

# WORK SAMPLES

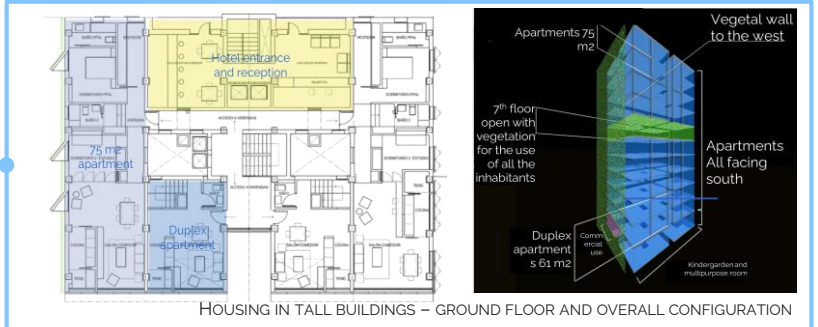
## BIOCLIMATIC URBAN REVITALISATION IN MADRID, SPAIN

Architecture • Urban redevelopment • Sustainable cities • Academic project

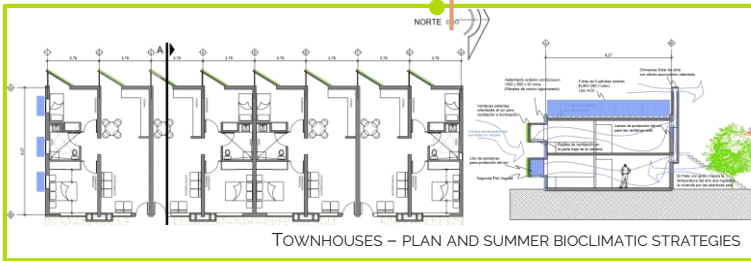


NEIGHBOURHOOD REVITALISATION - GENERAL PLAN

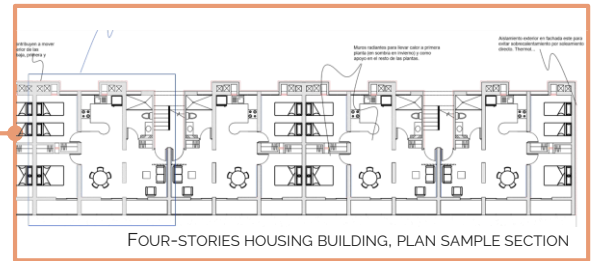
Urban neighbourhood revitalisation plan and redistribution of the living space of three different types of residential buildings to update their dimensions, include suitable living places for people with reduced mobility, and diversify the uses of the urban area. Technologies, materials and systems were selected specifically for the local climate and based on analyses of function and energy efficiency of the existing buildings.



HOUSING IN TALL BUILDINGS - GROUND FLOOR AND OVERALL CONFIGURATION



TOWNHOUSES - PLAN AND SUMMER BIOCLIMATIC STRATEGIES

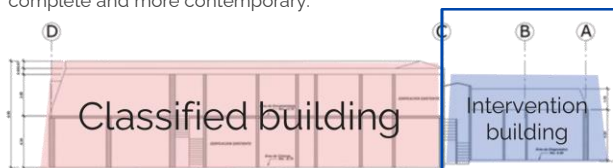


FOUR-STORIES HOUSING BUILDING, PLAN SAMPLE SECTION

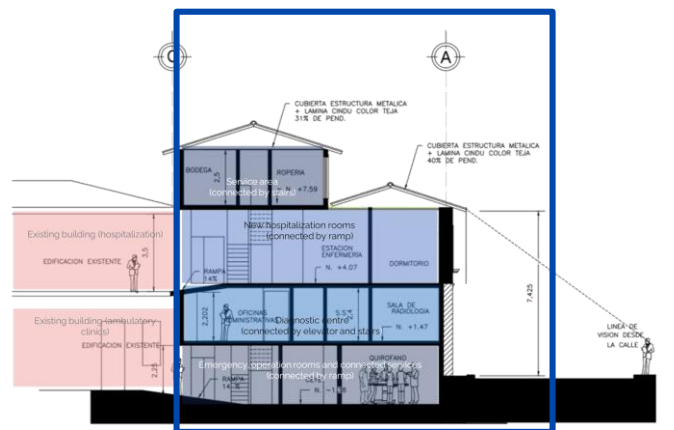
## HOSPITAL EXPANSION IN A HISTORICAL CITY

Architecture • Institutional architecture

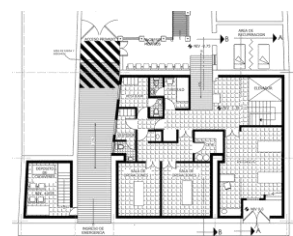
A small private hospital located in two adjoining 2-stories buildings –one classified for its historical value – needed an extension to complete its functional program. The intervention had to meet the regulations and limitations imposed by the office for the protection of the city's history and cultural heritage: full preservation for the classified building and facade and height regulations for the second one, because of its location within the historical limits of the city. The classified building was redistributed to optimize its use and a new 4-story high building substituting the original non-classified building was proposed for the expansion, maximizing the area available for the complementary services, turning the hospital into a complete and more contemporary.



EXISTING BUILDING - SECTION



EXPANSION PROPOSAL - SECTION



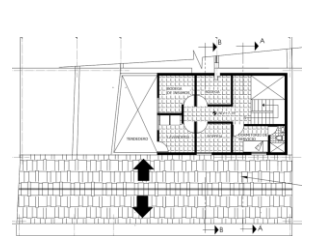
BASEMENT PLAN  
Emergency entrance (ambulances), operation rooms, intensive care, observation room.



GROUND FLOOR PLAN  
Radiology, ultrasound, laboratory with sample clinic, administrative offices and waiting room



SECOND FLOOR PLAN  
Delivery room, hospitalization (single, double and triple rooms)



THIRD FLOOR PLAN - COMPLEMENTARY SERVICES  
Storage, laundry room, clean linen room and service staff bedroom with bathroom

# WORK SAMPLES

## URBAN DEVELOPMENT OF LIDINGÖ CENTRE

Architecture • Urban development

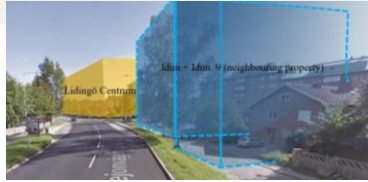
Volumetric study and proposal for a block in the surroundings of the city centre (Idun). A parking lot, with big potential to be part of the city centre dynamics due to its location gave place to a stepped open-shaped building of mixed used including an open public area.

Physical analysis of the characteristics of the plot and the surroundings (built elements dimensions and connections), analysis of the urban functions and needs around the block and consideration to the main Lidingö centrum project gave the fundamentals to the proposal. A sunlight study was carried out to ensure the possibility of sunlight to the new living and commercial spaces and therefore comfortable spaces.

The analysis and following proposal showed a way in which such interests can complement and boost each other.

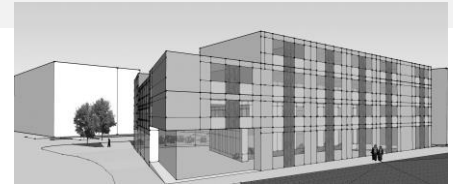


PHYSICAL ANALYSIS: BUILT ELEMENTS AND CONNECTIONS.



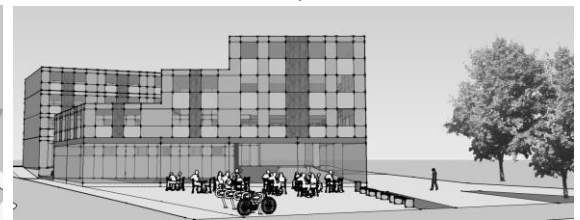
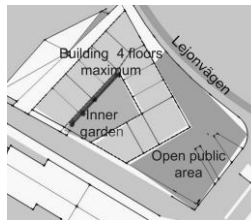
BLOCK DIMENSION ANALYSIS

Maximum volume according to municipal guidelines



VOLUMETRIC PROPOSAL – PERSPECTIVE

A welcoming volume directs the view towards the centre and into its dynamics



VOLUMETRIC PROPOSAL – PLAN VIEW AND FRONTAL PERSPECTIVE

Mixed residential + commercial uses to complete and boost the city dynamics. The open public area provides a needed social meeting place.



SUNLIGHT STUDY AROUND THE YEAR

The form and configuration of the volumetric proposal shows that it is possible to have sunlight into the spaces and on the public square almost year around. The potential of the block to create enjoyable indoor and outdoor places are big and just ready to become a reality.

## CONNECTING URBAN GROWTH WITH NATURAL DISASTERS

Physical geography + urban matters • Climate change • Disaster risk reduction • Research project

Understanding the drivers behind the increasing disaster-related losses around the world is vital to reduce such losses. However, the available data for studies that would contribute with such understanding are often scarce in many disaster prone regions. The implementation of long term studies on the causes of disaster related losses is thus unfeasible although the understanding is vital.

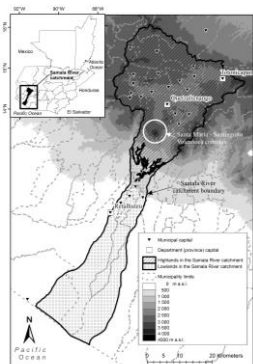
**What to do without data? Find alternative data!**

In a study case in Guatemala we created a method to compare the trends between human exposure, hazards and disaster risk to get a grip on their potential causal relationship and we used urban growth, rainfall and disaster losses as proxies for

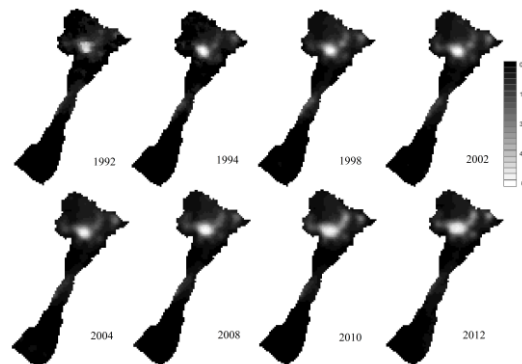
each of those factors.

We used an international database on disasters (Desinventar) to study the trend in the number of fatalities caused by water-related disasters. The local meteorological records were used to study the trends in precipitation amounts in the area, in terms of wet spells. Finally, remotely sensed maps of nightlights produced by NASA were used to study urban growth.

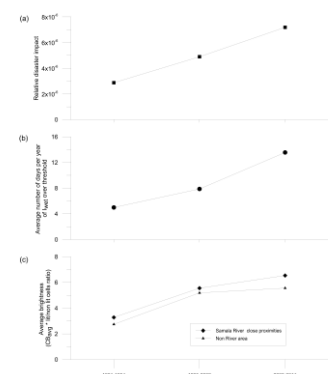
Nightlights maps provide an indication of where people are settled: the brighter the area, the more densely populated it is. We could see urban growth on a higher temporal resolution than if using census data.



SAMALA RIVER CATCHMENT



URBAN GROWTH IN THE SAMALA RIVER CATCHMENT (in terms of nightlights brightness)



TRENDS IN DISASTER RISK, NATURAL HAZARDS, AND URBAN GROWTH IN THE SAMALA RIVER CATCHMENT (in terms of their proxies: fatalities, wet spells and nightlights)

Our analyses showed that all the studied factors have increased over time. Disaster risk in this area is then more likely related to both increasing exposure and precipitation.

Since it is not possible to modify the precipitation patterns in the region, the most sensible course of action to avoid unnecessary exposure to natural disasters is to revisit the how cities are planned. Taking into account physical factors such as proximity to rivers, floodplains, preferential routes for debris flows, would go a long way in making safer cities in the future!