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# Concept Design for a New Mother and Baby Unit at Panzi Hospital, Bukavu, DR Congo



white



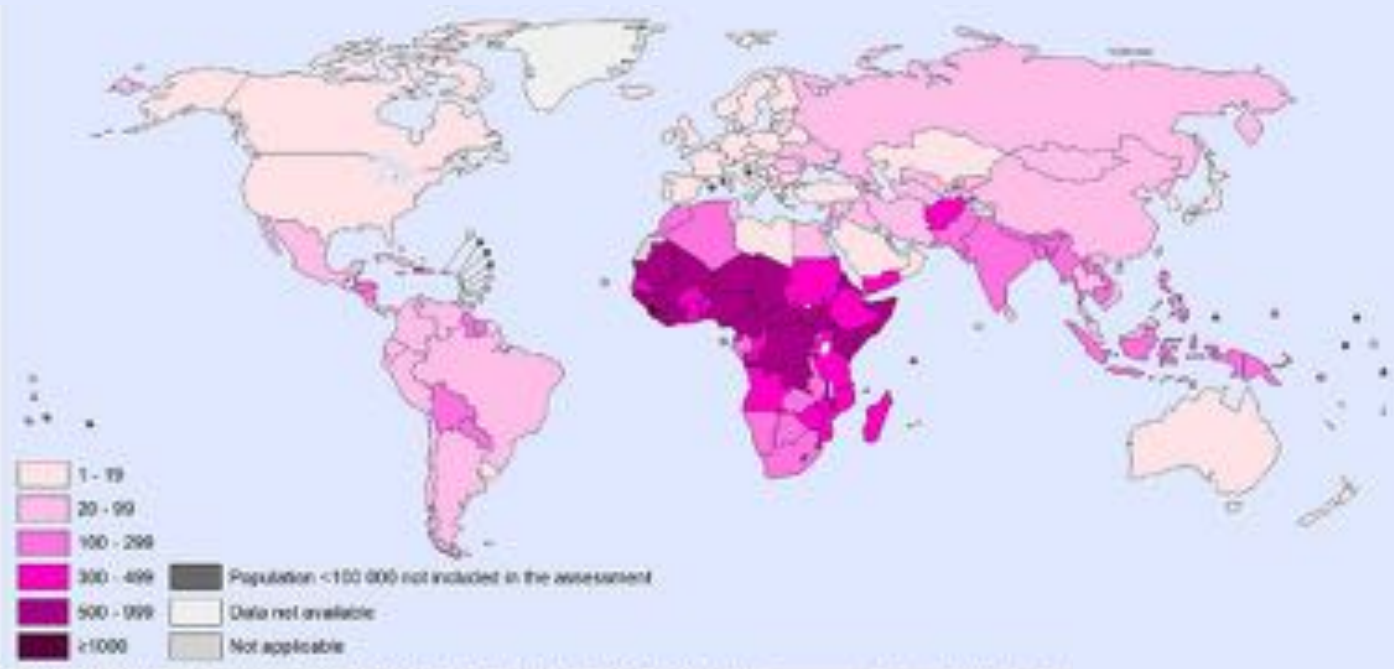
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# **BACKGROUND**

## KEY FACTS: MATERNAL AND NEWBORN MORTALITY



- **Every day, 830 women die from causes related to pregnancy and childbirth.**
- **99% of all maternal deaths occur in low-income countries.**
- **Between 1990 and 2015, maternal mortality worldwide dropped by 44%.**
- **In 2016, 2.6 million children died in the first month.**

# THE GLOBAL CHALLENGES CONTINUE

- **Reduced maternal mortality ratio to 70 per 100 000 live births**
- **Reduced neonatal mortality to 12 per 1000 live births**
- **Reduced 5 year child mortality to 25 per 1000 live births**

Source: UN Sustainable Development Goals, 2015

## THE GLOBAL GOALS For Sustainable Development





# WAYS TO IMPROVE THE QUALITY OF MATERNAL AND NEWBORN CARE

## Care at the right time, in the right way, with the right resources

- **Appropriate physical environment at healthcare facilities**
- **Well-trained and motivated staff**
- **Person-centered communication with women and families**
- **Essential newborn care immediately at birth**
- **Neonatal intensive care units for babies in need**



# DEMOCRATIC REPUBLIC OF CONGO



**Population:  
80-85 million**


**Maternal mortality:  
250 per 100.000 live births**

**Neonatal mortality:  
27 per 1000 live births**

**5 year child mortality:  
88 per 1000 live births**

DR MUKWEGE, PANZI HOSPITAL, DR CONGO

Doktor Mukwege  
DR Kongo

The image shows the entrance to a hospital building. A large sign above the entrance reads "Doktor Mukwege" in a stylized white font, with "DR Kongo" written below it in a simpler white font. The sign is mounted on a dark wooden frame. Several people are walking through the entrance. In the foreground, a man in a white lab coat is walking towards the right. To his left, a woman in a bright green dress is walking away. Other people are visible in the background, some walking and some standing. The building behind the entrance has a modern design with large windows and a dark roof. The background shows a hilly landscape under a clear sky.

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**THE MISSION:  
TO SUPPORT THE DEVELOPMENT OF  
EXCELLENT MATERNAL AND NEONATAL CARE**

- **A mother-baby unit**
  - **based on a scientific, patient-centered, holistic care philosophy**
  - **informed by established principles of healing architecture**
- **A sustainable blueprint for other maternity and neonatology projects in similar contexts**



# CORE PRINCIPLES FOR A SCIENTIFIC, PATIENT-CENTERED, HOLISTIC CARE PHILOSOPHY

**GOAL: A normal physiological pregnancy and birth**

- **Health promotive care environment securing personal integrity and safety**
- **Zero separation of mother and child**
- **Continuous support from healthcare staff and family**
- **Good working conditions**



# PRINCIPLES OF HEALING ARCHITECTURE

- **Single-bed rooms with space for family**
- **Good daylight access and indoor comfort**
- **Views of nature**
- **Efficient layout**
- **Easy wayfinding**



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# PROJECT METHODOLOGY



# PROJECT ORGANISATION



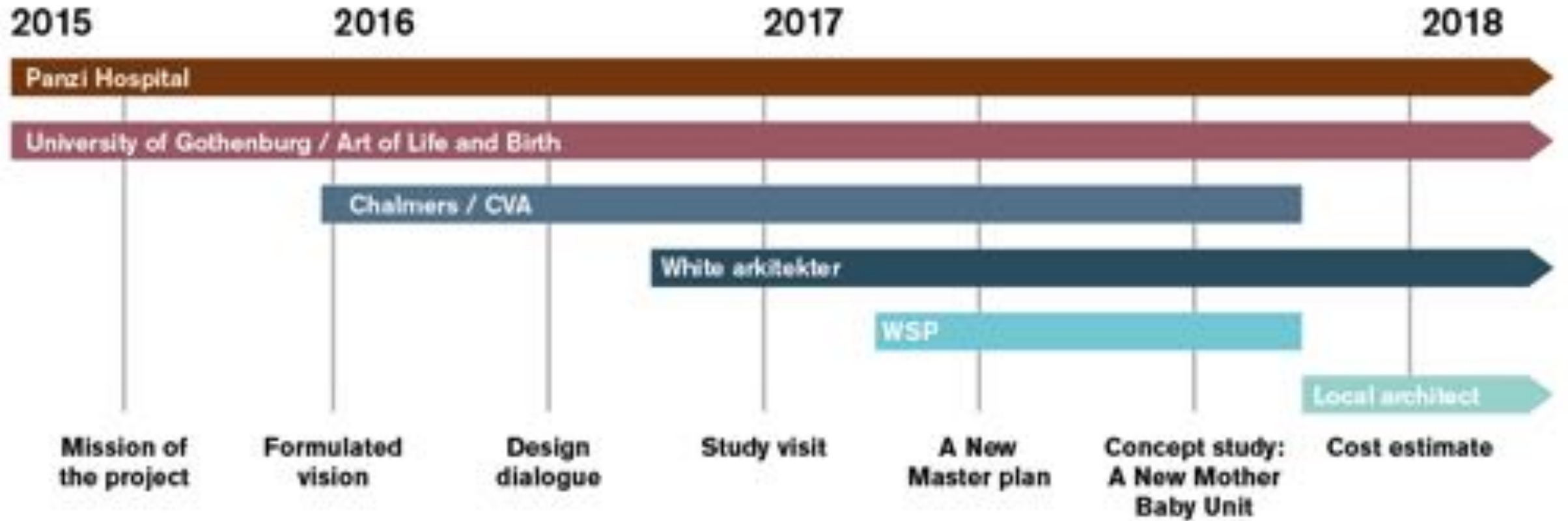
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CHALMERS





# PROJECT TIMELINE



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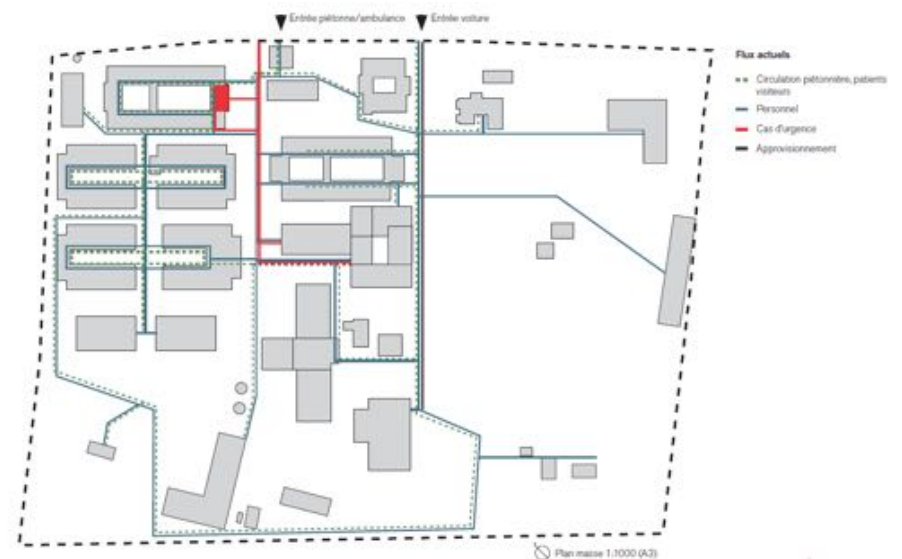
# MASTER PLAN

LOCAL CONTEXT





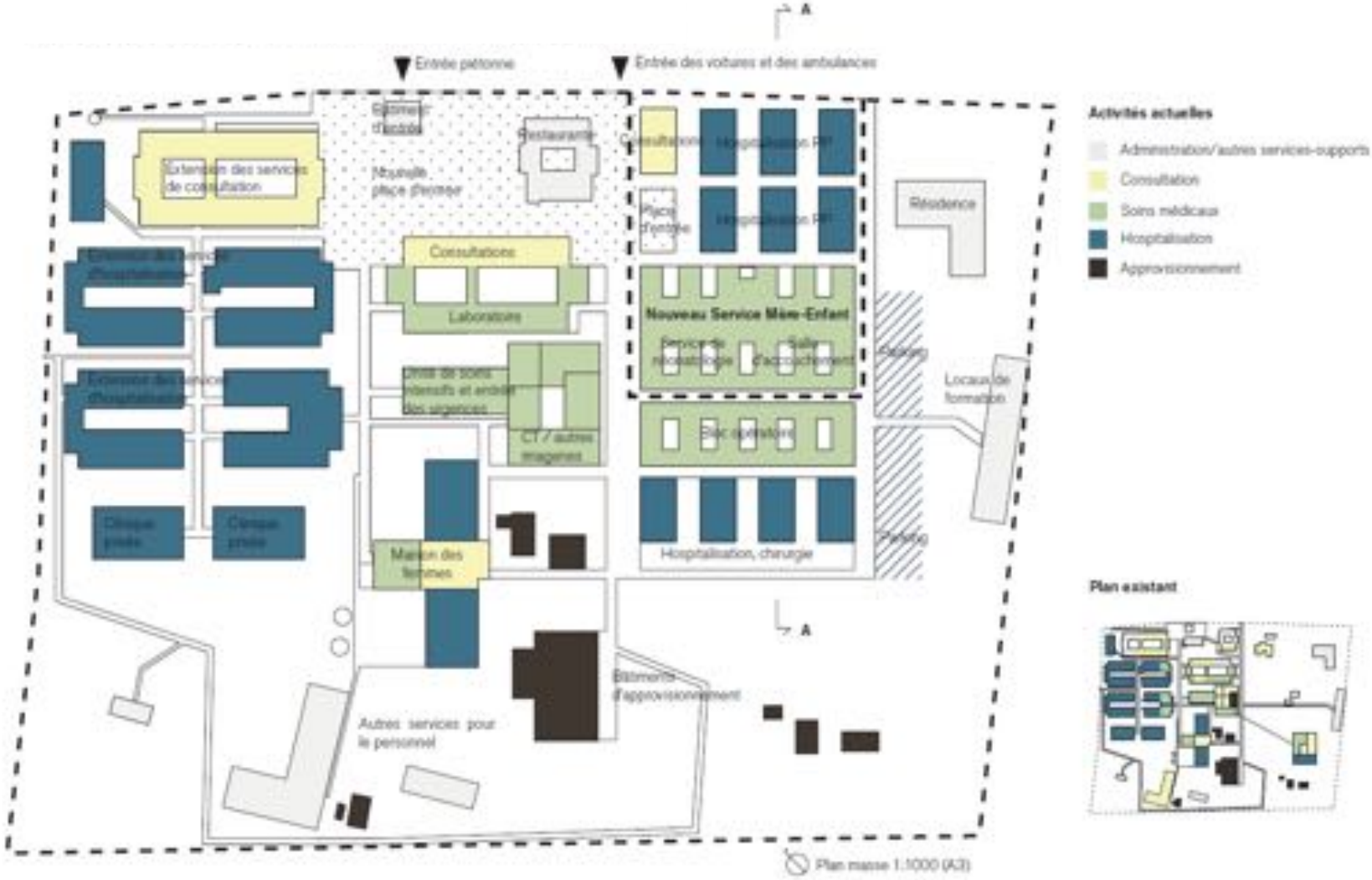
# EXISTING CONDITIONS AND SHORTCOMINGS



- **Healthcare provision and flows**
- **Buildings**
- **Technical infrastructure**

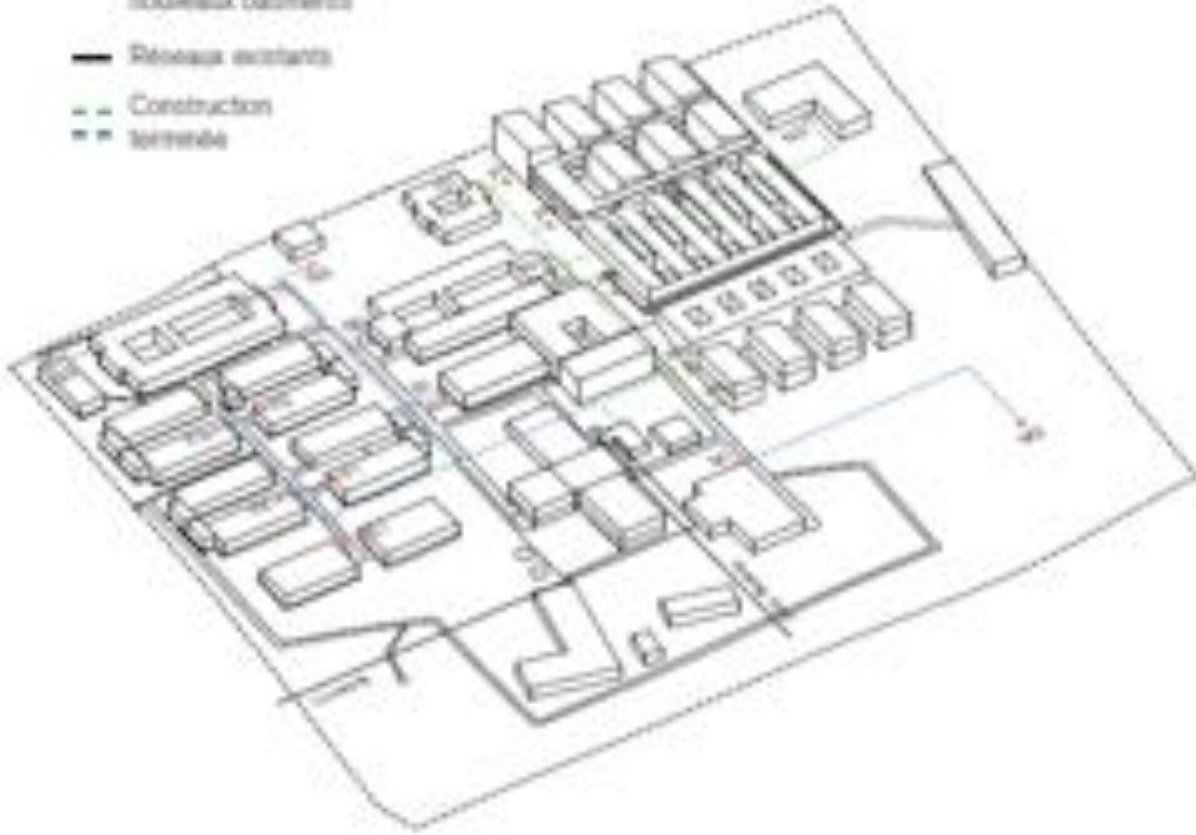


# PROPOSAL BUILDINGS AND HEALTHCARE PROVISION



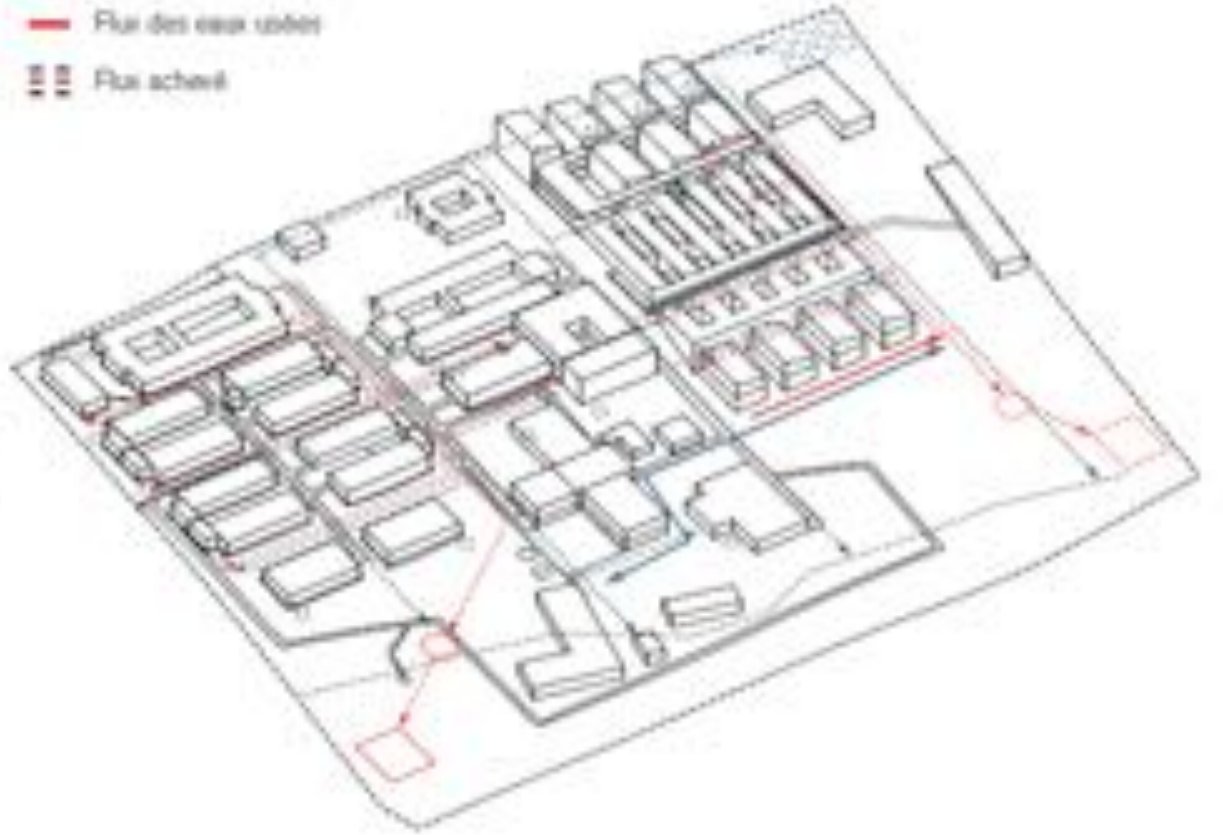
# PROPOSAL TECHNICAL INFRASTRUCTURE

- Excavations nécessaires pour les nouveaux bâtiments
- Réseaux existants
- - Construction
- - terrain



LES INFRASTRUCTURES DE L'ENERGIE

- Flux de l'eau
- Flux des eaux usées
- Flux achetés



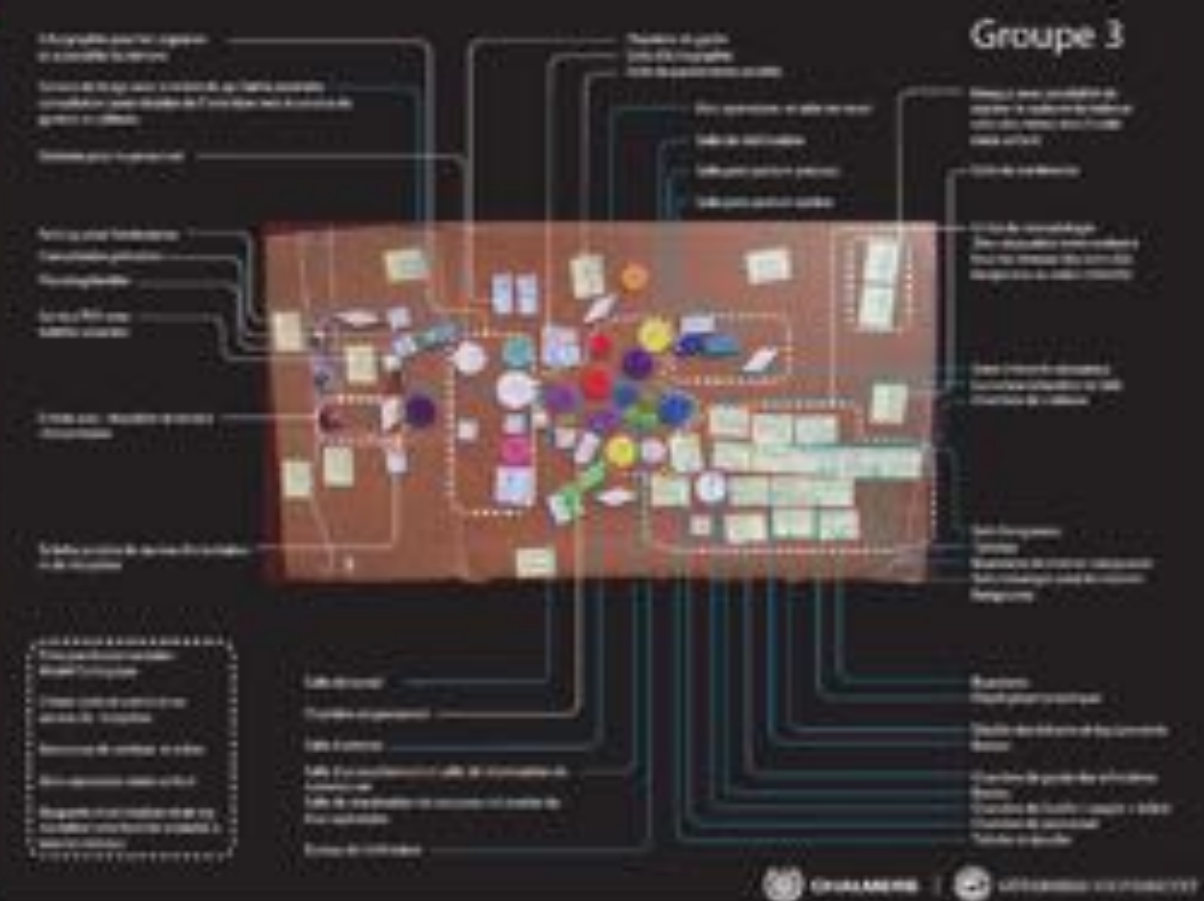
LES INFRASTRUCTURES DE L'EAU

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**A NEW MOTHER  
AND BABY UNIT**



# FIELD STUDIES, PARTICIPATORY DESIGN





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# CURRENT SHORTCOMINGS

## IN THE MATERNAL AND NEONATAL CARE

- **High rate of caesarean sections**
- **No appropriate space for fathers and family members**
- **No possibility for co-care of mother and neonate at the Neonatal Care Unit**
- **Insufficient logistics, such as long distances between maternity ward, NCU, OP**
- **Sub-standard work conditions**

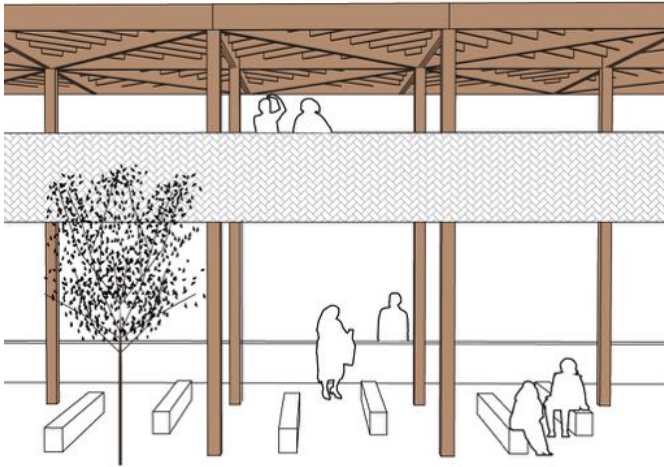
## IN THE PHYSICAL ENVIRONMENT

- **Not enough capacity**
- **Lack of integrity and privacy**
- **Poor indoor comfort and daylight**
- **Insufficient water, sanitation and electricity**
- **Lack of maintenance**

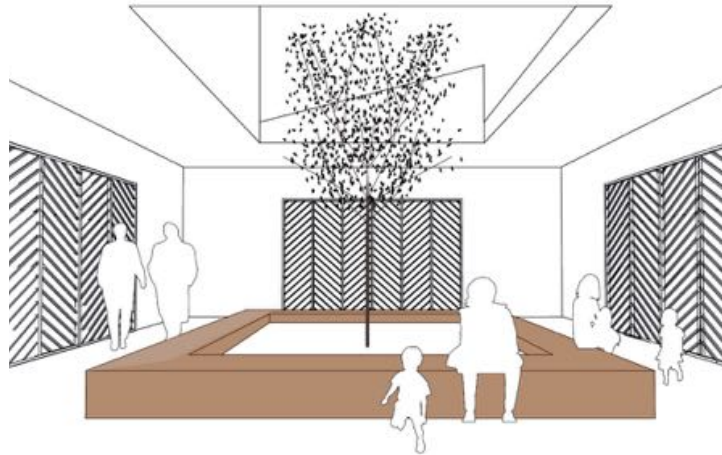
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# THE PROPOSAL

# PRINCIPLES OF HEALING ARCHITECTURE



**Attractive & welcoming environment**

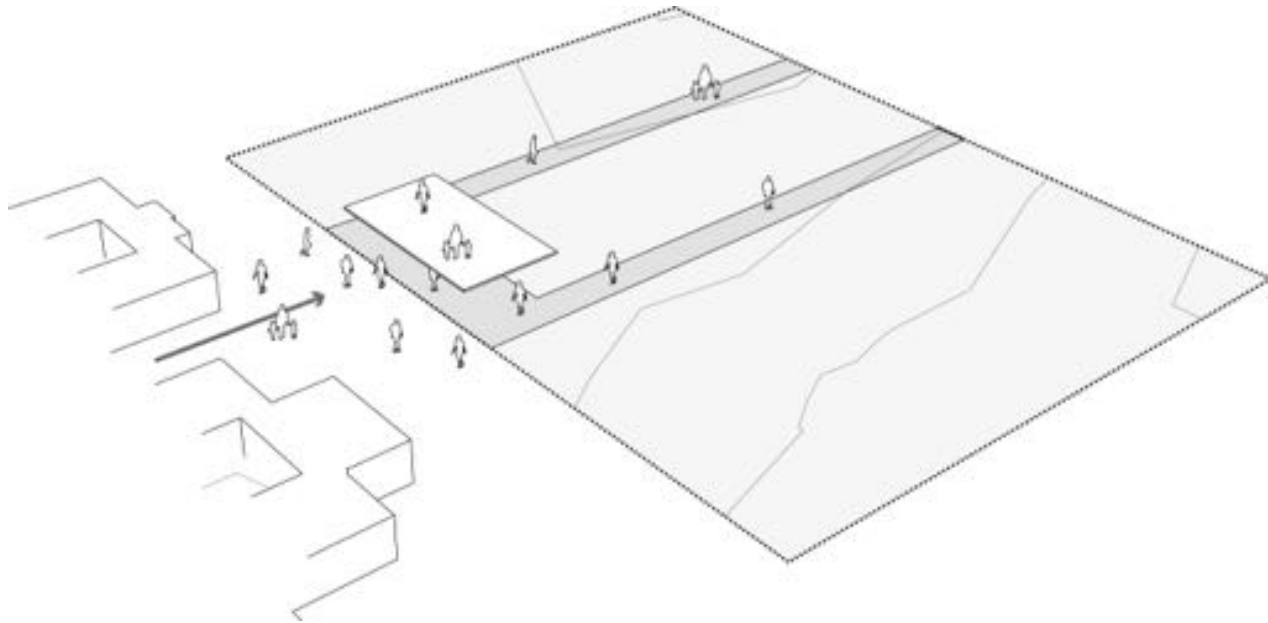


**Social vs private spaces & easy orientation**

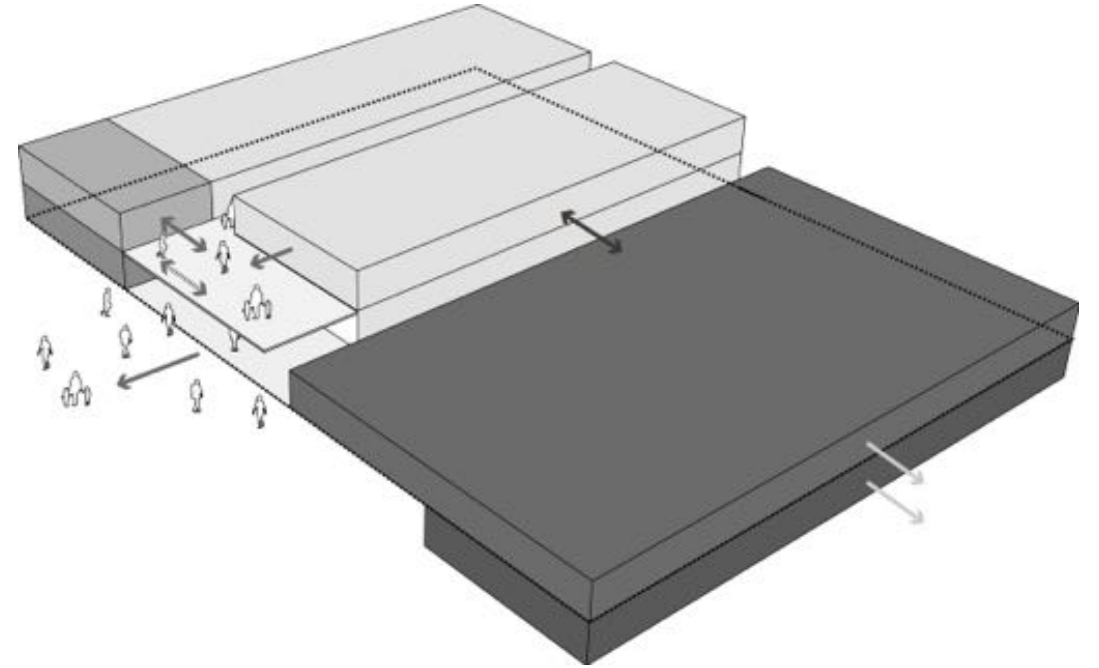


**Daylight, natural views & indoor comfort**

# CONCEPT



**1. ORIENTATION**

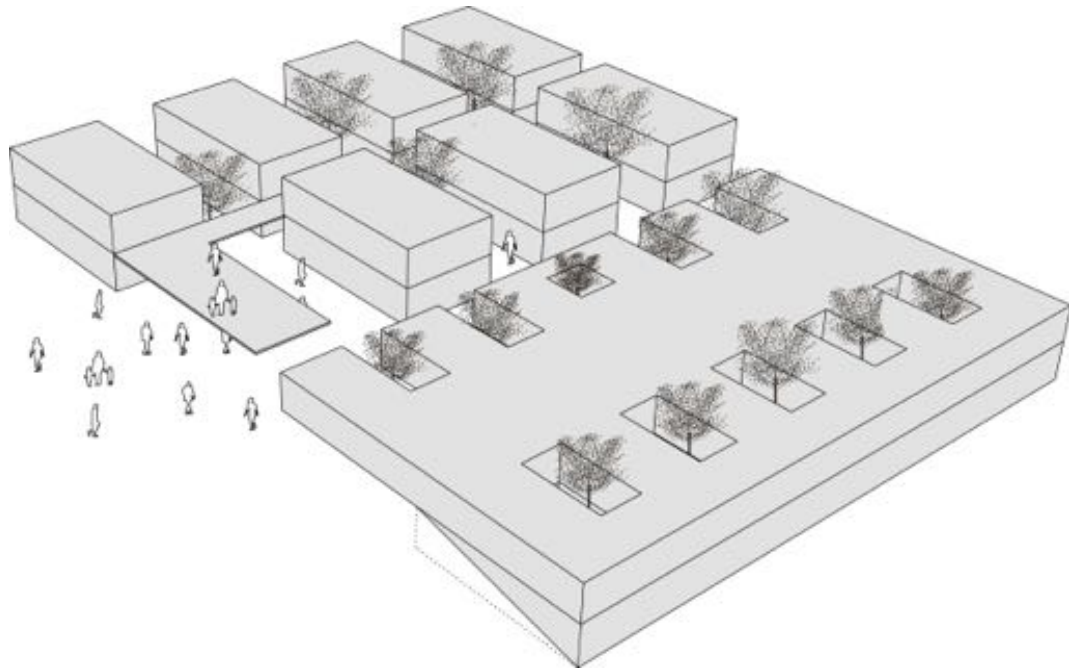


**2. DISPOSITION**

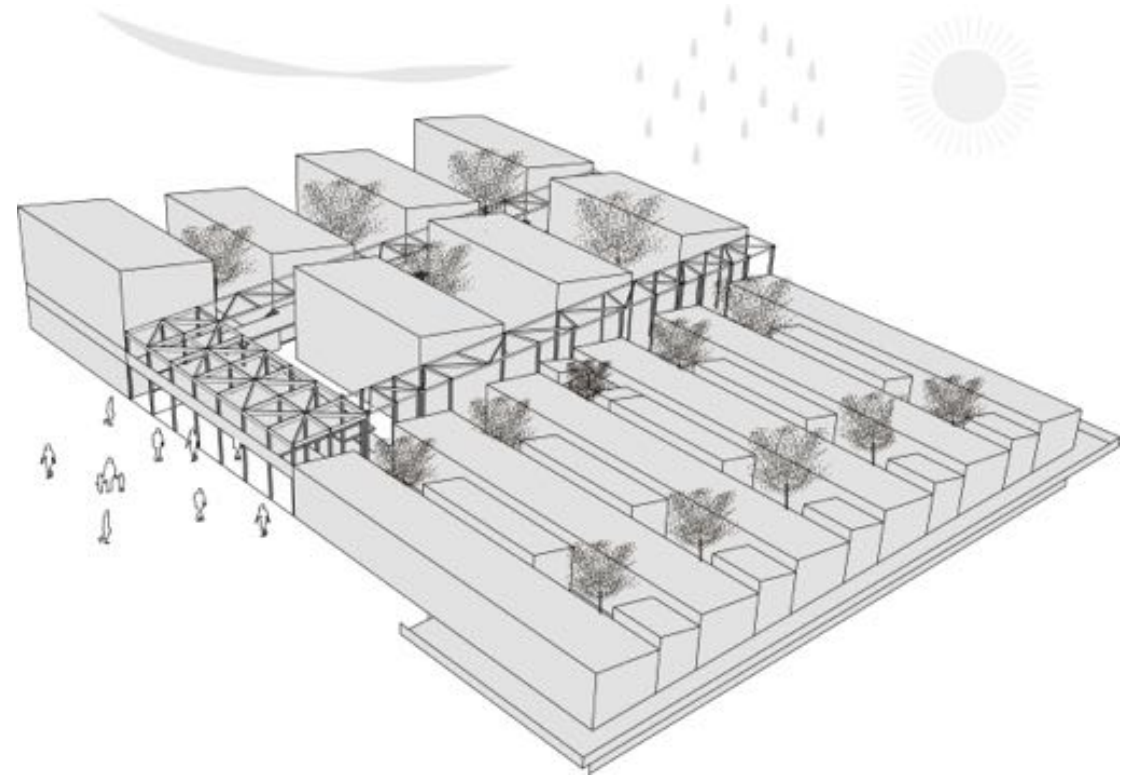




# CONCEPT



**3. ATRIUMS**



**4. VOLUMES**





# SITE PLAN



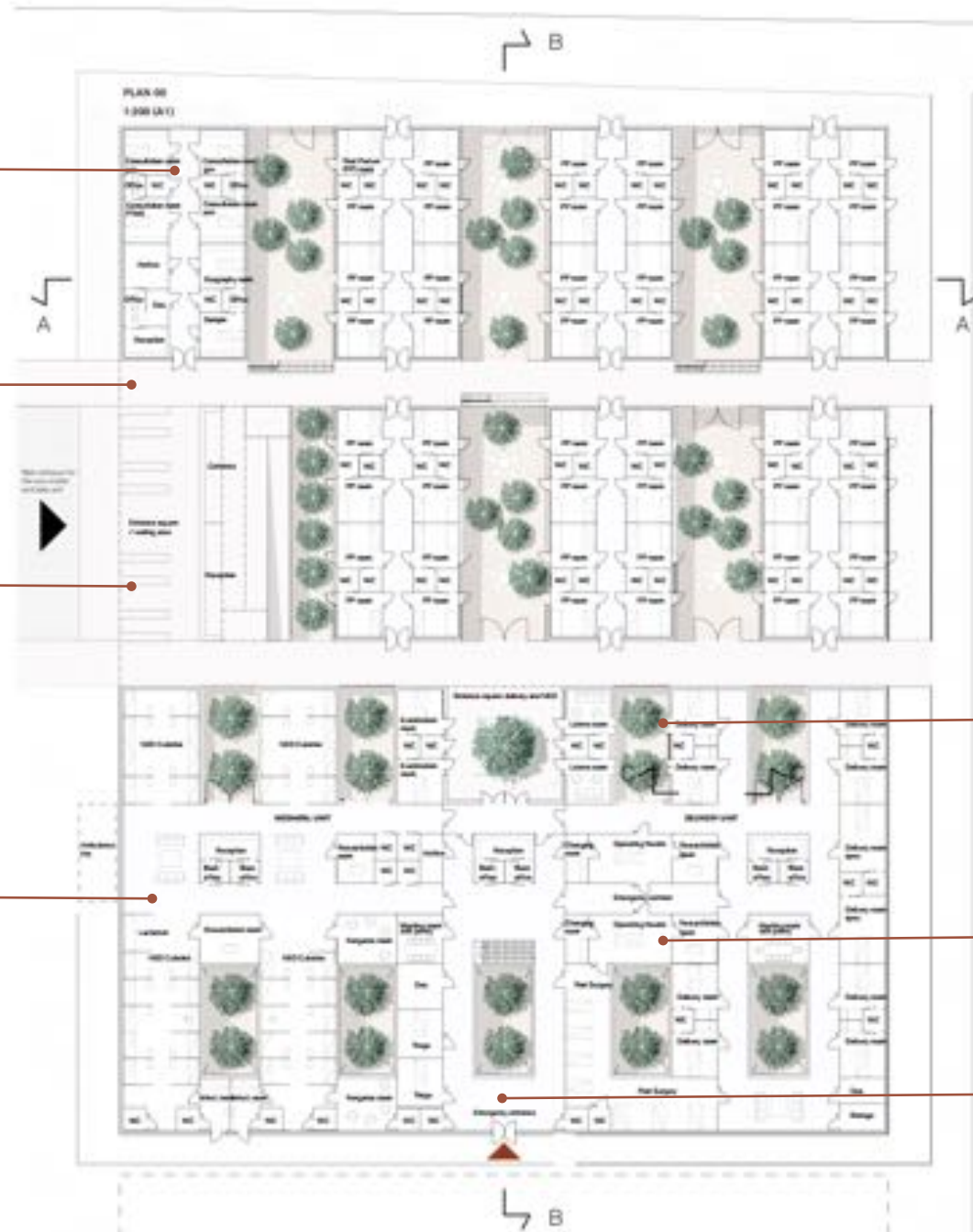


2.1 Small wards with patient rooms for one to two women

2.2 Easy wayfinding

2.3 Welcoming and attractive environment

3.1 Labor ward and neonatal unit in direct proximity, with possible co-care of mother and child



**1. Reduce maternal and neonatal mortality and morbidity**

**2. Health promotive care environment securing personal integrity and safety**

**3. Zero separation of mother and child**

1.1 Optimal flows and short distances

1.2 Possibility to do caesarian sections in the labor ward

1.3 Emergency flows reaching labor ward and neonatal unit directly

**4. Continuous support of a non-professional person like father, family member or doula**

**5. Good working conditions**

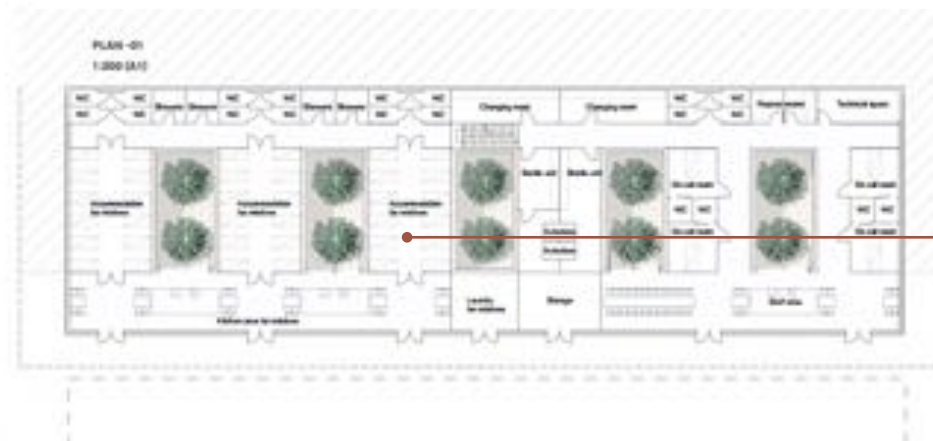
*5.1 A robust and sustainable building*

*5.2 Working and reliable technical systems for energy and water supply*



*4.1 Space for supportive companions in all patient rooms*

*4.2 Family area within the unit*



*4.3 Overnight space for relatives and supportive persons within the unit*

# BIOCLIMATIC DESIGN

