



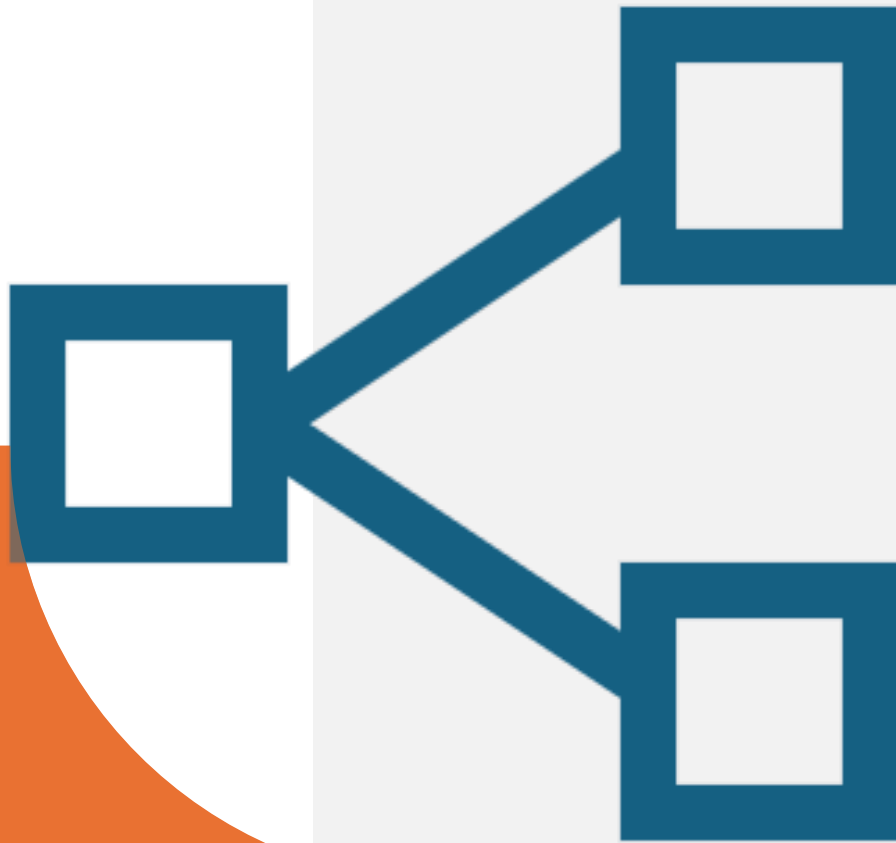
# VICTORINE EBUDE PROJECT

**VICEF**  
**VICKY EBUDE FOUNDATION- ODV**  
rep 138432 – CF 94107600309



**SOWEDA**  
South West Development Authority

**SOWEDA**  
**South West Development Authority**  
**Under the supervisory authority of Ministry of Agriculture**  
**and Rural Development**  
**Republic of Cameroon**



# Promoters Istituzional Agreement Location

## Attachments

Agreement between SOWEDA and VICEF

Agreement between VICEF and  
Foundation Social Economic  
Development Enrico Mattei



Ref N° 007/24/MUNAF/CSW/SA/C/BoD

30 JAN 2024

VICTORINE EBUDE PROJECT  
AGRICULTURAL AND AGROINDUSTRIAL COMPLEX IN KUPE MUANENGUBA  
DIVISION- SOUTH WEST REGION OF THE REPUBLIC OF CAMEROON

Collaboration Agreement  
Between

Vicky Ebude Foundation-Onlus. A humanitarian Association of International Cooperation, hereinafter VICEF, registered with Registration no. 147 in the FVG Region Volunteer Register, in Udine, Italy, represented by Bismark Epoh Enongene, Chairman  
On the one hand

And

South West Development Authority, hereinafter SOWEDA, a Governmental Agency under the supervision of the Minister of Agriculture and Rural Development of the Republic of Cameroon, with headquarters in Buea, South West Region, Cameroon, represented by Ediage Apande Herbert, as Board Chairman  
On the other side  
Both

Given that

- VICEF is a non-profit organization operating in Italy since 2008 where it develops non-profit activities in the sector of assistance, culture and social and economic relations between Italy and Central African countries
- VICEF, in the context of its activity to promote international cooperation between Italy and Africa, has established an operational branch in Cameroon.
- In 2018, VICEF obtained authorization from the Ministry of Territorial Administration through the ministry of external Relations of the Republic of Cameroon to directly promote and carry out activities in the Agri-Food and Healthcare sectors.
- VICEF, in the context of the global pandemic situation, which has also affected Cameroon, in agreement with the country's authorities, has given priority to activities in the healthcare sector.

- VICEF, having overcome the pandemic crisis, has decided to resume and boost activity in the Agri-Food sector by focusing, on the indication of the Government of the Republic of Cameroon, on projects aimed at the development of production lines intended, as a priority, for the most vulnerable population, youths in the country.
- VICEF, in order to give substance to this objective, has decided to develop, in collaboration with the regional administrations responsible for territorial development, an agro-food supply chain project with the main mission of producing Bio long-life milk, white meat, cheese, butter and eggs.
- VICEF, for reasons of availability of land and favorable microclimatic conditions, decided to locate the siting of the initiative in the South West Region of the country and therefore turned to SOWEDA, as the competent Government Authority of the South West Region, to which it proposed the Project, attached to this agreement, set up its preliminary and conceptual version.
- SOWEDA, having examined the conceptual project presented by VICEF, shared its approach and indicated a possible settlement site in the Kupe-Manenguba Division in an area, to be defined in shared terms, between the localities of Ngusi and Nyandong with access to rivers.
- SOWEDA has declared its willingness to collaborate with VICEF in the development of the project by contributing
- SOWEDA, declared herself willing to define, in the area indicated above, the conditions for making available to the Special Purpose Company, envisaged by the Project, the land suitable for the realization of the Project itself with the technical characteristics that will be indicated by VICEF and the Team technical organized in Italy by VICEF itself.
- SOWEDA, for the success of the Project, made herself available to:
  - ✓ individuate human resources and to encourage their training with the assistance of the school and university structures of the Region,
  - ✓ Recruit a direct stakes indicated by VICEF in the special purpose company envisaged for the implementation and management of the Project
  - ✓ define a multi-year concession, with predefined right of redemption, of a site land of approximately 5,000 hectares in favor of the planned special purpose company.
- SOWEDA, on the basis of this collaborative context, undertakes to promote the project with the competent authorities and to follow the authorization development of the same.

Having said all this, the Parties agree:

1. The premises form an integral part of this agreement
2. VICEF, as technical manager of the Project, will define a partnership with technical consultants and specialized companies capable of developing, in executive terms, the attached conceptual project and implementing the technical- financial project, in executive terms, relating to all the components of the project itself and in particular :

Agreement  
Signed  
between  
VICEF and  
SOWEDA  
(pag 1 and 2)

- a. The stables and works necessary for breeding agreed with SOWEDA,
  - b. The milk plant
  - c. The slaughterhouse
  - d. The packaging lines for products intended for retail marketing
  - e. The logistics platform necessary for the storage and shipping of the products themselves to the customer operators of the commercial distribution network
  - f. An electricity generation system from renewable sources and waste from the farms and processing lines of the agri-food complex. This system must be optimized in order to allow the energy autonomy of the agro-industrial complex envisaged by the project.
  - g. The overall financial plan of the project
3. SOWEDA, as responsible for the development of the project in the area, undertakes to develop the activities envisaged in the premises, according to the indications, timing and technical constraints that will be defined by VICEF and its team of technical partners for each of the projects referred to in the previous art 2 of this agreement.
4. The Project will be developed in agreement with SOWEDA and, once shared, will be presented jointly to the Italian and Republic of Cameroon Authorities for the authorizations under their jurisdiction. To this end:
- a. VICEF undertakes to present the Project to the offices of the Italian Ministry of Foreign Affairs and to the Enrico Mattei Foundation as the technical body investigating the Mattei Plan promoted by the Italian Government in agreement with the EU.
  - b. SOWEDA undertakes to present the project to the competent authorities of the Republic of Cameroon and to the Ministry of Foreign Affairs of Cameroon to activate its diplomatic channels with the Italian Republic to express its support for the project in the competent diplomatic offices.
5. The Parties undertake to define and sign an agreement which will regulate the relations between them and the technical partners of the project once the same has been defined at an authorization level and in particular:
- a. The share holders agreement between the Parties and a Third Party Implementer of the development plan defined above
  - b. The criteria for defining the contractual relationships between the Parties and the third-party partners involved in the project, without prejudice to the commitments already undertaken by VICEF in the preliminary phase of the project, commitments that VICEF submits to SOWEDA and which the latter undertakes to share without prejudice to compliance constraints imposed by the regulations in force in Cameroon.
  - c. The legal and arbitration rules that will govern the contractual relationships underlying the project.
6. Until the authorizations mentioned above, the Parties and their partners will collaborate in good faith, on a voluntary basis, to the success of the Project

7. After the authorizations that will allow the start up of the Project itself, the Parties will define the set of contracts that will regulate in onerous terms, on the basis of transparency and internationally recognized standard tariff levels, the relationships between themselves and those to remunerate the executive services provided by third parties partners.



Yaoundé  
Udine.

# Agreement Signed between VICEF and SOWEDA (pag 3 and 4)



**Agreement Signed  
between  
VICEF  
and  
Fondazione SED ENRICO MATTEI**

# Victorine Ebude Project and Piano Mattei

The **Victorine Ebude Project** is configured as a model example of **development cooperation** envisaged by art. 2 of Legislative Decree 161/23 as it is promoted jointly by:

the Italian non-profit organization **VICEF** (VICKY EBUDE FOUNDATION ODV – rep no. 139432, CF 94107600309) with headquarters in the Province of Udine

and by Regional Authority of the SOUTH WEST Region of Cameroon **SOWEDA** (South West Development Authority)

- The general objective of the project is to transform a vast area of the Region's territory, also subject to internal migratory flows, that of the municipality of Tombel , into an area suited to the development of cattle and goat farming aimed at the production of long-life milk ( UHT) intended especially for infant age groups. **Therefore the project fully falls within the objective of the development of agriculture and food security also foreseen by the aforementioned art 2 of Legislative Decree 161/23.**
- The livestock and agricultural project (see attachment), as well as that of the training of local managers, will be developed by a university consortium coordinated by the Faculty of Agricultural, Food and Environmental Sciences of the Catholic University of the Sacred Heart based in Piacenza.
- The consortium is made up not only of the Catholic University of Piacenza, but also of the University of Camerino and the two Universities of Buea (capital of the South West Region of Cameroon), the State one and the local Catholic one. **Therefore, the project fully falls within the objective of developing cooperation in the education , higher education and professional training sectors, also provided for by art. 2 of Legislative Decree 161/23.**
- Finally the **Victorine Project Ebude** , in line with the provisions of art. 3 of the Mattei Plan, **is configured as a territorial plan** as it intervenes in significant terms on the territory of an area of Cameroon on the border with Nigeria, subject to internal migration flows, encouraging its development and stability. .The local ruling class has a good level of both cultural and administrative preparation (see attached CVs), emerging from a period of now overcome separatist tensions, which seeks greater stability by strengthening international collaboration, on the one hand with Nigeria and on the other with Italy by taking advantage of the historic economic relations promoted, for years now with the University of Trieste, by the non-profit organization VICEF founded by a citizen of Cameroon, Bismark Epohe Enongene , by now permanently resident in Italy. The project proposed and under development, among other things shared with the SED Enrico Mattei Foundation, aims to make these relationships make a leap in quality with the direct involvement of local universities and technical schools.

# Agreement VICEF – Fondazione SED ENRICO MATTEI



## Accordo di Collaborazione

tra

Da una Parte

**VICKY EBUDE Foundation**, precedentemente iscritta al registro del volontariato della regione Friuli Venezia Giulia, in fase di iscrizione al Registro Unico Nazionale del Terzo Settore, di seguito **VICEF**, rappresentata da **Bismark Epoh Enongene**, Presidente

Dall'altra Parte

**Fondazione Social Economic Development Enrico Mattei**, con sede in via Umberto I n°9, Matelica (MC), CF 92040700434, di seguito **Fondazione SED Mattei**, rappresentata da **Aroldo Curzi Mattei**, Presidente

Insieme le Parti

### Premesso che

**VICEF** ha sottoscritto un **Accordo di Collaborazione** con **South West Development Authority** della Regione del Sud-Ovest della Repubblica del Camerun, di seguito **SOWEDA**, per lo sviluppo di un progetto Agroindustriale localizzato su un terreno dato in concessione con diritto di riscatto ad una società di scopo, di diritto Camerunese, costituita ad hoc da **VICEF**, **SOWEDA** ed un gruppo di imprese europee, per la produzione di derivati del latte e di altre produzioni agroalimentari correlate (vedi Allegato 1).

**VICEF** ha costituito un gruppo di consulenti e di imprese con competenze specifiche delle tecniche agricole ed industriali relative a tutta la filiera del latte e della carne.

**VICEF** e il gruppo di interesse economico da lei costituito ha sviluppato il **Progetto VICTORINE EBUDE**, di seguito il **Progetto**, strutturato nelle sue varie fasi realizzative riassunto nella presentazione allegata (vedi Allegato 2).

**VICEF** ha presentato il progetto nella sua veste preliminare riassunta nella presentazione allegata alla Fondazione SED MATTEI nel meeting convocato da questa in data 17 maggio 2024.

**Fondazione SED MATTEI** opera di concerto con la Struttura di Missione prevista dall'Art. 4 del D.L. 161/23 quale supporto tecnico indipendente nella valutazione dei progetti da inserire nei programmi di sviluppo del Piano Mattei.

**Fondazione SED MATTEI** ha esaminato il progetto sviluppato da **VICEF** e lo ha approfondito con **VICEF** stessa e il suo team arrivando alle seguenti conclusioni:

1. Il Progetto presentato rientra nei requisiti richiesti dal D.L. n. 161/23 con il quale è stato Decretata la nascita del Piano Mattei, la sua Missione e le sue strutture operative.
2. Il Progetto rientra nelle priorità previste dall'Art 1, comma 1 del Piano Mattei.
3. Il Camerun è sicuramente un paese verso il quale è opportuno sensibilizzare l'interesse della Cabina di Regia del Piano Mattei perché venga inserito tra i Paesi con i quali sviluppare progetti condivisi nel contesto del Piano Mattei stesso.

### Tutto Ciò premesso le Parti concordano:

Art. 1 - Le premesse e gli allegati citati in premessa sono parte integrante del presente accordo

Art. 2 - Le parti svilupperanno in termini condivisi l'approfondimento dei punti critici individuati nel confronto tecnico del 17 maggio 2024 ed in particolare approfondiranno:

- a) L'analisi delle prospettive di mercato dei prodotti finali della filiera del latte, sia a livello del Paese di localizzazione dell'intervento, il Camerun, sia a livello dei paesi confinanti con particolare attenzione alla Nigeria.
- b) L'analisi delle strutture distributive locali con particolare riferimento alle piattaforme commerciali indispensabili all'efficace implementazione della distribuzione retail dei prodotti finali.
- c) L'analisi della possibilità di realizzare una linea di produzione di latte in polvere, in parallelo alla linea di produzione di latte a lunga conservazione, definita a livello di accordo quadro tra **VICEF** e **SOWEDA**.
- d) L'analisi di opportunità di accordi internazionali con catene di distribuzione commerciali, sia che siano già presenti in Camerun, sia che siano interessati al Camerun e/o in Paesi dell'Africa prossimi al Camerun.
- e) L'analisi della possibilità di integrare il piano seminativo e di coltivazione agricolo destinato all'alimentazione degli allevamenti previsti, con coltivazioni di altri prodotti agricoli destinati all'uso diretto a fini alimentari, eventualmente in collaborazione con operatori agroalimentari internazionali interessati al paese
- f) L'analisi della possibilità di realizzare spacci e/o piattaforme grossiste, destinati a prodotti alimentari locali, in grado di alimentare in termini di efficienza commerciale, sia la rete di micro-distributori locali, sia eventuali altre piattaforme di distribuzione facenti capo a operatori internazionali.

Art. 3 - I risultati di tali approfondimenti saranno sottoposti da:

- **VICEF** all'attenzione di **SOWEDA** per l'indispensabile condivisione di eventuali iniziative integrative del piano già definito tra **VICEF** e **SOWEDA**.
- **Fondazione SED Mattei** all'attenzione della Struttura di Missione del Piano Mattei per la condivisione delle eventuali integrazioni del Progetto.

Art. 4 - Il presente accordo tra le parti è finalizzato all'inserimento del Progetto Victorine Ebude, tra i progetti promossi dal Piano Mattei in Africa.

Art. 5 - Il presente accordo resterà in essere per tutta la vigenza operativa del Piano Mattei stesso.

Art. 6 - Il Presente Accordo sarà gestito dalla Parti, con la finalità di raggiungere il successo del progetto ed in termini condivisi ed in buona fede.

**Fondazione SED Mattei**  
Matelica, 2024-06-06  
Aroldo Curzi Mattei  
Presidente

**VICEF**  
Udine, 2024-06-07  
Bismark Epoh Enongene  
Presidente

Allegati:

1. **Accordo di Collaborazione tra VICEF e SOWEDA**
2. **Presentazione Victorine Ebude Project**



Firmato digitalmente da:

**BISMARCK EPOH ENONGENE**

**Main Mission Envisaged by the  
Agreement between VICEF and  
SOWEDA:**

**Breeding of dairy animals (cows and  
goats) to produce long-life UHT milk  
and related food products**

**Resource made available by SOWEDA:**

**virgin (see Location) to be transformed  
into pastures and arable land intended  
for breeding dairy cows and goats**





**Project LOCATION- SITING**  
**Kupe Muanenguba Division – South**  
**West Region**  
**Municipality of Tombel – Ngusi District**



# Vicky Ebude Foundation

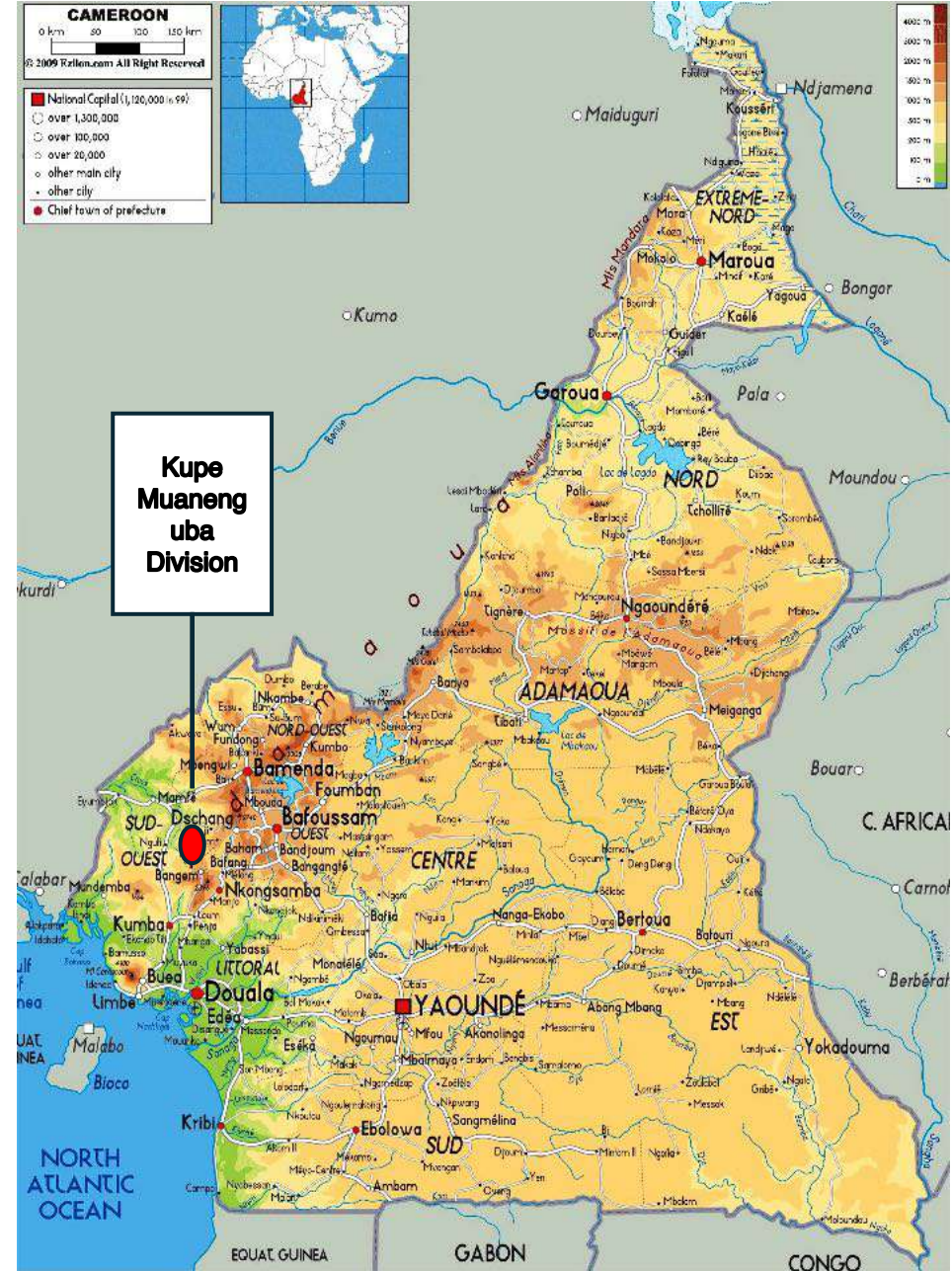


Udine  
Yaoundé



## VICTORINE EBUDE PROJECT

**Agricultural and Agroindustrial  
Complex in Kupe Muanenguba  
Division - South West Region  
of Cameroon**



## Geographic Coordinates of the site 4° 51' 13" N 9° 38' 48" E

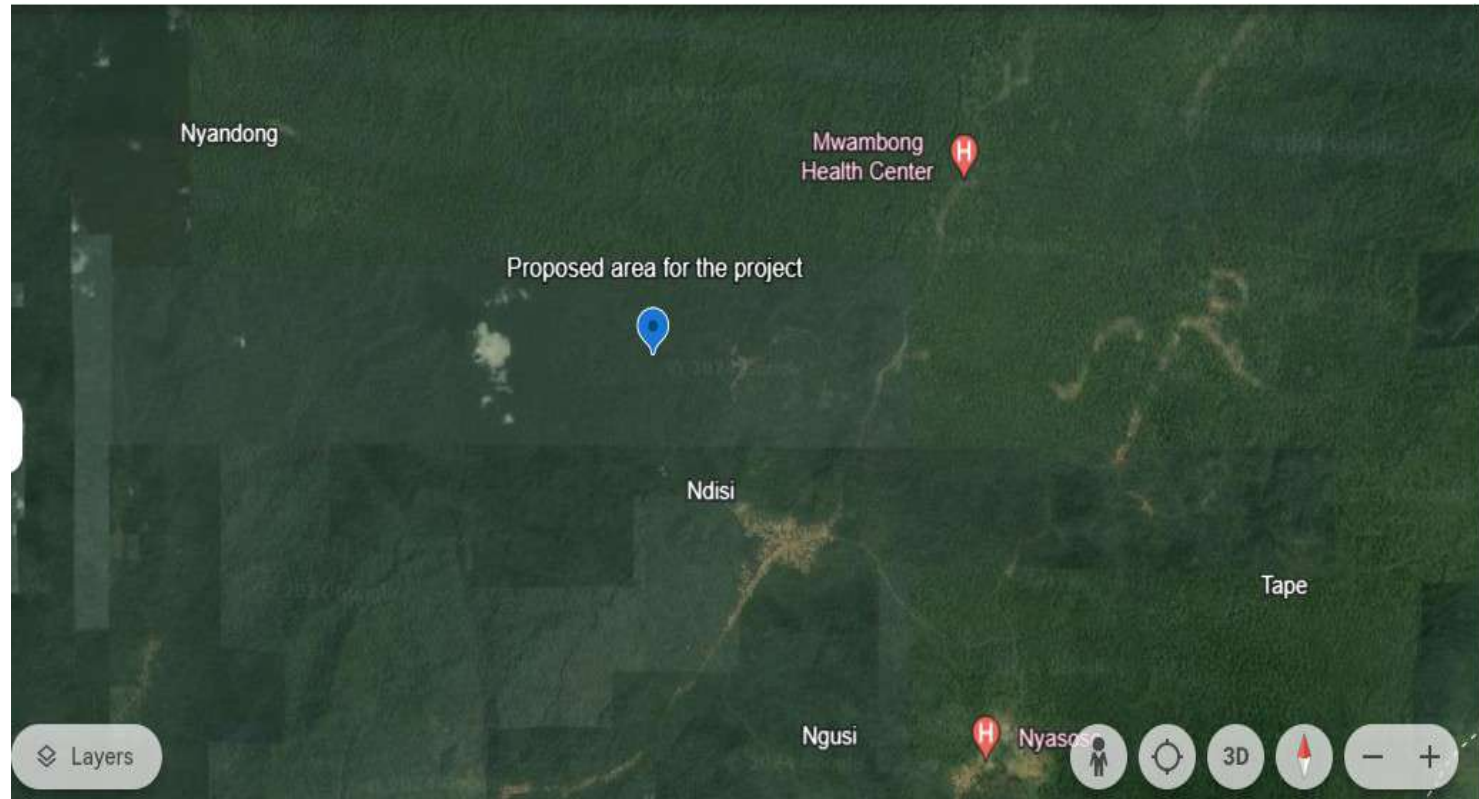
Site altitude 505 m

### Site orography:

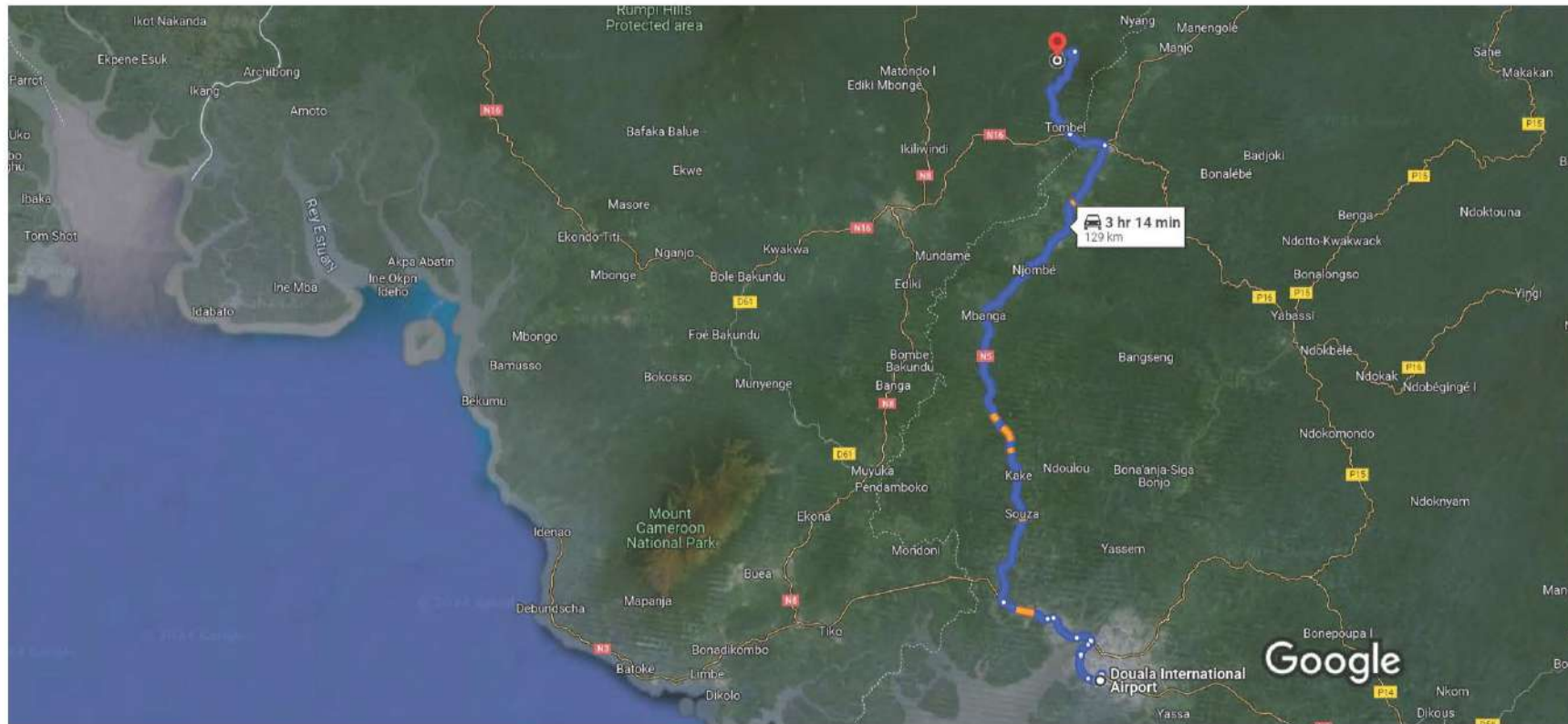
The area lie between the **Kupe mountain** and the **Rumpi highlands**

### Presence of courses and /or water sources:

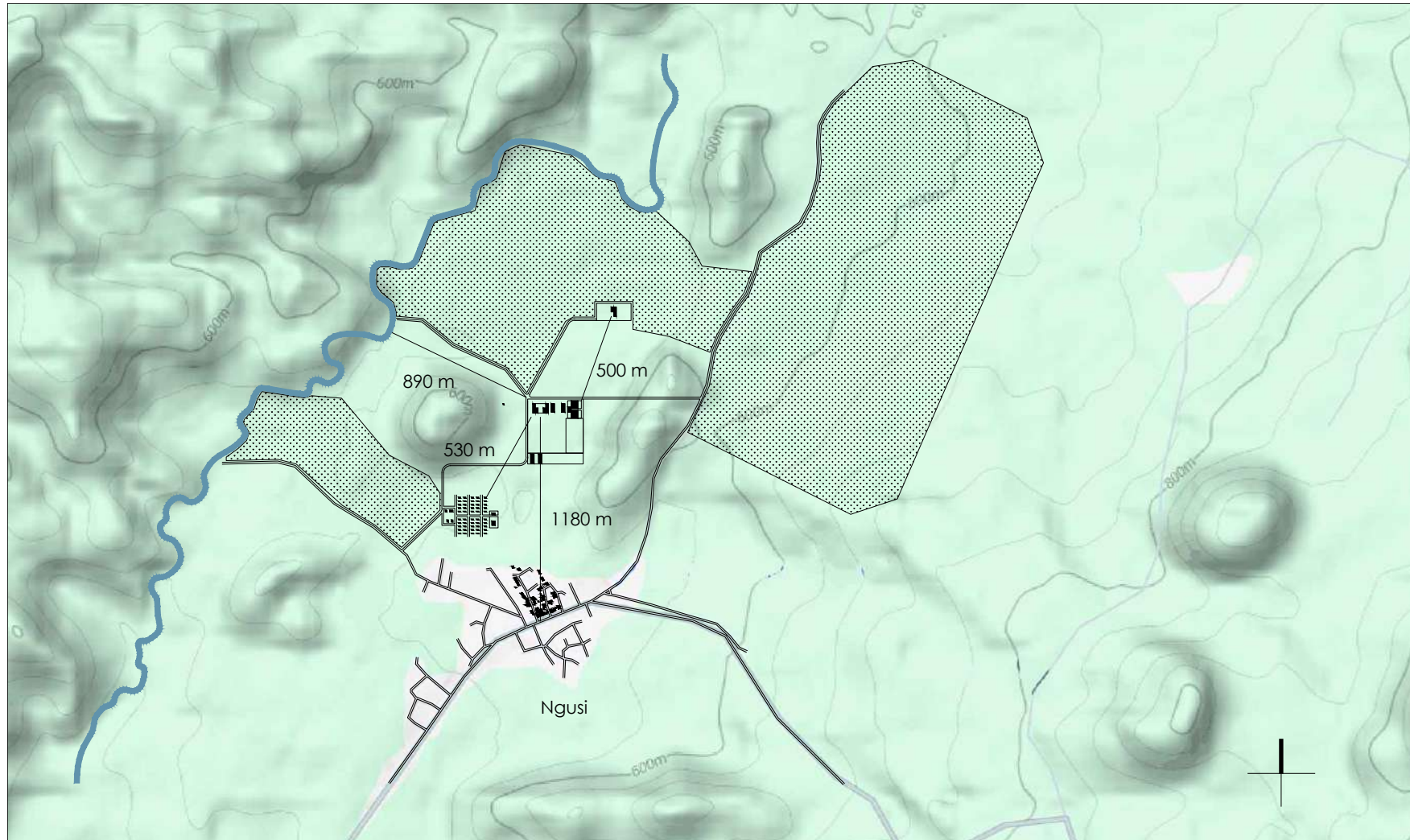
- The **hydrography** network is meaningful: we have:
  - > the **Moungo river** which crosses many villages, several permanent and seasonal streams (Toow, Ngese, Ebulle, childe, Metobe, Edibana, Kola, Esemze),
  - > **then about 102 springs** acting as water supply points which provide good drinking water for the villages not having pipe borne water



# Road Route from Douala to Ngusi ( road distance 130 Km)



# Preliminary Master Plan of the Demonstration Project planned for the first implementation phase



# Geology - Vegetation - Crops

## Geological characteristics of the terrain

- Geologically, the area is formed of sedimentary, volcanic, metamorphic and plutonic rocks ([Nkouathio et al., 2002](#))  
Volcanic rocks are made up of basalts and pyroclastic deposits while metamorphic and plutonic rocks are respectively gneiss and granite.  
Sedimentary rocks a,
- *(UMfa)* (325km<sup>2</sup>; 19%), *Dystric fragic Cambisols (humic) (CMdfh)* (37km<sup>2</sup>; 2%), *Rhodic Acrisols (cutanic humic) (ACrch)* (230km<sup>2</sup>; 14%), *Leptic fragic Umbrisols (UMlf)* (42km<sup>2</sup>; 2%); and *Mollic Ferralsols (eutric humic) (FRmeh)* (195km<sup>2</sup>; 11%).

Vegetation of the area, is generally represented by a dense tropical forest

## Crops already active :

- > Coacoa
- > Plantains Cocoyams
- > Vegetables
- > Palm oil
- > Rubber
- > Pepper
- > Okra
- > Fruit Trees

# Seasonal Trend of Temperatures and Precipitation

Annual high temperature : 34,18°C

Annual low temperature : 23,05 °C

Warmest Month : February : 37,74 °C

Coldest Month : January : 23,35 °C

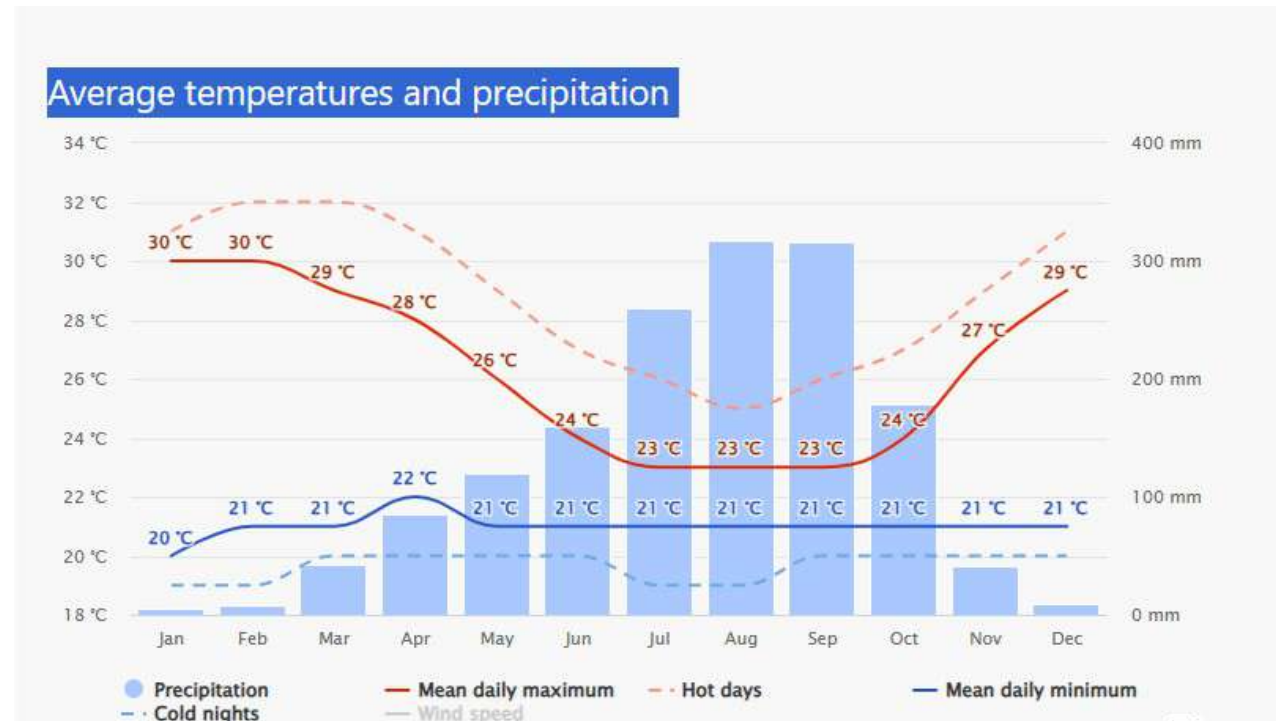
Wettest Month : July : 301,85 mm

Driest Month : Yanuary : 14,12 mm

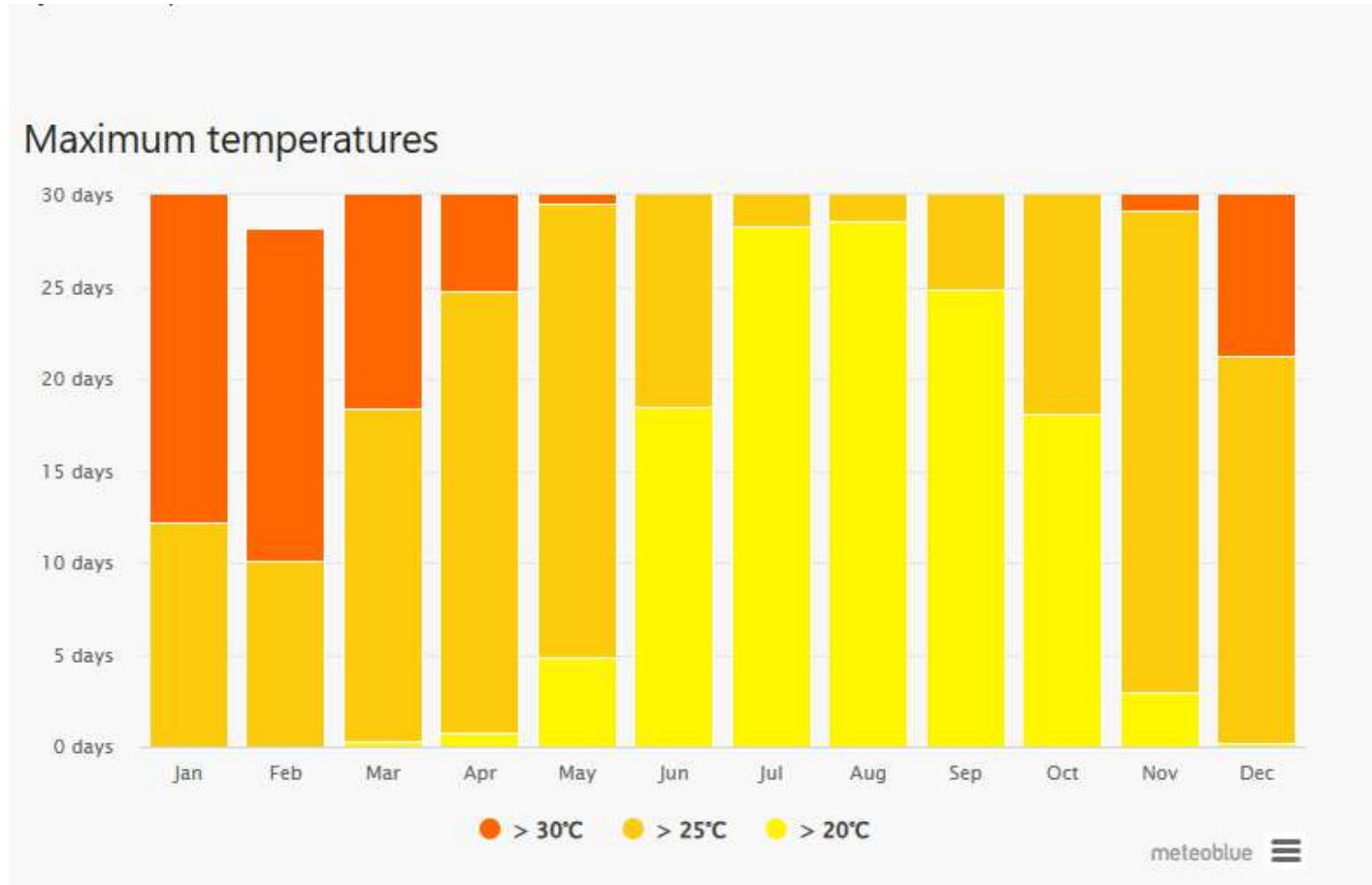
Number days with rainfall (>1,0 mm): 267,25 days (73,22%)

Number days with ness rain : 97,75 days (26,78%)

Humidity : 79,82 %

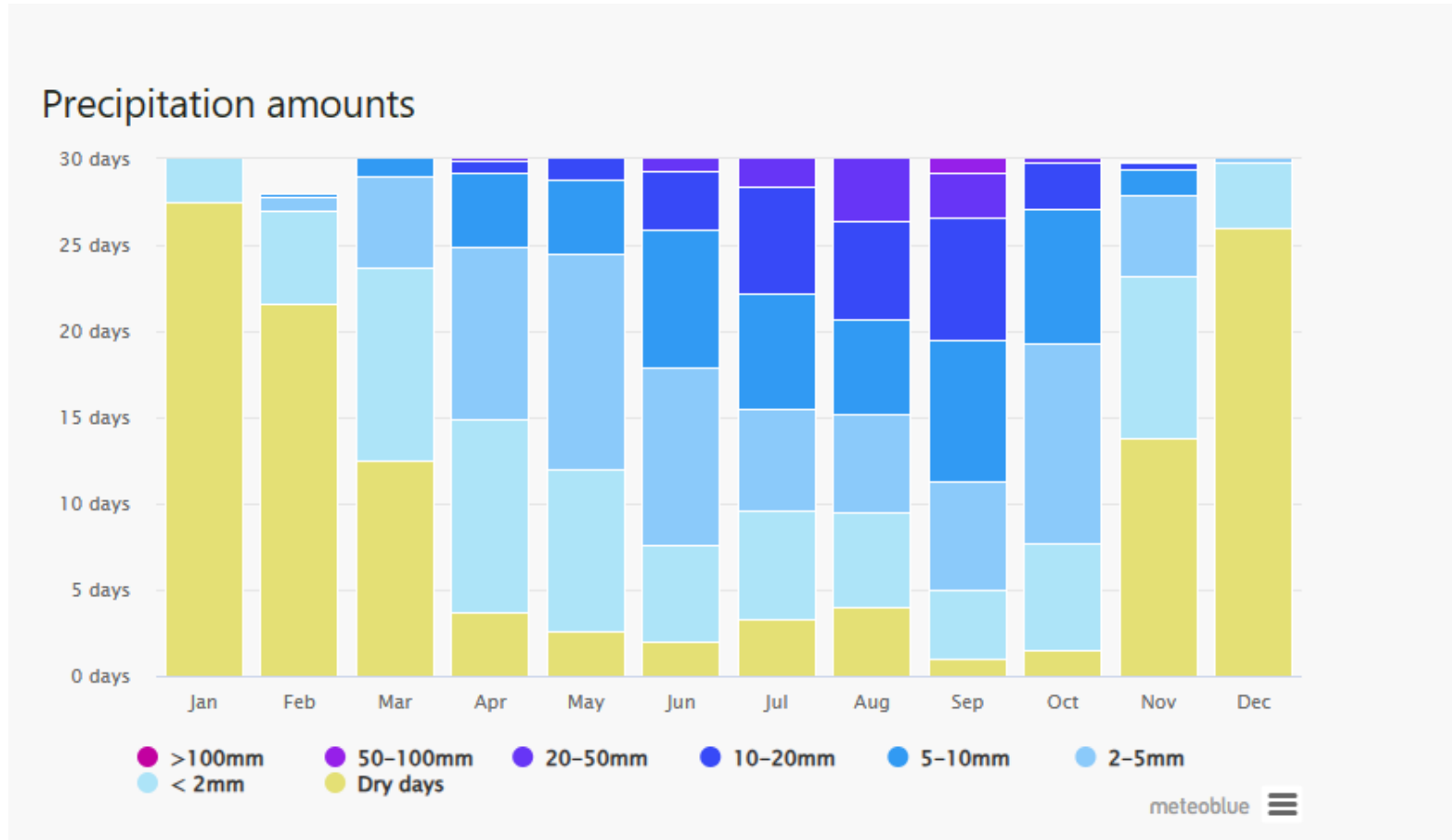


# Monthly Trend of Max Temperature





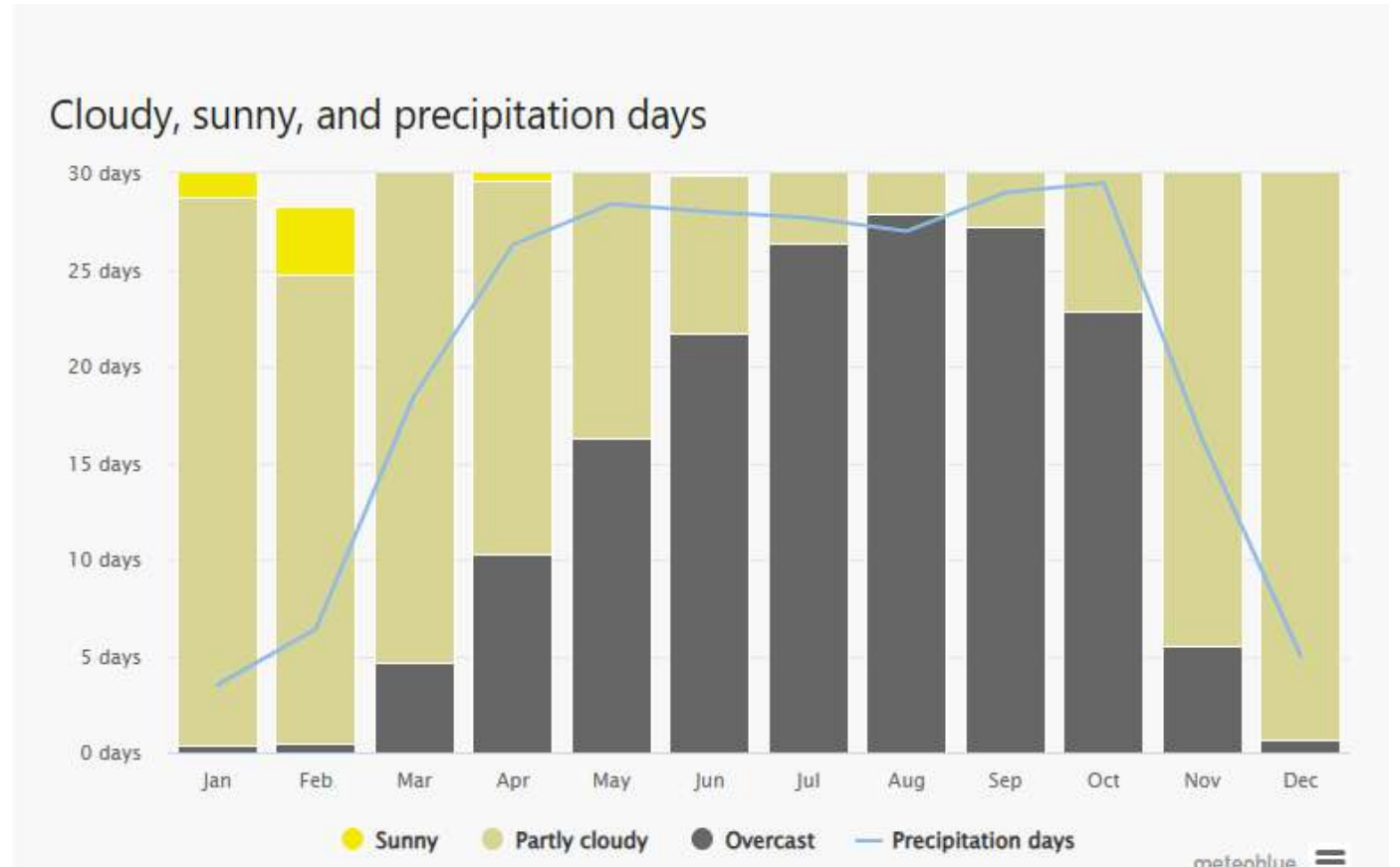
# Monthly Trend of Precipitation



The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days.

Days with:

- less than 20% cloud cover are considered as sunny,
- 20-80% cloud cover as partly cloudy
- with more than 80% as overcast





# Victorine Project Ebude

## Conceptual Hypothesis Developing in Progress of the Project

- The Agro-Industrial Pole Project defined briefly, but in precise terms in the preliminary agreement signed between VICEF and SOWEDA provides for an important plan for the creation of an Agro-Industrial Pole starting from a green field made available by the Regional Development Authority
- The fact that the initiative is to all intents and purposes a Start-up entails the need to proceed through implementation phases developed in sequence in order to minimize the risks of non-remediable setup errors which can compromise the success of the overall project. initiative itself.
- The development phases identified are the following:
  1. **Selection and training phase of local managers** to whom the management of the Agro-Industrial system will be entrusted. For the development of this phase it is planned to use the local training resources represented by the University of Buea in collaboration with faculties of the Faculty of Agriculture and Veterinary Medicine of qualified Italian Universities
  2. **Industrial start-up phase of the project** . This phase has the mission of finalizing the design, construction and management of a prototype module of the project to concretely test the development of the critical components of the project itself and anticipate the solutions to be adopted in the implementation.
  3. **Project implementation phase** . **Transfer of management to a group of local entrepreneurs trained in start-up phase**

## **Constraints Imposed on the development of the Project by the preliminary agreements between the promoters VICEF SOWEDA and Fondazione SED Enrico Mattei**

**The Project aims to adapt to the specific environmental situation of Cameroon and its socio-cultural tradition, a farming model that is as modern and productive as possible for the agro-industrial milk supply chain. This requires designing from scratch:**

- An agricultural production system suitable for farms that are sufficiently productive and economical to justify major investments to replace imported milk and dairy products with quality milk produced locally.
- The introduction of cultivation techniques useful for the diet of farm animals and compatible with the local environmental conditions mentioned above.
- Agricultural transformation compatible with the presence of vast forest spaces
- Study and construction of integrated agricultural complexes capable of cultivating integrated land with stables equipped with all services for efficient management of breeding facilities
- Study the optimization of cow and goat systems necessary for production and the new residence
- Industrial recovery structures for wood by-products and the production cycle
- Schools for permanent training of the personnel necessary to carry out the entire complex hypothesized system. at breeds with appropriate genetic techniques that allow the creation of specific animal breeds suitable for lactation on an industrial scale and resistant to the local climate.
- Design an industrial transformation system that allows both the production of high quality milk and that of mandatory by-products (dairy and slaughter integration)
- Create service centers capable of maintaining the efficiency of the system.



A close-up profile of a black and white cow's head, looking towards the right. The cow has a white blaze on its face and a white patch on its forehead. The background is a clear, bright blue sky.

# Dairy Farming in Cameroon

COWS AND GOATS

# SOWEDA information on:

- University
- New experimental farms in Cameroon

Bases on the request from the consultant related to local types and italian breeds, find here images of the local types in Cameroon.

Best  
Idris

---

3 allegati



Kamerun schaff.jpeg  
66K



Boer goats Cameroon.jpeg  
12K



Cameroon RAM -EWES-LAMB.jpeg  
35K

# Traditional cow and goat farming in Cameroon

Herd of Keko cattle raised in Cameroon



Guinea Dwarf Goat breed raised in Cameroon



**Existing Cow and Goat Herds in Cameroon ( Information provided by Doct. Idriss Nzubepie )**

Race	COWS				GOATS		
	Gudali-Holstein Hybrid	Gudali	Holstein	White Fulani	Back Belly Pygmy Goat	Djallonke Sheeps	Dorset Sheep
Duration of the lactation days	283	167	309	220	from 120 to 150	157	from 120 to 180
Quantity milk produced liters/day	12,1	2,5 - 3	from 10 to 20	from 10 to 20	2 - 2,5	1,55	1
Diet							
Forage	Hay quality grass hay - Legume hay - Corn or Sorgun silage	Hay quality grass hay - Legume hay - Corn or Sorgun silage	mix fodder dry (hay and grass) wet (additional nutrients moisture)	mix fodder dry (hay and grass) wet (additional nutrients moisture)	Sainfoin grass Oatmeal moixture	Sainfoin grass Oatmeal moixture	Sainfoin grass Oatmeal moixture
Concentrate	Grains and Protein supplements	Grains and Protein supplements	Concentrate supplements including: Carbohydrates, Proteins, Fats, Minerals, Vitamins	Concentrate supplements including: Carbohydrates, Proteins, Fats, Minerals, Vitamins	Concentrates	Concentrates	Concentrates
Notes					Probability of twin birth	Probability of twin birth	Probability of twin birth





# Design Development of the Project

**VICEF MANDATE**

to

**Engineer VALERIO LEONARDO BITETTO ([www.urlbitetto.it](http://www.urlbitetto.it)) for**

**Project Coordination**

and

**Agreement with Universities for Feasibility Studies**

# Design Development of the Project

## Organizational Structuring of Work

*On the basis of the mandate received, Ing Valerio Bitetto organized the project activity on three sectors of activity:*

1. Coordination and Strategic Development Activities coordinated by a project secretariat entrusted, in agreement with VICEF, to **Generalplan srl**:
  - Strategic Consulting Coordination Team promoting agreements with Italian and Cameroonian Universities made up of **Prof Massimo Tallarini and Dr Francesco Rivolta** in Italy and **Dr Idriss Nzubipie**
  - Conceptual design team for the training strategy of top management and plant management personnel and the territorial planning of interventions made up of **the Anna Kuliscioff Foundation and the architects Chiara Filios and Marianna Galbusera**
2. Development team for agricultural and livestock systems coordinated by **ATW srl**
3. Design team for agro-industrial transformation plants for agricultural and livestock production coordinated by **Self Globe srl**





# Preliminary Technical Approach and Co-Promoting Technical Developers

## Organizations involved in the development of the project teams

- Universities Involved are :
  - UNICATT Piacenza and UNICAM Camerino. In Italy
  - Universities of Buea in Camerun
- The three Consulting Companies involved are:
  1. **General Plan srl** of Udine led by **Dr Pier Luigi Nassimbeni**, former Director of the Agricultural Development Agency of the Friuli Region V. G.
  2. **ATW srl** of Ricengo (Cremona), a consultancy and service company for agricultural breeding companies led by **Dott Agr Alberto Marazzi and Eng Paolo Marconi** ([www.agricoltura.com](http://www.agricoltura.com) )
  3. **Self Globe srl** of Monte San Martino (Macerata), a service company for the agri-food industry with great international experience and Africa in particular, led by **Dott Tarcisio Senzacqua** ([www.selfglobe.com](http://www.selfglobe.com) )
- Consultancy activity in Cameroon :  
**Dr Idriss Nzubepie** , SOWEDA advisor

# **Object of Scientific Collaboration within the Project**

**As stated above, it is the intention of the Promoters that the Project be developed with the scientific support of the:**

**Faculty of Agricultural Sciences of Piacenza of the Catholic University,**

**Faculty of Veterinary Medicine of the University of Camerino**

**University Schools of Buea in South West Region of Cameroon identified by SOWEDA (see attached )**

# Minute of Vicky Ebude Project Presentation Meeting

## Faculty of Agricultural Sciences of the University Catholic Sacred Heart

### Piacenza headquarters, 18 June 2024

## Present at the Meeting

<b>Catholic University of Sacred Heart:</b>	1. Prof <b>Marco Trevisan</b> Dean of the Faculty of Agricultural, Food and Environmental Sciences	2. Prof <b>Fiorenzo Piccioli Cappelli</b> Full Professor of Innovation in Animal Production	3. Prof <b>Antonio Gallo</b> Full Professor of Nutrition and Animal Nutrition
<b>VICEF – Vicky Ebude Foundation Onlus :</b>	Ø Dr <b>Bismark Epohe Enongene</b> Chairman	Ø Eng <b>Valerio Leonardo Bitetto</b> ( <a href="http://www.urlbitetto.it">www.urlbitetto.it</a> ) Project Consultant	Ø Dr. <b>Giuseppe Martines</b> Associate
<b>Companies Associated with VICEF in the Project:</b>	Ø <b>Self Globe srl</b> ( <a href="http://www.selfglobe.com">www.selfglobe.com</a> ) also representing SINT Technologie srl ( <a href="http://www.sinttechnologie.com">www.sinttechnologie.com</a> ) and Prototech snc ( <a href="http://www.prototech.it">www.prototech.it</a> )	ü Dr <b>Tarcisio Senzacqua</b> CEO Self Globe srl	ü Eng <b>Riccardo Lupetti</b> Technical Office Manager Self Globe srl
Ø <b>Atw srl</b> ( <a href="http://www.atwagricoltura.com">www.atwagricoltura.com</a> ):	ü Dr. Agr <b>Alberto Marazzi</b> Managing Partner	ü Eng <b>Paolo Marconi</b> Partner Expert in breeding techniques	

## Intraduction by VICEF

VICEF clarifies that the document presented has collected the technical questions suggested by Professors Trevisi and Renieri, transferring them to the SOWEDA Advisor who follows the Project, Dr. Idriss Nzubepie who responded (see attached email to the project) specifying:

- The Goat and Bovine breeds with good milk productivity that are currently raised in Cameroon
- The training courses present in the two regional universities present in Buea with agricultural and veterinary skills also specifying the names of the teachers who direct the courses in these subjects

# Meeting at Faculty of Agricultural Sciences of University Catholic of Sacred Heart – Piacenza headquarters , 18 June 2024

## meeting minutes (pag 1-2)

VICEF– SOWEDA Agro-Industrial Victorine Ebude Project in the South West Region of Cameroon.  
VICEF Meeting – Faculty of Agricultural Sciences of the University Catholic of the Sacred Heart  
Piacenza headquarters, 18 June 2024  
Minutes of Meeting

### Present:

- **Catholic University of Sacred Heart:**
  1. Prof **Marco Trevisan** Dean of the Faculty of Agricultural, Food and Environmental Sciences
  2. Prof **Fiorenzo Piccioli Cappelli** Full Professor of Innovation in Animal Production
  3. Prof **Antonio Gallo** Full Professor of Nutrition and Animal Nutrition
- **VICEF – Vicky Ebude Foundation Onlus :**
  - Dr **Bismark Epohe Enongene** Chairman
  - Eng **Valerio Leonardo Bitetto** ([www.urlbitetto.it](http://www.urlbitetto.it)) Project Consultant
  - Dr. **Giuseppe Martines** Associate
- **Companies Associated with VICEF in the Project:**
  - **Self Globe srl** ([www.seifglobe.com](http://www.seifglobe.com)) also representing **SINT Technologie srl** ([www.sinttechnologie.com](http://www.sinttechnologie.com)) and **Prototech snc** ([www.prototech.it](http://www.prototech.it))
    - ✓ Dr **Tarcisio Senzacqua** CEO Self Globe srl
    - ✓ Eng **Riccardo Lupetti** Technical Office Manager Self Globe srl
  - **Atw srl** ([www.atwagricoltura.com](http://www.atwagricoltura.com)):
    - ✓ Dr. Agr **Alberto Marazzi** Managing Partner
    - ✓ Eng **Paolo Marconi** Partner Expert in breeding techniques

At the opening of the proceedings, Dr Bismark E. Enongene thanks Prof Trevisan for his availability by accepting the meeting and formally delivers the conceptual project prepared by VICEF (attached to these minutes) reworked by the team of consultants aggregated in this phase of development by VICEF itself.  
At the invitation of Prof Trevisan, VICEF invites its project coordinator consultant, Eng Bitetto to summarize the essential points of the project presented to the

Faculty of Agricultural, Food and Environmental Sciences of the Catholic University of the Sacred Heart.

In the introduction to his illustration, Ing Bitetto makes two clarifications:

1. The project was promoted by SOWEDA (South WEST Development Authority) which is the regional agency for the agricultural development of the region based in Buea, capital of the South West Region, but which operates in the regional territory by delegation of the Ministry of Agriculture and the Forests of the Republic of Cameroon.  
SOWEDA has activated VICEF to present an agro-industrial settlement project that would create a production center for the complete milk supply chain with a fully operational potential of approximately 120,000 litres/day of long-life UHT milk ready to be distributed to end consumers.  
To this end, SOWEDA is making available a twenty-year concession with right of redemption of approximately 5,000 hectares adjacent to the rural center of Ngusi in the municipality of Tombel .
2. On this hypothesis VICEF spoke with:
  - ✓ Self Globe srl and with ATW srl , the former experts in the processing of milk and meat produced by animal farms, and the latter experts in the creation and management of agricultural business complexes specialized in the management of herds of lactating animals ;
  - ✓ Prof Erminio Trevisi of the Catholic University of Piacenza and Prof Carlo Renieri of the University of Camerino who immediately raised the need for:
    - Diversify and correctly identify the choice of animal breeds with which to form the herds to be raised, in order to combine the characteristics of adaptability to the territorial environment where they are raised, with the production capacity of milk and meat that allows the economic return of the investment.
    - Identify breeding units of such dimensions as to reduce the risk of spreading diseases within the herds and between the herds and which allows optimizing the relationship between the size of the herd and the size of the fields to be cultivated for the production of products intended for animal feed.

Given this, VICEF clarifies that the document presented has collected the technical questions suggested by Professors Trevisi and Renieri, transferring them to the SOWEDA Advisor who follows the Project, Dr. Idriss Nzubepie who responded (see attached email to the project) specifying:

# Meeting at Faculty of Agricultural Sciences of University Catholic of Sacred Heart – Piacenza headquarters , 18 June 2024

## meeting minutes (pag 3 -4)

- a) The Goat and Bovine breeds with good milk productivity that are currently raised in Cameroon
- b) The training courses present in the two regional universities present in Buea with agricultural and veterinary skills also specifying the names of the teachers who direct the courses in these subjects

**After this presentation, having taken note of the information presented, VICEF and its partners, on the one hand, and Prof Trevisan, as Dean of the Faculty of Agricultural, Food and Environmental Sciences, on the other hand, shared the following work plan to be implemented in team with the University of Camerino and the 2 Universities of Buea:**

### **A. Preparation of a general pre-feasibility study of a territorial sector promotion plan for cattle and goat breeding farms.**

#### **Objective of the study:**

- a) ***The verification and certification of the availability of bovine breeds to be used as the basis for lactating cow herds***
- b) Definition of possible genetic engineering interventions to increase the productivity of the chosen bovine breed in terms of milk and meat
- c) Evaluation of the ***optimal size of a cattle herd*** managed on a single farm
- d) Design of the ***typical diet*** for an optimized lactating cattle herd
- e) The ratio between the share of the lactating herd and the overall herd with the hypothesis of specifying the composition of the entire reared herd
- f) Type of diet and husbandry suggested for the non-lactating cattle herd.
- g) ***The zootechnical parameters to be assumed in the design phase of the standard cattle stable and the land served for each optimized breeding unit***
- h) ***Checking the availability of goat breeds to be used as the basis for lactating goat farms***

- i) Definition of possible genetic engineering interventions on the chosen goat breed to increase productivity in terms of milk and meat
- j) Evaluation of the ***optimal size of a herd of goats*** managed on a single farm
- k) design for an optimized lactating ***goat herd***
- l) The ratio between the share of the lactating goat herd and the overall goat herd with the hypothesis of specifying the composition of the entire reared herd
- m) Type of diet and husbandry suggested for the herd share of non-lactating goats.
- n) ***The zootechnical parameters to be taken into account during the design phase of the goat stable and the land served for each goat breeding unit***

### **B. Preparation of a technical-economic feasibility plan for the creation of an experimental Agri-Food Hub to be built near the residential area of Ngusi and shared, right from the design phase, with the companies that are already assisting, each for their own expertise, VICEF in project development (Self Globe srl , AWT srl , General Planning srl ).**

The parties present at the meeting shared that this feasibility study:

- ***take as design parameters:***
  - a) ***The animal types (cattle and goats) defined during the pre-feasibility study***
  - b) ***Herds of a size consistent with the results of the pre-feasibility study***
- ***Evaluate the technical-economic opportunity of integrating the hypothesized cattle and goat farming with a chicken farm that exploits the food synergies between the diets of the various animal types .***
- ***Plan the development of the industrial components of the agri-food hub according to a time program consistent with the genetic optimization plan of the animal species defined in the pre-feasibility phase***
- ***It involves the implementation, in subsequent phases, of the individual interventions planned***

# Meeting at Faculty of Agricultural Sciences of University Catholic of Sacred Heart – Piacenza headquarters , 18 june 2024

## meeting minutes (pag 7)

- according to self-sufficient plant modules from an economic point of view and according to time schemes that provide for the implementation of the individual intervention only in compliance with the economic self-sufficiency constraint.*
- *Integrate the Agro-industrial Center with an agricultural field of such a size as to allow experimenting with cultivation plans consistent with the feeding plans for the experimental herds envisaged above.*

At the end of the meeting, Principal Trevisan made himself available to coordinate the formation of a team on a consortium basis with the University of Camerino and with the Universities of Buea indicated by VICEF.

The Faculty of Agricultural, Food and Environmental Sciences of the Cattolica of Piacenza reserves the right, in a short time, to send VICEF the estimate relating to the study plan shared above.

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CATTOLICA  
del Sacro Cuore



## Conclusion of the Meeting

After this presentation, having taken note of the information presented, VICEF and its partners, on the one hand, and Prof Trevisan, as Dean of the Faculty of Agricultural, Food and Environmental Sciences, on the other hand, shared the following work plan to be implemented in team with the University of Camerino and the 2 Universities of Buea  
**Preliminary Studies :General pre-feasibility study of a territorial sector promotion plan for cattle and goat breeding farms.**

### Objective of the study:

**a) The verification and certification of the availability of bovine breeds to be used as the basis for lactating cow herds**

b) Definition of possible genetic engineering interventions to increase the productivity of the chosen bovine breed in terms of milk and meat

c) Evaluation of the **optimal size of a cattle herd** managed on a single farm

d) Design of the **typical diet** for an optimized lactating cattle herd

e) The ratio between the share of the lactating herd and the overall herd with the hypothesis of specifying the composition of the entire reared herd

f) Type of diet and husbandry suggested for the non-lactating cattle herd.

**g) The zootechnical parameters to be assumed in the design phase of the standard cattle stable and the land served for each optimized breeding unit**

**h) Checking the availability of goat breeds to be used as the basis for lactating goat farms**

i) Definition of possible genetic engineering interventions on the chosen goat breed to increase productivity in terms of milk and meat

j) Evaluation of the **optimal size of a herd of** goats managed on a single farm

k) design for an optimized lactating **goat herd**

l) The ratio between the share of the lactating goat herd and the overall goat herd with the hypothesis of specifying the composition of the entire reared herd

m) Type of diet and husbandry suggested for the herd share of non-lactating goats.

**n) The zootechnical parameters to be taken into account during the design phase of the goat stable and the land served for each goat breeding unit**

**Preparation of a technical-economic feasibility plan for the creation of an experimental Agri-Food Hub to be built near the residential area of Ngusi.  
Feasibility Study**



**The parties present at the meeting shared that this feasibility study:**



***• Evaluate the technical-economic opportunity of integrating the hypothesized cattle and goat farming with a chicken farm that exploits the food synergies between the diets of the various animal types .***



***• Plan the development of the industrial components of the agri-food hub according to a time program consistent with the genetic optimization plan of the animal species defined in the pre-feasibility phase***



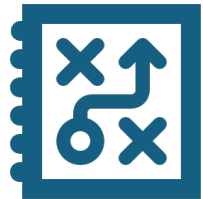
***• It involves the implementation, in subsequent phases, of the individual interventions planned according to self-sufficient plant modules from an economic point of view and according to time schemes that provide for the implementation of the individual intervention only in compliance with the economic self-sufficiency constraint.***



***• Integrate the Agro-industrial Center with an agricultural field of such a size as to allow experimenting with cultivation plans consistent with the feeding plans for the experimental herds envisaged above.***

**Take as design parameters:**

- The animal types (cattle and goats)***
- b) Herds of a size consistent with the results of the pre-feasibility study***



# Feasibility Study of the Organizational Project

**The objective of the feasibility study is to organize with a logic of assistance and not of a patrimonial intervention a start-up model of the complex of :**

Agricultural companies,

Agricultural product processing companies,

Service companies to operational entities in the area restructuring plan to allow cultivation and breeding





**Hypothesis of  
Economic Relations  
within the Project  
Pre-feasibility  
phase:**

**VICEF , in agreement with the SED Enrico Mattei Foundation and SOWEDA:**

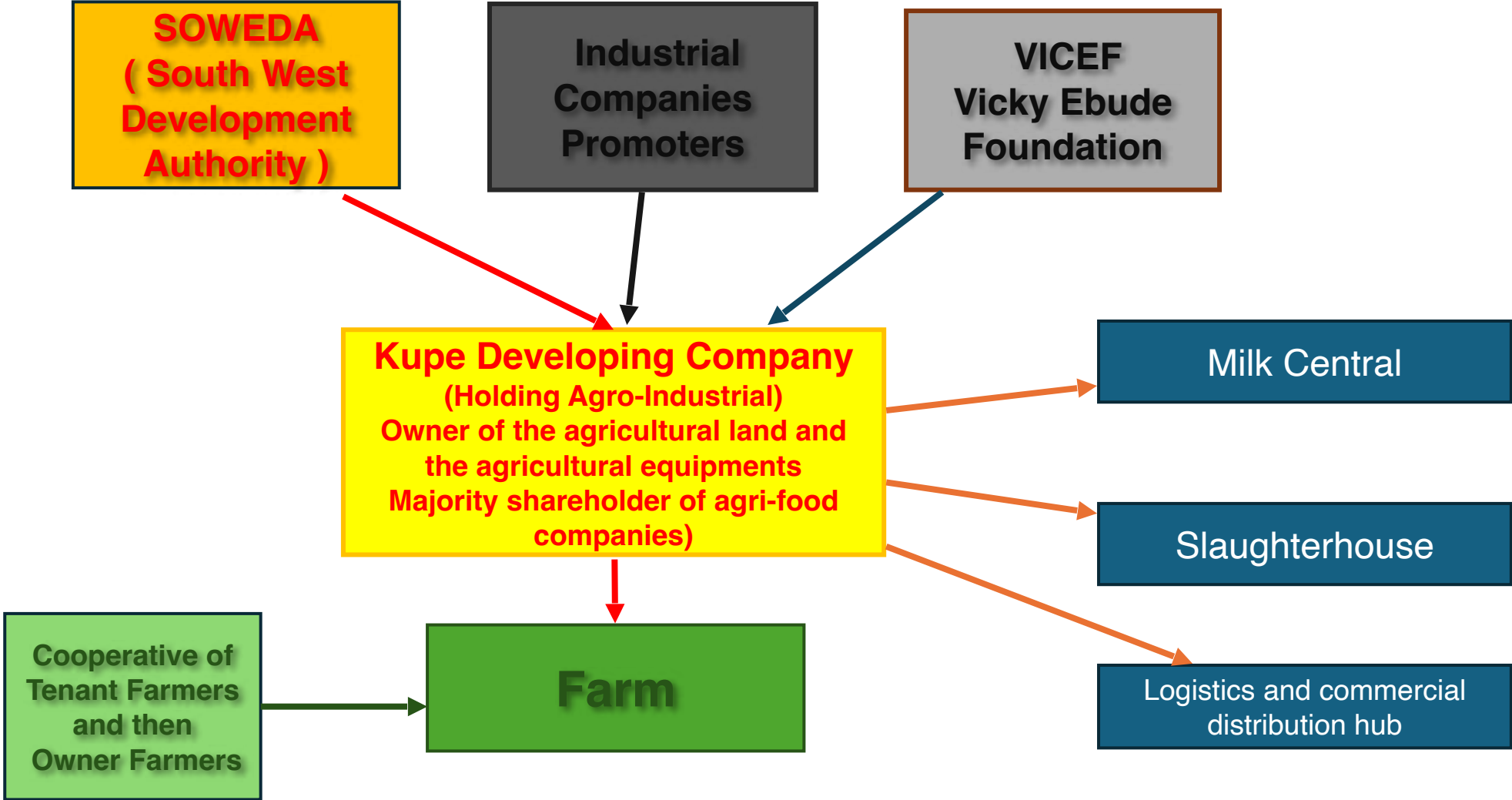
- develops the feasibility project with the support of associated companies and with the consultancy of the university team coordinated by the Faculty of Agricultural Sciences of the Catholic University of the Sacred Heart
- Develops fundraising for the feasibility development of the Project
- Promotes through already associated companies the European Consortium which will take the shareholding in the Cameroonian holding KUPE Developing Company
- Confers the feasibility project approved by SOWEDA and the SED Enrico Mattei Foundation to Newco KUPE Developing Company ( KDC) in exchange for a 10% stake

# Project Structures

The Project involves the establishment of specific purpose Newcos directed by Cameroonian entrepreneurs/managers with the following corporate missions:

- **Development holding company with the aim of promoting and participating in specific purpose companies with the following corporate missions:**
  - Agricultural companies with the task of cultivating and exploiting the agricultural potential of the area
  - Agricultural companies responsible for breeding cow and goat herds
  - Slaughterhouse
  - Primary milk processing company with the aim of producing UHT milk and by-products intended for dairy processing
- **Company provides services for the construction and maintenance of building and plant engineering interventions related to the main interventions mentioned above.**

# Corporate Organizational and Management Model of the Project Structure





## Hypothesis of Economic Relations within the Project Realization Phase

### The EU Consortium:

- It defines the technical project according to the skills of each member of the Consortium, defining, for each subsystem designed, the contractual hypothesis between the supplier of the component and KDC which will be the Cameroonian customer who will centralize all the supplies necessary for the realization of the project.
- financial scheme of each component with the banking institutions, favoring, where possible, the use of export financing supported by SACE guarantees on the Italian side and SOWEDA real guarantees on the Cameroonian side
- It will promote the search for ethical funds to complement commercial financing and to support the guarantees that SOWEDA will have to provide within the project
- It will promote the opening of a request for structural financing at the EIB within the framework of the existing agreements between the EIB-EU and Cameroon.

# Hypothesis of Economic Relations within the Project Realization Phase

## SOWEDA will promote:

- The planning of the territorial interventions necessary for the establishment of the agricultural activities envisaged by the project both in the transitional start-up phase and in the operational management phase.
- He will promote the establishment of the Kupe Holding Developing Company, defining the terms of the shareholder agreement with the other partners
- It will promote KDC's action for the definition of the medium-term structured financing plan to integrate the commercial financing acquired by the EU Consortium
- The establishment of agricultural cooperatives (farms) taking care of the training of the staff who will manage the livestock and cultivation of the connected fields
- It will guarantee the concession of land intended for the economic activities of agricultural cooperatives
- It will create the agricultural and residential infrastructure within which the management of agricultural activities will be developed according to the project scheme
- It will set concession/rental fees for the assets entrusted to agricultural cooperatives compatible with the overall economic constraints of the business plan envisaged for the granting Holding KDC
- It will set mandatory remuneration rates for sales of cooperative products destined for mandatory storage at the service center managed by KDC
- It will manage, in centralized terms, by setting the fees paid by users, the service of the agricultural equipment and fleets necessary for the management of agricultural companies



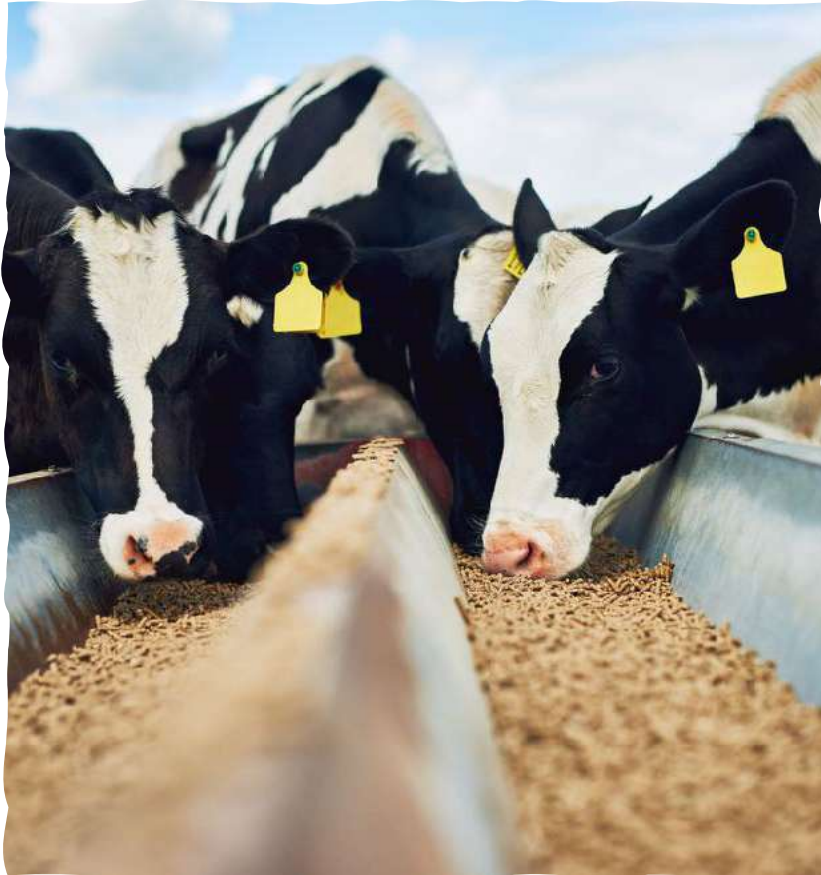
# Full Size Preliminary Project Plan

- **Full Size Project Objective: *creation of an agro-food complex for the production of:***
  - *approximately 120,000 litres/day of long-life partially skimmed milk to be sold on the market at €0.60/litre*
  - *approximately 2000 kg/day of packaged spreadable cheeses recovered from the fat fraction of processed milk.*
  - *Meat slaughtered in quantities compatible with the milk supply chain*
- **Location: KUPE MUANENGUBA DIVISION – SOUTH WEST REGION**
- **Building constructions companies on site location:**
  1. **Farm**

Made up of:

    - Field and related equipment (Internal logistics and agricultural equipment)
    - Barn for max 400 lactating cows each with connected equipment
    - Herd of approximately 30,000 goats ( total herd) managed in semi-wild conditions with collection points for milking
    - Stables and residential service structures
    - Electrical generation systems for self-production of energy and technological heat consisting of 2 sections:
      - a) Photovoltaic,
      - b) Animal waste digester and Biogas/Biomethane production
  2. **Milk Central**
  3. **Slaughterhouse**
  4. **Centralized structure for agricultural fleet management and maintenance of technological systems.**
  5. **Service structure for territorial transformation interventions including wood processing for on site use for residential and construction purpose.**

# Critical Components of the Project: The Stables and the Herds



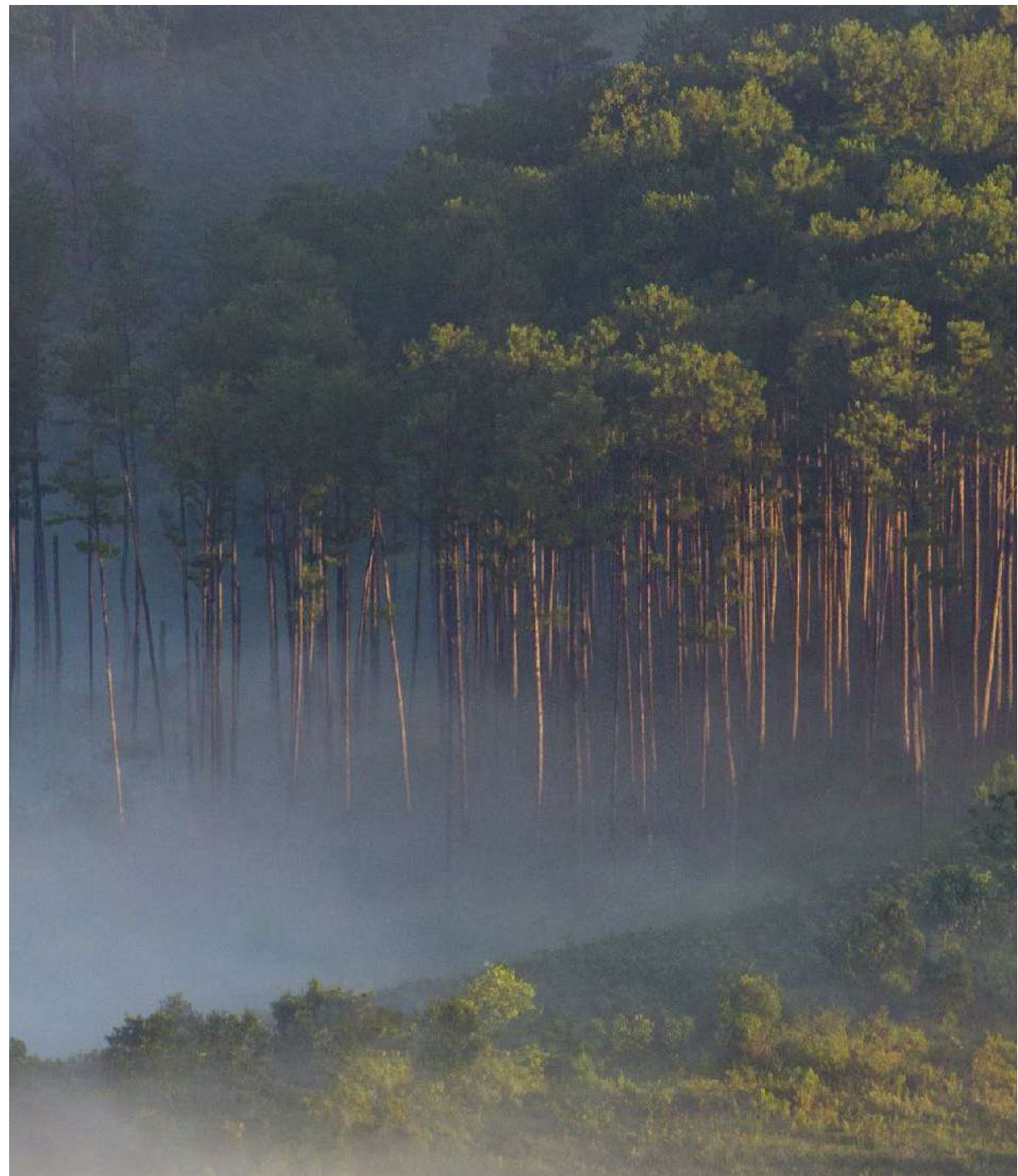
- The agreement between VICEF and SOWEDA provides for the production of approximately 120,000 liters/day of cow's and goat's milk (mainly cow's milk, to be transformed into long-life milk, yoghurt and spreadable cheese packages).
- To achieve this objective, it is planned to form units serving the agro-industrial breeding hub in order to reach two groups of herds for a total:
  - Cattle herds for a total of 6,000 lactating cows
  - Goat herds for a total of 30,000 lactating goats
- In order to achieve the expected productivity objectives, these herds must be appropriately:
  - selected and correctly managed
  - Sheltered in equipped stables with milking parlors
  - Correctly fed on the basis of a diet suitable for the climatic situation in which they are raised
  - Hospitalized during the recovery phase in rooms or environments suitable for their well-being
- The breeding fraction not suitable for breastfeeding must be correctly managed for fattening and subsequent slaughter
- The diet must be prepared in an ad hoc feed mill functionally connected to the stables and fed on the basis of a cultural plan appropriately prepared in the fields served by the agro-industrial hub

# **Critical Components of the Project The Fields Serving Livestock**

*The territory identified by SOWEDA is a predominantly forest territory where there is a single residential nucleus: Ngusi*

*To obtain the grazing and cultivation areas essential for feeding the herds, the following must be foreseen:*

- 1. Urban plan of agricultural areas and connected residences*
- 2. Plan for deforestation and reuse of the wood obtained for its reuse for construction and residential uses*
- 3. Land cultivation plan based on the feeding patterns envisaged during the zotechnical design phase of the herds*



# First Phase Implementation Preliminary Project Plan

- **Implementation Phase Project Objective:** *creation of an Demo Unit agro-food complex for the production of:*
  - *approximately 1000 litres/day by goats and 2000 litres/day by cows of long-life partially skimmed milk to be sold on the market at competitive price*
  - *approximately 200 kg/day of packaged spreadable cheeses recovered from the fat fraction of processed milk.*
  - *Meat slaughtered in quantities compatible with the milk supply chain*
- **Location:** KUPE MUANENGUBA DIVISION – SOUTH WEST REGION
- **Building constructions companies on site location:**
  1. **2 Demo- Farm (1 for goats and 1 for cows)**

Made up of:

    - Field and related equipment (Internal logistics and agricultural equipment)
    - Barn for max 200 lactating cows and 500 lactating goats each with connected equipment
    - Herds of approximately 1000 goats and 400 cows ( total herd) managed in semi-wild conditions with collection points for milking
    - Stables and residential service structures
    - Electrical generation systems for self-production of energy and technological heat consisting of 2 sections:
      - a) Photovoltaic,
      - b) Diesel Generator
  2. **Demo Milk Pasteurization and Processing Plant**
  3. **Demo Slaughterhouse**
  4. **Demo Centralized structure for agricultural fleet management and maintenance of technological systems.**
  5. **Service structure for territorial transformation interventions including wood processing for on site use for residential and construction purpose.**

The background features a complex network diagram with numerous nodes of various colors (blue, orange, yellow, purple, black) connected by thin grey lines. The nodes are scattered across the frame, with a higher density in the right half. The overall aesthetic is technical and interconnected.

# Training and **START-UP PHASE** of the Project

It is being defined with Scientific Institutes in Italy and Cameroon in collaboration with the skills of entrepreneurs and non-profit organizations that are already participating in the Project. In particular, the collaboration of the following University Institutes is being defined:

**Catholic University of Sacred Heart**

**University of Camerino**

**University Institutes of the City of Buea**

# DEMO IMPLEMENTATION PHASE

---

Preliminary Project  
Pre-Feasibility



# **Preliminary Demonstration Project:**

**Preliminary Master Plan  
Residential Hub  
Cattle and Goat Farming Hub  
Poultry Farming Hub  
Plant Modules ( Equipment -  
Slaughterhouses - Milk Plant)**

---

**Project development aimed at territorial settlement by :**

**Arch. CHIARA FILIOS (NORMALEARCHITETTURA) e Arch. MARIANNA GALBUSERA (STUDIO VLORA)**

**Agro-Industrial and Livestock Project Development by :**

**ATW srl e SELF GLOBE srl**

# Preliminary Demonstration Project



Development for  
agricultural and livestock  
system



Development for agro-industrial  
transformation plants for  
agricultural and livestock  
production

**STUDIO  
V L O R A**  
+  
NORMALEARCHITETTURA °

Development of an urban and  
architectural project for the agro-  
industrial and residential hub

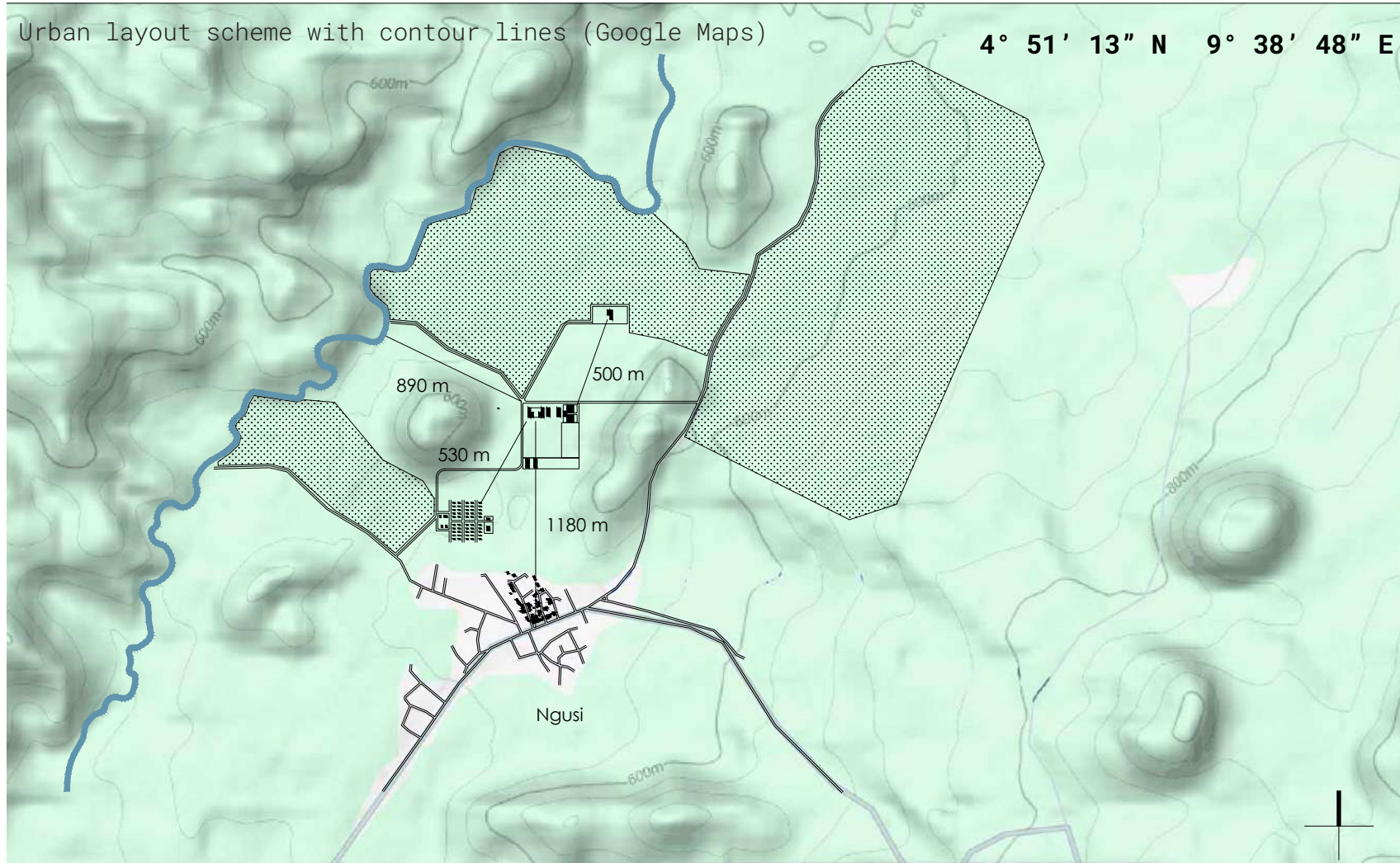


# DEMO PRELIMINARY PROJECT

The Demo Project to be considered final for the experimental phase should include the following components in a single pole:

- Demo-stables (bovine+caprine) and related field (500 ha)
- Experimental poultry farm for meat and egg production
- Dairy production module
- Slaughterhouse module
- Residences of the families active directly and indirectly at the agro-industrial pole
- A service facility including:
  - Agricultural fleet shelter and maintenance of technological systems
  - Fodder storage
  - Service center for building and facilities maintenance
  - Veterinary laboratory
  - Social and health service center
  - Recreation center
  - Electric generating plant consisting of 2 sections : Electric generator system (diesel) for a power of 3 x 120KW + an off grid photovoltaic system of 500KW (+ battery energy storage systems utility room)
  - Polyclinic and emergency room intended for the health care of the residents
  - Educational and training facility to support the inhabitants and management of the agro-industrial hub.

# PROJECT LOCATION - SITING



# PROJECT LOCATION - SITING



# PROJECT LOCATION - SITING

Kupe Muanenguba Division - South West Region  
Municipality of Tombel - Ngusi District

4° 51' 13" N 9° 38' 48" E

Ngusi is a large cosmopolitan area situated in Tombel commune at the foot of Kupe mountain. Agriculture is the main activity of the area with cocoa, palm oil, plantains is is their main cash crop.

Its at the heart of the evergreen forest area with a dense hydrographic network, a fertile volcanic soils and a temperate climate.

Ngusi share boundary with the Bakossi reserve area which is a rich in biodiversity. Ngusi is a crucial road intersection connecting the northern and western regions, Douala, and several other areas including Kumba and Loum. It serves as a vital hub for accessing surrounding divisions, such as Bangem, the headquarters of the Kupé-Manengouba division.

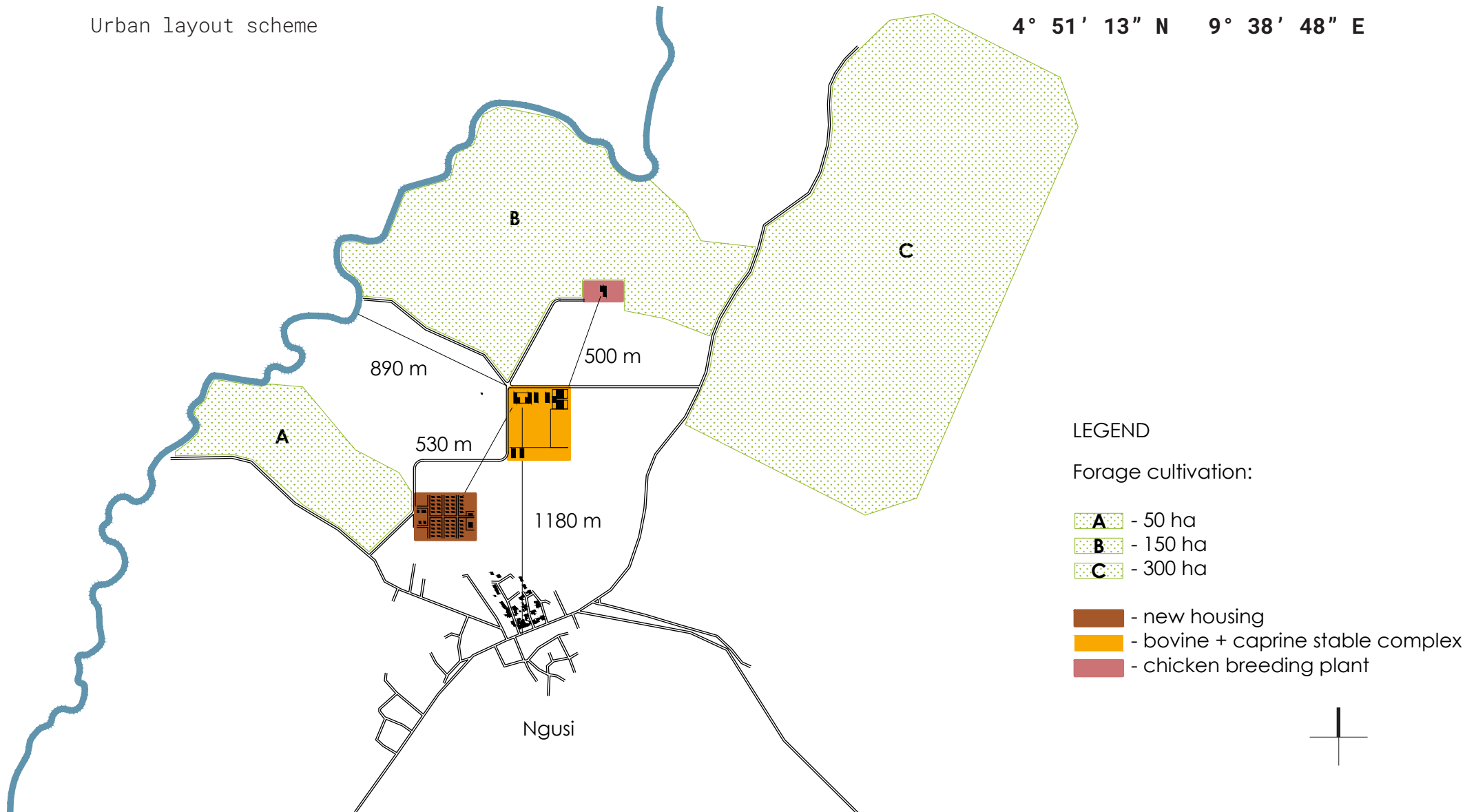
Following the geographical coordinates proposed by VICEF, a possible area for project development has been identified. The choice should be considered purely indicative, in the sense that an apparently flat piece of land with less dense vegetation was identified near the villages of Ngusi, between the Mounjo River and the existing road, which connects to the Tombel-Nyassoso road (P17).

Identifying the final site will have to be accompanied with detailed studies of the geology and morphology of the area. Therefore, we hope that multiple sites will be proposed so that the one with the most suitable characteristics will be chosen.

# PROJECT LOCATION - SITING

Urban layout scheme

4° 51' 13" N 9° 38' 48" E



# STABLES (BOVINE+CAPRINE) PROJECT

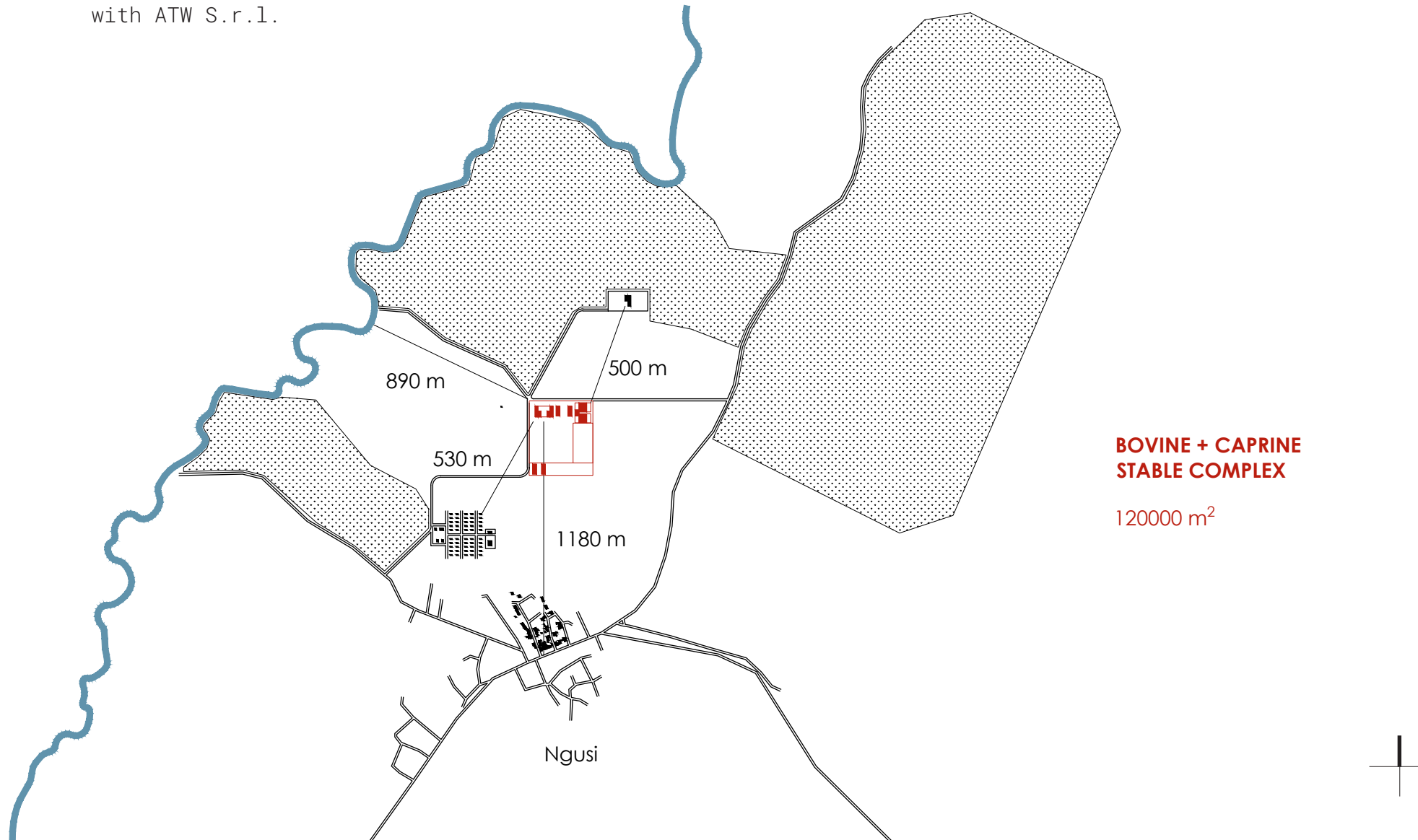
**Balanced and self-sufficient agricultural food production hub.**

An efficient agricultural hub where selected cows are raised for better and higher milk production. An adjacent dairy processing hub for daily production of yogurt and cheese in addition to processing of fresh milk through pasteurization. A meat processing center in a controlled atmosphere with high hygienic standards for the production of beef, goat and chicken. A large solar power system located above the agricultural canopies, finely interconnected with the center of agriculture, the stables and all the equipment and the residential area. A 24/7 power generation system that can also be used by the households living in the complex.



# STABLES (BOVINE+CAPRINE) PROJECT

All the information about this part of the project have been discussed and approved together with ATW S.r.l.



# STABLES (BOVINE+CAPRINE) PROJECT

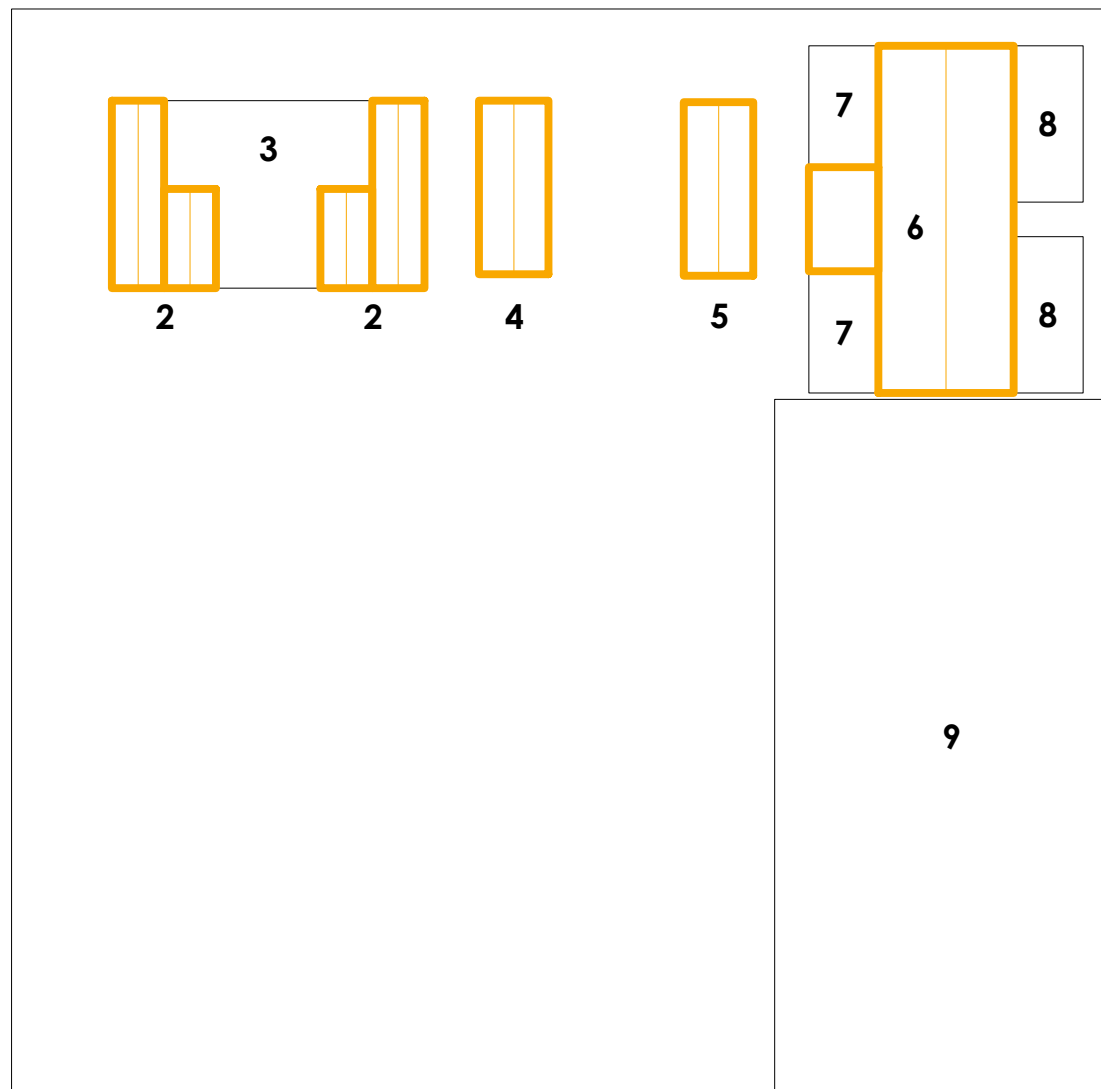
Model of Agricultural center for breeding.  
Zootechnical Structure and Internal Stables for Lactating Cows.





# STABLES (BOVINE+CAPRINE) PROJECT

01



## LEGEND

- |     |                   |                       |
|-----|-------------------|-----------------------|
| 1 - | water well        |                       |
| 2 - | goat stable       | 1200 m <sup>2</sup>   |
| 3 - | goat paddock      | 2400 m <sup>2</sup>   |
| 4 - | machinery storage | 1000 m <sup>2</sup>   |
| 5 - | food storage      | 1000 m <sup>2</sup>   |
| 6 - | cow stable        | 4500 m <sup>2</sup>   |
| 7 - | cow paddock       | 700 m <sup>2</sup>    |
| 8 - | cow paddock       | 900 m <sup>2</sup>    |
| 9 - | manure storage    | 20 000 m <sup>2</sup> |



# STABLES (BOVINE+CAPRINE) PROJECT

## Design criteria for a deep bedding stable

- Resting area: 10-12 m<sup>2</sup> / adult head of stock (\*the only resting area)
- Floor level of the resting area: -0,2 / -0,8 m
- Generally, it is better to have a solid floor and scraper in the feeding area (but it is also possible to use slatted flooring, paying attention to the removal systems under the flooring)
- Containing curbstone in the feeding area:  $h > 0,10 - 0,20$  m (for the passages)
- Indoor height:  $> 3,5$  m (access by a tractor / wheel loader)
- It is possible to install gates of variable height (especially for the calves)
- Pay attention to the positioning of the drinking troughs (bedding humidity)
- Pay attention to the bedding  $\leftrightarrow$  feeding passages (accommodate for a free access)
- It is necessary to have gates to keep the animals in the feeding area during the bedding cleaning
- There is a risk of the animals crowding in the summer (pay attention to the orientation, ventilation, points of interest)



# STABLES (BOVINE+CAPRINE) PROJECT

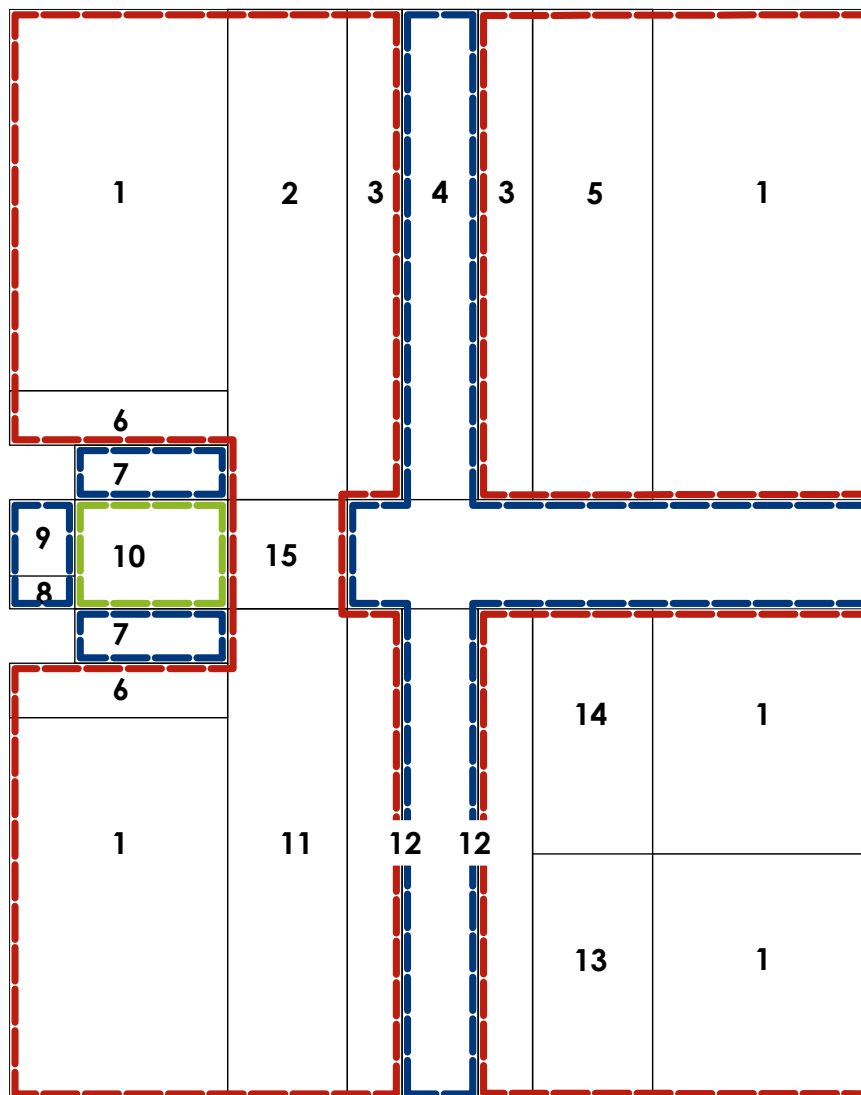
## Advantages of deep bedding stables

- Relatively low construction cost of the buildings
- Increased freedom of movement and therefore a high potential level of well-being
- Simple and “flexible” internal organization:
  - Shelter suitable for different types of animals
  - (Easily) transformable into other livestock housing systems (for example, bunks)
- More convenient manure production



# STABLES (BOVINE+CAPRINE) PROJECT

79



100

## LEGEND

- 1 - open-air paddock
- 2 - old milk cows, 60 heads
- 3 - service passage
- 4 - feeding passage
- 5 - dry cows, 40 heads + pregnant heifers, 50 heads
- 6 - calves, 20 heads
- 7 - infirmary
- 8 - machinery room
- 9 - milk storage
- 10 - milking pit 10 + 10
- 11 - newly calved cows, 60 heads
- 12 - feeder
- 13 - young heifers, 40 heads
- 14 - calves, 40 heads
- 15 - waiting area

## FUNCTIONAL ZONING

- areas accessible to the operators
- areas accessible to the animals
- areas accessible to both animals and operators

Cow stable

# STABLES (BOVINE+CAPRINE) PROJECT

## Functional zoning (Design Criteria)

In the open cattle housing systems, the area of the stable (+ paddocks and pastures) is divided into “functional” areas:

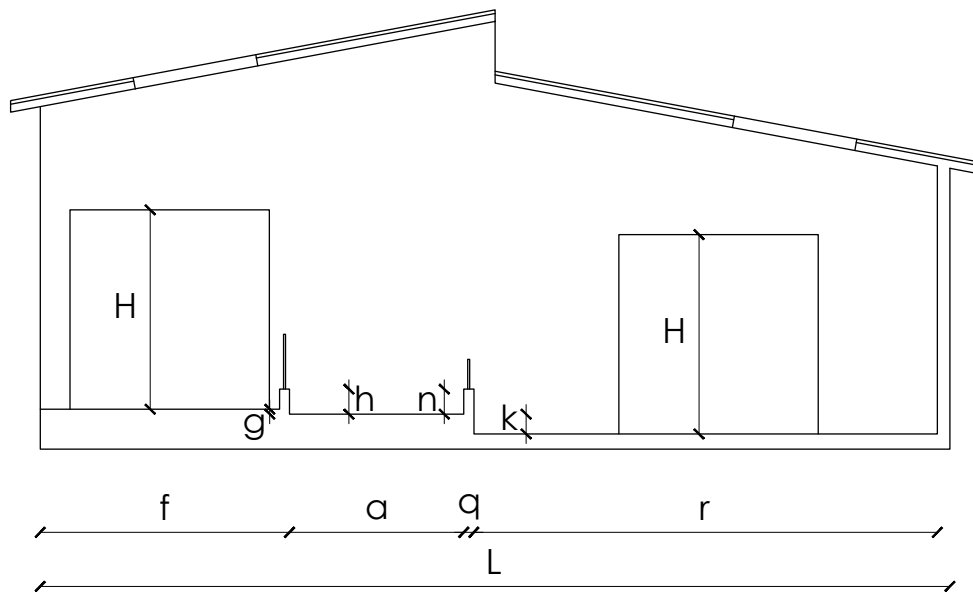
- Accessible only to the operators:

- Feeding supply area (passage). Where the distribution of the fodder occurs.
- Milking area (operators). Milking pit + Control room (milking robot)

- Accessible to the animals:

- Feeding area (passage). Where the animals feed.
- Resting area. Area completely covered by the bedding in the bedding stables (deep, inclined, compost barn). Bunks + sorting passages in the bunk stables (Sometimes the sorting passages between the bunks are considered exercise areas)
  - Exercise areas (open-air paddocks or separate stables)
  - Milking area (accessible to the animals). Milking room: milking spots, passages, waiting area. Robot: areas adjacent to the robot (~ 5m) + accessory areas (waiting area, delay area, recirculation, passages)
- Pasture

# STABLES (BOVINE+CAPRINE) PROJECT

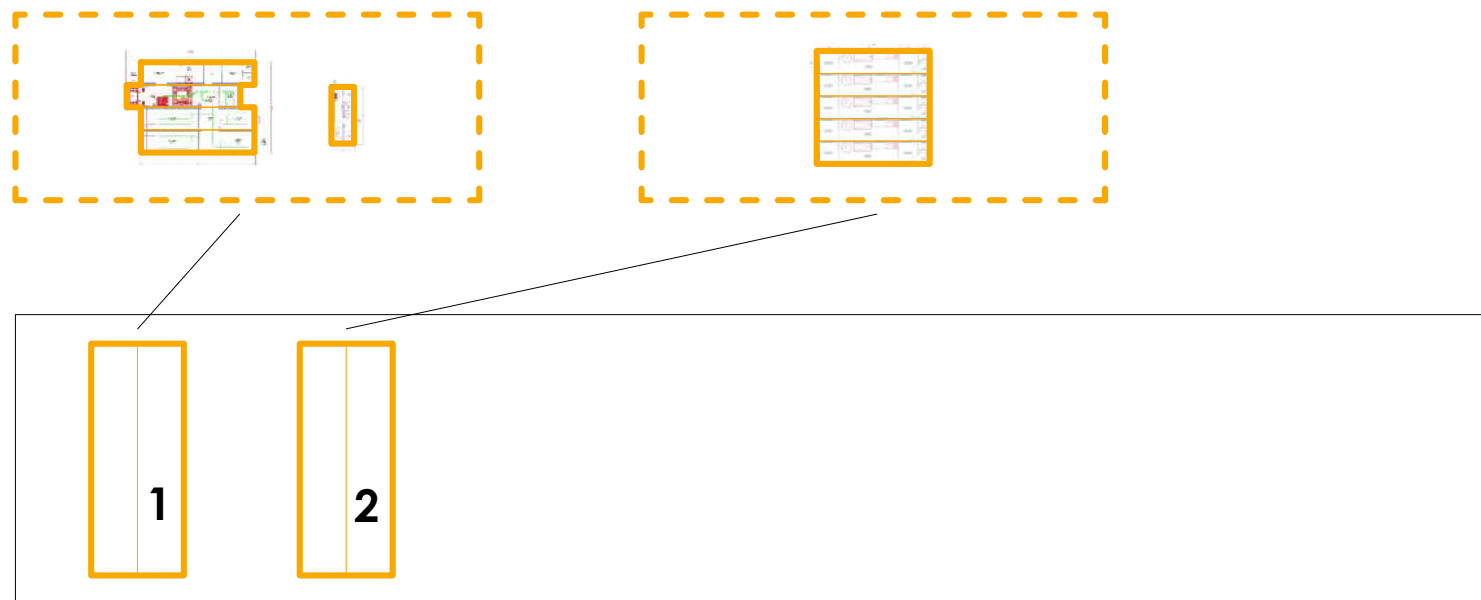


ELEMENTI COSTRUTTIVI		DIMENSIONI (m)	
		min-max	consigliata
f	larghezza di corsia foraggiamento, mangiatoia e muretto	4,00-7,00	5,00
a	larghezza zona di alimentazione	3,30-4,5	3,50
q	larghezza muretto zona di riposo	0,10-0,25	0,20
r	larghezza zona di riposo	8,00-10,00	9,30
L	LARGHEZZA TOTALE		18
g	dislivello fra fondo mangiatoia e zona di alimentazione	0,05-0,20	0,10
h	altezza muretto rastrelliera	0,45-0,55	0,50
H	altezza libera in corsia foraggiamento e zona di riposo	3,50-4,50	4,00
n	altezza muretto zona di riposo	0,20-0,60	0,50
k	profondita' zona di riposo	0-0,60	0,40
	spazio/capo alla mangiatoia	0,65-0,75	0,70
SUPERFICI			m2/capo
Ss	superficie di stabulazione		8,95
Sc	superficie coperta		12,60
St	superficie totale		12,60

# STABLES (BOVINE+CAPRINE) PROJECT

All the information about this part of the project have been discussed and approved together with Self Globe S.r.l.

**Bovine + caprine slaughtering plant / Milking production plant**

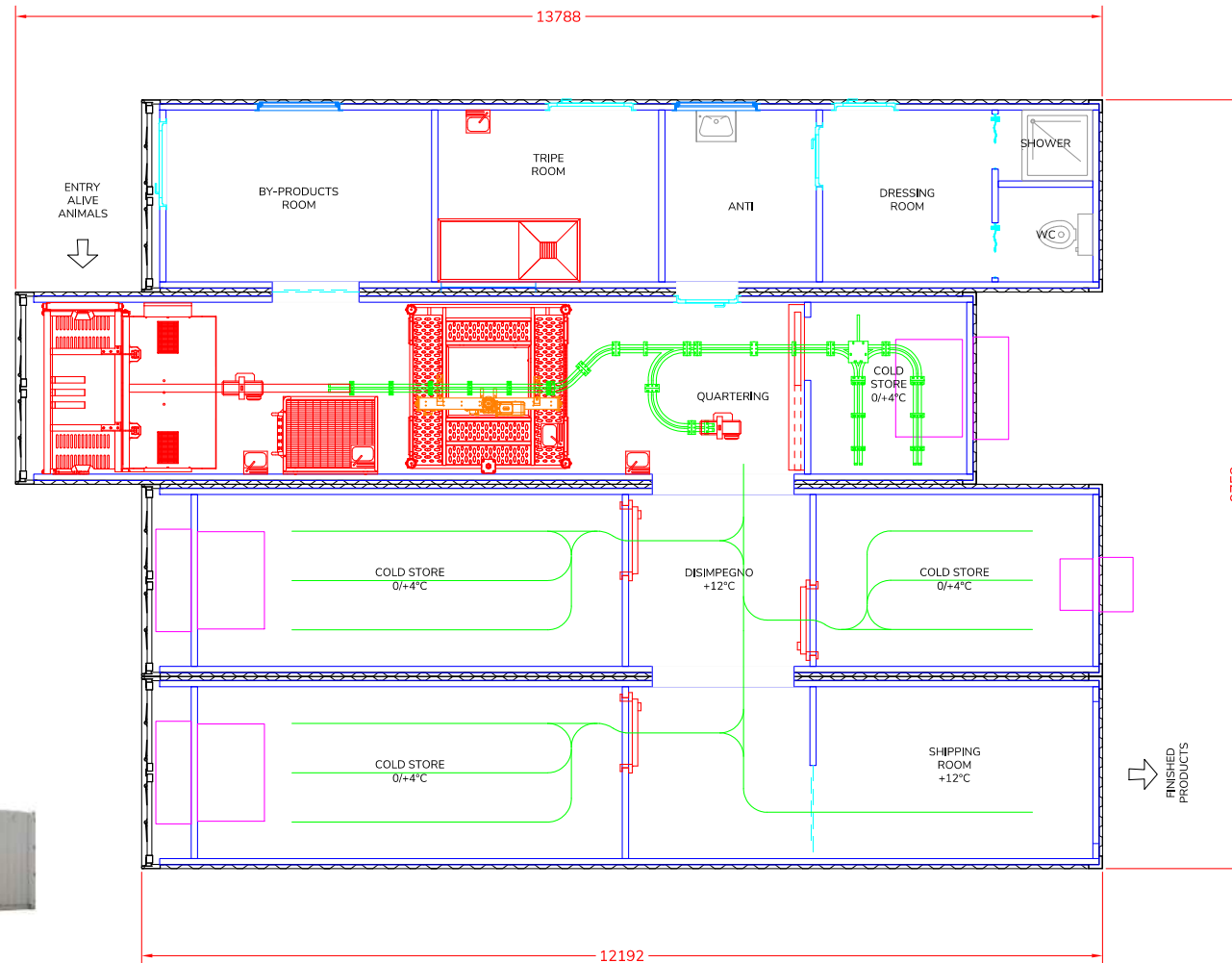


## LEGEND

- 1 - agro-industrial meat processing hub 1000 m<sup>2</sup>
- 2 - argo-industrial milk processing hub 1000 m<sup>2</sup>

# STABLES (BOVINE+CAPRINE) PROJECT

Modular cattle slaughtering plant (13.70 m x 9.70 m)

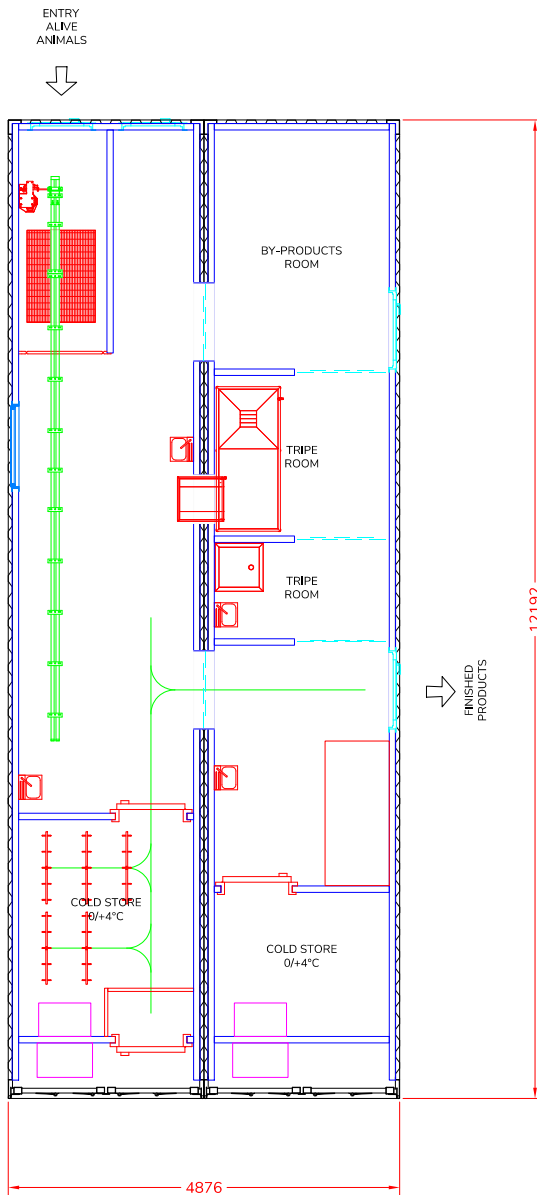


DATA	FIRMA	SCALA	PESO	MATERIALE
25/07/2024	Riccardo Lupetti	1:50		
Cliente: VIKKY ERUDE PROJECT Tipologia: ALCUNI MODULI PER PROGETTO DEMO				
SELF GLOBE S.p.A. SEDE LEGALE: Via Piana, 42 - 45010 MONTE SAN MARTINO (PD) SEDE SOCIALE: Via S. Lucia, 10 - 35010 BIANCO (PD) www.selfglobe.com - info@selfglobe.com Tel. +39 049 9000000				
A TERME DI LEGGE CI RISERVAMO LA PROPRIETA' DI QUESTO DISEGNO CON DIVIETO DI RIPRODURLO O COMUNIQUE RENDENDO NOTO A TERZI O DITTE CONCORRENTI SENZA NOSTRA AUTORIZZAZIONE SCRITTA.				



# STABLES (BOVINE+CAPRINE) PROJECT

**Modular goats slaughtering plant**  
 (4.80 m x 12.00 m)

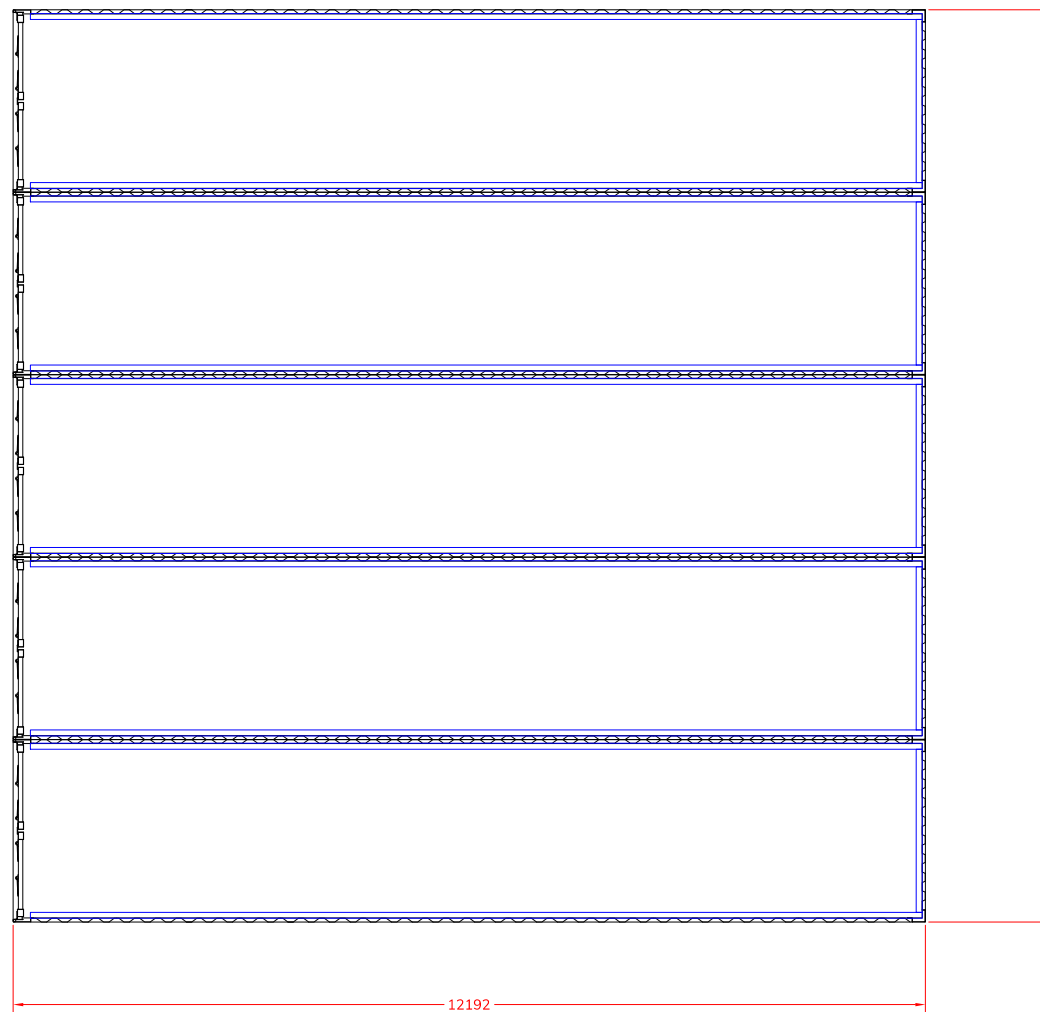




DATA	FIRMA	SCALA	PESO	MATERIALE
25/07/2024	Riccardo Lupetti	1:50		
 				
Cliente: VICKY ERUDE PROJECT Tipologia: ALCUNI MODULI PER PROGETTO DEMO				
<small>           SELF GLOBE S.p.A.            SEDE LEGALE: Via Piana, 42 - 65010 MONTE SAN MARTINO (PG)            SEDE FISCAL: Via S. Caterina, 29 - 05012 ROMA            www.selfglobe.com - info@selfglobe.com            tel. +39 06 49110000         </small>				

A TERMINE DI LEGGE CI RISERVIAMO LA PROPRIETA' DI QUESTO DISEGNO CON DIVIETO DI RIPRODURLO O COMUNIQUE RENDERLO NOTO A TERZI O DITTE CONCORRENTI SENZA NOSTRA AUTORIZZAZIONE SCRITTA.

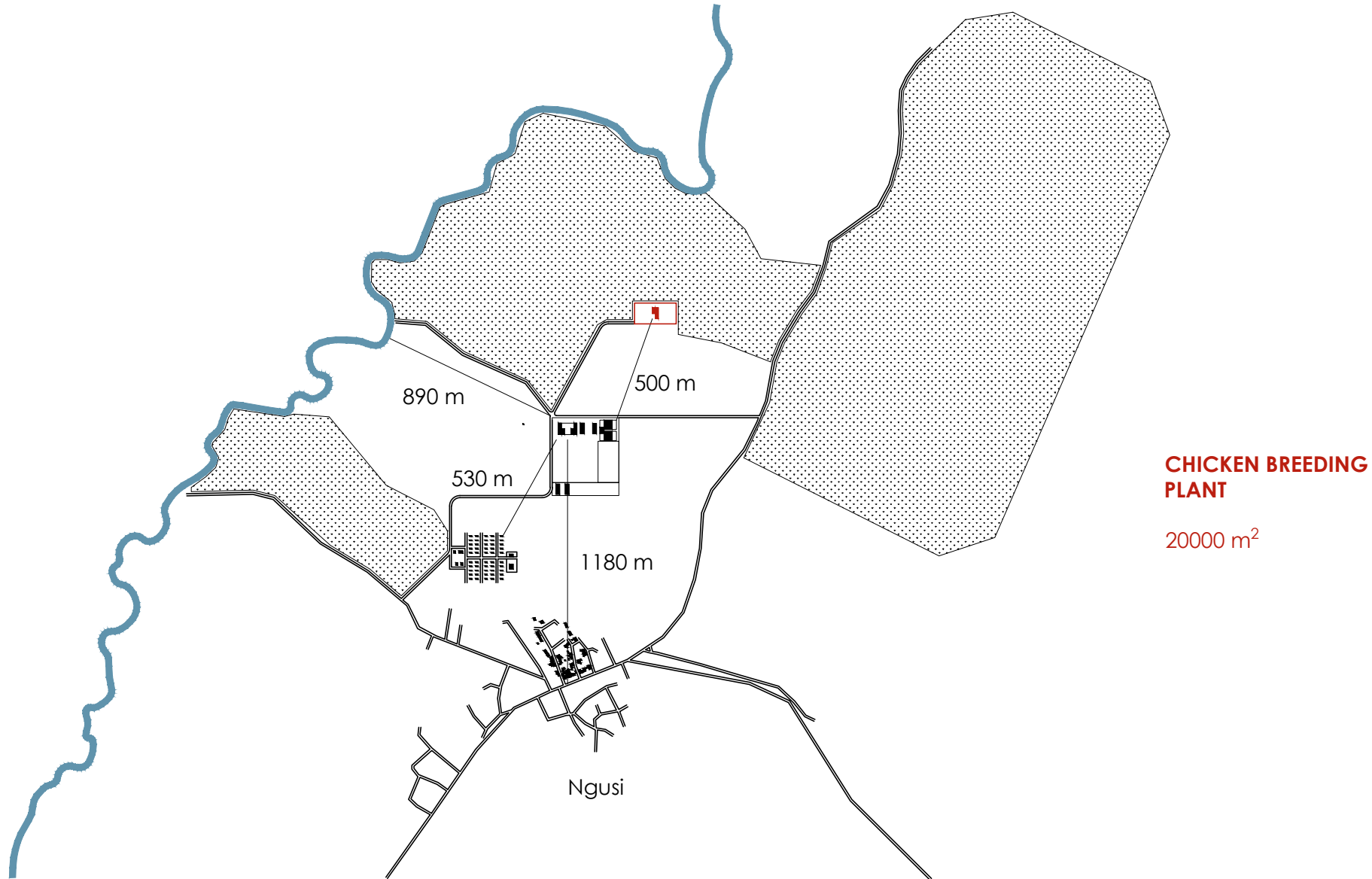
# STABLES (BOVINE+CAPRINE) PROJECT

Modular milk production plant - both for cows and goats- (12.00 m x 12.00 m)



DATA	FIRMA	SCALA	PESSO	MATERIALE
25/07/2024	Riccardo Lupetti	1:50		
 				
Cliente: VIKKY ERUDE PROJECT Tipologia: ALCUNI MODULI PER PROGETTO DEMO				
SELF GLOBE S.p.A. SEDE LEGALE: Via Piana, 42 - 40020 MONTE SAN MARTINO (MO) SEDE FISCALE: Via S. Lucia, 10 - 41013 CASTEL BOLOGNESE (MO) P.IVA: 04570800972 - C.F. 04570800972 Tel. +39 059 2000000 - Fax +39 059 2000001 Email: info@selfglobe.com - selfglobe@selfglobe.com				
A TERME DI LEGGE CI RISERVIAMO LA PROPRIETA' DI QUESTO DISEGNO CON DIVIETO DI RIPRODURLO O COMUNQUE RENDEROLO NOTO A TERZI O DITTE CONCORRENTI SENZA NOSTRA AUTORIZZAZIONE SCRITTA.				

# POULTRY BREEDING PLANT



**CHICKEN BREEDING  
PLANT**  
20000 m<sup>2</sup>



# POULTRY BREEDING PLANT

All the information about this part of the project have been discussed and approved together with Self Globe S.r.l.

## **A. 3 sheds for ground rearing 2'000 poultry for meat**

(complete with no. 3 boxes, 1 quarantine and 1 feed room)

$$24.00 \text{ m} \times 12.00 \text{ m} = 288.00 \text{ m}^2$$

$$\text{Total} = 288.00 \text{ m}^2 \times 3 = 864.00 \text{ m}^2$$

## **B. 1 shed for ground rearing 2'000 laying hens**

(complete with no. 3 boxes, 1 quarantine and 1 feed room)

$$12.00 \text{ m} \times 20.00 \text{ m} = 240.00 \text{ m}^2$$

$$\text{Total} = 240.00 \text{ m}^2$$

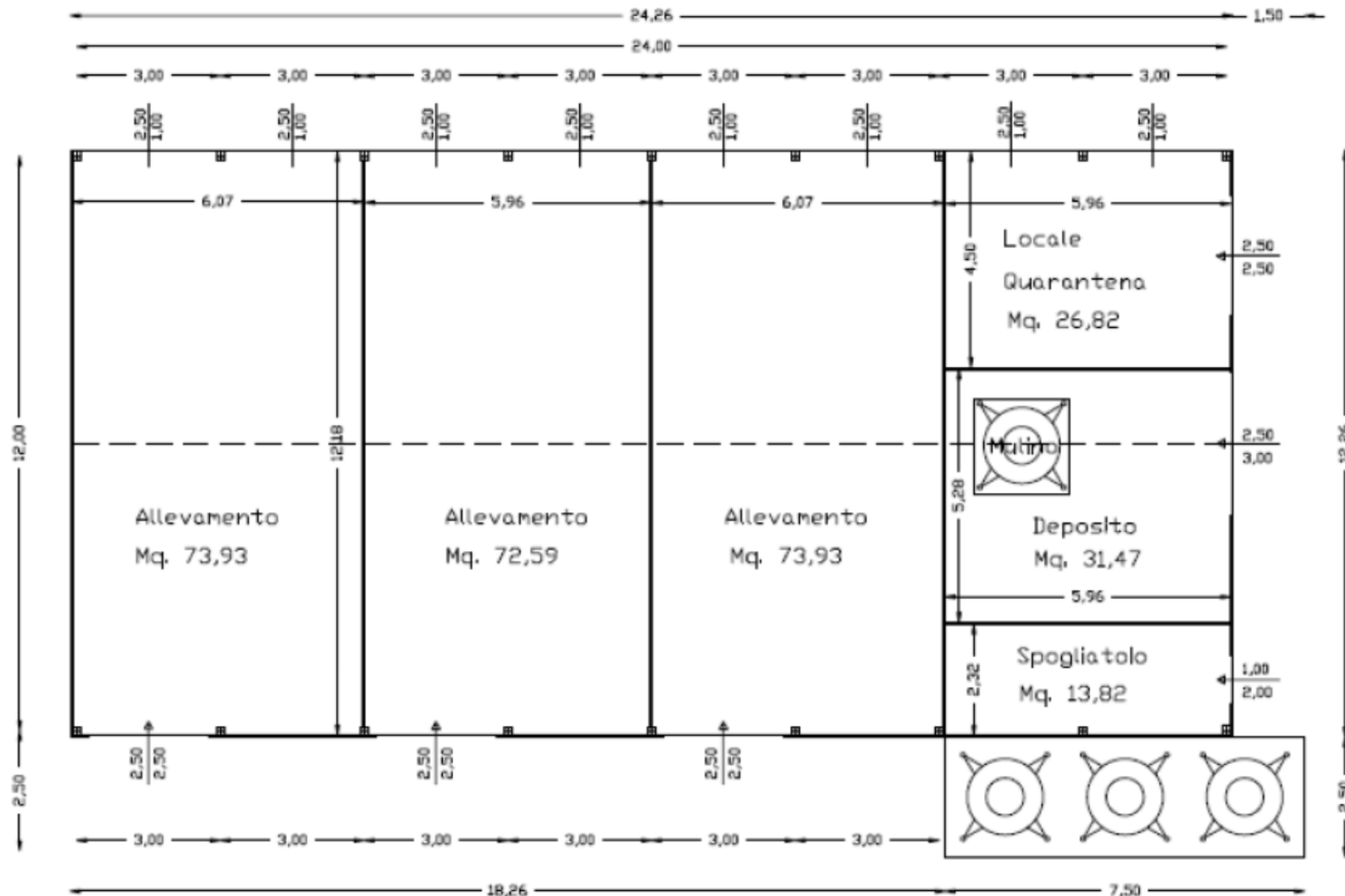
## **C. 3 modular poultry slaughtering plants**

$$12.00 \text{ m} \times 7.30 \text{ m} = 87.60 \text{ m}^2$$

$$\text{Total} = 87.60 \text{ m}^2$$

# POULTRY BREEDING PLANT

A. 3 sheds for ground rearing 2'000 poultry for meat



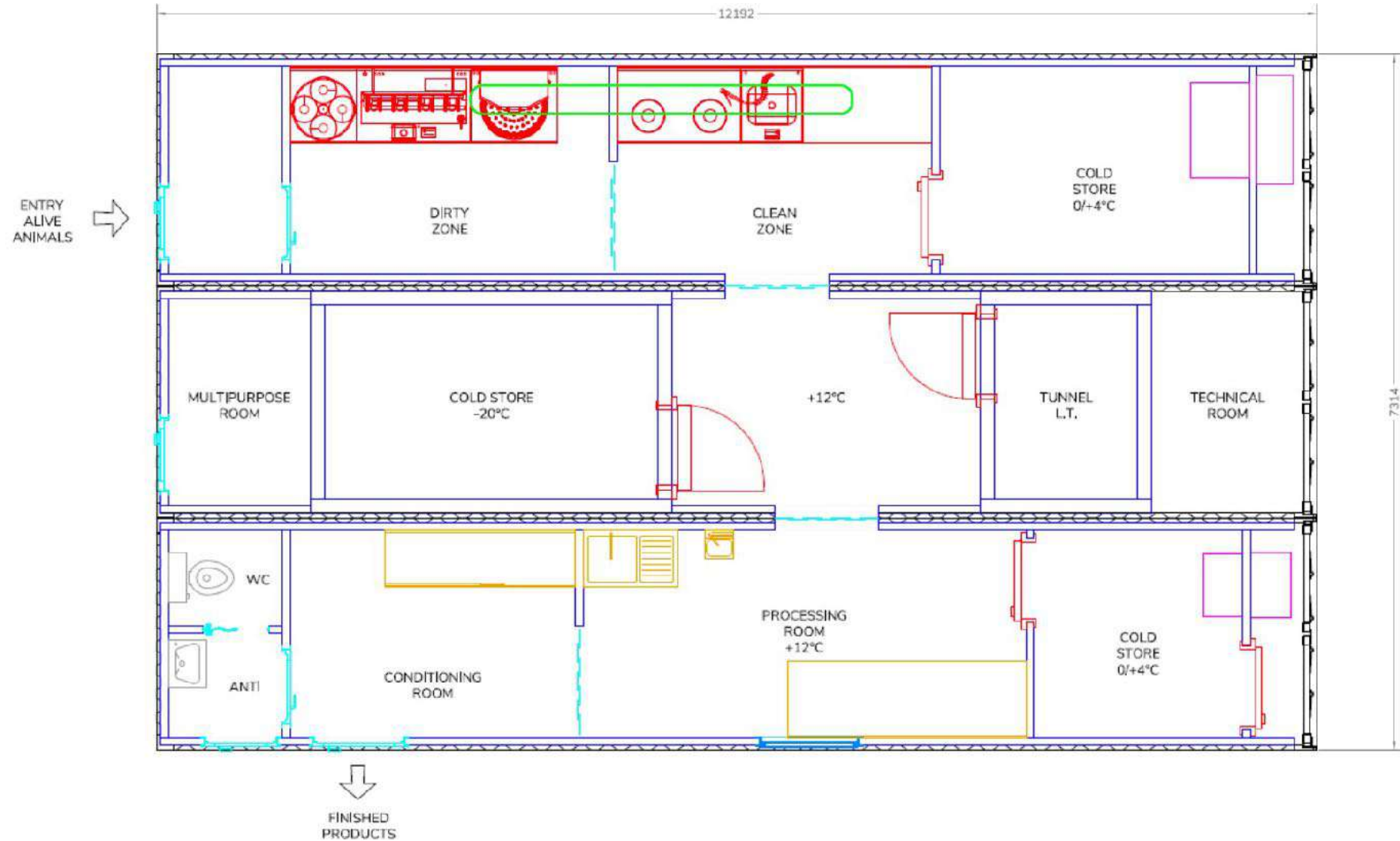
# POULTRY BREEDING PLANT

B. 1 shed for ground rearing 2'000 laying hens



# POULTRY BREEDING PLANT

## C. 3 modular poultry slaughter plants



# **ENERGY PRODUCTION** (For all the Demo-Project)

All the information about this part of the project have been discussed and approved together with ATW S.r.l.

## **Off grid photovoltaic system of 500KW**

1KW/4-5 m<sup>2</sup> =

2'000-2'500 m<sup>2</sup> (equal to partial covered area of food storage and/or machinery storage)

Total land for photovoltaic system

## **Battery energy storage systems utility room**

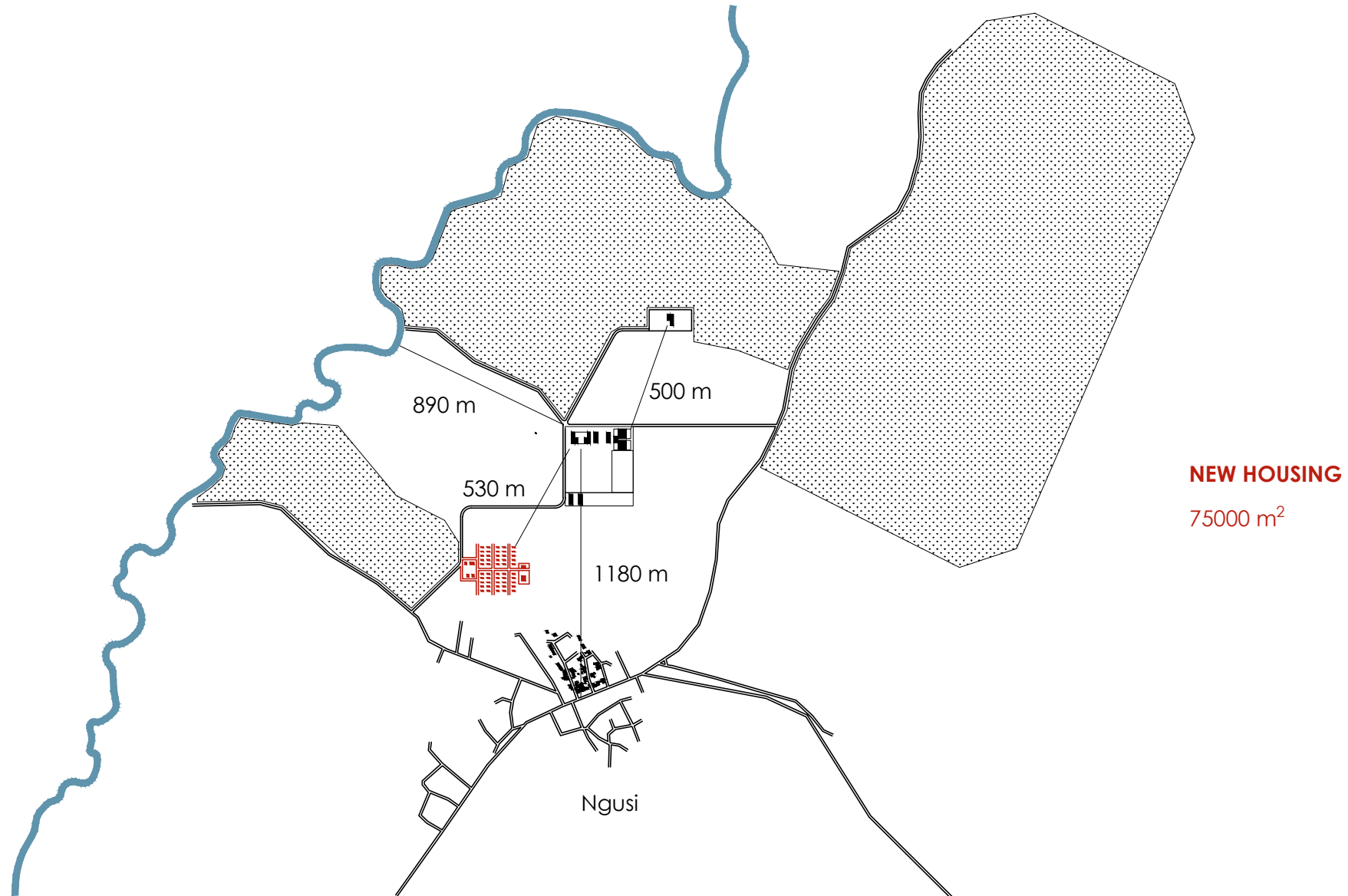
1 Container 2.50 m x 6.00 m

## **Diesel generator utility room up to 3 x 120KW**

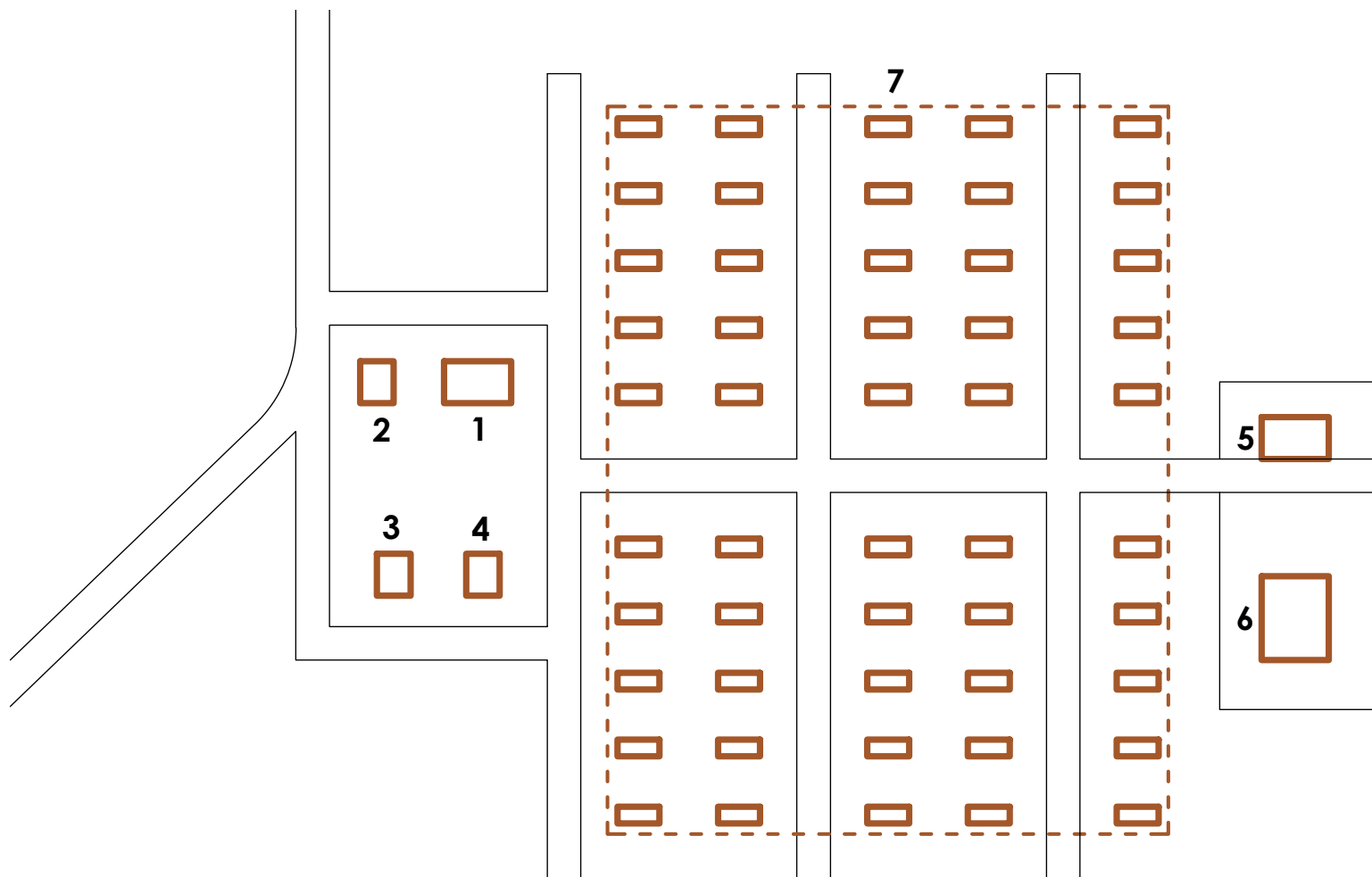
1 Container 2.50 m x 6.00 m



# RESIDENTIAL PROJECT



# RESIDENTIAL PROJECT



## LEGEND

1 - school	300 m <sup>2</sup>
2 - training center	150 m <sup>2</sup>
3 - medical facilities	150 m <sup>2</sup>
4 - cultural center	150 m <sup>2</sup>
5 - supermarket	300 m <sup>2</sup>
6 - guest house	600 m <sup>2</sup>
7 - single family houses (tot. 50 units)	75 m <sup>2</sup>

# RESIDENTIAL PROJECT

Adequate housing encompasses more than just physical living space; it includes security of tenure, affordability, habitability, accessibility, location, cultural suitability, and access to services and infrastructure. Each step of a housing program must consider various needs and principles. Identifying the specific needs, roles, and capacities of displaced populations is essential for their participation and ownership. Housing should be culturally appropriate and convenient for people of all ages and backgrounds, and located near essential services and infrastructure.

In urban and architectural planning, housing units should not be isolated but integrated into the broader settlement context. Housing solutions must be designed based on context-specific requirements, ensuring a secure and healthy living environment with privacy and dignity for the inhabitants.

Developing an appropriate housing response is a process that prioritizes social aspects alongside other characteristics and specifications.

A multi-criteria decision analysis aims to balance costs, environmental impacts, and functionality for a specific housing type. The goals include:

- Providing protection from the elements, space for living and storage, and ensuring privacy, comfort, and security.
- Creating a habitable living space that ensures a secure and healthy environment.
- Using materials and techniques familiar to the displaced population.
- Adapting to the local context, climate, cultural practices, skills, and available materials.
- Considering the wider settlement context where households are sheltered.



# RESIDENTIAL PROJECT

In our research, we explore strategies to enhance the sustainability of architectural solutions while ensuring housing adequacy. We identified key criteria to select the most suitable residential designs for specific contexts:

## A. **Environmental Impact:**

Evaluate the negative effects of material production, transportation, construction, and disposal, considering:

1. Material consumption (raw and man-made materials, water)
2. CO2 footprint (emissions and absorption)
3. Habitat damage
4. Reuse or recycling options

## B. **Technical Performance:**

Assess the structural and functional performance of residential unit, including:

1. Structural resistance (wind, flood, seismic resistance)
2. Design suitability (ventilation, fire safety, thermal comfort, security, accessibility)

## C. **Residential Habitability:**

Evaluate the living conditions of residential units based on:

1. Covered living area
2. Privacy
3. Natural and artificial lighting
4. Appropriate materials and construction techniques
5. Complementary facilities

## D. **Residential Affordability:**

Consider the total cost of the units, including production, material supply, transportation, and setup.

# RESIDENTIAL PROJECT

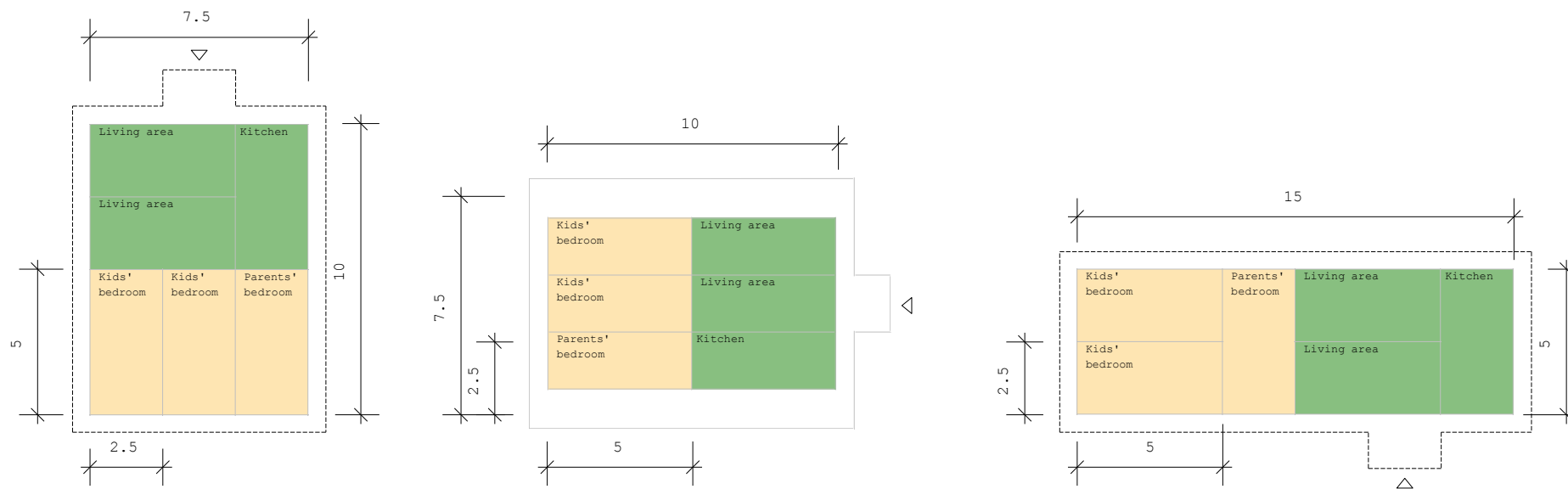
At the demo stage, before sectorial specialization of labor is achieved, workers (both women and men) are assumed to be engaged in both animal husbandry, milking, and agriculture. The management of the stables and farmland will be entrusted to groups of settled farmers, possibly on a family basis, appropriately distributed throughout the area in small residential groups built around the stable.

- The average family in Cameroon consists of 5 people (2 adults + 3 children).
- It is assumed in the demo phase that the area can accommodate **50 family units** (total 250 individuals).
- Total **adults** would then consist of **100** individuals and **children** of **150** individuals.

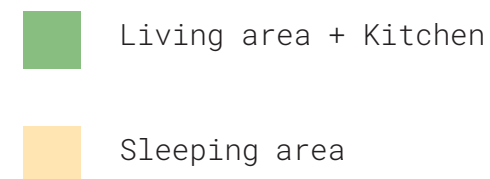
The **construction module** we propose, based on wood span, is **2.50 m x 5.00 m** (area of **12.50 m<sup>2</sup>**), because we want to promote **principles of replicability** and ease of **implementation**, as well as ease of **assembly** and **disassembly**. In this way the building modules can be freely assembled in shape and size, depending on the needs of use of the space, meteorological and geological characteristics.

We imagine that a **suitable space for a family of 5 people** could be a unit of **75.00 m<sup>2</sup>** (**6 construction modules for each residential unit**). The children's bedrooms, in this scenario, would be two (two modules), the parents' bedroom would occupy one module, two modules would house the living area, connected to the kitchen module.

# RESIDENTIAL PROJECT



Diagrams of possible module pairings



## Principle of flexibility

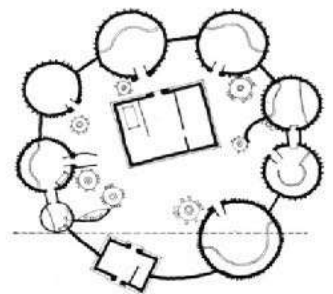
As mentioned earlier, flexibility is an extremely important aspect of the project approach here.

While the size of the structure must correspond to construction and technical requirements, the interior space must be wisely organized according to the needs of the inhabitants. This means that by working on interior partitions, other subcategories can be identified to meet different needs. For example, if a family has more than three children, it means that the space devoted to rooms can be organized internally to accommodate them all.

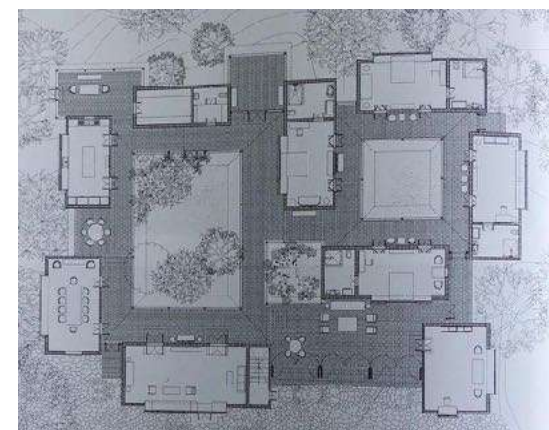
# RESIDENTIAL PROJECT

We strongly believe that **each housing unit** should **not** be understood as a **stand-alone unit**, but that **multiple housing units** could be **grouped**, around a **common outdoor courtyard**, to create a **community domestic space**.

In this way, a community housing model and typology, rooted in the traditional local way of life, would be promoted.



Musgum dwelling units



Studio Mumbai, Casa Carrimjee

From this typological decision, there are also **advantages** from a technical/constructive point of view, since a communal roof ensures a more efficient **recovery of rainwater**, especially for its storage and subsequent reuse, and sufficient **natural ventilation** to ensure living comfort for residents.

Once the precise site of the intervention has been defined, a precise wind study should be developed to ensure that natural ventilation is as efficient as possible, avoiding the risk of a sail effect.

The **covered common area** will correspond to about **40 percent more** than the area **of the housing units**, i.e., it will be 105.00 m<sup>2</sup>).

The covered community area will house **communal toilet facilities**, which are outside the housing unit, secure gathering and play spaces, as areas dedicated to a **cultivation and breeding for self-sustenance**.

# RESIDENTIAL PROJECT

From a **constructive** point of view, the housing units will rest on a **concrete basement**, which allows them to be elevated above the ground and thus **protect** them **from the weather**.

Above this basement, the housing units will have a **wooden vertical structure** and either **wooden or earth blocks infill**.

The **roof structure** could be either in **wood or metal**, as well as the **roof covering**.

Cameroon is advancing in the use of **sustainable materials** for green building projects, increasingly favoring **locally sourced** and innovative options. Bamboo, a rapidly renewable resource with lower embodied energy than cement and steel, is a prime example. Compressed earth blocks, made from soil and a small amount of cement, are also popular for their durability and energy efficiency.

Additionally, materials like recycled glass, natural stone, and rammed earth are used to **reduce environmental impact** and add unique aesthetics. These sustainable practices have also created jobs and stimulated local economies, benefiting both the environment and economic development in Cameroon.

The **average cost** for such a **construction** is assumed to be between **350-500.00 \$/m<sup>2</sup>**, taking into consideration the **high contingency rate** that the context provides (infrastructure to be developed, transportation of materials for construction, etc.)

$$50 \text{ family units} \times 75.00 \text{ m}^2 = \frac{3'750.00 \text{ m}^2}{\text{Total construction for residential purposes}}$$



# RESIDENTIAL PROJECT



Examples of contemporary residential architecture Cameroon

# RESIDENTIAL PROJECT



Example of a residential compound (bricks + wood)



# RESIDENTIAL PROJECT



Example of a residential compound (bricks + wood + beton)

# RESIDENTIAL PROJECT



Example of a residential compound (bricks + wood + beton)



# RESIDENTIAL PROJECT



Star Homes Project, Ingvarstsen Architects, Tanzania 2021

# RESIDENTIAL PROJECT



Examples of an interior in a residential unit



# RESIDENTIAL PROJECT



Examples of an interior in a residential unit

# RESIDENTIAL PROJECT

## Facilities for universal primary education for children

As mentioned above, there should be about 105 children in the village. Taking the Italian school sizing as a reference (Linee guida edilizia scolastica, 2013), a classroom area of 2.00 sq. m. is due to each child, to which should be added spaces dedicated to circulation and services of about 2.5 times:

$$2.00 \text{ m}^2 \times 105 \text{ bambini} = 210.00 \text{ m}^2 \times 2.5 = \underline{525.00 \text{ m}^2}$$

Total construction for education purposes

## Training facilities to support the residence and management fo the industrial hub

$$2 \text{ building modules} \times 75 \text{ m}^2 = \underline{150.00 \text{ m}^2}$$

Total construction for training facilies purposes

## Social and health service center (Nursing, outpatient clinics, delivery room, testing laboratory, emergency room, health posts, dispensaries)

$$2 \text{ building modules} \times 75 \text{ m}^2 = \underline{150.00 \text{ m}^2}$$

Total construction for health purposes



# RESIDENTIAL PROJECT

## Recreation center

2 building modules x 75 m<sup>2</sup> = 150.00 m<sup>2</sup>  
Total construction for recreation purposes

## Market for supplies

2 building modules x 75 m<sup>2</sup> = 150.00 m<sup>2</sup>  
Total construction for market purposes

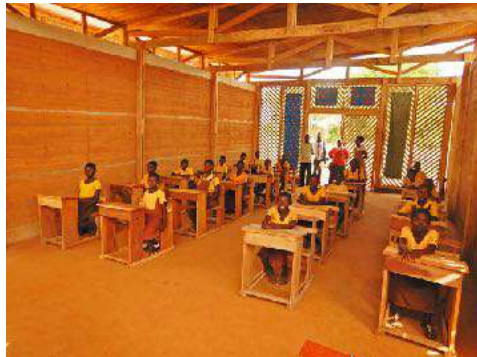
## Guest house

8 building modules x 75 m<sup>2</sup> = 600.00 m<sup>2</sup>  
Total construction for training facilities purposes

## TOTAL (RESIDENTIAL + FACILITIES)

ca. 5000.00 m<sup>2</sup>  
Total construction for residential + facilities

# RESIDENTIAL PROJECT



Contemporary public architecture

# THANK YOU ALL!



Dr. Agr Alberto Marazzi, Managing Partner  
Eng. Paolo Marconi, Partner Expert in breeding techniques

E-mail: [info.atw@libero.it](mailto:info.atw@libero.it)  
Website: [www.atwagricoltura.com](http://www.atwagricoltura.com)



Dr. Tarcisio Senzacqua, CEO Self Globe srl  
Eng. Riccardo Lupetti, Technical Office Manager Self Globe srl

E-mail: [senzacqua@selfglobe.com](mailto:senzacqua@selfglobe.com)  
Website: [www.selfglobe.com](http://www.selfglobe.com)

## STUDIO VLORA

Arch. Marianna Galbusera, Principal STUDIO VLORA

E-mail: [m.galbusera@studiovlora.com](mailto:m.galbusera@studiovlora.com)  
Website: [www.studiovlora.com](http://www.studiovlora.com)

NORMALEARCHITETTURA °

Arch. Chiara Filios, Principal NORMALEARCHITETTURA

E-mail: [chiara@normalearchitettura.com](mailto:chiara@normalearchitettura.com)  
Website: [www.normalearchitettura.com](http://www.normalearchitettura.com)