

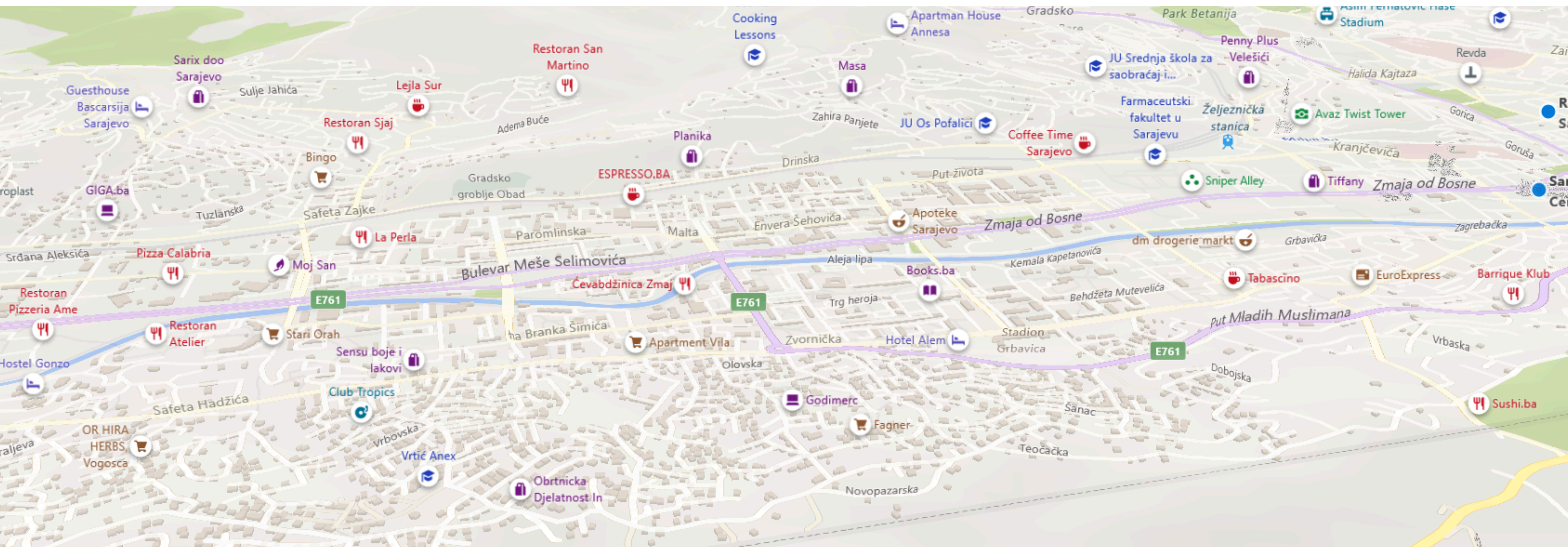


IDENTIFYING THE PROBLEM



THE CITY OF SARAJEVO HAS BEEN DEALING WITH THE PROBLEM OF SMOG APPEARING IN THE WINTER MONTHS FOR A LONG TIME. IT IS CAUSED BY AIR POLLUTION, SO BY ANALYZING IT IN DETAIL WE WERE ABLE TO FIND A COUPLE OF OTHER PROBLEMS UNDERNEATH THE SURFACE, AS WELL AS SUGGEST A SOLUTION. BY PROVIDING CLEAN AIR TO OUR CITIZENS WE ARE RAISING THE QUALITY OF LIFE, REDUCING POSSIBLE ACCIDENTS, PREVENTING HEALTH ISSUES, ETC.

- HOW DO WE FIND THE BIGGEST POLLUTER?
- HOW MUCH DOES THE CONDITION OF PUBLIC TRANSPORT ACTUALLY AFFECT THE CURRENT STATE OF AIR POLLUTION?
- IS IT POSSIBLE TO REDUCE THE NUMBER OF CARS?
- HOW MUCH GREEN SPACE WAS SACRIFICED IN ORDER TO MAKE MORE PARKING SPACE?



AIR POLLUTION

09/2024. MTIV SUMMER SCHOOL
ETH ZÜRICH, HSLU & UNIVERSITY OF SARAJEVO
MARKO MARTINOVIĆ ELIHMANA ŠARANOVIĆ ENA ŠANTIĆ

PROBLEM STATEMENT WORKING ON ONE PARTICULAR PROBLEM

DEFINING ONE PARTICULAR PROBLEM



WHAT

IS THE PROBLEM



>SMOG IN SARAJEVO DURING WINTER
>CAUSED BY PEOPLE IN HOUSEHOLDS BY MAKING THE FIRE WITH LOW-QUALITY WOOD AND CHARCOAL



WHO

IS INVOLVED | IS AFFECTED



>INVOLVED IN CREATING A PROBLEM: PEOPLE FROM THE HOUSEHOLDS, AUTHORITIES
>AFFECTED: ALL OF THE RESIDENTS OF SARAJEVO



WHY

IS THE PROBLEM IMPORTANT



>IT DIRECTLY AFFECTS THE LIVES OF RESIDENTS
>IT OCCURS BECAUSE OF THE INCREASED AIR POLLUTION
>NO SOLUTION THAT WAS GOOD OR EFFECTIVE ENOUGH



WHERE

DOES THE PROBLEM TAKE PLACE



>IN THE WHOLE CITY OF SARAJEVO
>COULD USE THE EXAMPLE OF LONDON AND THEIR REGULATIONS AND RESTRICTIONS



WHEN

DID THE PROBLEM START



>THIS KIND OF SMOG APPEARED IN THE SECOND HALF OF THE 20TH CENTURY
>RESULTS COULD BE SEEN RIGHT AFTER ALL THE RESIDENTS AGREE ON USING THE BETTER METHOD OF HEATING



LIKE

HOW COULD IT BE SOLVED



>PEOPLE TRIED TO SOLVE A PROBLEM, BUT BY THE END OF THE 1980S EVERYTHING STOPPED
>COULD BE SOLVED WITH HELP PROVIDED BY THE STATE - BETTER-QUALITY BURNING MATERIAL

SHORT HISTORY

BY THE END OF 1980S, THE PROJECT STOPPED AND NOW WE HAVE SARAJEVO AS WE KNOW IT TODAY.



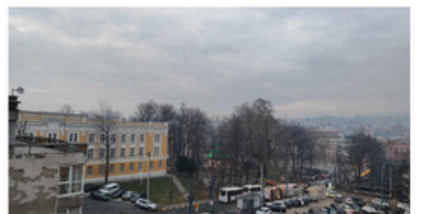
Sarajevo je 70-tih bilo svjetski primjer, a danas se guši: Problem je ugalj i nedostatak milijarde KM?

SARAJEVO | 25/01/2024 u 07:15 h



Zrak u Sarajevu ponovo štetan po zdravlje: Nije isključeno donošenje interventnih mjera

SARAJEVO | 15/01/2024 u 18:54 h



Godina prolazi, problemi ostaju: Sarajevo ponovo među najzagadenijim gradovima svijeta

LONDON AND THEIR REGULATIONS



HARDER CONDITIONS => PEOPLE FIGHT TO SURVIVE
COLD WEATHER => USE OF CHEAPER, LOW-QUALITY COAL

SOLUTION:

>ENVIRONMENTAL LEGISLATIONS, SUCH AS THE CLEAN AIR ACTS OF 1956, 1968 AND 1993.
>SMOKELESS FUELS
>SMOKE CONTROL AREAS
>IT WAS AN OFFENCE TO EMIT DARK SMOKE FROM THE CHIMNEYS
>THE HEIGHT OF CHIMNEYS
>THE COMPOSITION OF MOTOR FUELS
>FINANCIAL INCENTIVES WERE OFFERED TO REPLACE OPEN COAL FIRES WITH ALTERNATIVES, SUCH AS GAS FIRES, OR TO BURN COKE INSTEAD (PRODUCED LESS SMOKE)

POSSIBLE REGULATIONS



>AFFECTED ARE BOTH CITIZENS AND THE CITY - THE WAY IT WORKS, ITS TRAFFIC AND HEALTH OF THE PEOPLE

>MEASURES WOULD ENSURE LESS ACCIDENTS: LESS SMOG - LESS JAMS - BETTER VISIBILITY - LESS NERVOUSNESS - LESS ACCIDENTS

PROPOSITIONS:

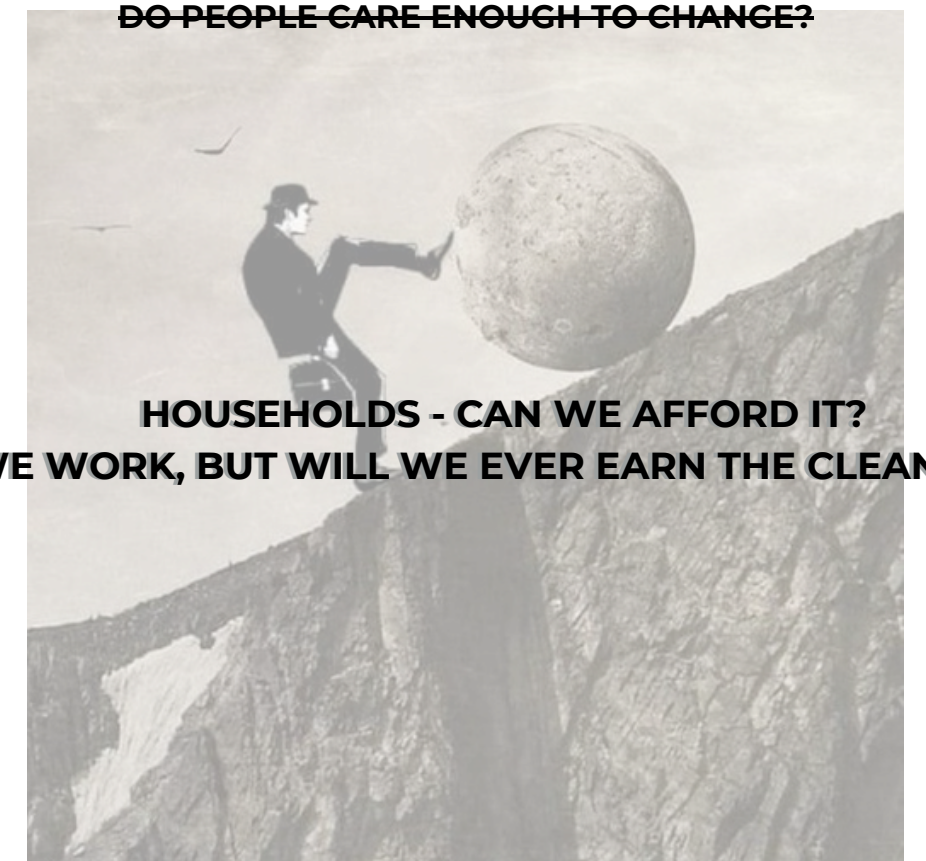
- USING WOOD AND COAL OF BETTER QUALITY
- ILLEGAL TREE CUTTING SHOULD BE STOPPED
- POSSIBLE DONATIONS
- PLANTING MORE TREES IN THE CITY

LIQUID TREE



DO PEOPLE CARE ENOUGH TO CHANGE?

HOUSEHOLDS - CAN WE AFFORD IT?
WE WORK, BUT WILL WE EVER EARN THE CLEAN AIR?



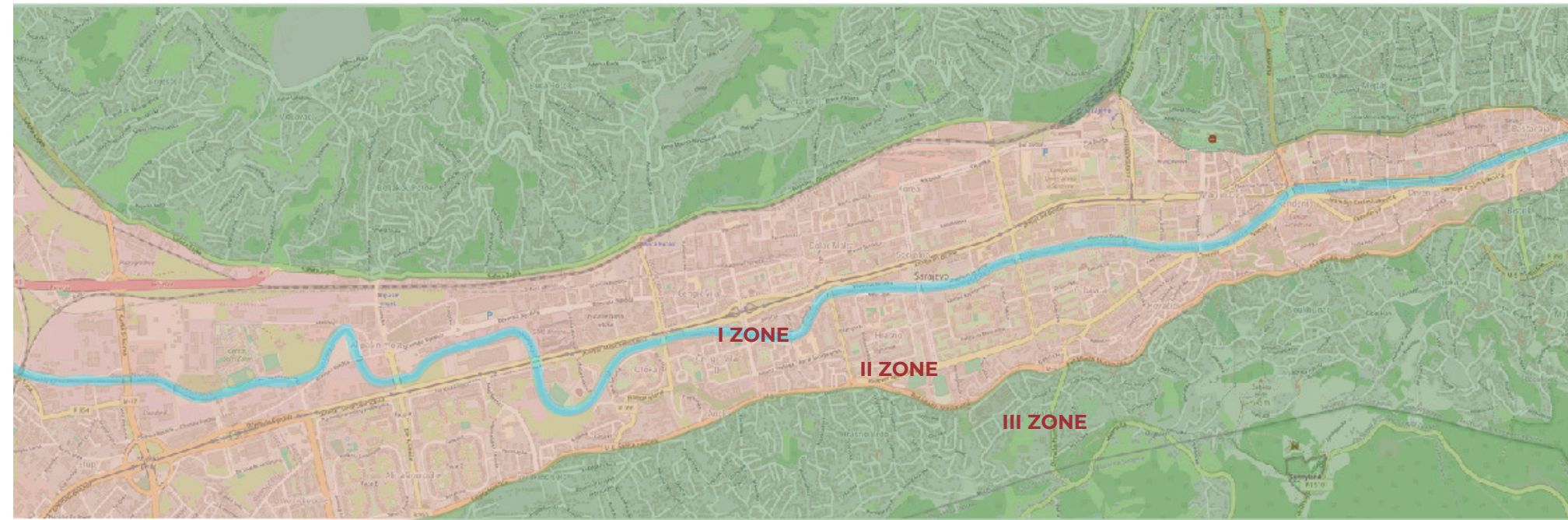
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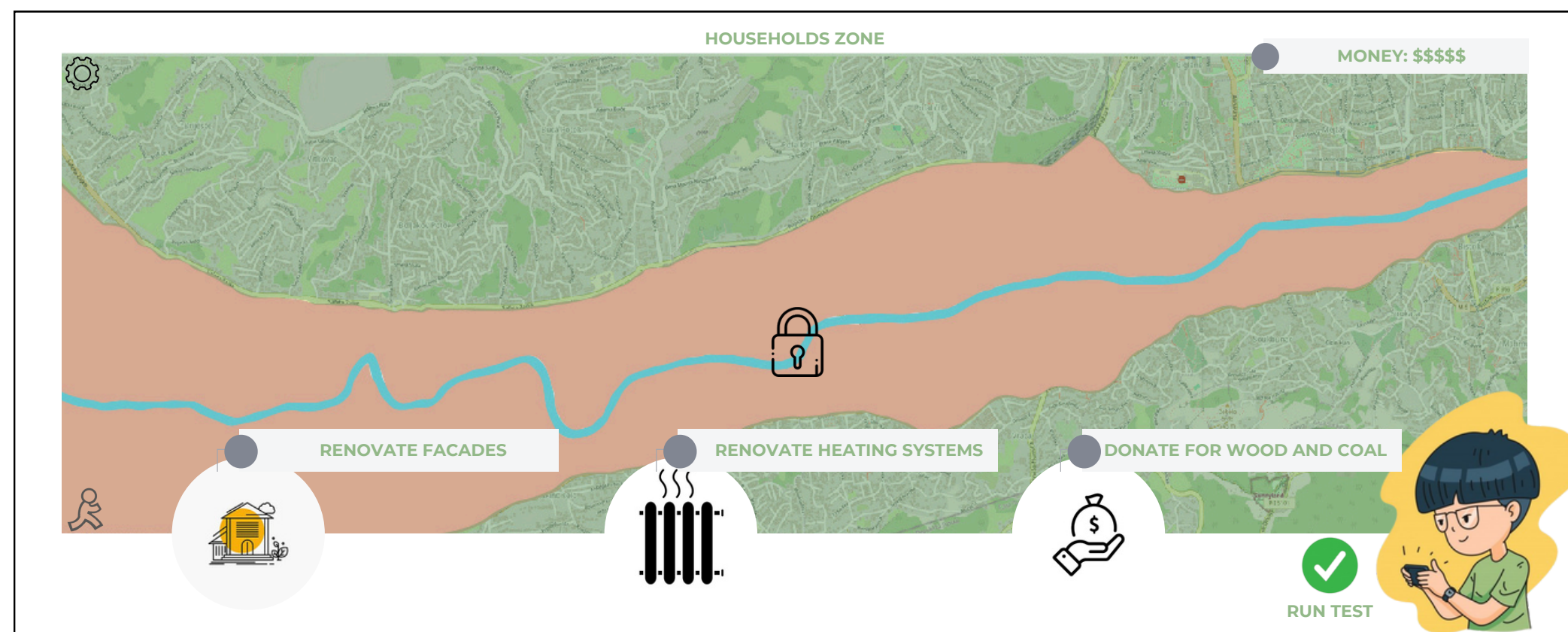
PROTOTYPE 1 INITIAL IDEA



THREE ZONES



LEVEL 1



1

NUMBER OF HOUSES: 0000
FUNDS NEEDED: \$\$\$\$

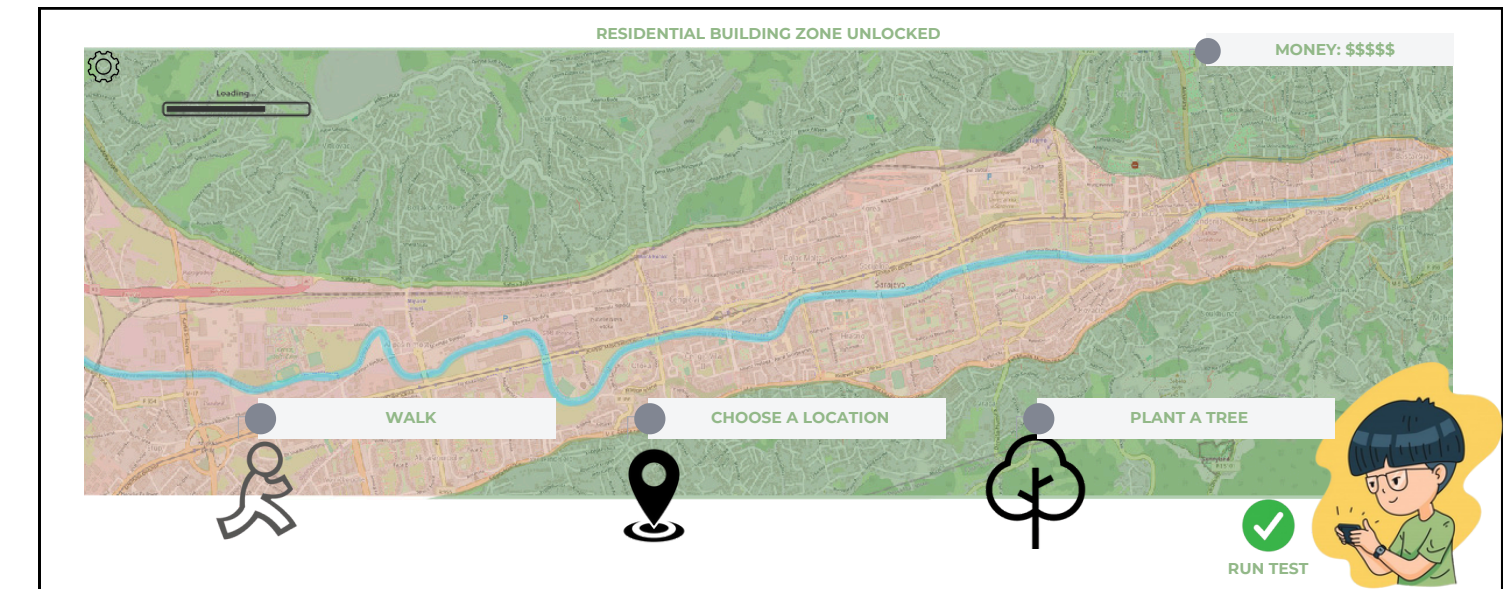
2

NUMBER OF HOUSES THAT
NEED NEW SYSTEM: 0000
FUNDS NEEDED: \$\$\$\$

3

AMOUNT OF WOOD: XXXX
AMOUNT OF CHARCOAL: XXXX
FUNDS NEEDED: \$\$\$\$

LEVEL 2

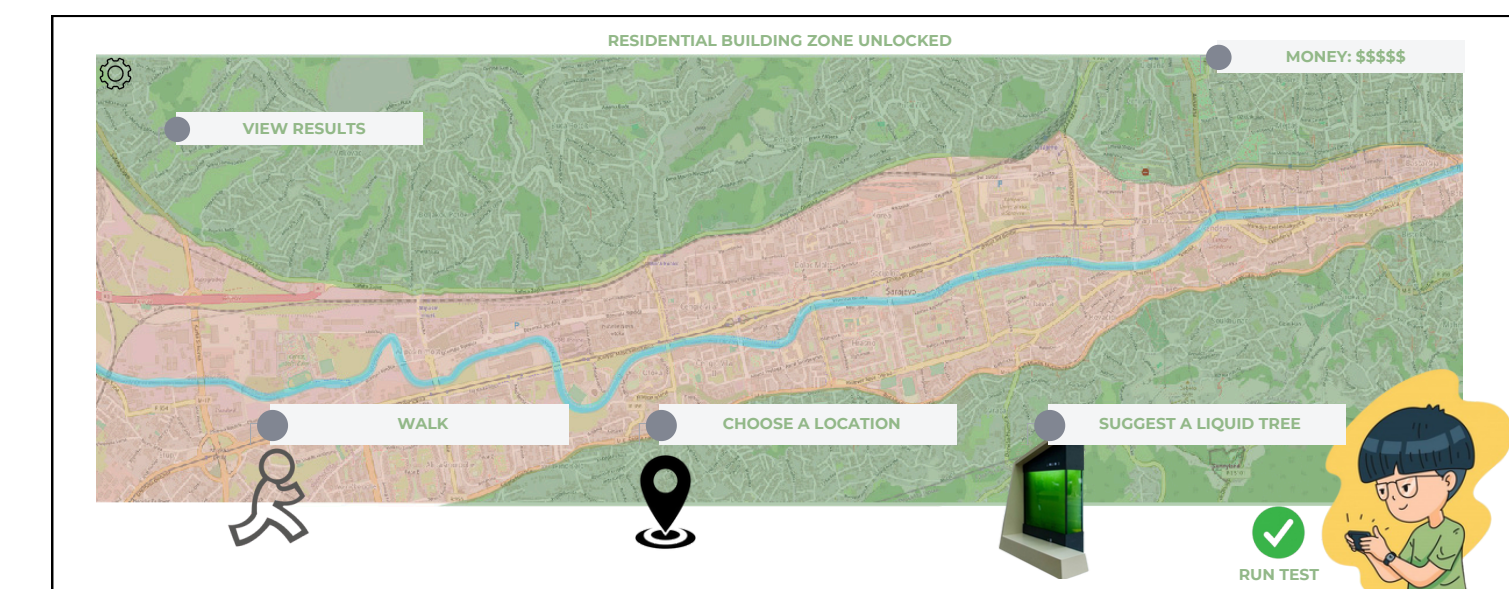


THE LOCATION THAT'S SUGGESTED
THE MOST WILL GET A TREE, IF
POSSIBLE.

SAW A POTENTIAL PLACE FOR A
TREE? JUST PICK A LOCATION AND
SUGGEST PLANTING ONE!



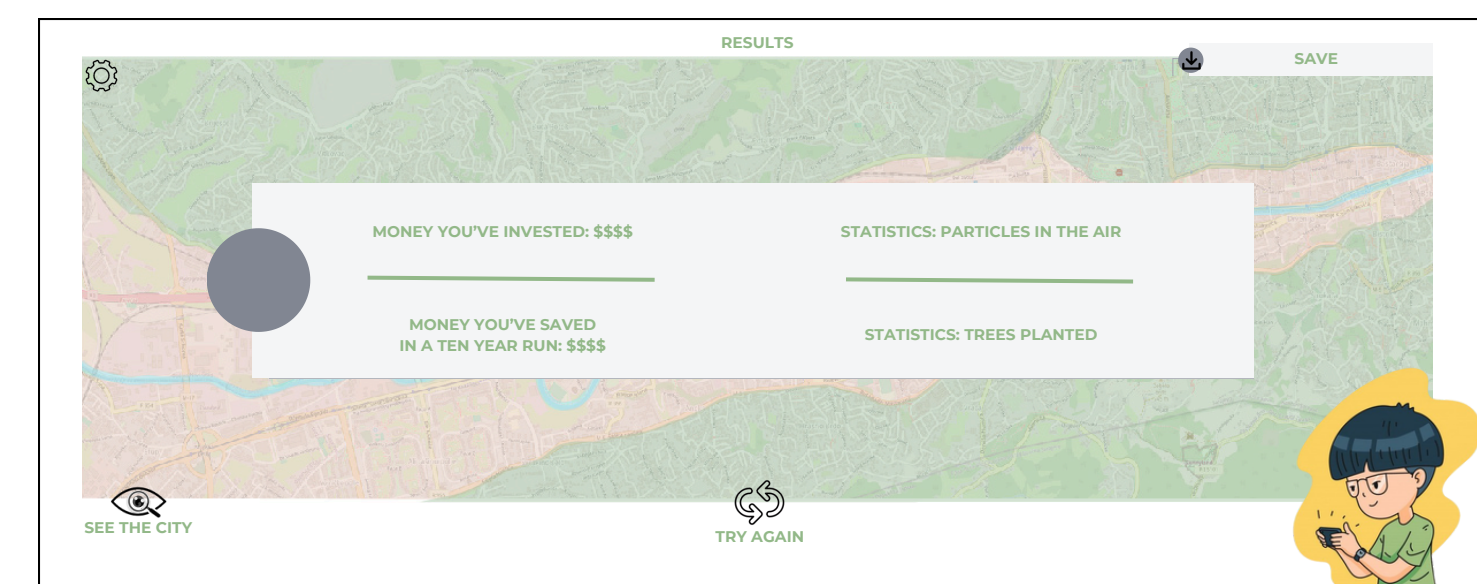
LEVEL 3



IF THERE ISN'T ENOUGH SPACE FOR
A TREE, NO WORRIES! LIQUID TREE
DOESN'T NEED AS MUCH SPACE AS
THE REAL ONE.



RESULTS



AIR POLLUTION

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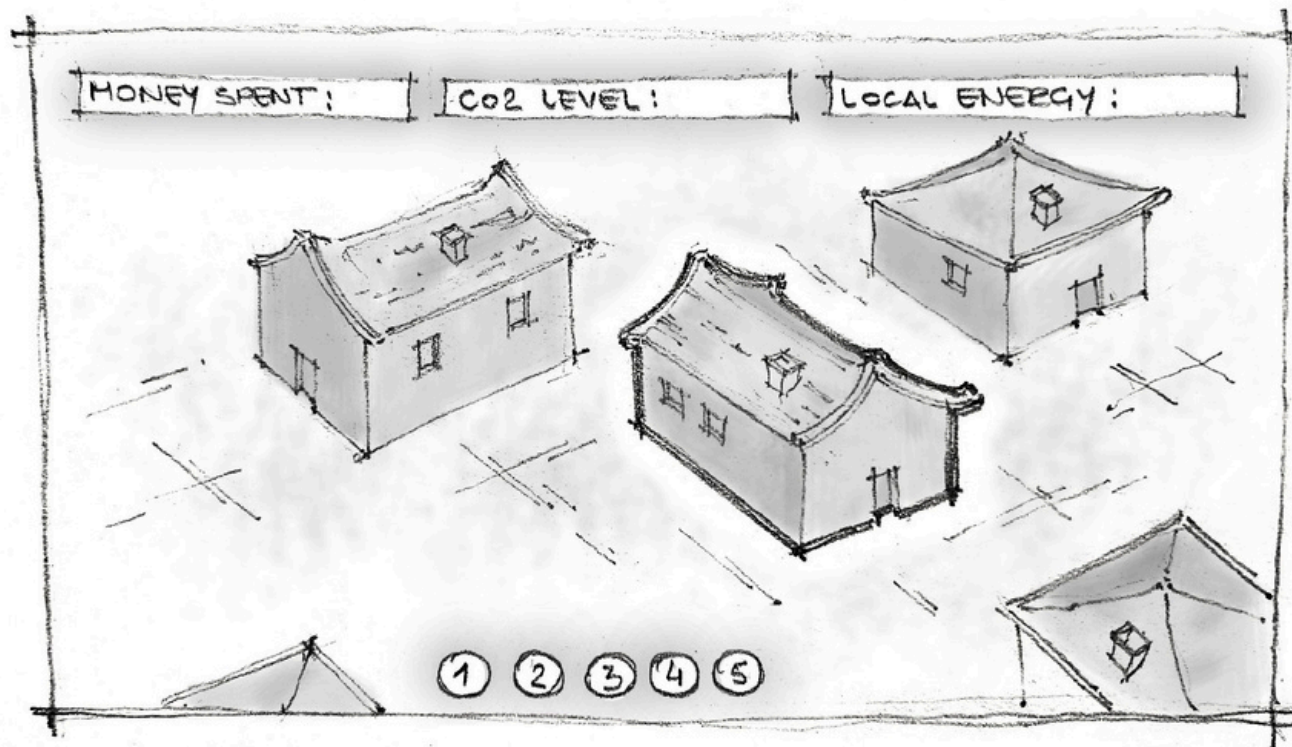
PROTOTYPE 2 FINAL IDEA



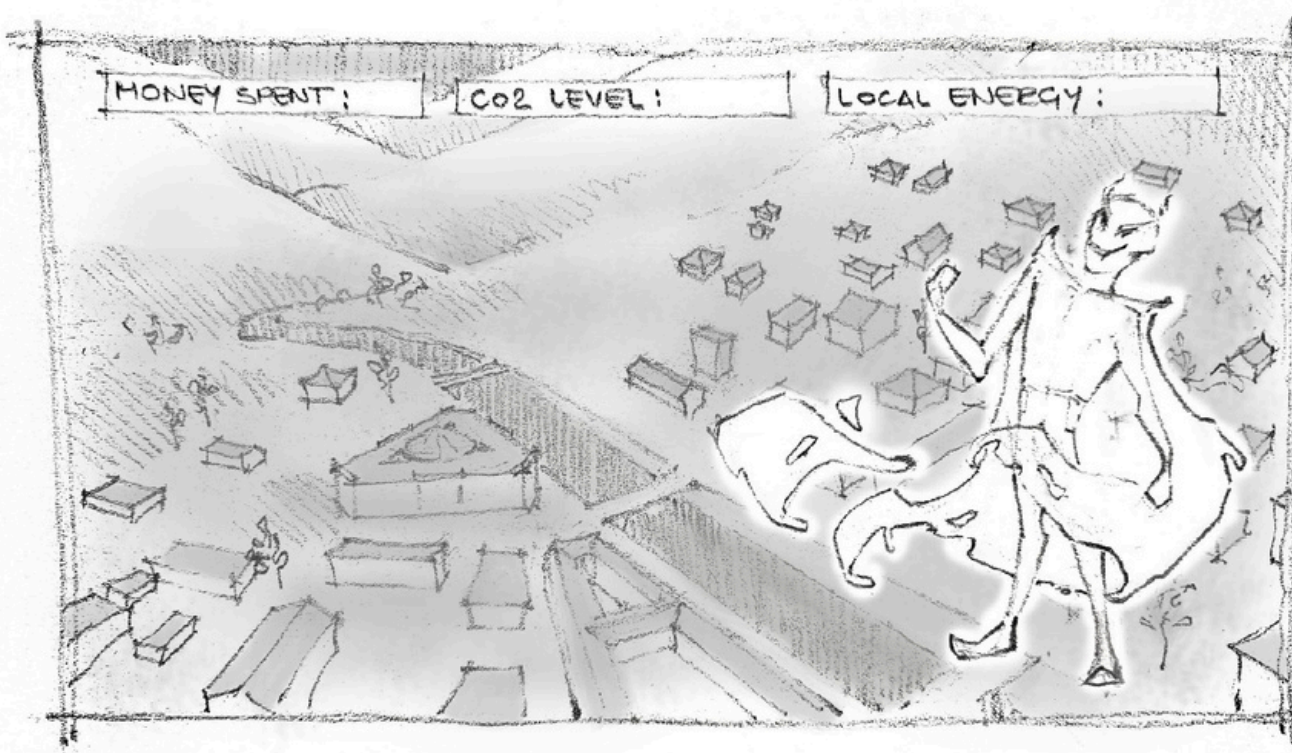
KILL THE SMOG IS A STRATEGY GAME PLACED IN VIRTUAL CITY OF SARAJEVO. THE GOAL OF THE GAME IS TO KILL THE ENEMY, MR. SMOG, WHICH IS ACHIEVED BY LOWERING CARBON EMISSIONS IN THE MOST EFFICIENT WAY.



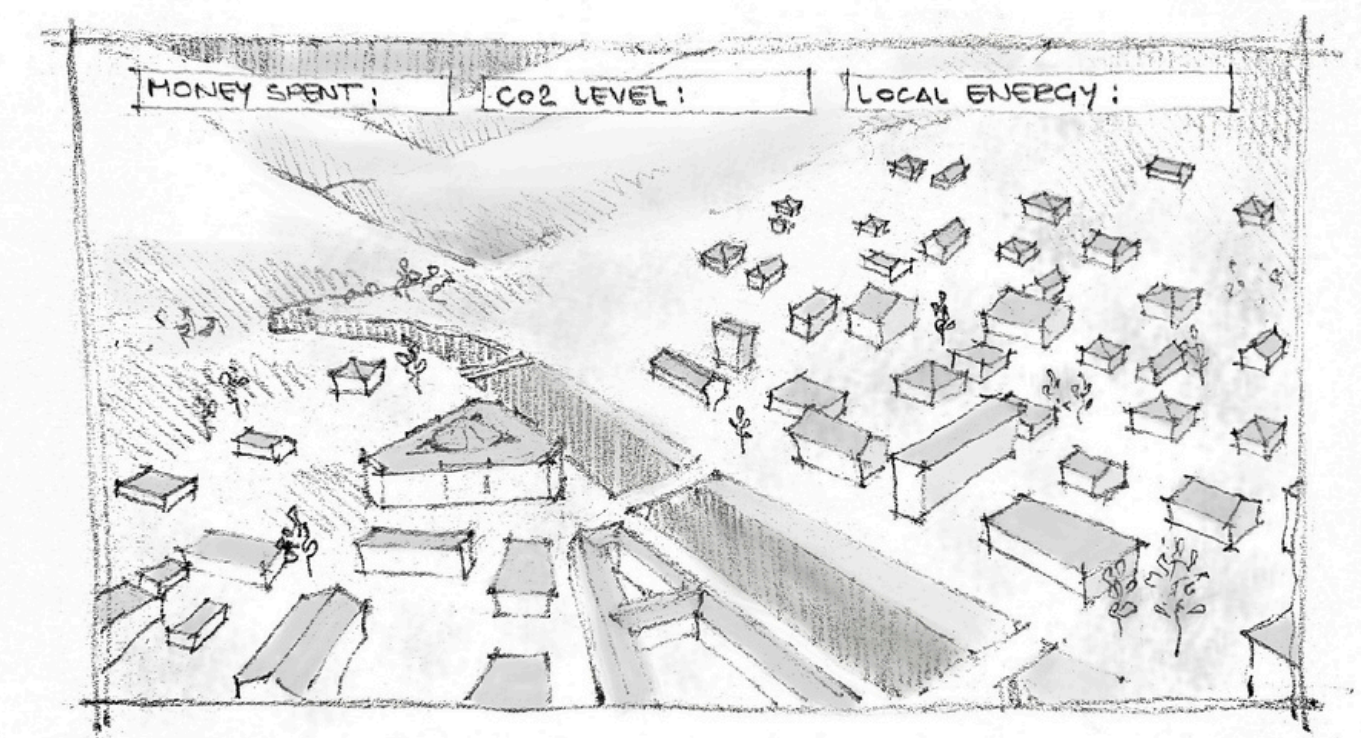
Players gets the role of government officials in charge of money distribution represented in a chosen character. Game is played as a competition between multiple groups.



Player can choose between different alterations of existing buildings as well as redesign of energy supply infrastructure. Each modification has a certain price.

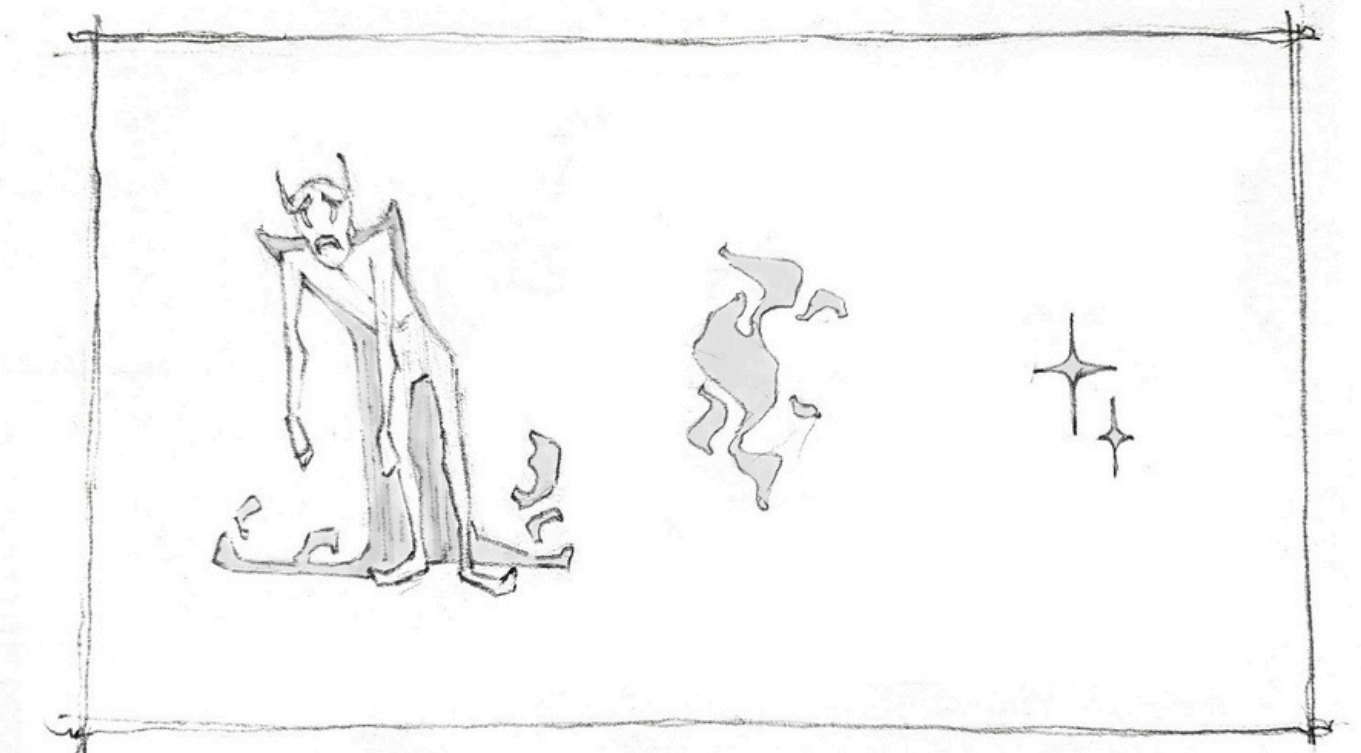


Too bad! Mr. Smog has come for the city! CO2 level has not been significantly reduced, maybe try a new strategy.



The game starts with a simplified model of Sarajevo. Zones that could be altered are hillside settlements. During the whole game player can track spent money, CO2 lever and local energy production.

After all the changes have been submitted results are evaluated. Different scenarios are possible, some realistic, some a bit less. The point is not just to lower the CO2 level, rather to do it efficiently while taking into account the amount of money spent and local energy production.



Great job! You managed to kill Mr. Smog! You have successfully and efficiently reduced CO2 level in the city.