

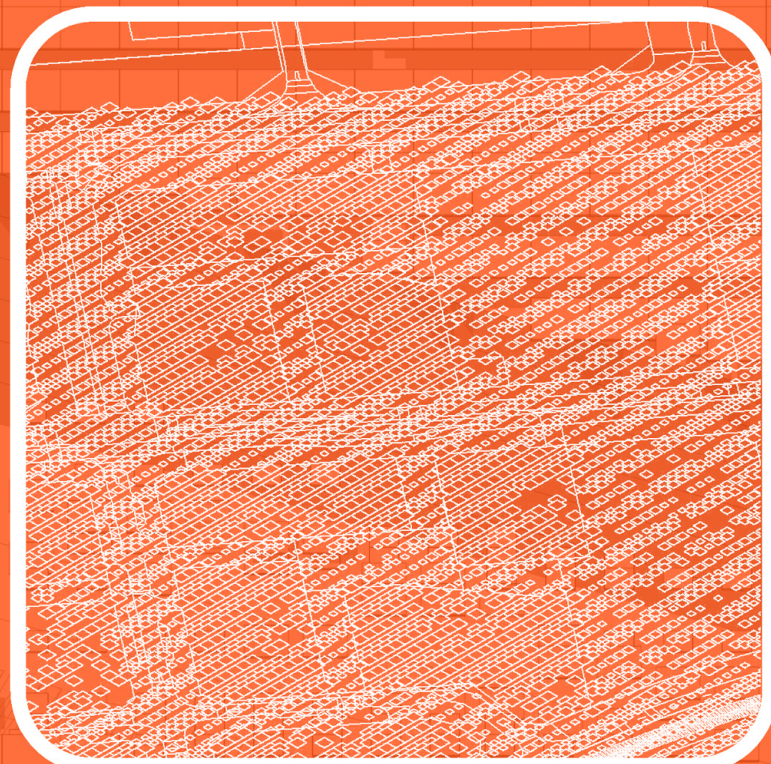
LAGI 2019 ABUDHABI

Return to the Source

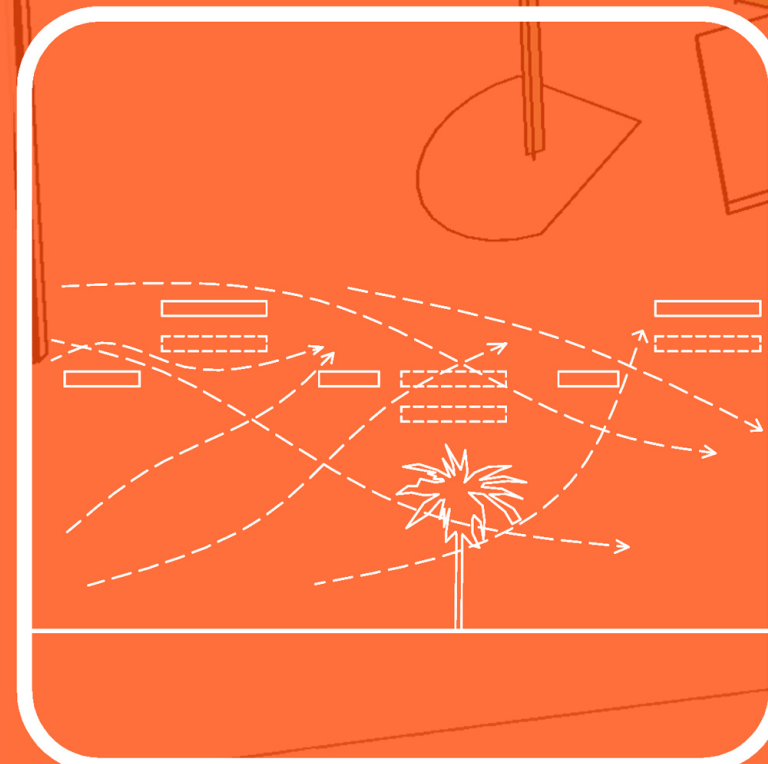
... its temperature (at wind speeds of 2-4 m/s) at the location, the temperature should be particularly low. The lack of variation in the height of the north-south facade panels is caused by the limitation of the mutual shading of the panels on the roof in the objective of effective solar radiation collection and thus generating shade below in the middle of the day. The same result of the panels (with facade) of the city was achieved by extending to the entire urban planning as an invitation to use streets, pavements and buildings. Roof panels will be equipped with photovoltaic cells as an alternative and ecological use of the natural environment. In order to allow light to the building sections, some of the designed panels were removed in order to add an openwork over the streets (25%). The openness of the roof structure has been increased above the sidewalks (50%) in order to provide access to daylight for residents and building users. Differences in the percentage of clear-ways between streets and pavements result from the desire to limit the sun heating the finishing material of flat surfaces where asphalt as road-wear layer will absorb more cal energy than pavements, thereby generating an increase in ambient temperature. The design gives the opportunity to lower the temperature of the earth in the city during hot days. Due to the need for full access to sunlight and the sky for high greenery, the panels over the trees were abandoned. Orange cubes marked with the aim to mark the storage locations during the day. For storage, the method of storage can be implemented presented in the concept, mechanical energy storage (using gravity) to make observers aware of electricity generation from solar panels during the day and at night to recover electricity for street lighting, pavements and parks through lamps fixed in the structure of the panels from the bottom. The energy storage mechanism will use reinforced concrete cubes filled with sand to increase their weight and lifted up through the elevator scrolls during the daytime supply of electric motors that drive the entire system. At night, the cubes will be released from their upper position in order to turn the scrolls in the opposite direction, thereby generating current through the same electric motors and raise them up. The electric power consumption obtained in this way should be used for lighting streets, pavements and parks from the lower layer of panels with installed LED lighting. In order to provide ventilation at the level of 25% for the city raised panels up in order to provide street ventilation at the level of 50%. Road panels have been lowered down. Adapting the level of city panels to the city development will locally raise or lower their level in order to adapt them to the economic attachment to the roof structure. The desired side effect of using panels lower than roads gives a reduction in noise emission at higher levels of buildings. As on the roofs of buildings, it provides a natural shielding of air conditioning and ventilation devices. Additional advantages generated by the presented installation are: reduction of air conditioning costs due to reduced thermal emission of hot and vertical surfaces and significant shading of buildings, increased ventilation at higher levels and limitation of wind speed at the human level. The use of the city (buildings, roads, streets and parks) as electricity generators is performed on-site which reduces its losses. An additional advantage of the solution is the reduction of emissions (noise, heat island, power consumption) to the natural environment related to the use of the city. Of course, the installation presented on the boards is limited to the boundaries of the location of the contest conditions (all calculations of the estimated installation costs are given within the limits of the competition location). Its extension to the whole city is an invitation to use precisely shaped and subjected to adaptation processes to the living conditions of the fifth facade. As a source, it can start the process of thinking about the entire urban layout as a structure generating electricity for its residents, additionally giving shade, ventilation and screening of undesired emissions.



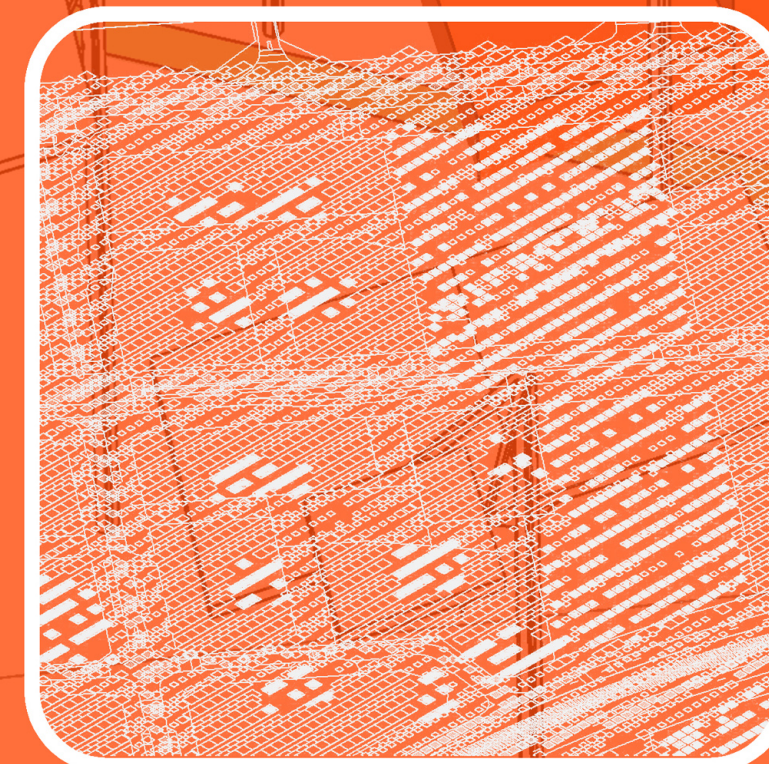
ventilation of pavements



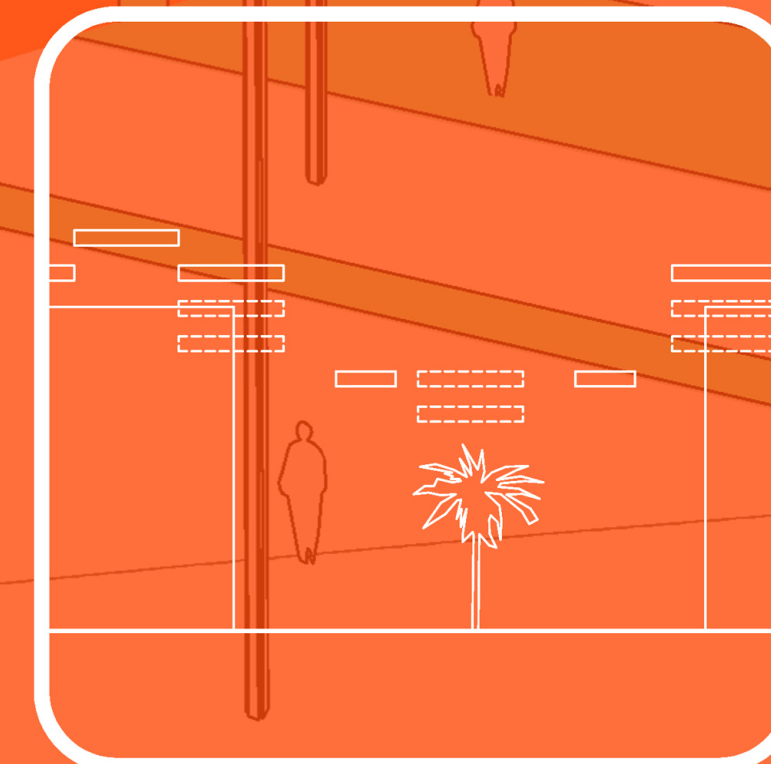
25% ventilation



increased ventilation of roads



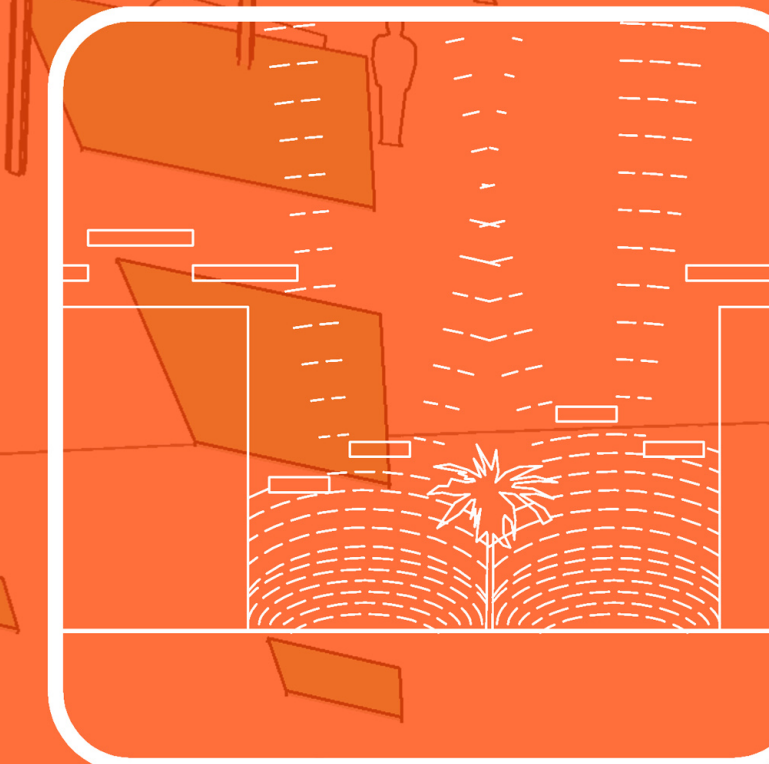
50% of road ventilation



raising building panels



reduction of road and pavement panels



reduction of noise emission