical Modules on Specific Stages** (TMSS) to learn more complex construction techniques.



Site carried out as part of the NV dissemination project financed by GERES.

Along with on-site training modules, theoretical learning in a classroom setting took place, with **2 technical modules and 2 modules on defining and managing a building site provided to 17 NV masons and chief masons**, to improve their ability to manage teams and organize worksites.

Next season, to ensure that Ghanaian NV artisans become more autonomous in developing their market, an enhanced business training module will be offered to them.

6 Trainer Masons (including three potential TMs) benefitted from the "Good On-Site Training" module.

In addition, like in Burkina Faso, some formal actors from the vocational training sector are beginning to express interest in the training and development of the NV eco-construction sector. **A partnership was signed at the start of the season with the Bolgatanga Technical University**, an academic and vocational training centre, to jointly develop an NV pilot training programme for construction sector actors. The meetings held were an opportunity to exchange technical and pedagogical documents and to begin planning how to organize the new curriculum and how to produce the relevant documents. These discussions will continue next season.



Benin

In Brief

POPULATION (IN 2019)

11,8 million inhabitants
(52% rural)

GDP PER CAPITA

\$1,219 - 27th in Africa
(World Bank, 2019)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2014

HUMAN RESOURCES

7 local employees

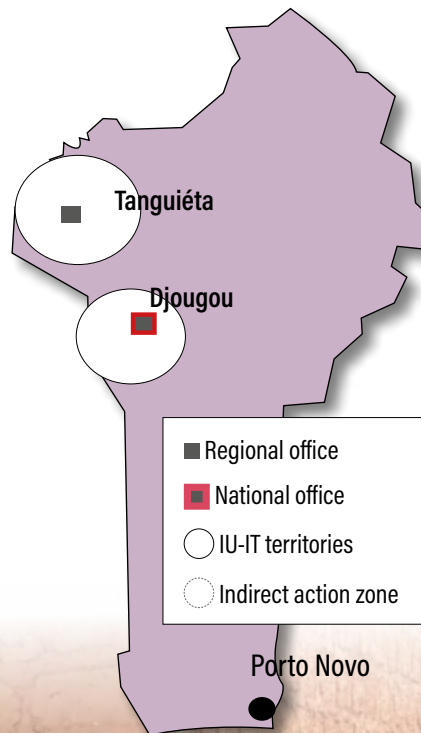
ROLLOUT

- ▶ 2 zonal offices opened
- ▶ 3 IU-IT rollout territories
- ▶ 2 indirect action zones

BUILDINGS

CONSTRUCTED

100 worksites since 2014



AVN began working in Benin in 2014, focusing specifically on the Atacora-Donga and Djougou regions for the following social, economic, climate and strategic reasons:

- a Sudano-Sahelian climate;
- Atacora-Donga is one of the poorest regions in Benin; most of its population lives off of subsistence farming and therefore represents the programme's core target group;
- northern Benin has the typical characteristics of housing in Sahelian zones: the architecture is earth-based and a familiar tradition, but since the straw used for roofing is rare, zinc roofs are widespread;
- the many contacts for partners on the ground, with positive feedback and keen interest for the programme expressed by the communities met with.

Local take-up of NVs is gradual and is taking root in the regions thanks to the active involvement of local organizations and an emerging NV sector of NV eco-builders.

Rollout



3 IU-IT rollout territories
8 active Implementation Units
2 indirect action zones



7 Operational Partners mobilized
on programme rollout
1 project carried out

The highlight and major opportunity of the season and for the development of the NV market in Benin was the receipt of financing from the EU for the project "A bioclimatic construction sector for youth employment in North Benin", which began in January 2020.

This project allows the NV territorial dissemination strategy to be rolled out over three years in eight IUs (arrondissements), spread out **over three communes (ITs) - Djougou, Ouaké and Tanguiéta** - with the **proactive involvement of two OP-ITs (AVIGREF and UCCPA) and five of their units (five OP-IUs)**. Though the project suffered from a late start to activities this first season, the operational arrangements foreseen should lead to interesting results in terms of Operational Partners gaining independence, the establishment of supply and the development of demand, allowing a threshold to be passed in terms of the spread of NVs in northern Benin.

In addition, at the start of the season **the decision was made to discontinue programme rollout in the zones to the south of Djougou**, due to heavy rains during the rainy season that prevented any broader spread of NVs. It was therefore decided to suspend all activities in the region, including the mobilization of stakeholders.

With the two OP-ITs AVIGREF and UCCPA, both strongly committed, fundraising efforts took place to make available additional funds for the ongoing EuropAid project and to allow activity to start in new zones. In particular, it is worth noting the NV market development project being set up with AVIGREF; this focuses on the Pendjari and W parks in 22 communes over 5 years and has been proposed to the African Parks Network (APN) - West African Savannah Foundation (WASF) project.



Drawing up this project was an opportunity to raise awareness with two institutional actors that have attested as to the idea's worth: the National Agency for the Promotion of Heritage and the Development of Tourism (ANPT) and the National Centre of Management of Fauna Reserves (CENAGREF) of W Park.

As for the involvement of local authorities, the mayor's offices of Tanguiéta and Ouaké met with AVIGREF and UCCPA respectively and committed to working with AVN and its partners to implement the EuropAid project in the six arrondissements concerned.

In addition, **the discussions that had broadly begun with the mayor's office of Djougou concerning a green cities project** focused on NV eco-construction and the training of a green sector did not lead to anything due to the resignation of the mayor during the municipal elections.



Benin

Buildings constructed



27 worksites completed (+50%)
81% of buildings intended for housing

650 m² built (+77%)

19 worksites (70%) completed using CICs



3 community buildings built, including
2 buildings for production/livestock farming



192 new user-beneficiaries



533 tons CO₂ eq. and
17 MWh potentially saved

With 27 worksites completed (+50%) and 650 m² of surface area built (+77%), there was again an increase in production, even though below the set objectives.

This was because raising awareness to boost demand was mainly carried out via direct canvassing by masons and artisans, who are still somewhat inexperienced and therefore need support in doing this. AVN and the OPs were only able to carry out awareness-raising activities in February after the EuropAid project was signed and the OPs trained in implementation. Due to late harvests and the early rainy season in Benin, few clients

were able to gather the materials needed in time for this season and decided to prepare for next season instead. In addition, the COVID-19 health crisis created a climate of uncertainty and economic insecurity, which dampened villagers' ability to begin a construction project.

During the 2020/2021 season, the approach to raising awareness with and supporting clients is to be strengthened in order first to spur them to take a decision and second to carry out their NV building project, through:

- stronger participation from OP and AVN facilitators on the ground and the organization of awareness-raising missions in villages;
- monitoring of the client/mason relationship in order to facilitate their discussions and effectively organize worksites;
- the implementation of incentives for clients building before 31 January, thus allowing them to more easily reconcile harvests and worksite preparations. This was announced starting in July to encourage clients to gather the materials as soon as possible.



Carrying out plasters on a NV house.

Establishment of supply



71 active apprentices, masons, artisans and entrepreneurs including
 42 new apprentices this season
 22% of projects were found independently



1,700 man-days of training by
3 operational NV Trainer Masons
 benefitting **70 trainees**
53 trainee qualifications validated (+77%)

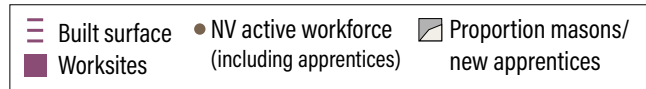
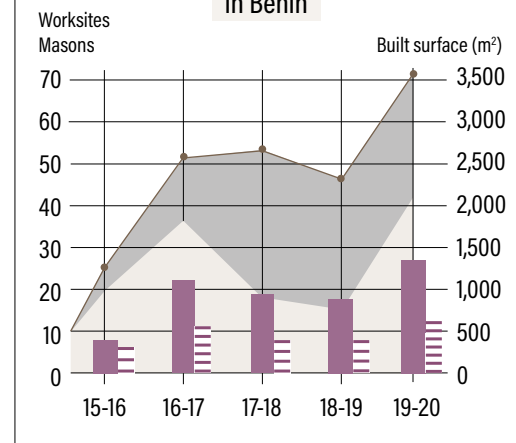
The number of artisans, masons and apprentices active on the NV eco-construction market grew by 54% this season, with new apprentices/trainees mobilized as part of the methodological project in eight IUs with AVIGREF and UCCPA.

75% of those working passed a qualification at the end of the season, most of whom were apprentices who began the training cycle this season, as did about ten new masons and artisans who could take responsibility for worksites next season.

18 on-site training modules took place, taught by three Trainer Masons, including:

- **11 training worksites** (GBT-AHs), which was half of the objective set, given the January launch of the EuropAid project; this meant that the selection of trainees took place late, with OPs having to be trained in advance;
- **5 Reinforcement on Building Site – First Clients modules** (RB-FC), allowing young masons to take charge of their first worksite, obtained thanks to financial incentives;
- **2 Technical Modules on Specific Stages** (TMSS) on complex techniques.

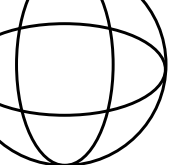
Evolution of the building stock and workforce in Benin



In addition to the on-site training modules, **theoretical learning in a classroom involved 12 modules: 9 technical modules and 3 modules on defining and managing a building site**, for which trainees demonstrated great interest and active participation.

Next season particular emphasis will also be placed on strengthening artisans' and masons' business skills, in order to guarantee their autonomy at all the necessary stages (seeking clients, negotiating, drawing up estimates, and following up with and supporting clients as they gather necessary materials).

In addition, the objectives for next season are rather ambitious in terms of on-site training, with an intense operational schedule. AVN and the OPs therefore secured the availability of Burkinabe Trainer Masons (TMs) from the end of the season in order to strengthen the young Beninese TM team, as well as that of an inspector TM to ensure the quality of the training provided.



France & International

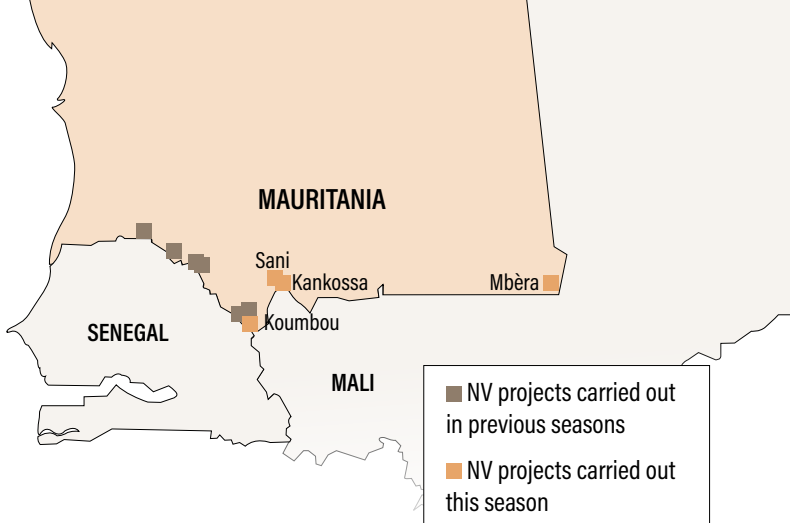
Other Countries

■ Mauritania

The specific approach taken to the spread of the NV eco-construction market does not include the deployment methodology used in Mali and Burkina Faso. Over recent years various opportunities have led to several construction projects being carried out in conjunction with the Al-Mizan Sahel consultancy firm, founded by Mathieu Hardy, an architect and AVN partner, and implemented by Trainer Masons and external NV artisans. These exemplary initiatives have led to the launch of a local NV sector and have mobilized and raised awareness with a broad panel of actors in the country.

This season, 6 NV buildings were built:

- the administration buildings (2 x 75 m²) and caretakers' lodges (2 x 31 m²) for the Kankossa and Sani schools (in the Assaba region), undertaken by Malian NV artisans and their Mauritanian trainees and supported by the International Labour Office;
- the agri-food processing centre (88 m²) for the Mbèrè refugee camp (in the Hodh Ech Chargui region), undertaken by Burkinabe artisans and their Mauritanian trainees and also supported by the International Labour Office;



- the agri-food processing centre (75 m²) for Koumbou (in the Guidimakha region), undertaken by Burkinabe artisans and their Mauritanian trainees and supported by a resident of the village.

It should also be noted that **local training that was possible due to the various buildings completed in recent years has begun to bear fruit**, with about 15 people seriously involved, including the first two Mauritanian artisans.

Next season (2020/2021), NV building sites are planned for the regions of Gorgol, Assaba, and Hodh Ech Chargui. **Interest in the NV technique is becoming more and more marked, inviting us to think about launching a more ambitious plan specifically adapted to the Mauritanian context.**



Kankossa college construction site



Sani college construction site

International events and advocacy

AVN participated in several international events, helping to spread the reach of its project, including several by videoconference due to the health crisis:

- **A meeting with the French Partnership for the City and Territories (PFVT)** in Paris in Sept. 2019, during which AVN was involved on the topic of "Resilience and the Climate";
- **The inauguration of the ESSEC Grand Prix exhibit for the City of Solidarity and Responsible Real Estate** in Paris in Sept. 2019, a competition for which AVN won the special prize for the French-speaking African City of Solidarity;
- **The "Financing Access to Housing" conference organized by the French Development Agency (AFD)** in Paris in Sept. 2019, at which AVN presented the financial levers of the NV market;
- **The forum on "decentralization and decentralized cooperation for the emergence of Fouta"** in Les Mureaux (78) in Sept. 2019, which focused on getting to know initiatives taken by partners in the Fouta region, including the NV Fouta programme;
- **The 2nd edition of the Climate Chance Summit Africa in Accra (Ghana)** in Oct. 2019, with AVN participating in the coalition workshop on "Sustainable Buildings and Construction";
- **AVN's presentation to a group of Yvelines associations** belonging to the Yvelines International Cooperation and Development Group (YCID) in Mantes-la-Jolie (78) in Oct. 2019;
- **The conference on France's international strategy for food security, nutrition and sustainable agriculture**, held by the Ministry of Europe and Foreign Affairs in Paris in Oct. 2019;
- **The conference on eco-construction models at the Federal Institute of Technology Lausanne (EPFL)** in Nov. 2019, at which AVN presented the NV technical concept and its outreach programme for West Africa;
- **The Sudan International Education Conference (SIEC)** in Jan. 2020, co-organized by the World Bank, the European Union, UNICEF and Sudan's Ministry for Education, at which Mathieu Hardy, an architect and AVN partner, presented AVN's programme in the Sahel;
- **The conference on "What types of housing for sustainable cities in Africa?"**, co-organized by the Department of Yvelines, the Yvelines International Cooperation and Development Group (YCID), the Mali Yanga Association and the housing network Réseau Habitat Francophonie (RHF) in Versailles in Feb. 2020, at which AVN presented the NV for social housing;
- **The Forum of Earth-Based Construction Actors (FACT+)** in Siby (Mali) in Feb. 2020, at which AVN moderated a conference;
- **The conference at the African School of Architecture and Urban Planning (EAMAU)** in Lomé (Togo) in Feb. 2020, with representatives from nine African countries;
- **The webinar on "understanding desertification and fighting its causes"**, organized by **Coordination SUD** in June 2020;
- **The virtual workshop, "After the crisis: Building back better to strengthen the resilience of tomorrow's sustainable cities"**, organized by **Climate Chance** in July 2020;
- **The working session on the implementation of an NV pilot project for displaced populations** with the United Nations High Commissioner for Refugees (UNHCR) and the Global Shelter Cluster in July 2020;
- **The virtual conference on "climate smart cooling solutions for sustainable buildings in Africa"**, organized by the UNFCCC in August 2020, at which AVN presented the link between its programme and financial levers for the market.

In addition, throughout the season, as part of the implementation of the PAMOC3 project, AVN participated in the work done by Coordination Sud's Climate and Development Commission (CCD) alongside other NGOs, which included:

- a webinar on the link between sustainable housing and adaptation and resilience to climate change, in Sept. 2020;
- participation in the study "Adaptation and resilience in development projects", as well as the production of a thematic note on the link between housing and resilience/adaptation to climate change;
- participation in capitalization workshops when related to AVN's field of expertise.



3 - Our Means for Action

■ Community Life

Established in 2000, AVN is a non-profit organization. It has about 30 active members.

The President, Benoît Lambert, regularly participates in various field missions. This season, he represented AVN at several events in Île de France and Togo (*see previous page*) where he gave a conference to representatives of 9 African countries, at the African School of Architectural Professions and of Urbanism (EAMAU) in February 2020.

Note, this season, the resignation of Nathalie Guillot from the Board of Directors in March 2020.

■ AVN's Board of Directors

- **Benoît Lambert**, President, designer (retired)
- **Anthony Kaye**, Vice president, university professor (retired)
- **Jean-Marie Crombez**, Treasurer, retailer
- **Michel Lenthéric**, Secretary, former director of ADEME and former regional councillor (retired)
- **Jean-François Naud**, Administrator, film director
- **Nathalie Guillot**, Administrator, architect
- **Mand Ryaira Ngarara**, Administrator, public service executive

■ Human resources and organizational structure

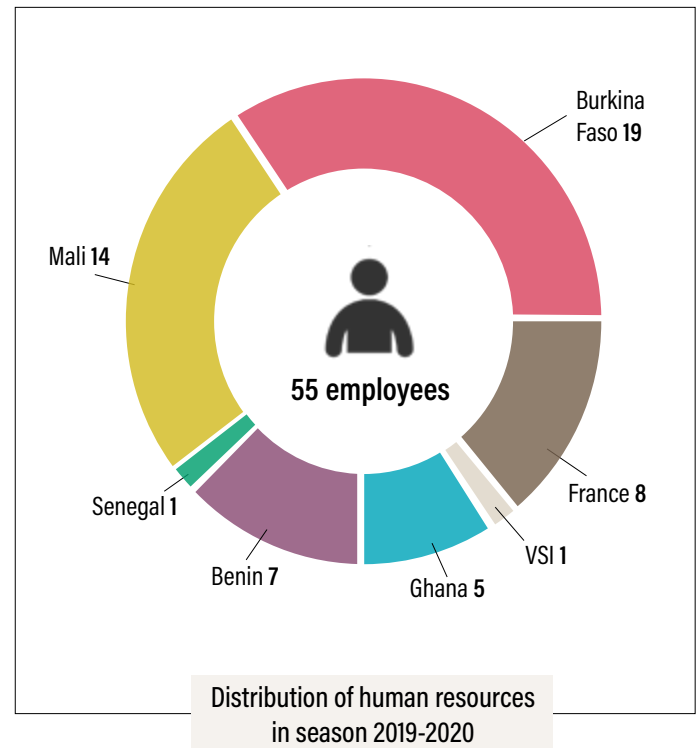
During the period of methodological transition (that is, this season and last), AVN's HR arrangements have remained mostly unchanged: between 50 and 60 employees, 85% of whom are FTEs in the countries in which AVN is active.

Since the start of the season, an **optimization exercise of management practices** has been carried out within the thematic teams and between different levels of intervention (geographical, thematic and organizational, involving Operational Partners); this was to make the steering, monitoring/evaluation and interlinked management of AVN's programme and its projects more efficient. This emphasis on improvement focused on two axes:

- methods to collect data and monitor activities, allowing for the implementation of a growing number of projects and adapted support for partners;
- consolidation of financial management methods, in order to meet the requirements of financial partners, the number and variety of which increased during the season.

At the end of the season, given the results achieved, the HR changes that took place during the year or that were announced for the end of the season, and the prospect of an increase in activities and projects for the 2020/2021 season, **it was necessary to reconsider certain organizational aspects:**

- the Administrative and Financial Team, which was particularly concerned by this season's turnover, increased its number of staff members and set up an internal audit department whose first mission is to improve financial management and accounting procedures; the creation of this new team, the revision of the reference manual, the application of new procedures and checks on them are planned for the 2020/2021 season;



- the Training Team also replaced international and assistant coordinators, with an increase in the number of dedicated FTEs next season, so as to be able to plan and launch the many activities to be led by the team;
- the Technical Expertise, Development and Monitoring/Evaluation Teams also added to their numbers in line with the expected increase in activities and the need to optimize monitoring/evaluation and fundraising, which will allow the scaling up of development of the NV market and the ability of AVN and its partners to intervene.



4 - Financial Report

Sound financial management

The Association constantly seeks to ensure transparent and reliable financial management. Since 2013, the annual accounts have been audited by a statutory auditor following review by a chartered accountant. Specific audits are carried out to ensure that expenses comply with the expectations of the different donors. Financial scorecards and indicators are regularly established, allowing AVN's activities to be continually monitored throughout the year in line with the budgets established for each country and region. The local financial directors are regularly monitored and trained by the team at headquarters.

Monitoring of forecasts

Each year, AVN draws up a budget that is updated quarterly. Expenditure is forecasted, taking into account specific features requested by donors and local constraints. This periodic forecasting allows AVN to efficiently redirect the monitoring by headquarters and local coordinators and to best manage fundraising. The steering committee, division managers and local coordinators work together to produce high-quality information both up- and downstream.

Providing suitable IT resources

AVN has for several years used SAGA software to follow expenditure by country, project and donor. The local teams have mastered this tool, which allows them to carry out standardized monitoring of their expenses against their budget. Accounts in euros are combined on a quarterly basis using the Coala programme, with the assistance of a chartered accounting office. Payment of salaries at headquarters is outsourced.

Motivated members of staff

In the Burkina Faso and Mali National Coordination Offices, two skilled administrative and financial managers (RAFs) check the accounting information from the regional offices and import it into SAGA; this takes place in Boromo (Burkina Faso), in Ségou (Mali) and in Djougou (Benin). Ghana's accounting control is handled at headquarters. At headquarters, the financial team checks, coordinates and produces the summary financial statements and reports to donors, administrators and accountants in France. Country coordinators are responsible for budgets and funding appeals and also check local expenditure.

A partnership that continues to develop

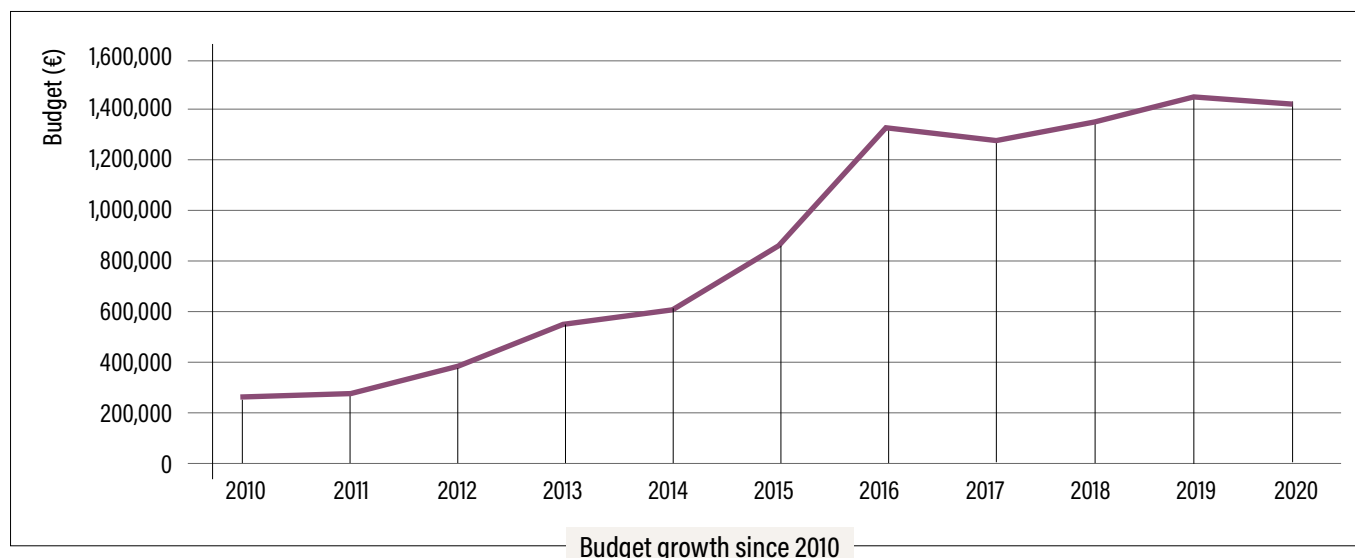
AVN has established close relationships with its partners to whom it subcontracts some of its activities, in particular with the NGO Le Partenariat for activities in northern Senegal. This cooperation involves regular, reliable financial reports as well as a mutual understanding of administrative and financial procedures.

Regular cash management

The diversity of resources managed requires regular cash management, investment of liquid assets and using advances under the Dailly law. Funds received in advance of expenditure are placed in interest-bearing accounts paying around 2%. Some foreign donors subsidize activities in dollars, which also means that those resources must be monitored to ensure that the currency exchange is properly applied in accordance with those activities.

Enhanced local management

AVN provides local actors with the resources to gradually gain autonomy through continual training and by having them take charge of different operations. The financial management tools are controlled locally, and certain donors transfer their funding directly into the accounts of local branches, which requires supervised local management of transfer of funds, from allocation of expenditure to the establishment of specific financial reports (e.g., the World Bank in Mali, the Canadian government in Burkina Faso, the French embassy in Ghana).



Statement of Resources & Expenses

RESOURCES in EUROS	2019-2020	2018-2019
French State Funds	491,659	659,632
Social Investors / Organizations	694,295	665,575
Individual Social Investors	67,730	68,934
Other	172,275	55,503
Total Resources	1,425,959	1,449,644
In-kind voluntary contributions	6,660	13,786
Total General	1,432,619	1,463,430

EXPENSES in EUROS	2019-2020	2018-2019
Salaries & Costs	554,116	532,975
Fees	100,073	116,921
Field Missions	456,022	413,474
Fundraising & Administrative Expenses	67,505	74,988
Investments & Constructions	231,829	270,492
Total Expenses	1,409,545	1,408,850
Result	16,414	40,794
In-kind voluntary contributions	6,660	13,786
Total General	1,432,619	1,463,430

Balance sheet

The increased fixed assets concern the purchase of vehicles and computers for staff, as well as credits for loans or advances to staff. Credits due consist of the balance of various conventions and invoices awaiting payment. Other main liabilities include provisions for accidents, paid leave, and various tax and social payments due.

Some sponsors have advanced funds to AVN for periods later than August 31st. : these funds are noted as advance payments.

Jobs

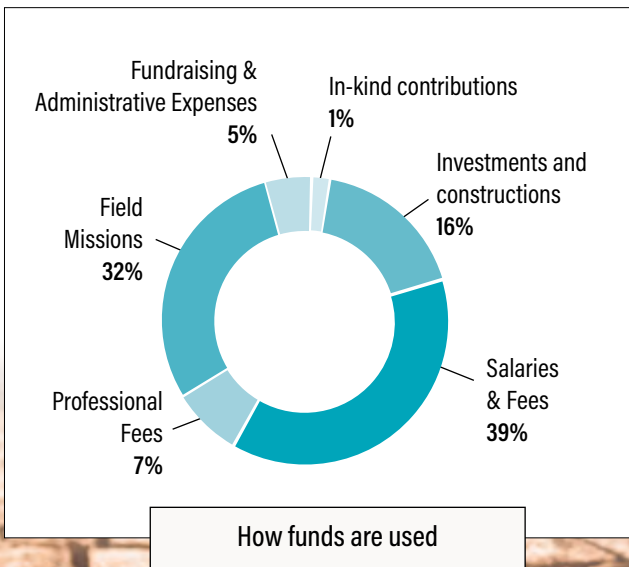
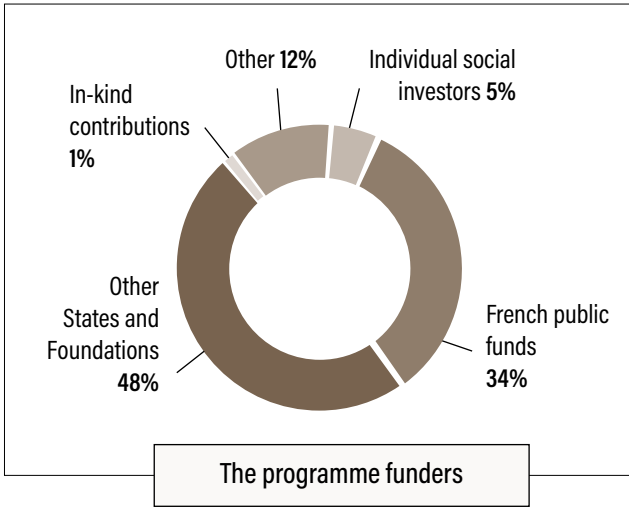
Financial incentives for construction have been deployed for both clients and masons (83K€). Mason training has become a dominant activity, both on-site and through group sessions (60K€).

The programme in Senegal continues, with the NGO *Le Partenariat* (118K€).

Active and passive balance sheet

ACTIVE BALANCE SHEET in EUROS	31/08/20	31/08/19
Fixed assets	30,764	7,507
Other receivables	7,637	4,518
Prepaid expenses	1,080	22,823
Products to receive	93,560	215,112
Treasury	561,179	109,427
Total Assets	694,220	359,387

PASSIVE BALANCE SHEET in EUROS	31/08/20	31/08/19
Stocks	128,035	87,241
The result of the exercise	16,406	40,794
Payables	2,741	50,396
Other debts	90,691	50,642
Prepaid income	456,347	130,314
Total Liabilities	694,220	359,387



AVN's funders and areas

FUNDERS	Burkina	Mali	Benin	Ghana	Senegal
French State					
AFD - DPO	█				
CD78 - YCID			█		
Île de France		█			
Expertise France	█				
SCAC - French embassies				█	
Other States and Foundations					
Alwaleed Philantropies	█	█	█	█	█
PEJDC	█				
Europaid			█		
PATRIIP - WHH	█	█			
Government of Quebec - ICCP	█				
Individuals Social Investors	█	█	█	█	█
Billing	█	█			
Other	█	█	█	█	█





5 - Partners and Awards

■ Financial Partners

Financial partners who co-financed the 2019-2020 season



■ Networks



■ Prizes and Awards

Prizes and awards won in 2019-2020



The jury of the prize for urban innovation awarded by the prestigious French newspaper *Le Monde* is made up of experts

from round the world (politicians, researchers, corporate and foundation directors, architects, and urbanists). In this the fifth year of operation of the Prize, the jury has awarded the Grand Prix to AVN for its programme of adapted housing and construction in West Africa.

61 projects were in competition for the Prize, in 5 categories: Habitat, Mobility, Energy, Urbanism, and Citizen Participation. AVN's project was specifically noted for its innovatory approach, its international coverage, and its potential for scaling up.

Through this latest sign of international recognition, AVN hopes that the essential importance of adapted housing and construction will receive more emphasis and attention. This key issue and its associated impacts on professional training, employment, attenuation of and adaptation to climate change, environmental protection, and strengthening of local economies should no longer be neglected.



Photos taken from Sophie Douce's article @lemonde.fr



Partners on the ground

Burkina Faso

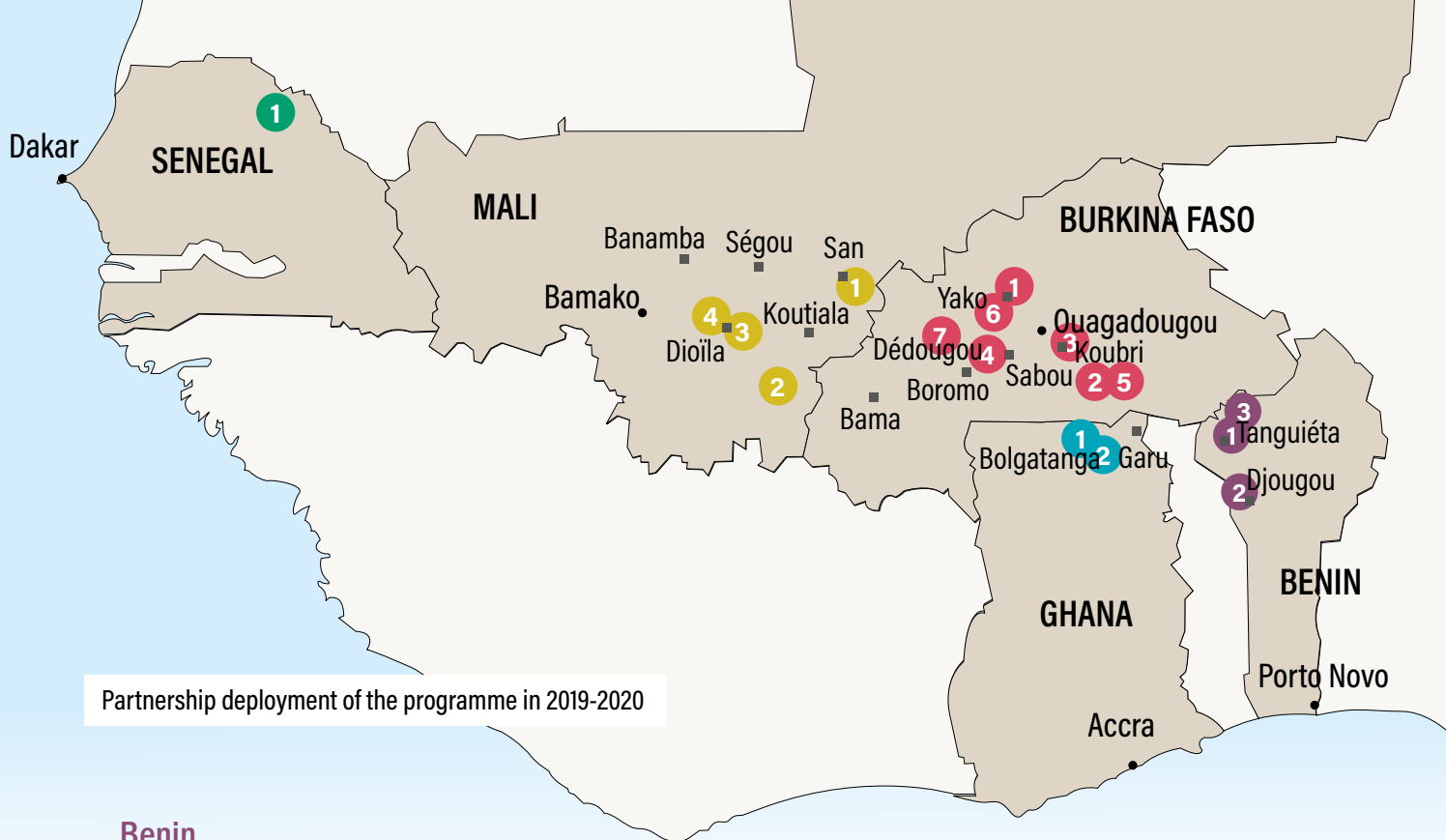
- 1 National Federation of NAAM Groups (FNGN), Viim Baoré Cooperative and NAAM unions**
Umbrella organization for 90 farmers' organizations
▶ AVN's programme is disseminated by about 20 NAAM unions and by the Viim Baoré Cooperative in two regions in Burkina Faso (the Nord and Boucle du Mouhoun regions).
- 2 Provincial Association of Nong-Taaba Artisans and Guilds from the Boulgou Province (APAGAN-B) and local unions**
Artisan association
▶ AVN's programme is disseminated in the Boulgou province (the Centre-Est region), with support from local communal relays.
- 3 Tind Yalgré Association (ATY) and local unions**
Farmers' group for socio-economic and cultural development
▶ AVN's programme is disseminated in the Plateau-Central region through the efforts of village groups.
- 4 Regional Unions of Dolo Women Producers from the Boucle du Mouhoun (URPD-BM) and local unions**
Grassroots organization
▶ Dissemination of AVN's programme in the Boucle du Mouhoun region.
- 5 Provincial Association of Koulpelogo Artisans (APAK)**
Artisan association
▶ AVN's programme is disseminated in the Boulgou province (the Centre-Est region).
- 6 Credit and Savings Baoré Tradition Union (UBTEC)**
- 7 Association for the Promotion of Inclusive Finance in Burkina (APFI-B)**
Microfinance institution
▶ NV Housing Loans established and distributed (project currently on hold while awaiting the funds and mobilization of partners necessary for its implementation).

Mali

- 1 Coordination for Women's Associations (CAFO)**
Coordination of 200 women's associations
▶ Dissemination of AVN's programme in three communes in Tominiian cercle.
- 2 Meeting of Rural Women for Food Sovereignty (COFERSA)**
Meeting of 40 rural women's cooperatives
▶ AVN's programme is disseminated in the Sikasso region by several of its cooperatives.
- 3 Diédougou Union of Cereal Producer Cooperatives (USCPCD)**
Association of 7 cooperatives
▶ Implements projects to build agricultural buildings and to train local NV masons, financed by the NGO SOS Faim.
- 4 Union of Cooperative Societies of Cereal Producers of the Circle of Barouéli (USCPCCB) "Yèrènyèton"**
Union of 6 cooperatives
▶ Implements projects to build agricultural buildings and to train local NV masons, financed by the NGO SOS Faim.

Senegal

- 1 Le Partenariat (LP)**
NGO
▶ Co-operator of the NV Fouta project, which promotes and disseminates the NV market, in partnership with institutional actors, in the departments of Matam, Podor and Kanel.



Benin

- 1 Villagers' Association for the Management of Wildlife Reserves (AVIGREF)**
Umbrella organization of 32 village associations
 ▶ Dissemination of AVN's programme in 3 arrondissements in Atacora department, under the programme financed by the European Union.
- 2 Ouaké Communal Union of Cooperatives for Cashew Nut Producers (UCCPA)**
Umbrella organization for cooperatives
 ▶ Dissemination of AVN's programme in the commune of Ouaké (Donga department), under the programme financed by the European Union.
- 3 Ecology & Community Development (ECODEC)**
NGO
 ▶ Dissemination of AVN's programme in "Pendjari" (Atacora Department).

Ghana

- 1 Youth Harvest Foundation Ghana (YHFG)**
NGO
 ▶ Relay Partner that raises awareness and mobilizes Operational Partners in the Upper East region of Ghana.
- 2 Department of Construction Techniques and Civil Engineering of Bolgatanga Polytechnic**
Vocational training actor
 ▶ Implementation of a pilot dual curriculum (technical and academic) to train construction technicians.



NV site in Benin.

Prospects

The anticipated dissemination of a sustainable, affordable and resilient housing solution in the Sahel is based on three main axes: the emergence and growth of an eco-construction sector, raising awareness about and providing incentives for eco-construction to different clientele, and gaining support for this new market from a range of actors who, together, will generate a favourable business environment.

Over time, these axes will each require specific action, amongst which AVN has pinpointed the following as most urgent:

Emergence of a green construction sector:

- Positioning, strengthening and bringing together NV Trainer Masons working in informal contexts;
- Mobilizing and training construction industry technicians who can work with artisans and companies in formal and/or urban markets;
- Mobilizing actors from the institutional vocational training sector (VTCs, responsible ministries, etc.) on the dual and inclusive training pathways.

Strengthening demand:

- Distributing, in the private and rural core target market, financial incentives for eco-construction and offering "mitigation" value for NV buildings on the voluntary carbon/GHG offset market;
- Ensuring microfinance operators have the capacity to offer products for access to new housing in rural areas;
- Raising awareness about eco-construction with donors and project owners of community buildings and introducing terms of reference about thermal and environmental performance into their calls for tender.

Strengthening a favourable business environment:

- Mobilizing and supporting civil society leaders with advocacy focusing on the right to adapted and resilient housing;
- Adapting and strengthening public policies having to do with eco-construction issues, standardization of affordable and low-carbon building techniques, and dual and inclusive vocational training;
- Garnering the interest of donors and development operators about housing for as many as possible and about climate/environmental performance of the sector.

AVN and its Operational Partners alone cannot ensure the implementation of this vast range of actions in solving the housing problem in the Sahel.

In addition, awareness of the essential nature of this orphan issue, expanded mobilization of stakeholders, and ring fencing of specific financing, are the keys to resilience and to better living conditions for the populations of sub-Saharan Africa.

Thomas Granier
Co-founder and Director General of AVN

Acronyms

ZIE: International Institute for Water and Environment

ADOS: Association Ardèche Drôme Ourosogui Sénégal

AEDTT: Access to Sustainable Energy for All

AEDD: Agency for Environment and Sustainable Development

AEF: Family Mutual Aid Association

ADEME: Environment and Energy Management Agency

AFD: French Development Agency

ANPT: National Agency for the Promotion of Heritage and the Development of Tourism

APAGAN-B: Provincial Association of Nong-Taaba Artisans and Guilds from the Boulgou Province

APAK: Provincial Association of Artisans of Koulpelogo

APFI-B: Association for the Promotion of Inclusive Finance in Burkina

APGEF: Association for the Promotion of Gender and the Development of Women

APN: African Parks Network

ASAPEA: Association for the Support of Prevention and Education Actions in Africa

ATY: Tind Yalgré Association

AVIGREF: Villagers' Association for the Management of Wildlife Reserves

AVN: The Nubian Vault Association

AWAC: Walloon Air & Climate Agency

BF: Burkina Faso

BTP: Buildings and Public Works

C1/C2/C3/C4/C5: Beginner apprentice / Advanced apprentice / Mason / Artisan / Entrepreneur

CAEB: Advice and Support for Basic Education

CAFO: Coordination for Women's Associations and NGOs

CBO: Community Base Organisation

CEMCA-BTP: Training Centre for Mining, Quarry and Construction Professions

CENAGREF: National Centre of Management of Fauna Reserves

CIC: Financial Incentive

CNPB: National Council of Burkina Faso Employers

CO₂eq: CO₂ Equivalent

COFERSA: Meeting of Rural Women for Food Sovereignty

CQB/CQP: Certificate of Basic Qualifications/ Certificate of Professional Qualifications

DANIDA: Denmark's Development Cooperation

DRC: Danish Refugee Council

EAMAU: African School of Architecture and Urban Planning

ECODEC: Ecology & Community Development

ECRF: El-Ehsan Charitable Relief Foundation

ENABEL: Belgian Development Agency

EPFL: Federal Institute of Technology Lausanne

ESSEC: Higher School of Economic and Social Sciences

ESUP-J: Higher Polytechnic-Youth School

FBST: Full Building Site Training

FCPB: Head of the Caisses Populaires of Burkina Faso

FFEM: French Global Environment Fund

FICOL: French Local Authorities Financing Facility

FNEC: National Environment and Climate Fund

FNGN: National Federation of NAAM Groups

FTE: Full Time Equivalent

GABC: Global Alliance for Buildings and Construction

GBT-AH: Grouped Building Sites Training - Access to Housing

GEF: Global Environment Facility

GERES: Renewable Energies, Environment and Solidarity Group

HR: Human Resource

ICCP: International Climate Cooperation Program

ICLEI: Local Governments for Sustainability

IFRC: International Federation of Red Cross Societies

ILO: International Labor Office

IPA: Institut for Poverty Action

LP: Le Partenariat

LuxDev: Luxembourg's Cooperation Agency

MFI: Microfinance Institution

NGO: Non Governmental Organization

NV: Nubian Vault

NV-RC: Nubian Vault - Reinforced Concrete

OMH: Malian Office for Housing

OP: Operational Partner

PAFPA: Support Programme for Vocational Training and Apprenticeships

PAT: Triennial Action Plan

PEJDC: "Youth Employment and Skills Development" project

PFVT: French Partnership for the City and Territories

PISSCA: Innovative Civil Society Projects and Coalitions of Actors

PN-EFTP: National Policy for Technical and Professional Education and Training

R&D: Research & Development

RAF: Administrative and Financial Manager

RB-FC: Reinforcement on Building site - First Clients

RHF: *Réseau Habitat Francophonie*

ROPSA: Network of Farmers' Organizations for Synergy of Action

SCAC: Cooperation and Cultural Action Service

SNV: Dutch Development Organization

SPONG: Permanent Secretariat of Non-Government Organizations

TdR: Terms of Reference

TET: Technical Expertise Team

TM: Trainer Mason

TMSS: Technical Module on Specific Stage

UBTEC: Credit and Savings Baoré Tradition Union

UCCPA: Ouaké Communal Union of Cooperatives for Cashew Nut Producers

IU-IT: Implementation Unit - Implementation Territory

UN: United Nations

UNHCR: United Nations High Commissioner for Refugees

UNICEF: United Nations Children's Fund

UNFCCC: United Nations Framework Convention on Climate Change



URPD-BM: Regional Unions of Dolo Women
Producers from the Boucle du
Mouhoun
USCPCCB: Union of Cooperative Societies of
Cereal Producers of the Circle of Barouéli
USPCPD: Diédougou Unions of Cereal Producer
Cooperatives
VAE: Validation of Prior Experience
VSI: International Solidarity Volunteer
VTC: Vocationnal Training Centre
WASF: West African Savannah Foundation
WHH: *Welt Hunger Hilfe*
YCID: Yvelines International Cooperation and
Development Group
YHF: Youth Harvest Foundation
ZAE: Electrified Activity Area



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