

The Nubian Vault Association

ANNUAL REPORT

Season 2020-2021





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Cover photo: Family in front of their NV house in Mali
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Benoît Lambert, President of AVN, visiting a NV site in Togo.

■ Editorial

The year 2020, the pandemic, and the increasing impacts of climate change present global challenges to our individual and collective powers of resilience, and, indeed, to the future of our planet.

Hopefully, by the end of 2021, and as a result of the world-wide mobilisation of resources, humanity will recover from the effects of the pandemic and be able to successfully adjust to a 'new normal'. Now is surely the time to consider how similar levels of global resource and effort can be applied to combating the issues of climatic and environmental changes and, in particular, to support those populations who are suffering the most from these life-threatening challenges whilst benefiting the least from global economic development.

One of the greatest of these challenges is the provision of decent, affordable, and sustainable housing for the populations of sub-Saharan Africa and the associated benefits in terms of health, security, economic development and employment, as well as adaptation to and attenuation of the effects of climate change, which can be effected by appropriate national and international policies.

Thomas Granier,
Founder and Director-General of AVN

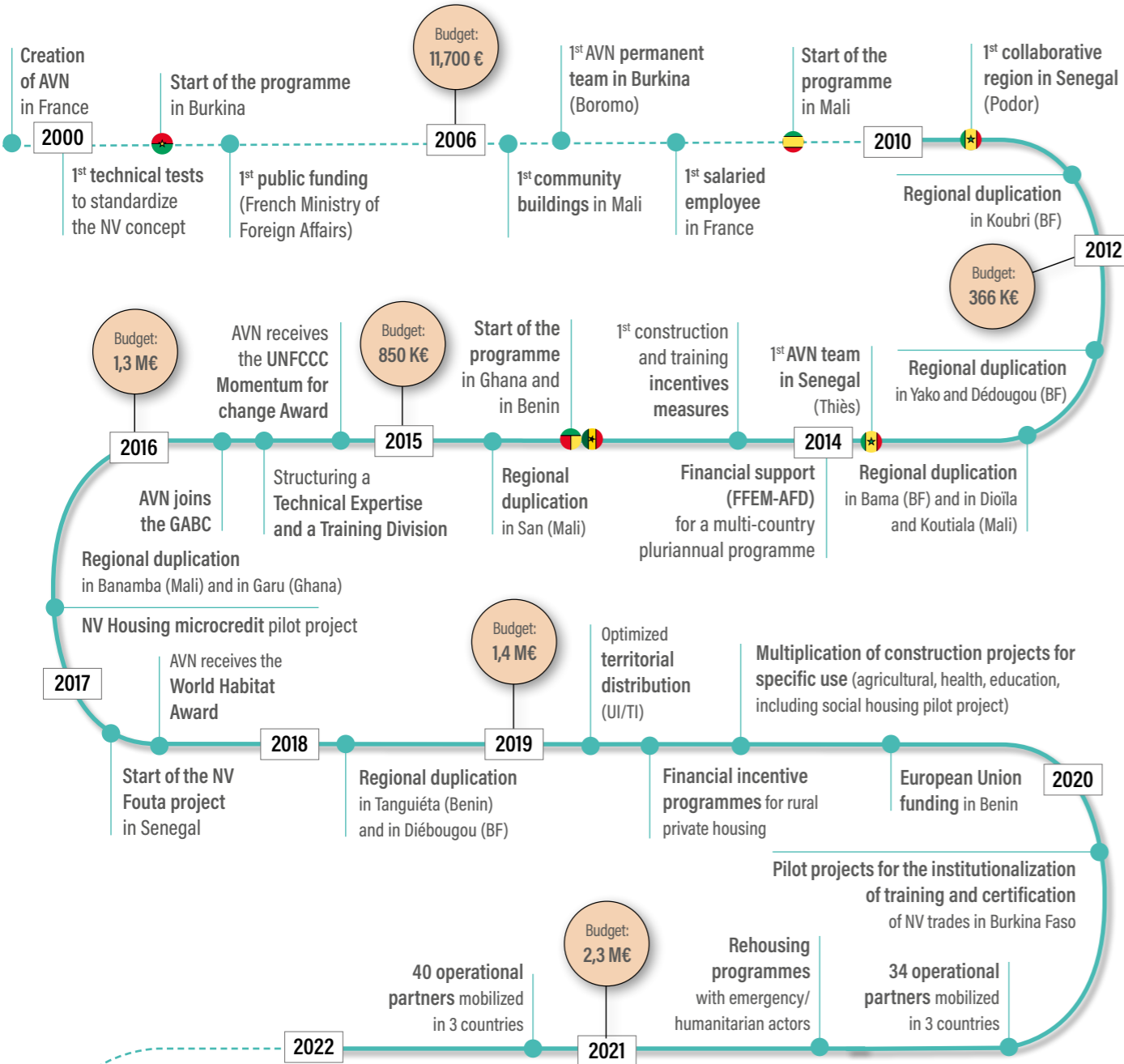
■ Community Life

Established in 2000, AVN is a non-profit organization. It has about 30 active members. Its Board of Directors is made up of 7 people:

- **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
- **Mand Ryaira Ngarara**, Administrator, public service executive
- **Cécilia Rinaudo**, Administrator, Communication Manager

The President of the Association, Benoît Lambert, regularly participates in various field missions. This season, he represented AVN at several events, particularly in Togo with students from the African School of Architecture and Urban Planning (EAMAU), which has shown an interest in our programme for several years.

■ Programme history



■ Key figures of the programme

AVN's programme not only offers a sustainable response to the problem of housing but also to issues of economic empowerment, youth employability, vocational training, environment and climate (adaptation/mitigation).



**Decent Housing
Climate Adaptation**

53,000 beneficiaries user
5,200 worksites / 170,000 m² including
18% built in 2020-2021 i.e.
937 private/community built this season

**Green-Jobs
Vocational Training**

1,164 active apprentices, masons, artisans and entrepreneurs including
700 trainees
31 trainer masons having implemented
384 training modules

**Climate-Mitigation
Environment**

0 trees felled for building purposes
140,000 tons CO₂ eq. and 4 300 MWh potentially saved since the start of the programme

Territorial Rollout

6 countries involved
12 regional offices and 55 employees
1,500 towns

Growth

20% average annual market growth (since 10 years)

Local-Development

4,8 M euros generated on the local market
34 Operational Partners mobilized



1 - The programme

■ Sustainable and resilient housing in Sahelian Africa: a key challenge

Whether rural or urban, individual or collective, the built habitat is a fundamental foundation of human activities. Well-being, resilience, education, health and life expectancy are directly linked to living conditions. It is also an essential pillar of all economies, both informal and formal.

However, currently, more than 50% of the Sahelian population (100 million inhabitants) lack access to decent housing. Poor housing greatly contributes to the weakening of socio-economic contexts and the instability of communities and families, especially for women and children, who are mainly responsible for managing the home. Although essential, the question of habitat in the Sahel is often insufficiently addressed by the political decision-makers - who are nevertheless responsible for this issue.



■ An appropriate response: the dissemination of an African architecture, the Nubian Vault

The concept of the Nubian Vault (NV), inspired by a secular architecture originating from the Upper Nile, consists of vaulted roofs mounted without brick formwork; using adobe bricks and earth mortar, it offers a simple and sustainable solution to different building needs. Simplified and standardised, this technique offers a frugal and resilient alternative construction method. NV construction sites only require abundant locally available raw materials (earth, water, stones) for the main structure, without the use of wood, metal or concrete. The technique makes significant use of local labour, and is based on vernacular know-how. It is an affordable solution adapted to climate change and socio-economic realities.

■ A systemic approach

In order to promote a large-scale deployment of NV eco-construction, the Nubian Vault Association (AVN) has chosen, for more than 20 years, to adopt a market-driven strategy. This transversal approach is based on three complementary axes:

An offer
embodied in an
eco-construction sector

p. 8

A demand
matching the expectations
of different types of clients

p. 12

**A favourable business
environment** supported by
multiple and diverse stakeholders

p. 16



NV site in Ghana.

Training and reinforcement of the actors of the NV eco-construction sector

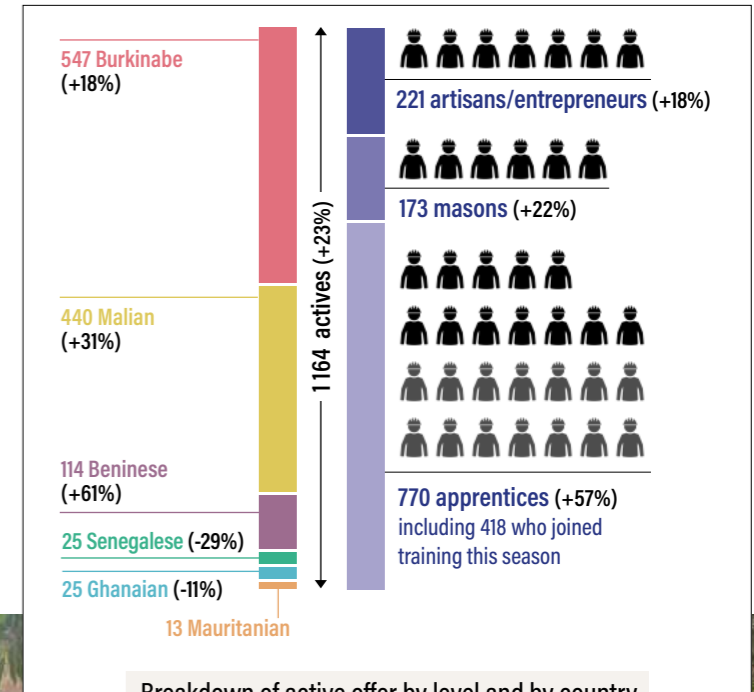
The new NV eco-construction sector is mainly made up of young people from rural areas - today at the heart of development and stabilisation issues in the Sahel - for whom it represents opportunities for training, off-season agricultural employment and resultant strengthening of local economies.

In order to train these profiles with little or no schooling, AVN has created a network of actors (artisan masons / endogenous trainers) and produces specific dual and inclusive educational tools and paths while working to integrate them into the institutional curricula of relevant national Ministries.

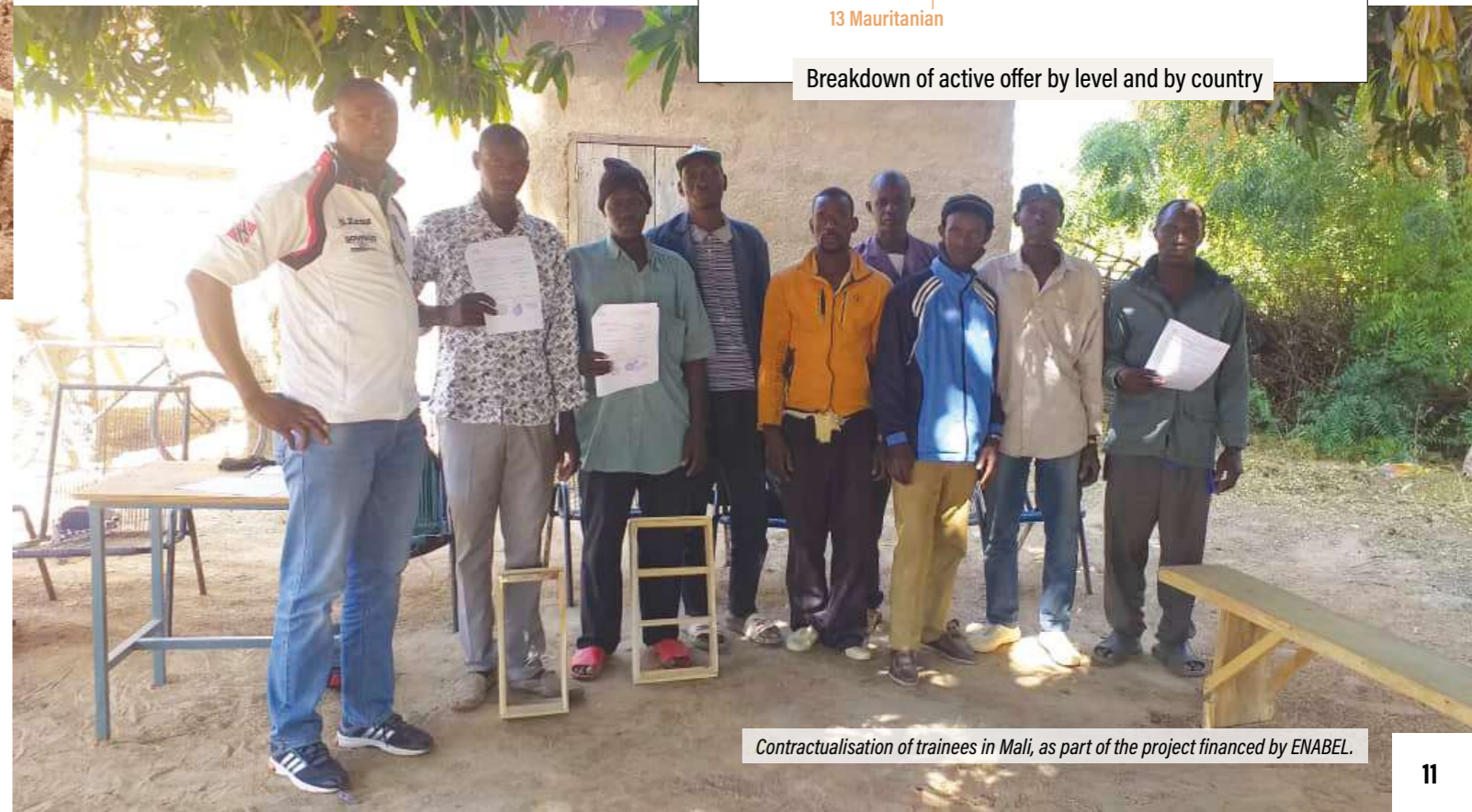
The sector is also deployed in the formal, public and urban markets, it integrates other trades in the sector (technician, engineer, architect) and construction operators (companies, design offices). This approach is supplemented by the development and optimization of an open source technical corpus.

Key figures of the season

- 1,164 active apprentices, masons, artisans et entrepreneurs (+23%) including
- 418 new apprentices (+11%)
- 56% of sites found independently
- 50 operational trainer masons
- 287 on-site training modules
- 96 academic training modules
- 585 validated qualifications (+16%)
- 77 Basic Qualifications Certifications (CQB) awarded



Breakdown of active offer by level and by country



Contractualisation of trainees in Mali, as part of the project financed by ENABEL.

■ Focus on...

Recognition of training courses and certifications

The formal recognition and institutionalisation of part of the educational approach proposed and implemented by AVN and its network of Trainer Masons (TM) is necessary for the overall positioning of the NV market.

The promotion of informal, particularly inclusive training courses, through a certification recognized by the Ministry of Vocational Training and accessible by accreditation or by Validation of Acquired Experience (VAE) was successfully tested this season in Burkina Faso (*see insert opposite*) and will be continued and strengthened. The collaborative work initiated with the Vocational Training Centers should make it possible to create bridges with more traditional formal training, without replacing the dual training courses widely deployed by AVN and the TMs in informal settings.

AVN must also strengthen its career paths - trainer masons, lead masons, technicians - and the capacities of its Technical Expertise Team, but also the support of public policies to include these dual and inclusive approaches in formal training programmes.



A historic first in West Africa: in August 2021, AVN and its partner Expertise France organized the first exam session to obtain the Basic Qualification Certificate (CQB) through the Validation of Acquired Experience (VAE) in civil engineering option "Nubian Vault Mason". Among 103 candidates presented, 77 obtained their CQB.

The formalisation of the construction sector

As key players in the growth of the market, companies in the construction sector must take responsibility for choosing low-carbon and sustainable techniques. AVN wishes to strengthen its capacities (financial and HR) to support these actors.

In addition, AVN encourages development actors to adopt a more transversal and systemic approach, promoting the growth of the NV market, beyond their own construction needs.



NV mason in Benin.

Trainer Masons: training, federation and formalisation

The Trainer Masons (TM) are the key players in the transmission of NV know-how. Coming from rural areas like the core target populations of AVN's action, TMs are part of the same economic and social dynamics. Recognized for their technical and educational qualities, they are supported by the AVN Training Division for the implementation and monitoring of training courses and the dynamics of institutionalizing the training in progress with other actors (VTCs, ministries, etc.).

AVN encourages their federation in order to aim, in the long term, for their autonomy in the creation and deployment of educational tools, in the recruitment and certification of learners, and for them to be recognized as an organization by the formal actors of the training sector, with whom they must necessarily collaborate.

This dynamic of inclusive dual training - "learning while working" makes AVN's approach an attractive proposal both for TMs and for formal actors in vocational training who are broadening their field of action.



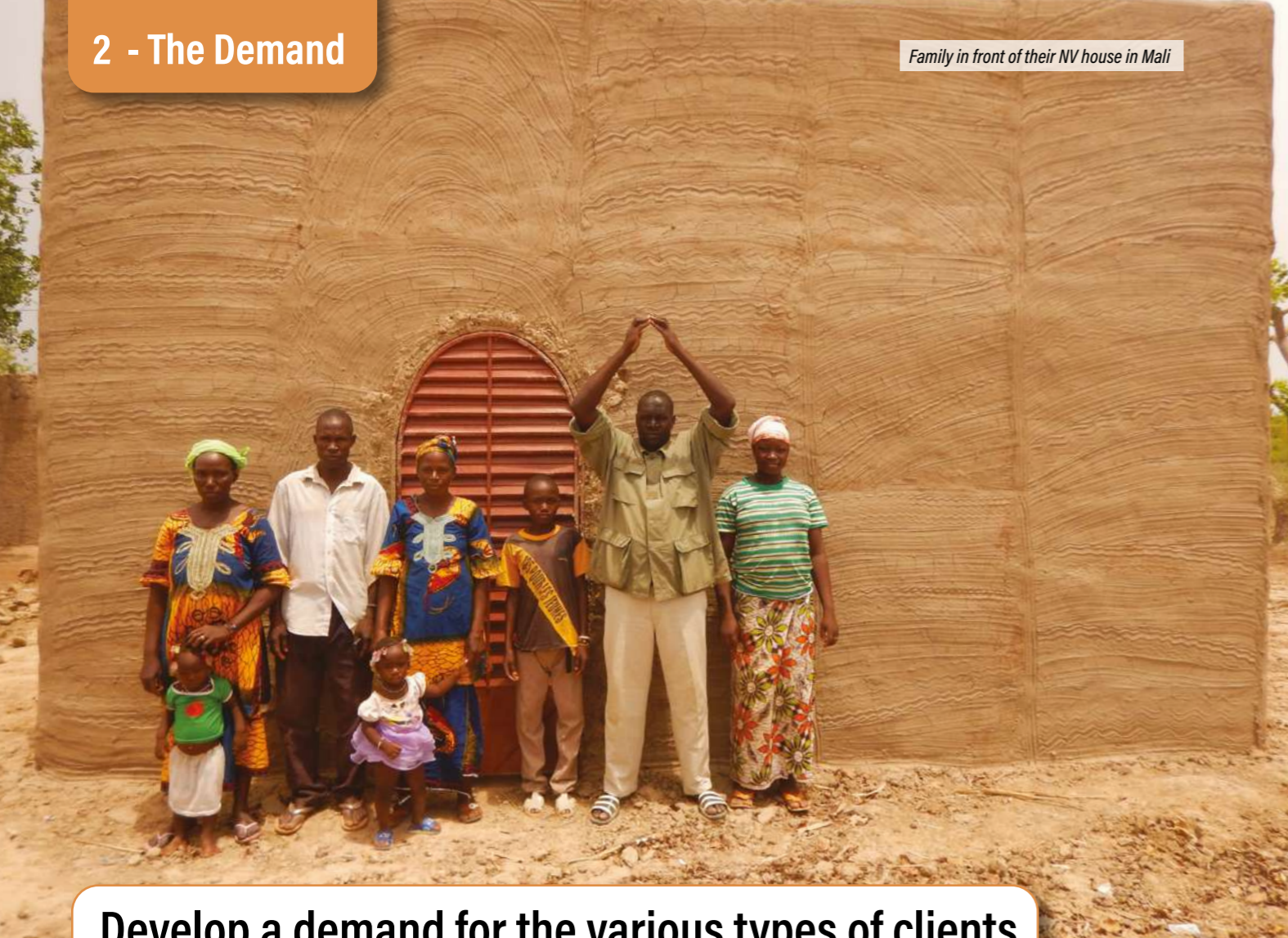
"I have been working as a NV mason for 4 years, and I see the advantages of the training offered by AVN: we can stay in the village to learn a trade by earning an income that allows us to meet our daily needs. Here, more than 18 young people have benefited from the training. Thus, we can feed our family and work during the off-season to pay the cost of fertilizer for our fields."

Fousseyni Toungara, artisan et MF au Mali



Raising awareness among "classical" masons to join NV training.

Family in front of their NV house in Mali



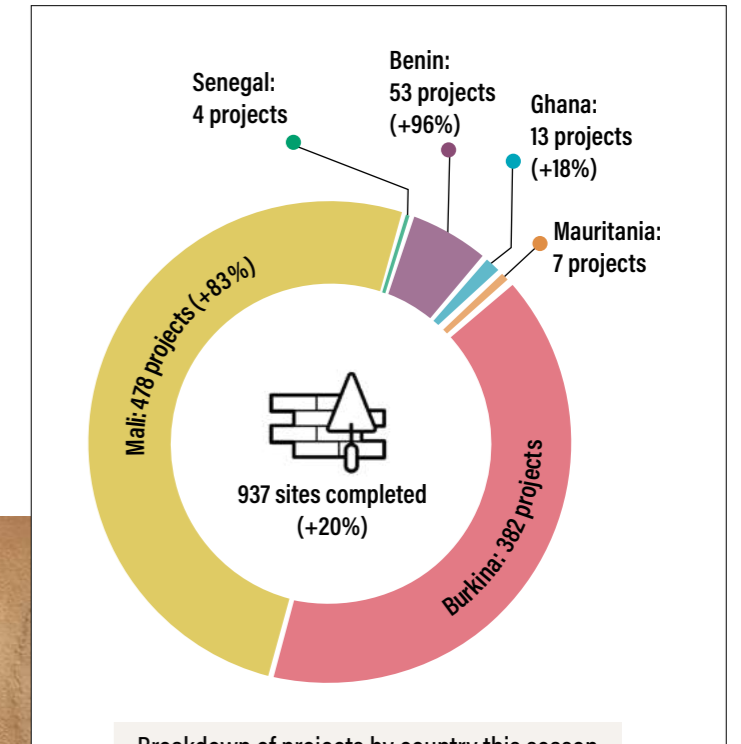
Develop a demand for the various types of clients

The demand for NV buildings mainly covers the expectations of rural families who are able to produce in kind a large part of the materials, transport and unskilled labor required for their construction project.

It is also made up of private urban clients and a growing number of project owners and donors of community or public projects - health, education, agricultural or institutional uses - who are increasingly aware of the necessary reassessments and adaptations of the terms of reference of their construction practices (environmental and thermal performance, reduction of GHG footprints, increased employability, etc.).

■ Key figures of the season

- 937 completed projects (+31%) including
- 612 built thanks to construction incentives, (76% of private constructions carried out)
- 86% of buildings intended for housing
- 26 547 m² built (+24%)
- 130 community buildings built, including
- 45 Establishments open to the public (schools, health buildings, cultural buildings, offices)
- 85 buildings for production/livestock farming
- 8 000 new user-beneficiaries



Breakdown of projects by country this season



Delivery of the keys to the cereal storage building in Dangedou, Mali (SOS-Faim/CAEB project).



NV health building built in Thiou, Burkina (DRC project)

■ Focus on...

From the start of the market to its growth

The scaling up of AVN's programme involves shifting the market to an endogenous and sustainable growth phase, to guarantee the sustainability of the programme's impacts.

The start-up phase of the market is generally slow (6-8 years) for several reasons:

- the targeted product - a house - is one of the most significant on the market at the cultural, heritage and financial levels,
- the target populations have little capacity to invest, and therefore take fewer risks.

However, the growth phase of the market is being boosted by an efficient territorial deployment strategy and the implementation/ multiplication of financial mechanisms.

Financing mechanisms, levers for scaling up

Although development funds can launch the market, the guarantee of success and empowerment of the programme is measured by the growth of the market, and therefore by the strengthening of the economic model of the eco-construction sector that supports it. Accordingly, AVN has identified additional financing mechanisms necessary for the growth of the NV market:

- **green building incentives for rural families:** for a moderate amount (around €300 for a building of 25 m²), they supplement the contribution in kind from the beneficiaries, in a virtuous economic approach (guarantee of salaries, strengthening of the market, promotion of investments in the sector, strengthening of local economies);

- the mobilisation of the carbon performance of NV constructions on the voluntary carbon market in the form of certified NV Carbon Credits, making it possible to perpetuate the source of financing for financial incentives;
- subsidized "access to housing" microfinance products allowing access in rural areas to new quality housing, and whose implementation requires the mobilization of dedicated actors in both the North and the South;
- the evolution of construction practices of project owners and donors of community and/or public construction adopting appropriate construction practices and the integration of eco-construction ToR in their projects, thus reinforcing the formal and institutional aspects of the emerging eco-construction market.

The mobilisation of donors from the North

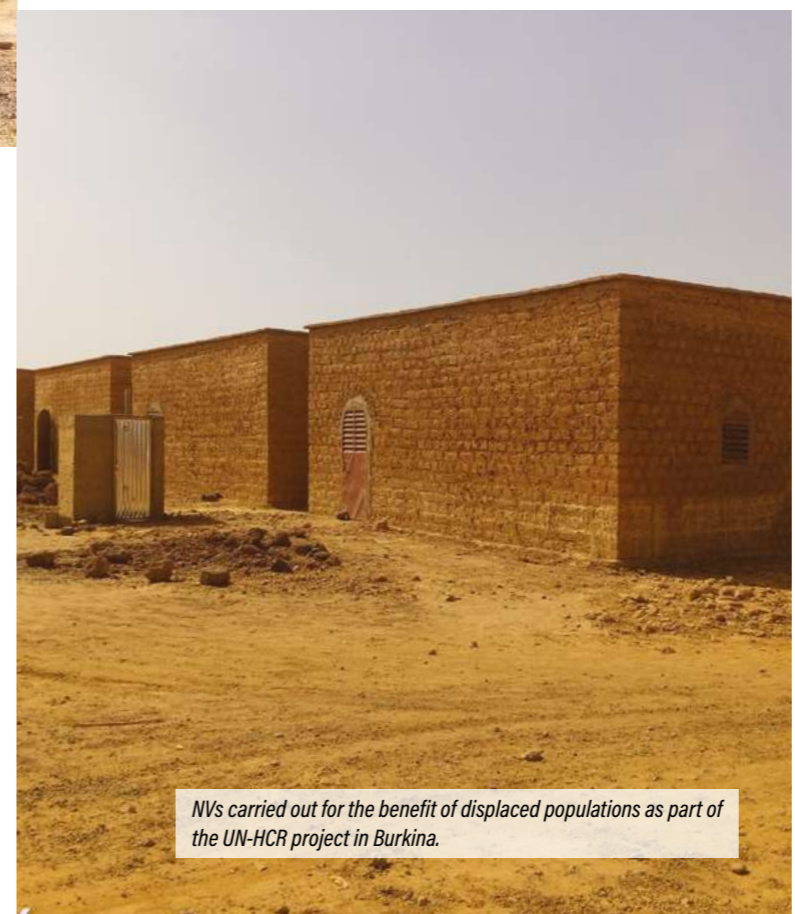
A very large volume of funding for community construction projects (education, health, agriculture/livestock) comes from public funds or associations from the North. These donors and project leaders, who are also already sensitive to issues of climate adaptation and mitigation, must develop construction practices on the sites they finance, and adopt an exemplary and educational approach serving developments in the construction industry. By imposing eco-construction ToRs in the specifications of their projects (GHG mitigation and environmental impacts of structures, passive thermal performance, use of locally sourced materials, strengthening of local economies and jobs, etc.) they add to the effects of use of their constructions a revitalisation of the institutional NV market, requiring players in the formal construction sector to change their practices.

Pilot projects for displaced populations

The interest in the NV concept from humanitarian actors in charge of refugee programs is illustrated this season by the implementation of several projects for the benefit of displaced populations:

- the cross-border project, funded by the PATRIP Foundation and led by Welthungerhilfe (WHH) integrating the construction of 60 community buildings over 2 years in Burkina Faso and Mali;
- the pilot project for the construction of 30 homes for displaced people in Burkina Faso, funded by the NGO Danish Refugees Council (DRC);
- the project funded by UN-HCR, for the construction of 34 houses for displaced people in Burkina Faso.

These echo the so-called "Nexus (humanitarian-development-peace)" approach introduced by the European Union, encouraging synergies between actors that work on humanitarian and development issues and dealing with prolonged, predictable crises, boosting the resilience of host communities and displaced persons.



NVs carried out for the benefit of displaced populations as part of the UN-HCR project in Burkina.



Mobilise and federate all stakeholders and generate a favorable business environment

AVN mobilises and federates a network of decision-makers, donors and operators who, through multiple approaches and actions, will establish the importance of the issue and the relevance of the NV concept and its dissemination methodology, while supporting the emergence and growth of the NV market locally, nationally and internationally.



Keys delivery of a NV guest house created as part of the PATRIP project in Mali.

■ Focus on...

Operator Partners, central players of the dissemination

The Operating Partners (OPs) are local Grassroots Community Organizations (farmers' organisations, unions, cooperatives, women's groups, local associations, etc.) that AVN informs, mobilises, trains and supports in the implementation of the methodology of deployment of the NV market in their territories.

This methodology is simple and accessible, and its management tools are adapted to the profile of these actors. Their legitimacy, their representativeness and their networks allow them to act quickly and efficiently on the three areas of AVN's programme. This collaboration produces rapid results and lasting effects on adaptation of the construction sector in the Sahel.

However, OPs remain fragile actors; their availability, their administrative capacities and their potential for autonomous fundraising are limited, and the expectations of donors are increasingly demanding. The strengthening of these skills, the mobilisation and training of new OPs, and their support in essential fundraising are now part of AVN's priority actions.

The Relay Partners, keys of the evolution of the adaptation of the construction sector

The territorial deployment of the NV market is based on the involvement of Relay Partners - CSOs, development actors, institutional actors - who support the mobilisation of local actors and the dissemination of the NV concept, and/or implement NV construction.

These actors are involved in the many cross-cutting themes in housing issues and take into account AVN's approach - local economy, vocational training and employment, environmental and climatic impacts - and therefore relay the changes needed to evolve the construction sector.

In the position of project owners, their needs in institutional and/or community construction serve the programme (exemplary, training, market). They also identify new Operator Partners and can mobilise their financial partners.

■ Focus on...

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

The living conditions of Sahelian populations, the state of the current building stock, demographic realities, and rapid climate change fully justify this right to adapted housing in Sahelian Africa, which currently is not specifically included in any official agendas, 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).

Women leaders, representing women's organisations in civil society and the countless Sahelian women who make them up, are the first to legitimately want to support this essential cause. Examples include COFERSA and CAFO, women's peasant umbrella organizations in Mali, who denounce the problem of poor housing and failing agricultural and livestock infrastructure at the heart of their economic activities, and who recognise the NV and its market-driven development as an integrated solution to the problems of housing, employment, mitigation and adaptation to climate change.

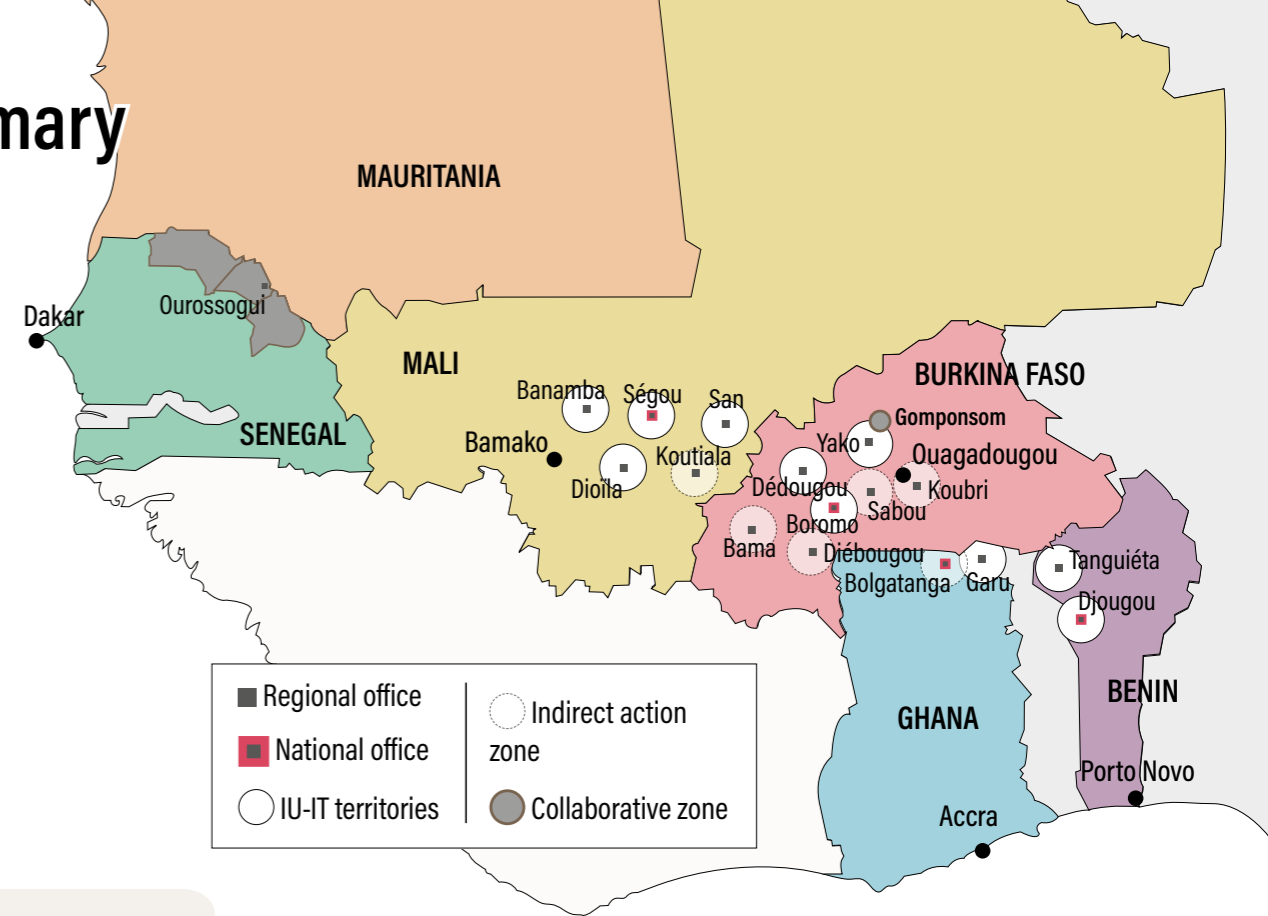




Construction of a community building in Burkina Faso (AWAC project).

2 - Our Countries

Summary



COUNTRIES OF ACTION
6 countries

ROLLOUT
14 Implantation Territories
40 Implantation Units
6 indirect action zones
1 collaborative zone (Senegal)

HUMAN RESOURCES
12 regional teams
48 local employees
34 Operational Partners mobilized

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.



Burkina Faso

POPULATION (IN 2020)
20,9 million inhabitants
(69% rural)

GDP PER CAPITA
\$858 - 39th in Africa
(World Bank, 2020)

CLIMATE
Sudano-Sahelian

AVN PROGRAMME BEGUN
in 2000

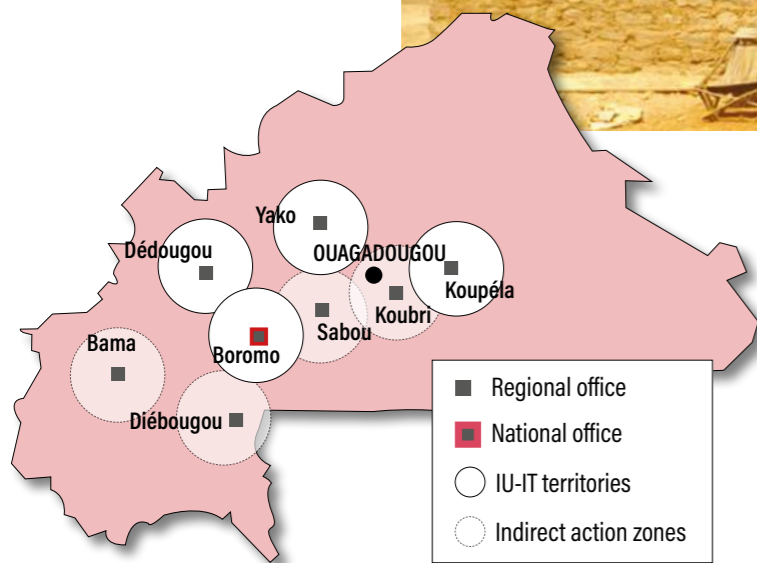
HUMAN RESOURCES
24 local employees

BUILDINGS CONSTRUCTED
2,630 worksites since 2000

Burkina Faso, the first country in which AVN was active, has been the site of many methodological rollouts. 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.



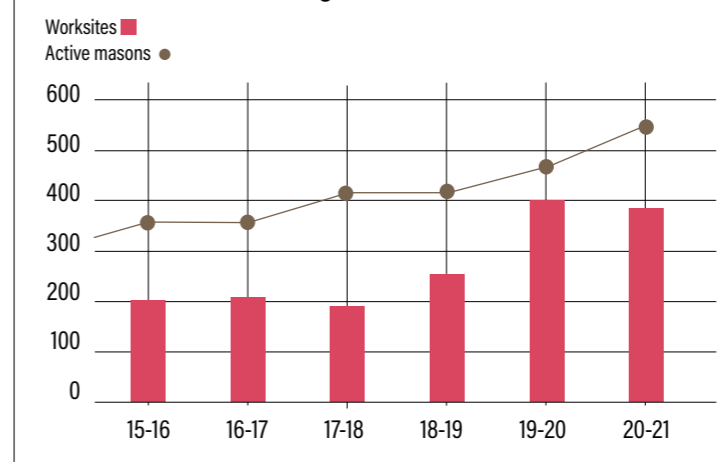
Client in front of his NV (Expertise France project).



Territorial Rollout

- 6 IU-IT rollout territories
- 21 active Implementation Units
- 4 indirect action zones
- 21 Operational Partners mobilized on programme rollout
- 11 projects carried out

Evolution of the building stock and workforce



Main points of the season

- Strong increase in training activities, in particular thanks to projects integrating this activity
- Formalization of the professional training programme with the development of CQB/CQP training standards and the organization of certifications by authorization and by validation of acquired experience (VAE)
- Support for artisans in the formalization of their activity (obtaining IFU numbers)
- Creation of an association of NV masons in the Province of Balés
- Implementation of numerous projects including four with the involvement of the Operational Partners
- HR reinforcement of AVN Burkina teams to ensure the smooth running of projects

Key figures of the season

Buildings constructed

- 382 worksites completed (-5%)
- 302 of buildings intended for housing (-18%) including 155 completed using CICs (51%)
- 10,947 m² built (-8%)
- 32 community buildings including 14 buildings for production/livestock farming
- 3194 new user-beneficiaries
- 8 976 tons CO₂ eq. and 278 MWh potentially saved

Establishment of supply

- 547 active apprentices, masons, artisans and entrepreneurs (+18%) including 236 new apprentices (+21%)
- 25% of projects were found independently
- 24 operational Trainer Masons
- 145 on-site training modules
- 68 academic training modules
- 306 qualifications validated (+16%)
- 77 Basic Qualifications Certifications (CQB) awarded
- 1 VTC mobilized

Projects implemented this season



1 Development of the NV market

- Provinces of Yatenga, Passoré, Zondoma and Loroum
- Walloon Air and Climate Agency (AWAC)
- SOS Faim
- FNGN and Naams Unions



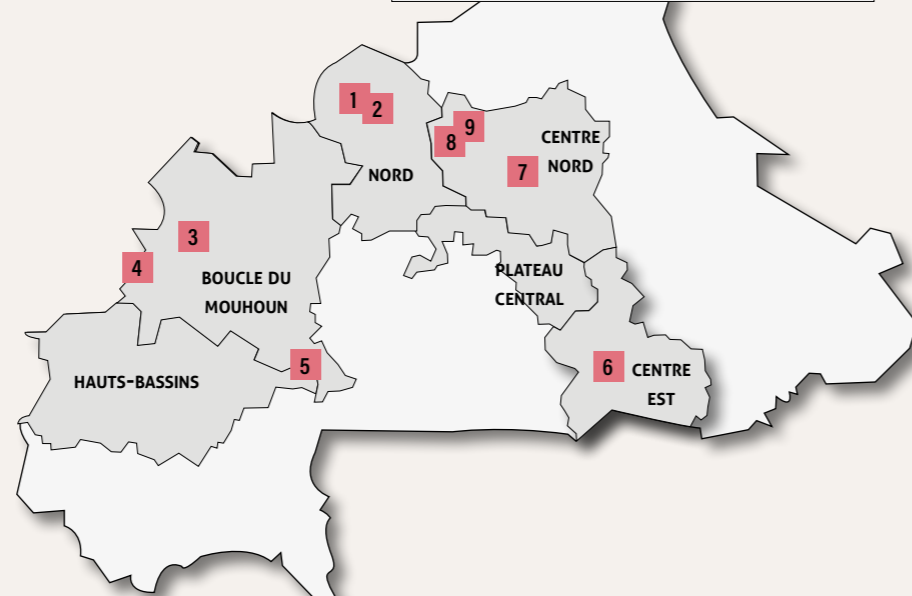
2 Projet pilote d'une solution alternative au logement des déplacés (Shift)

- Provinces du Yatenga, Loroum et Zondoma
- Conseil Danois pour les réfugiés (DRC)
- Welthungerhilfe (WHH)
- FNGN et Unions Naams



3 Strengthening the resilience of young people and women

- Provinces of Mouhoun, Kossi and Banwa
- Expertise France
- URPD



4 Cross-border territorial stabilization project

- Provinces of Houet, Banwa and Kossi
- PATRIIP Foundation
- Welthungerhilfe (WHH)



5 Pilot project at PAFPA

- Province of Balés
- National Council of Burkinabè Employers (CNPB) and VTCs



6 Business support project in the green economy sector

- Provinces of Boulgou, Koulpélogo et Kouritenga
- ENABEL
- APAK et APAGAN-B

Type of projects



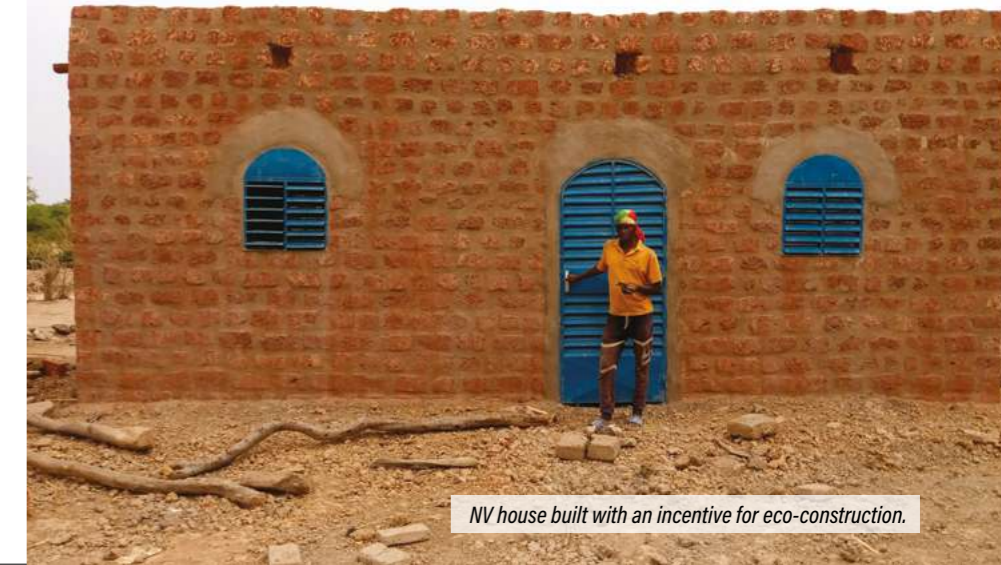
Methodology projects



Construction projects



Vocational training pilot projects



NV house built with an incentive for eco-construction.



7 Construction of housing for displaced persons

- Province of Sanmatenga
- UN-HCR



9 Construction of housing for displaced persons

- Province of Bam
- Welthungerhilfe (WHH)



Green jobs to reduce poverty in sub-Saharan Africa

- All Countries
- Alwaleed Foundation



8 Construction of poultry houses

- Province of Bam
- Welthungerhilfe (WHH)
- SOS Sahel



Supporting local players in the dissemination of the market

- All countries
- AFD

POPULATION (IN 2020)

20,25 million inhabitants
(56% rural)

GDP PER CAPITA

\$862 - 33rd in Africa
(World Bank, 2020)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2009

HUMAN RESOURCES

15 local employees

BUILDINGS CONSTRUCTED

2,100 worksites since 2007

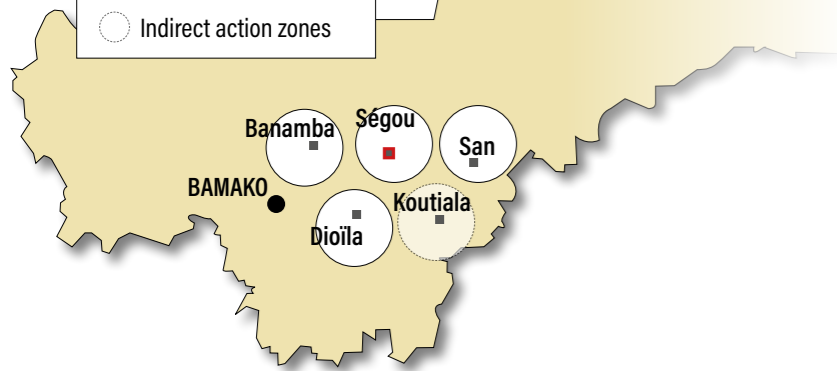
The AVN programme was launched in Mali in 2007, thanks to partnerships with NGOs to build community buildings. Following the Ségou region, the programme expanded to three other regions starting in the 2012/2013 season. The NV concept has been very successful, especially with the rural population, the 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 ecoconstruction sector (technicians, architects, consultancy firms).



Client in front of her NV in Bekuy.

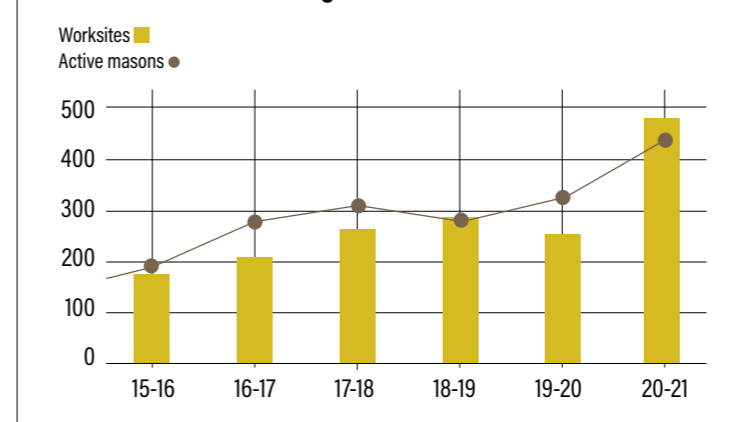
- Regional office
- National office
- IU-IT territories
- Indirect action zones



Territorial Rollout

- 4 IU-IT rollout territories
- 9 active Implementation Units
- 1 indirect action zone
- 5 Operational Partners mobilized on programme rollout
- 7 projects carried out

Evolution of the building stock and workforce



Main points of the season

- Strong expansion of the private market (nearly 100%). More housing for rural families could have been created if AVN had the means to distribute more financial incentives for eco-construction.
- Production on time of about thirty community buildings, in two areas with difficult access (Centre-Nord and cross-border area with Burkina), an area where the work of construction teams was complicated by insecurity due to the presence of armed groups.
- Realization of three Electrified Activity Areas (ZAE) in partnership with GERES, signing a first work experience between NV artisan masons and formal construction companies, complex and demanding sites.
- First collaboration with the Belgian development agency (ENABEL) in Mali, which enabled the opening of a new Implementation Unit, that of the municipality of Guégnéka, and the integration of 12 new learners in the training courses.

Key figures of the season

Buildings constructed

- 478 worksites completed (+83%)
- 444 of buildings intended for housing (+111%) including
 - 420 completed using CICs (+107%)
 - 13,060 m² built (+76%)
- 34 community buildings including
 - 14 buildings for production/livestock farming
- 3,930 new user-beneficiaries
- 10,700 tons CO₂ eq. and
 - 330 MWh potentially saved

Establishment of supply

- 440 active apprentices, masons, artisans and entrepreneurs (+31%) including
 - 98 new apprentices (-1%)
 - 88% of projects were found independently
- 12 operational Trainer Masons
- 65 on-site training modules
- 10 academic training modules
- 175 qualifications validated (+30%)

Projects implemented this season



1 Development of the NV market in the municipality of Guégneka

- Circle of Dioila
- ENABEL
- Niètaa Union



2 Construction of 25 agricultural storage buildings

- Circles of Banamba, Nara and Kolokani
- SOS-Faim
- CAEB



3 Cross-border territorial stabilization project

- Circle of Sikasso
- PATRIIP Foundation
- Welthungerhilfe (WHH)



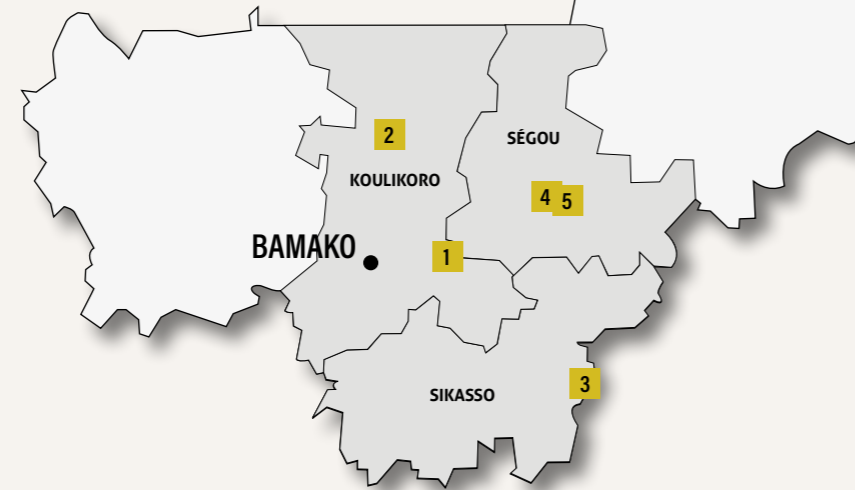
4 Monitoring, control and construction of bioclimatic buildings in 4 electrified Activity Zones (ZAE) in the regions of Ségou and Sikasso

- Circle of Ségou
- GERES



5 Training and support for the development of the NV market on the outskirts of 2 ZAE

- Circle of Bla
- GERES
- SCSPTPA et UCPC



Type of projects



Methodology projects



Construction projects



Vocational training pilot projects



Green jobs to reduce poverty in sub-Saharan Africa

- All Countries
- Alwaleed Foundation



Supporting local players in the dissemination of the market

- All countries
- AFD



Case de conservation à Massako.

POPULATION (IN 2020)
16,7 million inhabitants
(52% rural)

GDP PER CAPITA
\$1,471 - 26th in Africa
(World Bank, 2020)

CLIMATE
Sahelian

AVN PROGRAMME BEGUN
in 2010

HUMAN RESOURCES
1 local employee

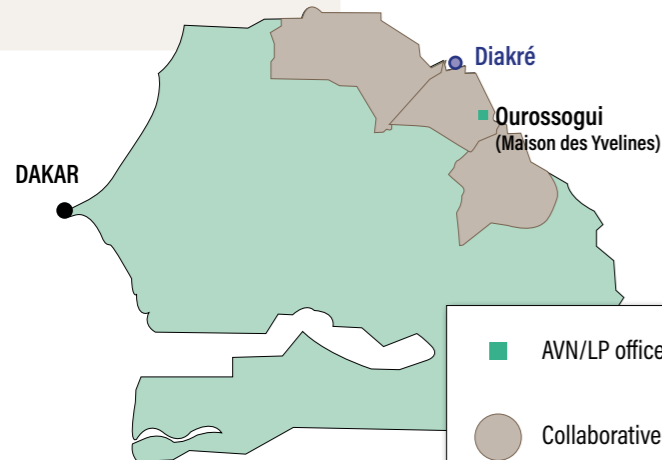
ROLLOUT
▶ 1 LP/AVN office

BUILDINGS CONSTRUCTED
113 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.







Building site for classrooms in Bile, Department of Podor (ADSCAL project)

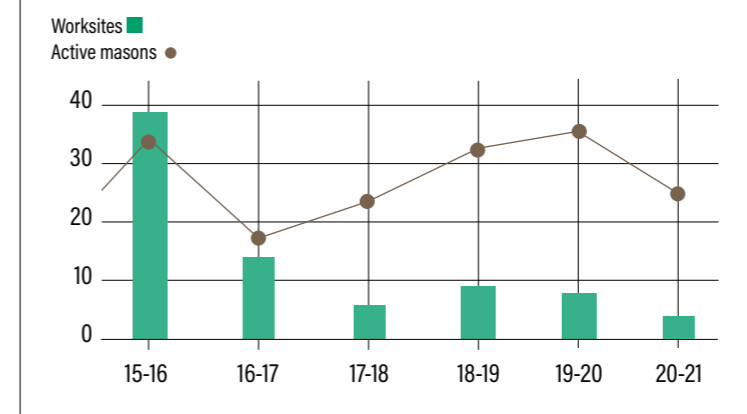


- AVN/LP office
- Collaborative zone
- Pilot Project

Territorial Rollout

-  1 collaborative zone
-  3 Departments concerned
-  1 Partner working on programme dissemination
-  1 project carried out

Evolution of the building stock and workforce



Main points of the season



- Initiation of the construction sites of two departmental centres, two-storey buildings including a large meeting room. Complex labour-intensive sites, which allow the technical reinforcement of apprentice masons in the area.
- Continuation of raising awareness of local authorities on eco-construction, construction of new community buildings and consolidation of the sector with the organisation of academic workshops and technical modules for specific topics.
- Publication of a catalogue listing the typologies of administrative and community buildings produced in the area.
- Submission of a new project to FICOL, managed by AFD via the Department of Yvelines and three Departments of Fouta, a pilot project integrating training courses in eco-construction in the offer of three Vocational Training Centres of the partner Departments, guaranteeing the development of the market in the area.
- Validation by the Ministry of the Environment of a project financed by the Global Environmental Fund, which had been submitted several years ago by AVN and Le Partenariat (LP) which provides for a five-year component to promote the Nubian Vault in synergy with the NV Fouta project, in the Departments of Matam and Louga.

Key figures of the season

Building constructed

-  3 worksites completed and 4 in progress
-  436 m² built
-  3 community buildings including 1 building for production/livestock farming
-  31 new user-beneficiaries
-  358 tons CO2 eq. and 11 MWh potentially saved

Establishment of supply

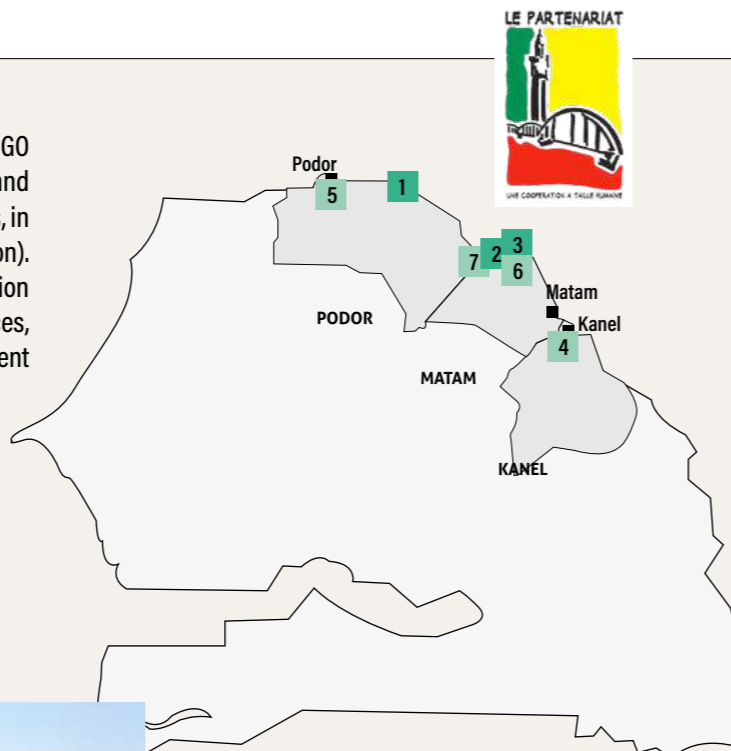
-  25 active apprentices, masons, artisans and entrepreneurs
-  25% of projects were found independently
-  1 operational Trainer Mason



NV-FOUTA Project

Since 2017, with funding from the Yvelines Department, AVN and the NGO Le Partenariat have been implementing a programme to popularise and disseminate the NV technique amongst local authorities and associations, in the departments of Podor, Matam and Kanel (Northern zone, Fouta region). Its objective is to support local authorities and CSOs in their NV construction projects, to train actors in the NV sector (masons, companies, design offices, etc.) and to support the authorities in integrating NV in their development plans for the sustainability and duplication of the project.

This season, three projects have been completed and 4 others have been started and will be completed next season.



1 Agricultural storage warehouse

- 📍 Ngoral, Department of Podor
- 🗨️ ONG Banlieue du Monde
- 📏 26 m²



4 Kanel Departmental Hotel

- 📍 Kanel, Department of Kanel
- 🗨️ Kanel Department Council
- 📏 145 m²



6 Representational housing

- 📍 Agnam Lidoubé, Department of Matam
- 🗨️ ADSCAL
- 📏 66 m²



2 and 3 Representational housing

- 📍 Agnam Lidoubé, Department of Matam
- 🗨️ ADSCAL
- 📏 90 m² and 66 m²

5 Podor Departmental Hotel

- 📍 Podor, Department of Podor
- 🗨️ Podor Department Council
- 📏 145 m²



7 Classrooms

- 📍 Bile, Department of Podor
- 🗨️ Municipality of Mbole Birane
- 📏 137 m²



In addition, several steps have been taken as part of the preparation of the NV-DEFI project (see "Perspectives" below):

- the creation by the Assistant to the Contracting Authority (ACA) Directors of the Departments of a **catalogue presenting the different types of buildings** (health, education, training, housing, agriculture, commerce and administration) built in the project area, including plans and technical files;
- meeting with various institutional actors in charge of housing and vocational training** (Department of the Vocational Training Financing Fund - 3FPT -, the National Office for Vocational Training - ONF -, the School-Company Training Programme - PF2E - and the Department of Examinations and Competitions - DEC -) aiming to mobilize them;
- the meeting with various actors in charge of standardization** (Department of Urban Planning and Architecture - DUA -, General Directorate of Construction and Housing, - DGCH - Order of Architects of Senegal -ODAS-, Senegalese Agency de la Normalization - ASN -) on questions of procedures for the approval and standardization of the NV technique;

Prospects for the coming seasons

In order to extend the existing work in Fouta, the Department of Yvelines, in partnership with the Departments of Kanel, Matam and Podor, proposed to AFD, for financing by FICOL, the NV-DEFI project. It is aimed at the promotion and the dissemination of NV eco-construction and the training of players in the sector (NV artisans and their teams, technicians, design offices, companies, etc.), with the particular aim of integrating the NV eco-construction training course in the course offering of three Vocational Training Centres. AVN and Le Partenariat will be technical operators on this project, which will be led by the Senegalese Departments and managed by the Department of Yvelines and the Maison des Yvelines, its representation in Fouta.

meeting with ministries:

- Urban planning and Housing - concerning the integration of the NV in a programme to build 100,000 social housing units;
- Health and Social Action - about public construction projects for health buildings in the North region;
- Employment, Vocational Training, Apprenticeship and Integration - about standardization and the possibilities of financing training;
- National Education - for supporting the project.
- the sensitization of local authorities of Fouta** for the inclusion of NV projects in their budget;
- the training of NV Trainer Masons** in the recruitment and support of their teams and technicians on procedures and best practices.



Construction site of the Kanel Departmental Hotel



Ghana

POPULATION (IN 2020)

31,1 million inhabitants
(42% rural)

GDP PER CAPITA

\$2,205 - 16th in Africa
(World Bank, 2020)

CLIMATE

Sudano-Sahelian

AVN PROGRAMME BEGUN

in 2014

HUMAN RESOURCES

1 local employee

BUILDINGS CONSTRUCTED

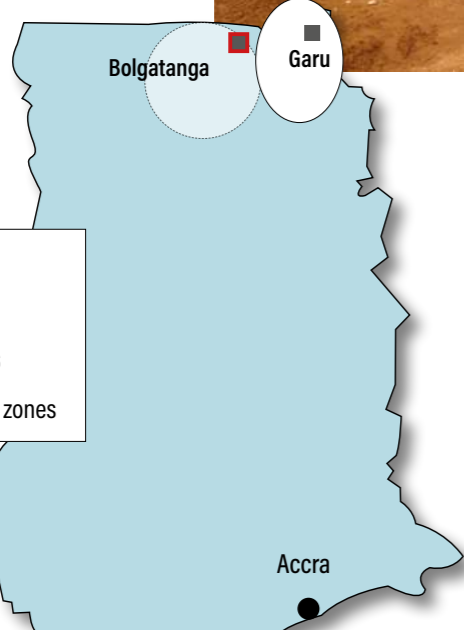
92 worksites since 2014

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 (adequate climate, recognized earthen architecture, geographical proximity with Burkina Faso, linguistic proximity between Frafra, the traditional language of the North-East, and Mooré, spoken by most Burkinabè NV masons).

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



Client and masons in front of a NV in Anafobiisi.

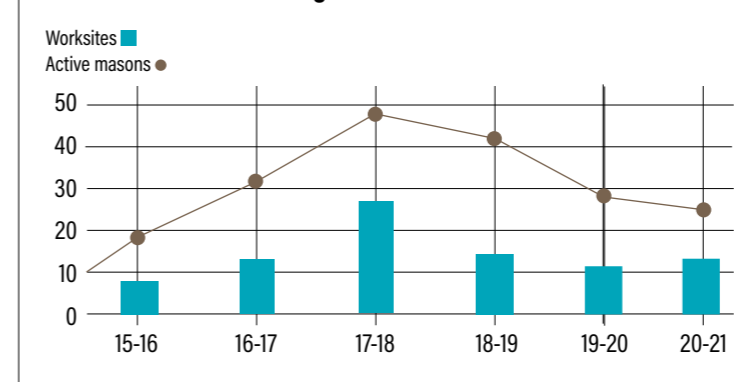


- Regional office
- National office
- IU-IT territories
- Indirect action zones

Territorial Rollout

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

Evolution of the building stock and workforce



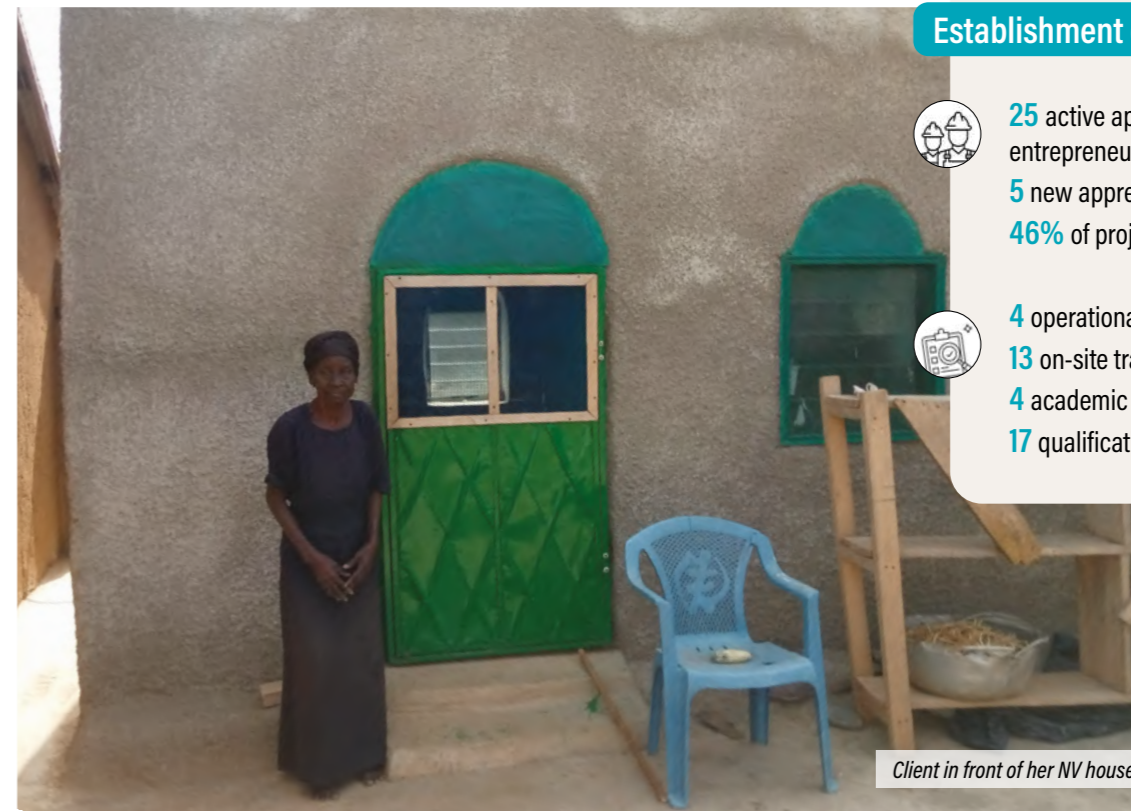
Key figures of the season

Buildings constructed

- 13 worksites completed (+18%)
- 13 buildings intended for housing (+18%) including
- 10 completed using CICs (77%)
- 306 m² built (+8%)
- 68 new user-beneficiaries
- 251 tons CO2 eq. and
- 8 MWh potentially saved

Establishment of supply

- 25 active apprentices, masons, artisans and entrepreneurs (-11%) including
- 5 new apprentices (-62%)
- 46% of projects were found independently
- 4 operational Trainer Masons
- 13 on-site training modules
- 4 academic training modules
- 17 qualifications validated (+21%)



Client in front of her NV house.

POPULATION (IN 2020)
12,1 millions inhabitants
(51% rural)

GDP PER CAPITA
\$1,291 - 32nd in Africa
(World Bank, 2020)

CLIMATE
Sudano-Sahelian

AVN PROGRAMME BEGUN
in 2014

HUMAN RESOURCES
7 local employees

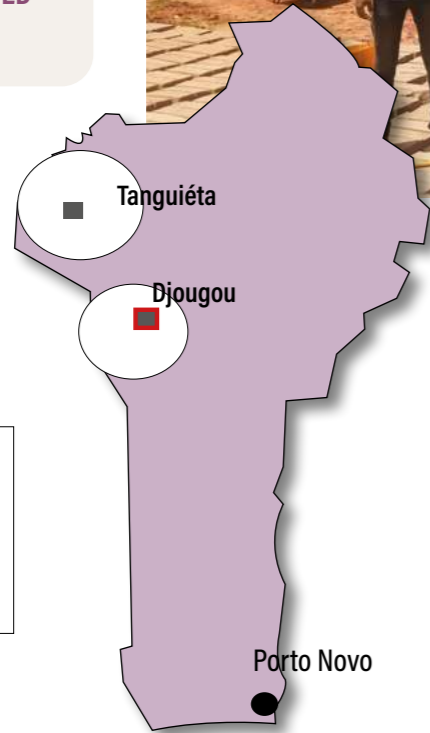
BUILDINGS CONSTRUCTED
152 worksites since 2014

AVN began working in Benin in 2014, focusing specifically on the Atacora-Donga and Djougou regions for social, economic, climate and strategic reasons (adequate climate, core target population of the programme, traditionally known earthen architecture, strong community interest).

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.



Client in front of his NV in Natingou.

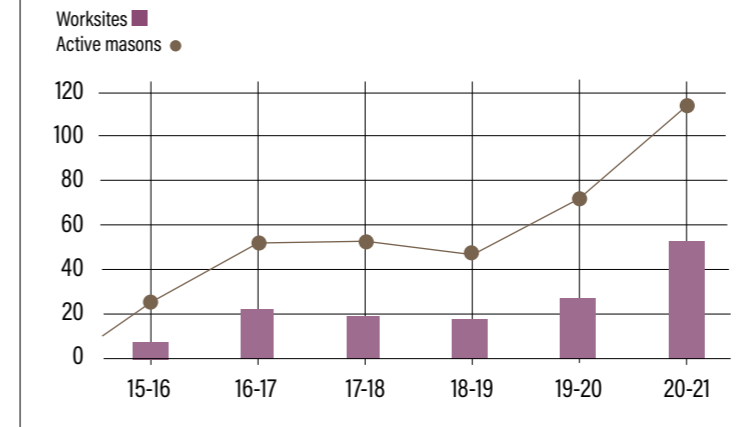


- Regional office
- National office
- IU-IT territories
- Indirect action zones

Territorial Rollout

- 3 IU-IT rollout territory
- 8 Active Implementation Units
- 1 indirect action zone
- 3 Operational Partners mobilized on programme rollout
- 1 project carried out

Evolution of the building stock and workforce



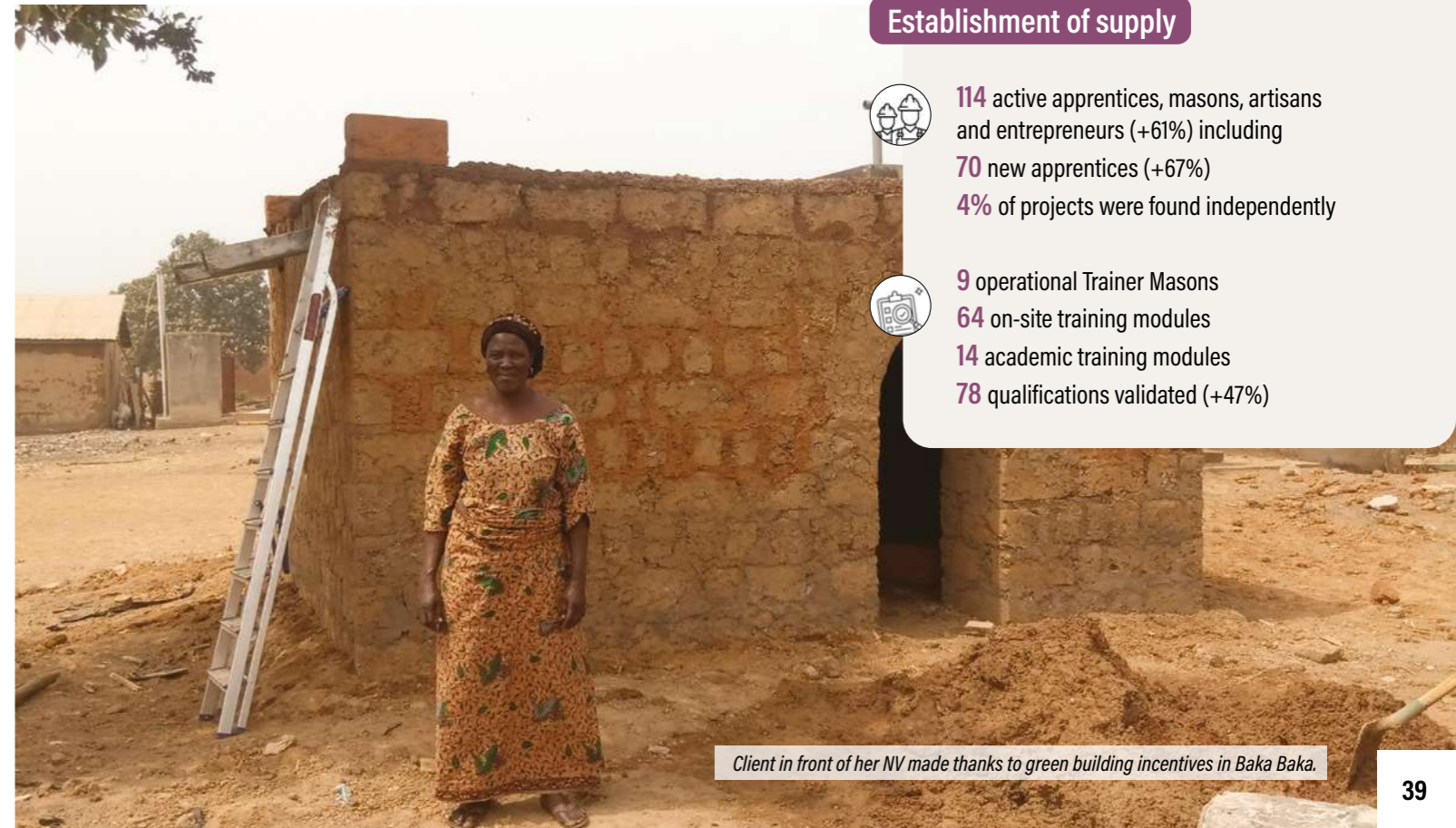
Key figures of the season

Buildings constructed

- 53 worksites completed (+96%)
- 47 buildings intended for housing (+114%) including
 - 27 completed using CICs (57%)
 - 1,094 m² built (+68%)
- 242 new user-beneficiaries
- 897 tons CO₂ eq. and 28 MWh potentially saved

Establishment of supply

- 114 active apprentices, masons, artisans and entrepreneurs (+61%) including
 - 70 new apprentices (+67%)
 - 4% of projects were found independently
- 9 operational Trainer Masons
- 64 on-site training modules
- 14 academic training modules
- 78 qualifications validated (+47%)



Client in front of her NV made thanks to green building incentives in Baka Baka.



Training meeting for Operational Partners.



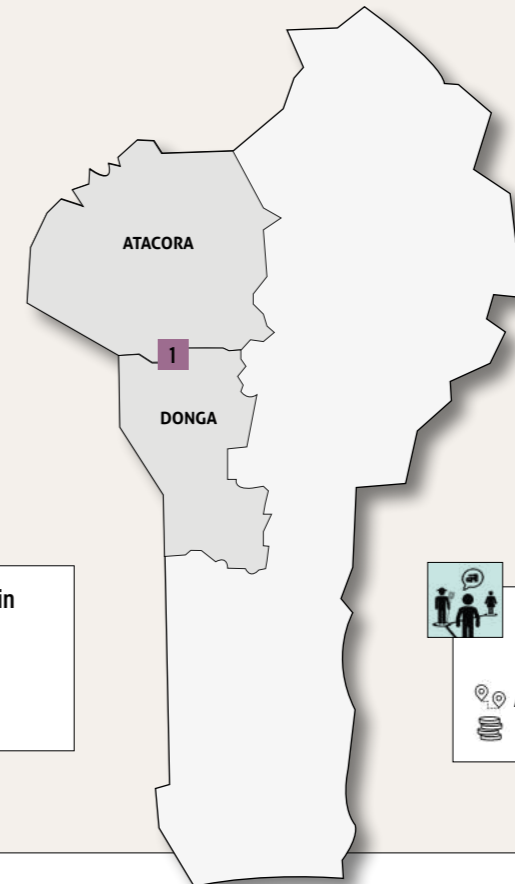
Raising awareness among villagers by OP UCCPA (UE Project).

Projects implemented this season



1 A sector of bioclimatic constructions for the employment of young people in northern Benin

📍 Departments of Atacora and Donga
 🏛️ European Union
 👤 AVIGREF et UCCPA



Type of projects



Methodology projects



Construction projects



Vocational training pilot projects



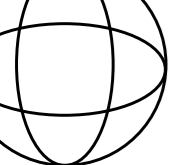
Green jobs to reduce poverty in sub-Saharan Africa

📍 All Countries
 🏛️ Alwaleed Foundation



Supporting local players in the dissemination of the market

📍 All countries
 🏛️ AFD

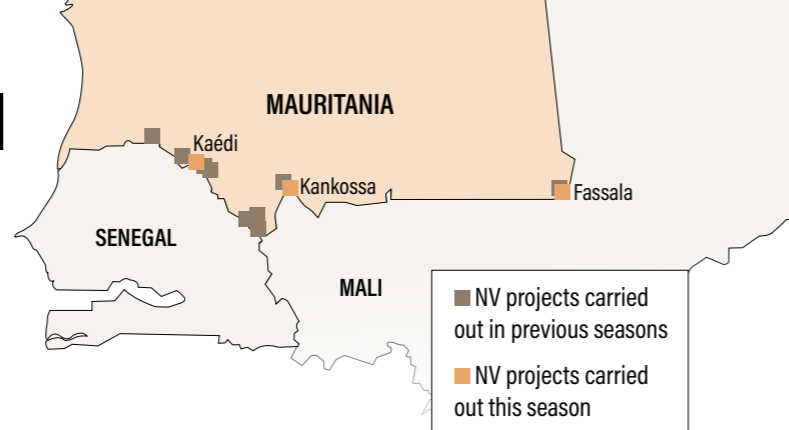


France & International

Other Countries of action

Mauritania

The NV eco-construction market in Mauritania continues on a different deployment model differ methodological from that implemented in Mali and Burkina Faso. For several years, opportunities have led to the realisation of several construction projects, accompanied by the Al-Mizan Sahel design office, founded by Mathieu Hardy, architect and partner of AVN. These exemplary operations allow the start of a local NV sector and the awareness/mobilisation of a wide range of actors in the country.



This season, eight NV buildings have been completed:

- 2 food processing centers (2 x 88 m²) in Fassala (Hodh Ech Chargui region) and Kankossa (Assaba region), projects led by the International Labor Office. The first was built by Burkinabe Mason Trainers and their local trainees, the second was built by a 100% Mauritanian NV company and team;
- two groups of three classrooms at Fassala high school (360 m²) implemented by Burkinabe Mason Trainers and their local apprentices, a project also supported by the International Labor Office. This project is particularly innovative, in its capacity as a prototype of a new NV classroom model with masonry load-bearing arches replacing the reinforced concrete beams of the previous model;
- four multi-purpose agricultural centers (4 x 38 m²) in the municipality of Kaédi (Gorgol region), implemented by a 100% Mauritanian company and NV team, project led by the NGOs CERAI and AMAD.

The local training made possible by the various projects carried out in recent years is beginning to bear fruit, with 22 local masons and apprentices involved this season.

Interest in the NV technique is increasingly marked, prompting reflection on the conditions for opening a more ambitious programme, specifically adapted to the Mauritanian context.



Fassala NV High School (▲ outside and ▼ inside).



Kankossa Processing Center.

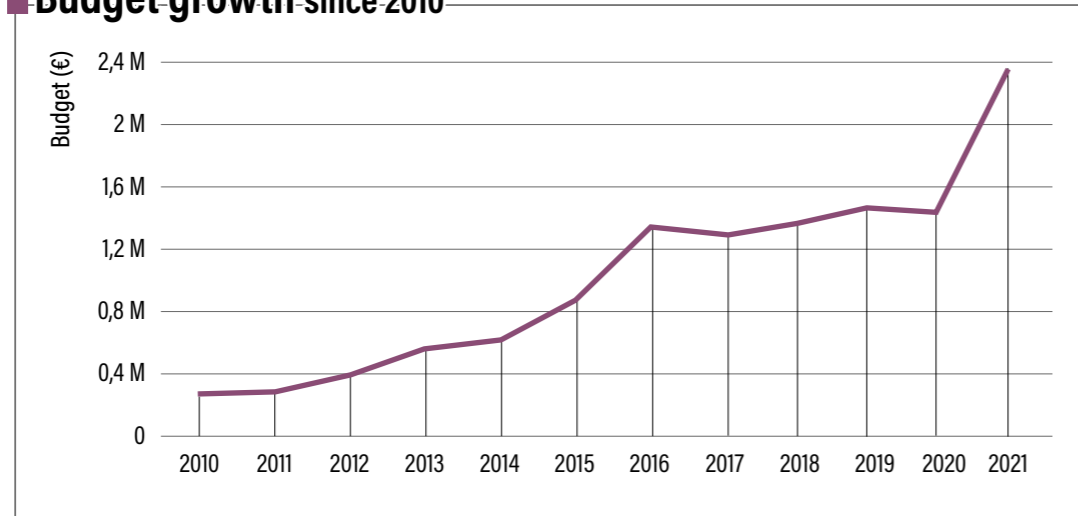
International events and advocacy

At the international level, AVN participated in several events to promote the project, including several by videoconference due to the health crisis:

- A webinar "Sustainable habitat, adaptation and resilience: what economic model?" on the link between development aid and the financial levers of the NV eco-construction market, in November 2020, as part of the PAMOC3 project of the Climate and Development Commission (CCD) of Coordination Sud;
- The Fact Sahel seminar, in February 2021, in Ouagadougou, for which AVN hosted a conference and exhibited posters about its programme;
- A conference cycle as part of Donilab's Doni'green programme, in March 2021, for which Thomas Granier led a videoconference on the NV technical concept to raise awareness and equip young students and entrepreneurs in Mali, on the risks/ challenges and opportunities related to climate change;

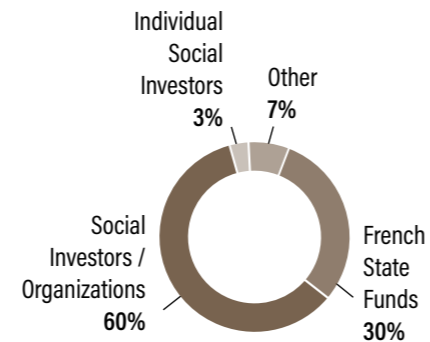
- A presentation of the AVN programme to students of the Swiss Federal Institute of Technology Zurich (ETH), in April 2021;
- The Nubian Vault photo exhibition in June 2021, in Montreal (Canada), organized as part of the Rallye-Expos de Vues d'Afrique and the participation of Thomas Granier in the associated webinar "Environment and sustainable development in Africa, the example of the NV";
- The 12th Meeting of the International Action of Territorial Communities (AICT) in June 2021, in Paris, through participation in a workshop "Earth construction, what issues and what partnerships?" with the Habitat and Francophonie Network (RHF) presenting in particular the LOAAD project.

Budget growth since 2010

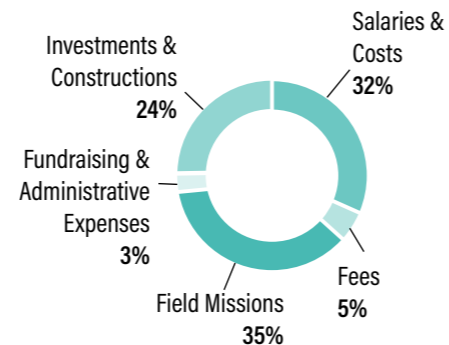


Statement of resources/expense

| RESOURCES in EUROS | 2020-2021 | 2019-2020 |
|----------------------------------|------------------|------------------|
| French State Funds | 722,002 | 491,659 |
| Social Investors / Organizations | 1,429,187 | 694,295 |
| Individual Social Investors | 67,588 | 67,730 |
| Other | 164,120 | 172,275 |
| Total Resources | 2,382,897 | 1,425,959 |
| In-kind voluntary contributions | 4,440 | 6,660 |
| Total General | 2,387,337 | 1,432,619 |



| EXPENSES in EUROS | 2020-2021 | 2019-2020 |
|---------------------------------------|------------------|------------------|
| Salaries & Costs | 746,618 | 554,116 |
| Fees | 124,804 | 100,073 |
| Field Missions | 835,889 | 456,022 |
| Fundraising & Administrative Expenses | 75,216 | 67,505 |
| Investments & Constructions | 577,897 | 231,829 |
| Total Expenses | 2,360,424 | 1,409,545 |
| Result | 22,473 | 16,414 |
| In-kind voluntary contributions | 4,440 | 6,660 |
| Total General | 2,387,337 | 1,432,619 |



Active/passive balance sheet

| ACTIVE BALANCE SHEET in EUROS | 31/08/21 | 31/08/20 |
|-------------------------------|----------------|----------------|
| Fixed assets | 38,798 | 30,764 |
| Other receivables | 26,302 | 7,637 |
| Prepaid expenses | 1,957 | 1,080 |
| Products to receive | 148,221 | 93,560 |
| Treasury | 733,403 | 561,179 |
| Total Assets | 948,681 | 694,220 |

| PASSIVE BALANCE SHEET in EUROS | 31/08/21 | 31/08/20 |
|----------------------------------|----------------|----------------|
| Stocks | 144,441 | 128,035 |
| The result of the exercise | 12,009 | 16,406 |
| Provisions for risks and charges | 12,600 | - |
| Payables | 43,836 | 2,741 |
| Other debts | 49,814 | 90,691 |
| Prepaid income | 685,891 | 456,347 |
| Total Liabilities | 948,681 | 694,220 |

AVN's funders and areas

| FUNDERS | Burkina | Mali | Benin | Ghana | Senegal |
|---|---------|------|-------|-------|---------|
| French State and local communities | | | | | |
| AFD - DPO | | | | | |
| CD78 - YCID | | | | | |
| Expertise France | | | | | |
| SCAC - Ambassades de France | | | | | |
| Other States and Foundations | | | | | |
| Alwaleed Philantropies | | | | | |
| ENABEL | | | | | |
| WHH | | | | | |
| PAFPA | | | | | |
| UN-HCR | | | | | |
| DRC | | | | | |
| Europaid | | | | | |
| PATRIIP - WHH | | | | | |
| Various | | | | | |
| Individuals Social Investors | | | | | |
| Billing | | | | | |
| Other | | | | | |





5 - Partners and Awards

■ Financial Partners who co-financed the 2020-2021 season



■ Networks



■ Prizes and Awards won this saison

AVN's programme was nominated among the 5 finalists for the Energy Globe World Award, in the "Earth" category. This prize rewards sustainable development projects every year.

The award ceremony took place during COP26 in Glasgow on November 8, 2021.

More info on: www.energyglobe.info



Partners on the ground mobilized this season

Burkina Faso

- 1 **National Federation of NAAM Groups (FNGN), Viim Baoré Cooperative and NAAM unions**
Umbrella organization for 90 farmers' organizations
▶ Distribution of the AVN programme by around twenty Naam Unions and the Viim Baoré Cooperative in the North Region and the Boucle du Mouhoun Region.
- 2 **Provincial Association of Nong-Taaba Artisans and Guilds from the Boulgou Province (APAGAN-B) and local unions**
Artisan association
▶ Dissemination of the AVN programme in the province of Boulgou (Centre-East Region) with the support of local municipal relays.
- 3 **Tind Yalgré Association (ATY) and local unions**
Farmers' group for socio-economic and cultural development
▶ Dissemination of the AVN programme in the Central Plateau region by mobilizing 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
▶ Broadcasting of the AVN programme in the province of Koulpelogo (Centre-Est Region).
- 6 **Training Center for Mines and Quarries Buildings and Public Works (CEMCA-BTP) of Boromo**
Vacational formation center
▶ Implementation of a NV eco-construction pilot training course leading to certification by CQB.

Mali

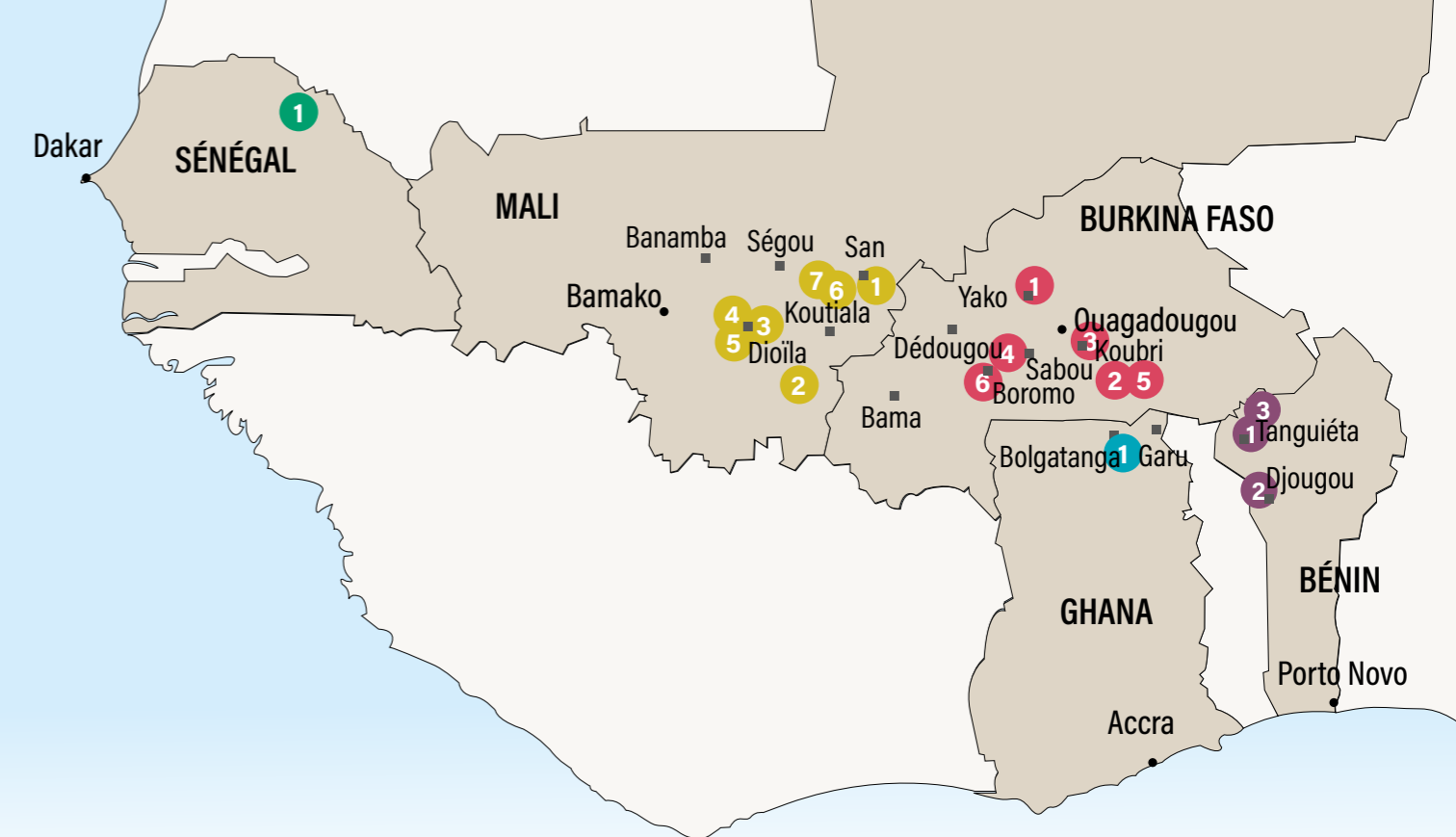
- 1 **Coordination for Women's Associations (CAFO)**
Coordination of 200 women's associations
▶ Mobilized for the diffusion of the NV on the Circle of Tominian.
- 2 **Meeting of Rural Women for Food Sovereignty (COFERSA)**
Meeting of 40 rural women's cooperatives
▶ Mobilized for the diffusion of the NV on the Circle of Sikasso.
- 3 **Diédougou Union of Cereal Producer Cooperatives (USCPCD)**
Association of 7 cooperatives
▶ Diffusion of the NV in the circle of Dioila.
- 4 **Union of Cooperative Societies of Cereal Producers of the Circle of Barouéli (USCPCCB) "Yèrènyèton"**
Union of 6 cooperatives
▶ Diffusion of the NV in the circle of Barouéli.
- 5 **NIETA Union**
Union of 9 cooperatives
▶ Diffusion of the NV in the circle of Dioila.
- 6 **Cooperative Union of Cotton and Cereal Producers (UCPCC)**
▶ Dissemination of the NV in the town of Diaramana.
- 7 **Simplified Cooperative Society of Producers and Processors of Agricultural Products (SCSPTPA)**
▶ Dissemination of the NV in the town of Dougouolo.

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.

Ghana

- 1 **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.



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).

Acronyms

3FPT: Department of the Vocational Training Financing Fund

ADOS: Association Ardèche Drôme Ourosogui Sénégal

ADSCAL: Association for the Socio-Cultural Development of Agnam

AECID: Spanish Agency for International Development Cooperation

AFD: French Development Agency

AICT: International Action of Local Authorities

AMO: Assistance for project management

APAGAN-B: Provincial Association of Artisans and Group of Artisans Nong-taaba du Boulgou

APAK: Provincial Association of Artisans of Koulpelogo

ASN: Senegalese Agency for Standardization

ATY: Association Tind Yalgré

AVIGREF: Village Association for the Management of Wildlife Reserves

AVN: Nubian Vault Association

AWAC: Walloon Climate Agency

BF: Burkina Faso

BIT: International Labor Office

BTP: Buildings and public works

C1/C2/C3/C4/C5: Beginner Apprentice/Experienced Apprentice/Mason/Artisan Mason/Entrepreneur

CAEB: Advice and Support for Basic Education

CAFO: Coordination of Women's Associations and NGOs in Mali

CCNUCC/UNFCCC: United Nations Framework Convention on Climate Change

CD: Departmental Council

CFP: Vocational Training Center

CIC: Client Incentive Coupon

CO₂eq: CO₂ equivalent

COFERSA: Convergence of Rural Women for Food Sovereignty

CQB/CQP: Basic/Professional Qualification Certificate

DANIDA: Denmark's Development Cooperation

DDC: Department of Development and Cooperation

DEC: Department of Examinations and Competitions

DRC: Danish Refugee Council

DGCH: Directorate General for Construction and Housing

DGFP: General Directorate of Vocational Training

DUA: Department of Urban Planning and

Architecture

EAMAU: African School of Architecture and Urbanism

ECODEC: Ecology and Community Development

ECRF: El-Ehsan Charitable Relief Foundation

ENABEL: Belgian Development Agency

ERP: Establishments open to the public

ETH: Swiss Federal Institute of Technology Zurich

EU: European Union

FBST: Full Building Site Training

FEM/GEF: Global Environment Facility

FFEM: French Fund for the Global Environment

FICOL: French Local Authorities Financing Facility

FNGN: National Federation of Naam Groups

GABC: Global Alliance for Buildings and Construction

GBT-AH: Grouped Building sites Training – Access to Housing

GDP: Gross Domestic Product

GERES: Renewable Energies, Environment and Solidarity Group

GES: Greenhouse gas

HR: Human Resources

IFU: Unique Tax Form

LP: Le Partenariat

MAE: Ministry of Foreign Affairs

ME: Millions of euros

NGO: Non-Governmental Organization

NV: Nubian Vault

OCB: Basic Community Organization

ODAS: Order of Architects of Senegal

ONF: National Forestry Office

OP: Peasant Organization

OSC: Civil Society Organization

PAFPA: Vocational Training and Apprenticeship Support Programme

PET: Technical Expertise Pole

PF2E: School-Company Training Programme

PO: Partenaire Opérateur

RB-FC: Reinforcement on Building site – First Clients

RHF: Francophonie Habitat Network

SCSPTPA: Simplified Cooperative Society of Producers and Processors of Agricultural Products

SDG: Sustainable Development Goals

SNV: Netherlands Development Organization

SPONG: Permanent Secretariat of Non-

Governmental Organizations

TM: Trainer Mason

TMSS: Technical Module on Specific Stage

ToR: Terms of Reference

UCCPA: Municipal Union of Cashew Producers' Cooperatives

UCPCC: Cooperative Union of Cotton and Cereal Producers

UI-TI: Unité d'Implantation-Territoire d'Implantation

UN: United Nations

UNHCR: United Nations High Commissioner for Refugees

UNICEF: United Nations Children's Fund

URPD-BM: Regional Unions of Producers from Dolo to the Boucle du Mouhoun

USCPCCB: Union of Cooperative Societies of Cereal Producers of the Circle of Baraouli

USPCPD: Union of Cooperative Societies of Cereal Producers of Dièbouougou

VAE: Validation of Acquired Experience

WHH: *Welthungerhilfe*

YCID: Yvelines International Cooperation and Development

YHF: Youth Harvest Foundation


ZAE: Electrified Activity Zone




NV site in Benin.



www.lavoutenubienne.org

 [thenubianvault](https://www.facebook.com/thenubianvault)

 [@earthroofs](https://twitter.com/earthroofs)

 [la Voûte Nubienne](https://www.linkedin.com/company/la-voûte-nubienne)

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