ClairCity: Citizen-led air pollution reduction in cities

Task 4.4.2. School Competition Report

June 2020

Document details

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Description	This report is a summary of the school activity in the framework of the ClairCity project. The activity belongs to the implementation of the WP4:Citizens and Stakeholder Engagement, Sub-Task 4.4.2 Competition for Schools: My City, My School, My Home. The competition for Schools: My City, My School, My Home is an activity which is designed as an online educational tool for change towards smart consumption, reduced carbon/air pollutant emissions and healthy lifestyle.
	The online tool is developed by a subcontracted company (Progressive Studio Ltd.) and the REC team. The tool is hosted by Progressive Studio Ltd. and linked to the ClairCity website.
	This report contains shortly the concept of the activity, the design and the framework for the online use by the school teams between the age of 13 and 16.

Version history

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Quality Assurance	Eva Csobod and Péter Szuppinger (former REC)
Project internal comments	Laura Fogg Rogers (UWE) Corra Boushel (UWE)

Table of Content

Executive Summary

This report is a summary of the schools activity in the framework of the ClairCity project. The activity belongs to the WP4 which focuses on Engagement of citizens and stakeholders. One of WP4's goal is to empower citizens to better understand the specific challenges and opportunities related to their city/region, and to engage them into moving towards a sustainable future, including reduced pollutant emission and carbon footprint, improved air quality and decreased health risks.

Under the Sub-Task 4.4.2. (Competition for schools) the main target audience are school children. The activity built on the action competence approach in environmental education. The goal of the activity is to engage interested school children and teachers to act towards good environment, low carbon emission, healthy city, a health promoting school and healthy home environment. The activity was called 'My City, My School, My Home'.

Selected school teams of the city/region were asked to collect data on their city and their school environment to be able to decide on what measures should be introduced in order to promote smart consumption, good environment, reduced emission and healthy lifestyle. The activity was implemented mainly by an online tool. This interactive software can later serve as a useful interactive educational tool for young people and their teachers.

In this report we describe the implementation of the tasks in the cities and regions based on the 'guidelines and supporting documents' and the 'software development'. This report the results of the school competition in the cities and regions are presented. The online software was used in local languages (Dutch, English, Italian, Polish, Portugees and Slovenian) in the cities and regions. Based on the tests and specific situation in the cities, the guidelines and supporting documents were optimized for each city and the online tools were updated.

Guidelines and supporting documents:

The concept and guidelines for the Schools Competition have been developed by REC for the partners (see Annex A). The concept and the implementation plan have been fine-tuned several times based on discussions with the partner cities and regions. The main points of discussion, besides the details of the software, were the age range of children, the techniques to be used to involve schools and the timing of the activity. To provide help for the project partners, REC developed a summary description of the tasks of the local activity for schools..

In addition, experts from REC and UWE developed an after-competition evaluation survey template (see Annex B) and the relevant ethics consent documents (see Annex C).

Software development

One of the core elements of the Task 4.4.2 was the development of the software that would support the schools competition. The project team of the REC carried out a tendering procedure to subcontract an external company to develop a web-based interactive software for schools. Based on the tendering the REC team selected the company Progressive Studio Ltd. The software was launched in April 2018, as planned, to support the school competition,

which rolled out across the cities/regions to align with school term times and curricular activities.

Another educational approach (without using the tool) was used in Bristol and Amsterdam in order to implement the schools activity. The partners in Bristol and Amsterdam presented ClairCity and run a capacity building program on air quality, carbon footprint and public health instead by personal meetings and lectures. This lead to similar outcomes of awareness raising, knowledge creation among pupils.

1. Reports by the cities/regions

School competition and other educational approach were used in the selected schools in the ClairCity project.

The other educational approach was used in Bristol and Amsterdam in the reporting period to engage interested school children to act towards good environment, low carbon emission, healthy city, health promoting school and healthy home environment. The partners in Bristol and Amsterdam delivered information about the ClairCity project for teachers and run capacity program on air quality, carbon footprint and public health by personal meetings and lectures. This approach fits to the time of teachers for introducing new topics and methods in the school.

1.1 Amsterdam: summary of the report

1.1.1 Preparation of the task

The local project team spent a lot of time on the preparation of the school activity. They contated several school and teachers in 2018/2019 to engage them for the activity. The local project team at Trinomics found that they could only get school's participating by using the personal networks of the local project team.The curricula of the schools are already fully planned (including often themes like climate and pollution) and only based on personal contacts the project team could get the ClairCity activity accepted.

1.1.2 Number of selected schools, age of children, number of school teams

In 2019 for the ClairCity school activity in Amsterdam, in the Netherlands the project team went to two secondary schools in Leiden, a small city near Amsterdam. Like Amsterdam, Leiden is part of the Randstad Urban area. Two staff members of the Trinomics implemented the school activity at two schools in Leiden, namely the Visser 't Hooft Lyceum and the Stedelijk Gymnasium. The school activity was done in four 4th grade pre-university classes with a total of 92 students. Additionally, a school activity was organised in Almere, which is also in the Amsterdam Metropolitan area. This school activity was not included in the analysis, as it fell outside the evaluation period. In order to make it attractive to the schools to participate in the school activity, the local project team (Trinomics) tailored the setup of the activity to the interests of the participating teachers and tried to connect it to topical themes in the curriculum.

1.1.3 Cooperation with teachers, matching the topic to the school curriculum

With the design of the activity, the local project team aimed to actively engage with the students and combine awareness raising with a discussion/survey element, to understand more on how Dutch 4th and 5th grade secondary school students think about air quality and climate change. On both schools, the combined an online Kahoot quiz (Figure 1) with a plenary discussion. The quiz format also allowed the local project team to ask the students for their opinions on air quality and climate change and their own attitudes and behavior relating to these topics. In-between the quiz questions local project team discussed with the students why they chose for

a certain answer and explained what the right answer was (in case of factual questions). The topic of the plenary discussion as well as the quiz were tailored to the ongoing activities at that school or for the subject where the local project team was hosted.

Figure 1 – Screenshot of one of the questions of the online Kahoot quiz

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At the Visser 't Hooft Lyceum local project team did the activity in two classes where they were working on research setups/experimental design. In these classes, local project team discussed the design of the local air quality measurement system and took a deep-dive into some of the associated datasets and asked students to explain the differences between different measurement locations and conditions.

At the Stedelijk Gymnasium, local project team was joining a Climate day, organized by several 6th grade pre-university students. Therefore, local project team focused the activity on this school more on climate-related issues. This meant that the quiz questions were focused a bit more on climate and in the discussions, local project team focused on what should be done to fight climate change, addressing what policymakers should do, what businesses should do and what the students need to change in their own behaviour.

At the school 'het Baken' in Almere local project team focud on the relation NO_2 pollution with climate and air quality as this is currently a hot topic in the newspaper and the teacher wanted to stay close to day to day reality.

1.1.4   The result of the school activity

Conclusions on the setup of the school activity and engagement of secondary school students: Students were not too motivated to give their opinion on air quality and climate change issues. During the activity, in the plenary discussions, it was challenging to engage the students and only a few were willing to express or explain their thoughts. There can be several reasons for this. Firstly, it can be that the students are not (yet) very interested in these topics at this age (mostly 15-16). It can also be that people do not have a well-developed opinion on this topic yet or that they are hesitant to share their views in the group, because they might be afraid that other people disagree.

The effectiveness of the Kahoot quiz as an education tool:

The use of the online Kahoot quiz as an educational tool has several advantages. It is easy to set up and the students are actively participating. Furthermore, it is very effective in surveying a large group of people in a harmonized and rapid manner. Because of the Kahoot quiz local project team was able to ask the students about their willingness to change their behaviour. Otherwise, the teacher would have needed to make an estimate of their student's opinons, while getting the student's opinions directly is more reliable.
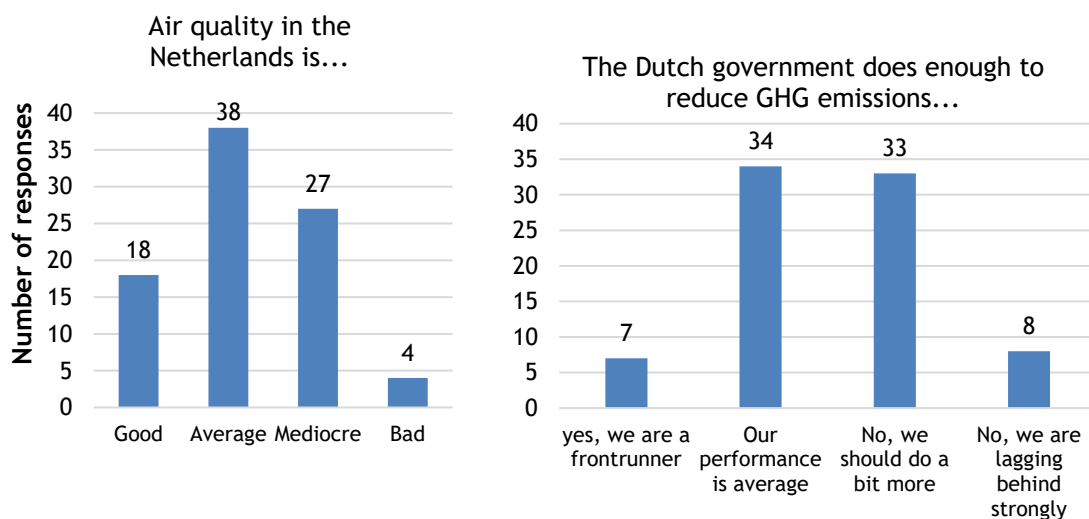
There were also some down sides to using the kahoot quiz in the classroom. Firstly, it creates a lot of fuzz in the room, which makes it difficult to discuss the answers in a quiet manner in-between the questions. Secondly, although the use of scoring helps to engage the students in the quiz, it also distracts them from the content. The students are focused on giving the answer as quickly as possible, because this gives them a higher score, which prevents them from thinking a bit longer about the question. Therefore, it might be an option for the future to do the quiz without scores or at least without scores for answering fast.

Findings and conclusions from the quiz answers and discussions:

Climate change seems to be perceived as a bigger problem than air quality. When the students were asked about the status quo of the air quality in the Netherlands, 21% of the students rated the air quality as good, 44% as average, 31% as mediocre and only 5% as bad (Figure 2, left panel. When the students were asked why they answered like this, several students who rated Dutch air quality as good or average, mentioned that Dutch air quality is much better than in some other countries in the world (China was given several times as an example). Others who answered that the air quality was mediocre or bad, nuanced this by saying that there are still unhealthy levels of air pollution in the Netherlands.
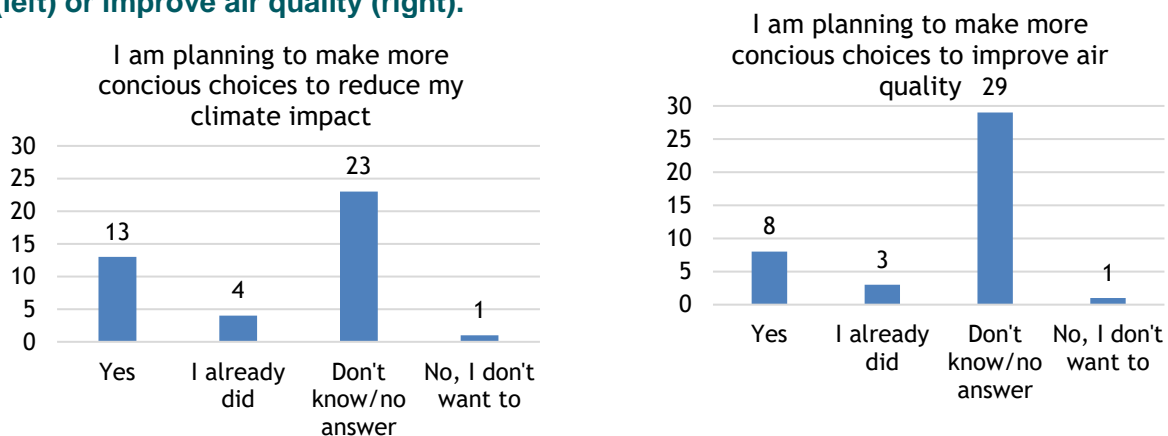
When the students were asked how the Netherlands is performing in the fight against climate change, the students were much more negative. Here only 9% perceived the Netherlands as a frontrunner in combatting climate change, 41% thinks the Dutch performance is average compared to the rest of the world, 40% thinks the Netherlands should do somewhat more and 10% thinks the Netherlands lags far behind (Figure 2, right panel).

Figure 2 - Student perceptions on Dutch performance on air quality (left) and climate change policy (right).

When the students are asked about their willingness to change their behaviour to improve air quality or reduce their greenhouse gas impact, there are also notable differences. Separate questions on air quality and climate change in this context were only asked at the Visser 't Hooft Lyceum (N=41 students). Where 32% of the students were saying they were willing to do something about their GHG impact, only 20% indicated that they were intending to change their behaviour to improve air quality (Figure 3). The difference can largely be explained by a larger group of people that did not know yet if they were willing to change their behaviour or did not answer the question. This could indicate either that people find it more important to reduce their climate impact than their impact on air quality. Alternatively, it can mean that people have thought more already about their behaviour in relation to climate change compared to the impact of their behaviour on air quality.

Figure 3 - Student willingness to change behavior to reduce their carbon footprint (left) or improve air quality (right).

1.1.4.1 Difference between stated importance of air quality & climate issues and actual behaviour change

Another interesting finding was that even though many students indicated that more should be done about climate change and the improvement of air quality, most people thought the changes should come from policy and business changing their behaviour, rather than from personal changes in behaviour or lifestyle. The students seem to have better knowledge on climate change issues than on air quality.

When the students were asked whether they are willing to change their behaviour in order to reduce GHG emissions or air pollution a small minority indicates that they are willing or intending to do so. However, when asked how they think they could change their behaviour (eating less meat, showering shorter), only a few students had concrete ideas on what they should change in their behaviour. When looking at the scores of the students in the Kahoot quiz it is apparent that they score better on questions relating to climate change than on questions relating to air quality. The students do know that the current air quality norms are not sufficient to protect citizens from all air pollution related health problems, but at the same a vast majority of students underestimates the contribution of air pollution to the total burden of disease in the Netherlands. As can be expected, students scored better on questions relating to their daily lives, e.g. on which activities of consumers contribute most to climate change, than on more technical or policy related questions.

The local project team received feedback from the teacher at Stedelijk Gymnasium Leiden. She indicated that the activity was enjoyable and they were neutral about the effectiveness of the activity in terms of enhancing the knowledge and awareness of the students on air quality and climate change issues. The kahoot quiz was perceived to be too long and the teacher also indicated that in some groups, such quizzes can induce much more noise and unrest in the classroom.

1.1.5 Evaluation

The local project team decided not to use the official school competition game for several reasons. Firstly, some of the questions in the questionnaire did not seem to be very relevant in the Dutch context. Secondly, some of the questions are rather technical (e.g. on the energy use in the children's houses and school) are therefore difficult to answer on an ad-hoc basis without any preparation. With the other approach the local project team of Trinomics could quickly setup the lesson and involve the students in a discussion on air quality and climate change issues in an engaging manner.

1.1.6 Conclusion

The students seem to have better knowledge on climate change issues than on air quality. The overall interest in climate and air quality in the classes that local project team visited seems not very high: There is a shared general concern about in particular climate. However, the underlying knowledge level is not very high (but perhaps in line with what could be expected from students in this grade) and willingness to change personal behaviour is very low – students also do not see many possibilities for changing their own behaviours. Neither do they have very specific ideas about what should be done for change or what a 'better' future would look like.

1.2 Aveiro region: summary of the report

1.2.1 Preparation of the task

In the Aveiro Region there was regular interaction between the UAVR team and the local schools. There were several meetings with the representatives of the municipalities, where the UAVR asked for their engagement in the activities. This is also an important evidence of the close collaboration between the UAVR and CIRA teams, which strongly facilitate the contact with the municipalities.
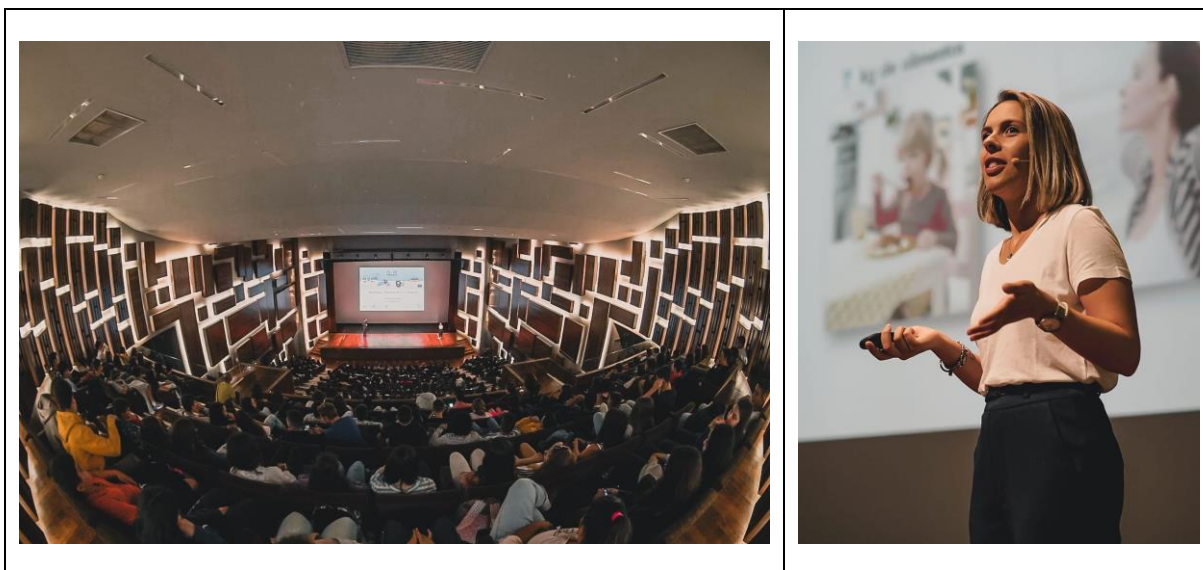
The materials (schools competition kit) were shared with the municipalities and schools, namely the. The cooperation with schools started on September of 2018, and the topics covered focused mainly on presenting a background about air pollution, carbon footprint, health and then followed by a presentation of ClairCity project and an introduction to the school competition. The following list shows all interactions made with schools of the Aveiro region between 2018 and 2020:

- Colégio Nossa Senhora da Assunção, Anadia – The local UAVR team of the ClairCity project has visited the school on the 15th March 2019 and delivered the workshop for students aged from 13 to 15 years old. Number of students involved: 54

- Escola Secundária da Gafanha da Nazaré, Ílhavo – The local UAVR team has visited the school on the 04th April 2019, on the 30th May 2019, and on the 13th Dez, and delivered the workshop for students aged from 13 to 15 years old. Number of students involved: 180
- Escola Secundária de Estarreja, Estarreja – The local UAVR team has visited the school on the 2nd and 3rd of May 2019, and delivered the workshop for students aged from 13 to 15 years old. In this case, the activity was included in the ECO-schools program and organized by the group of teacher responsible by the environment area. The first presentation was about greenjobs, and the second day was dedicated to the presentation of ClairCity. Number of students involved: 160.
- Colégio do Calvão, Ílhavo – The local UAVR team has visited the school on the 10th May 2019, and deliverd the workshop for students aged from 13 to 15 years old. Number of students involved: 60
- Escola Básica e Secundária Soares Basto, Oliveira de Azeméis – The local UAVR team has visited the school on the 15th May 2019, and delivered the workshop for students aged from 11 to 15 years old. Number of students involved: 60
- Escola Básica 2, 3 do Loureiro, Oliveira de Azeméis – The local UAVR team has visited the school on the 16th May 2019, and delivered the workshop for students aged from 10 to 18 years old. Number of students involved: 60
- There were 2 Mix&Move innitiatives, the 1st one on 8 September 2018, and the 2nd one in on 19 September 2019, organized by Oliveira do Bairro Municipality, during the mobility week. The local UAVR team did a presentation on "Mobility, air quality and citizenship" for an auditorium of 400 students, aged between 12 and 15 years old, from 3 different schools. Number of students involved: 800
- Escola Básica Padre Donaciano de Abreu Freire – The local UAVR team has visited the school on the 29th May 2019, and delivered the workshop for students aged from 6 to 10 years old. Number of students involved: 30
- Escola Básica 2, 3 João Afonso, Aveiro – The local UAVR team has visited the school on the 27th Nov 2019 and on the 11th Dec, and delivered the workshop for students aged from 6 to 10 years old. Number of students involved: 40
- Escola EB 2,3 da Gafanha da Encarnação, Ílhavo – The local UAVR team has visited the school on the 27th February 2020, and delivered five workshops for students aged from 9 to 14 years old. Number of students involved: 100

A total of 1544 students were involved in these activities.

Figure 4 - ClairCity presentation at Mix&Move 2019

1.2.2 Number of selected schools, age of children, number of school teams

The process of gathering teams for the school competition consisted on some direct contacts by email to schools after the presentations previously mentioned, and as a result of a reunion with the representative of each municipality that challenged the schools to participate. In total, 24 teams registered for the competition from six different municipalities.

After the registration on the school competition, on the 23rd October we arranged a meeting for all teachers involved in order to explain all the steps of the competition and to provide further clarifications.

A close contact by email was kept in order to guide all the teachers through all the steps of the school competition. The competition ended on the 13th of December, with 19 teams concluding successfully all the steps, built on the Guideline and the materials for the school competition developed by the REC.

The following schools were engaged:
- Colégio Nossa Senhora da Assunção, Anadia
- Escola Secundária da Gafanha da Nazaré, Ílhavo
- Escola Secundária de Estarreja, Estarreja
- Colégio do Calvão, Ílhavo
- Escola Básica e Secundária Soares Basto, Oliveira de Azeméis
- Escola Básica 2, 3 do Loureiro, Oliveira de Azeméis
- Escola Básica Padre Donaciano de Abreu Freire
- Escola Básica 2, 3 João Afonso, Aveiro
- Escola EB 2,3 da Gafanha da Encarnação, Ílhavo

1.2.3 Cooperation with teachers, matching the topic to the school curriculum

The UAVR team did a spectacular job in engaging hundreds of children between the ages of 6 and 18. Between September 2018 and December 2019 UAVR ClairCity colleagues gave workshops in several schools and events (Mix&Move) across the Aveiro Region. The goal of this activity was to engage school children to act towards good environment, low carbon emission, healthy city, health promoting school and healthy home environment.

Besides workshops at those schools, the Aveiro team gave a presentation on "Mobility, air quality and citizenship" for an auditorium of 400 students from 3 different schools at the 'Mix and Move' event during the EU Mobility Week.

The engagement process involves also the presentation of ClairCity project and in particular the Schools Competition in PACOPAR (Painel Consultivo Comunitário do Programa Atuação Responsável® de Estarreja) meetings, in which the Schools of Estarreja municipality participate.

1.2.4 The result of the competition and conclusion

The competition ended on the 13th of December, which 19 teams concluded successfully all the steps. Resulting in 105 students participating between the ages of 12 and 15 years old, 10 responsible teachers, from 6 municipalities and 6 different schools.

Bellow, the final classification table is presented:

Municipality	School	Team name	Final result
Estarreja	Agrupamento de Escolas de Estarreja	Garnisés 8-II	62
Estarreja	Agrupamento de Escolas de Estarreja	ClairCity6	60
Estarreja	Agrupamento de Escolas de Estarreja	GEOCITY2020	43
Estarreja	Agrupamento de Escolas de Estarreja	ClairCity3	39
Sever do Vouga	Escola Básica e Secundária de Sever do Vouga	A tribo	38
Estarreja	Agrupamento de Escolas de Estarreja	Business Class	37
Anadia	Escola Básica de Vilarinho do Bairro	Vila Eco	33
Sever do Vouga	Escola Básica e Secundária de Sever do Vouga	Explorers	32
Aveiro	Escola Básica Joao Afonso	Os Heróis do Ambiente	29

Oliveira de Azeméis	Agrupamento de Escolas do Loureiro	Trash Busters	27
Estarreja	Agrupamento de Escolas de Estarreja	I don't know	26
Sever do Vouga	Escola Básica e Secundária de Sever do Vouga	Zoo em casa	25
Estarreja	Agrupamento de Escolas de Estarreja	Os 27	17
Estarreja	Agrupamento de Escolas de Estarreja	10 ECOS	14
Estarreja	Agrupamento de Escolas de Estarreja	ECO D	12
Estarreja	Agrupamento de Escolas de Estarreja	ClairCity4	12
Estarreja	Agrupamento de Escolas de Estarreja	Os Bigodes	10
Estarreja	Agrupamento de Escolas de Estarreja	Garnisés 8-I	4
Ílhavo	Escola Secundária da Gafanha da Nazaré	smart.air	3

The reached scores are between 3-62. The first and second teams reached 60-62 scores what are quite hight. It shows that the winner teams undestand the complexity of air quality-climate change-public health.

Conclusion: Some example about the selected measures:

All school teams supported the measures like: *i) to motivate people to commute in shared vehicles, ii) the adoption of smart solution (apps and softwares) for mobility planning, iii) the construction of new highly energy efficient buildings, and iv) extended communication and campaigning activities.*

Except one team, all teams supported: i) *the improvement of public transport, ii) the introduction of a compulsory rate of renewables for new and refurbished buildings and insulation for old buildings, iii) increasing green spaces by imposing a minimum m² per capita that should be provided in cities, iv) application of urban planning tools for better air quality and less emissions.*

The school teams were not really in favor in restrictive measures like: *i) introducing a congestion charge in city centre, ii) increase the price of fossil fuels (gasoline, diesel) and/or iii) increase road tolls to encourage people to drive less, iv) the lowering of the speed limit in all residential areas to 30 km/h, and v) potential reductions of road capacity.*

A participation diploma has been given to all participants, namely students and teachers.

1.3 Bristol: summary of the report

1.3.1 Preparation of the task

The local project team spent a lot of time on the preparation of the school activity. They contacted several school and teachers in 2018 to engage them for the educational activity.

After many emails and calls to the schools the Bristol team decided to lead the activity with ClairCity staff so there was minimal teacher preparation except organising the school visits, which encouraged schools to participate in the activity.
The activities were used that were based on the Delphi Round 3 Workshop. These had proved successful in engaging a wide variety of communities with the issue of air pollution. The workshop approached the topic in a way that fit with the Geography curriculum, focused on human changes to the environment and the impact of urban environments on health.

1.3.2 Number of selected schools, age of children

Three secondary school groups in the Bristol region have been involved in the school activity.

St Mary Redcliffe contacted the project by email via the website, as they had heard about ClairCity and were interested in running an activity for their science and eco clubs around air quality.

Chipping Sodbury School and the Bristol Home-schooled Children Group were offered the air quality session as part of activities they selected to undertake while at events on UWE Bristol campus.

Ten other schools were offered the workshop via email and at teacher training events, but declined the offer.

The activity in the selected schools:

School 1: The St Mary Redcliffe and Temple School, 11th December 2018.

At the St Mary Redcliffe and Temple School 15 students were involved in the school's *science club and eco club participated* in a one-hour workshop led by Corra Boushel (UWE). The workshop started with introduction to UWE Bristol and air pollution in Bristol (air pollution sources, problems) in 15 minutes then followed by Group work of students. The next questions were discussed:

"Which is worse for your health?"

"What are the health impacts of air pollution?"

"Top 5 tips that my family or school could do to improve air quality in our area"

After the team work the students shared the best tips for improving air pollution in the Question&Answer Plenary on information learnt during session.

School 2: Bristol Home-schooled Children Group, 18th June 2019

At the Bristol Home-school 50 students, approximately 10 of secondary school age, were involved in a 45-minute practical workshop as part of a Great Science Share event at UWE Bristol, led by Corra Boushel.

The workshop started with introduction to UWE Bristol and air pollution in Bristol (air pollution sources) in 10 minutes then followed by Group work of students. The next questions were discussed:

"Where is air pollution a problem in Bristol?" The students used large map of Bristol showing pollution in 2016 (map-reading skills).

"Has air pollution improved in 2018?" The question was discussed bu using experiment from the British Science Association Week pack (experiment p.19).

"Top 5 tips that my family or school could do to improve air quality in our area" - Group discussions by students.

After the team work the students shared the best tips for improving air pollution in the Question&Answer Plenary on information learnt during session.

School 3: Chipping Sodbury School, 26th June 2019,

From the Chipping Sodbury School 30 students were involved in a one-hour workshop as part of their FutureQuest tour of UWE campus, led by Corra Boushel (UWE). After a short Campus Tour and Quiz the discussion focused on the important question for the students: 'Why not go to University/HE and Why go to University/HE?'

The ClairCity workshop for the students from the Chipping Sodbury School started with introduction to UWE Bristol and air pollution in Bristol (air pollution sources, problems) in 15 minutes then followed by Group work of students. The next questions were discussed:

 "Which is worse for your health?"

"What are the health impacts of air pollution?"

"Top 5 tips that my family or school could do to improve air quality in our area"

After the team work the students shared the best tips for improving air pollution in the Question&Answer Plenary on information learnt during session.

Figure 5 - Great Science Share event

Figure 6 - Chipping Sodbury FutureQuest event

ClairCity
@ClairCity

We met some excellent Yr9s from @CSSSch today on their @Future_Quest_ tour of UWE. Learning about what "universities" do and why #airpollution beats traffic accidents in the most morbid game. Great questions and reflections from the pupils, thank you!

6:19 AM - 26 Jun 2019

2 Retweets   8 Likes

1.3.3   Cooperation with teachers, matching the topic to the school curriculum

The English education system puts strict requirements on taught content and enormous pressure on teacher time. As a consequence, it is difficult to engage secondary school teachers in activities unless the activity directly engages with curriculum content and does not require too much preparation on the part of teachers.

To adapt to these circumstances, instead of using teacher-led online materials, in Bristol the local project partner, UWE, have delivered a project workshops that fit within the curriculum, was led by one of the UWE staff and did not require IT facilities. Schools in the UK are keen

for students to meet "experts" and "scientists" where this can facilitate curriculum knowledge, so providing one of our staff to run the workshop was an additional bonus in this sense.

1.3.4 The result of the school activities

As each group undertook activities under different circumstances with adjustments for their needs and timings, we did not include a competition element in the Bristol delivery.

No further activity was planned with each school, although each have been given the project contact information to stay in touch if they would like further information or support.

1.3.5 Evaluation of the competition

The workshops for the students of the three schools had no formal evalution on the ClairCity workshop. The students enjoyed the workshop activities and were open for dicussion of the 5 tips that famies or schools could do to improve air quality in our area.

The visit and the workshop at UWE was more interesting for those student who plan to learn more about health and environment after the secondary study.

1.3.6 Conclusion

It is much easier to engage primary schools in the UK with activities that cover engaging, cross-curriculum materials as they have more flexibility in their timetable and liaison can happen with the class teacher.

Online materials work if they are directly linked to curriculum content and can demonstrate that they meet student learning objectives, otherwise schools in England are not keen to engage.

In Bristol after the report of the workshops above there were several dissemination activities. Due to additional public events and lessons around 1000 children were engaged in air quality, climate change and public health issues.

1.4 Liguria region: summary of the report

1.4.1 Preparation of the task

The Liguria Team began to work on the contacting schools in May 2017, preparing the list of schools to contact and arranging the documents needed. In July 2017 the Education Offices of Genoa had been informed that shortly the schools of Genoa would have been contacted in ordert to present the ClairCity project and the school competition to which they would have been invited to participate. In August 2017, 35 schools of Genoa were selected and contacted. In July 2018 emails were sent to all the selected schools to remind them on the project. In September that is the beginning of the academic year, the above schools were again contacted to promote their participation in the competition, especially after the tragic event of the collapse of Genoa "Morandi"s bridge that has even more brought to the attention of the citiziens the important issue of air quality.

In total 4 schools decided to adhere to the project. All documentation was provided to the teachers (information sheet, application form with the consent, teacher's briefing,

characteristics of pollutants and of the greenhouse gases, online post-participation survey, slides of presentation of the online tool used for the competition). It took long time to arrive to the completion of the use of the tool because this was one of many activities in the Italian schools.

1.4.2 Number of selected schools, age of children, number of school teams

23 teams composed by students between 13 and 16 years old made the school competition in Genova. All the competitions were carried out between the end of February, early March 2019. The Genoa schools which participated at the school competition are the following High Schools: Primo Levi (Ronco Scrivia), Lafranconi, Marsano (Molassana), Colombo.

All the teams done the competition in Italian language, except those of the High School Primo Levi which done it in English. Thanks to the presence of two teachers, one of Science and one of English.

Before to carry out the competition, the teachers prepared the students with lessons about air pollution and climate change.

1.4.3 Cooperation with teachers, matching the topic to the school curriculum

The teachers showed good interest, since that this initiative represents a very good opportunity to talk with the students about these themes and to directly involve them into the process of analyses of their behaviours which can affect the production of air pollutans and greenhouse and conseguently their emission.

1.4.4 The result of the competition

Results of the competition: Students filled in the online questionnaire and indicated the measures, but in several cases didn't provide any justifications for selection made or for the choosed measures or sometimes provided a very general explanations. That means that it would be necessary a major learning about these themes, but also that activity such as this can help the learning on these themes.

The scores reached by the teams are not much high, only 2 teams reached scores higher than 40 out of a total of 70 points. That means that some measures have been perceived as too much difficult to be implemented. Furthermore, the feedback including were in many cases absent, or not detailed, also if we know that the issues were discussed among the students.

1.4.5 Evaluation of the competition

Some example about the selected measures:

All school teams supported the increase of green spaces by imposing a minimum m² per capita that should be provided in cities. Except one team, all teams supported the accelerated uptake of vehicles running on alternative fuels, and expansion and modernisation of district heating networks. The school teams were not really in favor of the increase of the price of fossil fuels (gasoline, diesel) and/or increase road tolls to encourage people to drive less, the reduction of the road capacity and the reduction of the speed limit in all residential areas to 30 km/h.

After the school competition, the teachers filled the online survey and their opinions were positive. In conclusion they said: the problems related to the air pollution and climate change increase every day; the potential of the tool used for competition is very high and It could be used in all schools in Italy and become part of the lessons of scientific matter, but also of humanistic and social matter.

Liguria team decided to give an award to the win team of the school competition This award ceremony was at the City Day in Autumn 2019 in Genova.

The Liguria team of the project wish to run country-wise the school competition after the project closed.

1.4.6 Conclusion

In conclusion:as we know, the problems related to the air pollution and climate change increase every day; the potential of the tool used for competition is very high. It could be used in all schools and become part of the lessons of scientific matter, but also of humanistic and social matter.

1.5 Ljubljana: summary of the report

1.5.1 Preparation of the task

The first steps were the preparation: translation of the materials for schools that the Ljubljana project team got from the REC. These were the information sheet for schools, the competition guideline, application form for school teams and teacher briefing. Then, the whole content of the competition online tool was translated into Slovenian and sent back to the REC. A local ClairCity team tested the Slovenian version of the online tool in the last quarter of 2019.

1.5.2 Number of selected schools, age of children, number of school teams

In the second part of February 2020, after school semestrial exams, the local project team were in contact with schools, the only two, that showed some interest - one high school and one primary school. The plan was to run the competition in Ljubljana in March.

1.5.3 Cooperation with teachers, matching the topic to the school curriculum

The teacher in Slovenia are open to environmental issues, climate change and air quality in general. They have very compact curriculum. For new activities they need to do planning in the previous year.

1.5.4 The result of the competition

The testing of the use of the online software for the school competition was successful. The report about the result of the competition has not finished in the reporting period in Ljubljana.

1.5.5 Evaluation of the competition

The evaluation will be after the school competition.

1.5.6 Conclusion

The Ljubljana project team tested and launched the Slovenian version of the school software and contacted four schools (age 11-13 years old). However, finalisation of this activity was delayed due to the 2020 Corona crisis. Therefore information on the activity could not be included in this report.

Update in April 2021

COVID-19 led to the modification of the task.

In Slovenia, and also in Ljubljana all school programmes became virtual already in March 2020 until almost the end of school year in June 2020, and again in October 2020 until middle of February 2021. According to the schools, the burden of everyday virtual education programme was so high for pupils, that schools did not see it suitable to engage the pupils with an additional online activity. The team of Ljubljana modified the approach and instead of engaging pupils in primary schools, they targeted students at the university level. The idea was also supported by the Sub-Task 4.4.2 Competition for Schools: My City, My School, My Home leaders.

The activity was integrated in the Environmental Management subject at a Master Degree of the Faculty of Administration of Ljubljana and took place in January 2021. . Students aged 23-26 were involved in the activity. Students were asked to answer the questionnaire prepared for the schools activity. The topic of the competition supported very well the purpose of some of the lectures of the professor Nataša Petrović (guest professor) which aimed for students to get acquainted with the problems of their environment where they live and to make suggestions for improving the air quality in the environment where they live.

In order to encourage students to participate, the professor suggested that she would evaluate the participants and thus the best idea or the best presentation on improving the air quality in the environment would earn an additional 20 points in the final evaluation of the subject. However, in order not to leave the other students empty-handed, she gave between 10 and 19 points for each subsequent presentation, depending on the ideas that the students presented. Summary of the task

Due to COVID-19, the competition was held online at the Faculty of Administration among students, who will in the future teach school children and younger generation and will use the information obtained through the competition in their profession.

On January 21, 2021, we sent the students an application for the competition via e-mail with the assignment to the online link to the software. The registration was on the same day and they were limited in time from 3 pm to around 8 pm as the lectures on the subject of Environmental Protection took place. All students were included in the competition and the winner eventually received 20 points in the subject's final score.

At the beginning of the lecture with the subject Environmental Management, we presented the ClairCity project, discussed the overall concept of the competition My City, My School, My Home and held a competition among students. There were 15 participants in the group, where each individual answered a questionnaire. Together with the professor, we presented the task, the way of performing it and the importance of cooperation in the task.

The main prize was in agreement with the professor additional points in the final grade of the subject. The winner wins 20 extra points, and each place lower receives one point less. At the end, all participants received additional points, which will help them to successfully pass the exam in the subject of Environmental Protection.

Evaluation of the activity during the pandemic period:

The professor was enthusiastic about the idea of the competition itself and the way it was implemented. The topic of the competition was very suitable both personally and for the students. The students showed high interest in the topic of how to improve the situation in the city from an excessive concentration of carbon dioxide. As a result of participating in ClairCity activities, students plan measures to reduce air pollution and / or reduce carbon emissions. They plan to walk or cycle more often, choose a more environmentally friendly car, advocate for change among others (network structures), and travel more often by public transportation. In the future, they will make an effort and raise the awareness of the elderly to change the heating in the house from coal and wood to more sustainable options .

to the COVID measures, the lectures were held through the ZOOM conference, as a result the students were not able to get information about the school's electricity consumption, how the school is heated, and how much energy the school uses for heating. Therefore, this data may not be exactly relevant or correct. Also, a group work was not possible and each participant had to answer the survey questionnaire him/herself. Perhaps it would have been easier for a group to get the data they needed to solve the questionnaire more successfully.

<u>Some example about the selected measures by the students:</u>

Most of the teams supported (more than 80%) more than two thirds of the suggested 30 measures. These mostly referred to modernization in energy systems, to energy efficiency, to modernizing fleets, and to soft measures.

Out of the 7 teams more than 60% disagreed with 2 measures only:

- Increase the price of fossil fuels (gasoline, diesel) and/or increase road tolls to encourage people to drive less. (71%)

- Reduce road capacity. (71%)

Between 40-60% of the teams rejected the measures on making car driving more inconvenient (57%), on reduction of car size (and the corresponding fuel consumption) by law (43%), on requiring schools to calculate the CO_2 emissions of the journey to school of teachers and pupils (43%) and on making green infrastructure such as green walls and roofs compulsory in new buildings (43%).

While the results under point 1-3 above are mostly in line with the results from the other three countries (with a different age group), two differences can be spotted:

- Only 29% was against reducing the speed limit in all residential areas to 30 km/h. In the other three countries this had an average 76% rejection rate.

- And while in the other three countries an average of 69% rejected the introduction of a congestion charging scheme in the city center, here all the teams selected this measure.

Final conclusion:

We can conclude that the tool for conducting the competition was very well prepared. Students have made quite important decisions about changing pollution situation. When the measures due to COVD-19 cease or subside, they will try as a group to organize cleaning campaigns around the faculty and beyond, and each individual will raise awareness of pollution through lectures to younger generations at work among colleagues and friends.

1.6 Sosnowiec: summary of the report

1.6.1 Preparation of the task

The first point of preparation was translation of information materials for schools, that the Sosnowiec project team got from REC i.e. information sheet, competition guideline, application form and teacher briefing into Polish. Then, the whole content of the competition online tool was translated into Polish and sent back to REC. Finally, we bought sports accessories intended as prizes for winner and runner-up teams. The competition was announced at the moment when we received information from REC about the launch of the online tool with all the translation amendments i.e. on 29th October 2018.

1.6.2 Number of selected schools, age of children, number of school teams

13 teams from 11 schools reported their participation - there were two schools in which two teams were created. Members of school teams were aged between 13 and 16 and were students of both primary and secondary schools.

On 29th October 2018 the information about the competition along with the entire information package was sent to all schools in Sosnowiec with students aged 13-16, i.e. 22 schools, via e-mail through Education Department (WED) of the City Hall in Sosnowiec. School teams could report their participation until 14th November 2018. The period of competition activities for children was until 28th February 2019. The event summarizing this activity, during which the winner team was announced and prizes were awarded was Gala of Good Initiatives, that took place on 21th March 2019.

1.6.3 Cooperation with teachers, matching the topic to the school curriculum

Announcement of the competition along with the information package (information sheet, application form, teacher briefing, competition guideline) was sent to 22 schools in Sosnowiec (all schools with students aged 13-16) via e-mail through Education Department (WED) of the City Hall in Sosnowiec. WED also provided this information to the principals of these schools during the monthly organizational meeting, during which all important current organizational matters are discussed. Sosnowiec project team also checked if the information reached all schools (review by phone). Teachers supervising competition teams submitted signed application forms in paper version in the Sosnowiec City office, as well as via e-mail in the form of scan. When all schools confirmed their participation, the list of questions from the first part

of online activity was sent to each team, so that they could agree on the answers, since the questionnaire had to be completed in full for the first time, otherwise the answers would be lost.

The City team of the project contacted the schools also after the end of the competition activities in order to invite teams to Gala of Good Initiatives, during which the winners were to be announced.

1.6.4 The result of the competition

10 teams completed the competition activities. 3 teams, including two from the same school, despite applying for the competition, did not enter the competition tasks.

After the teams finished working with the online tool, we received the percentage results from REC and based on them a jury composed of the ClairCity Sosnowiec team and a representative of WED calculated the points of each team and selected winners.

The winner team gained 45 points and the team that occupied 2nd place – 24 points. The third team in terms of points scored 17 punktów. The lowest number of points was 3.

The main prize for the winner team were sports backpacks, specially adapted to the needs of people running or cycling. We prepared also a prize for the team that would occupy 2nd place – it was a training sack and a water bottle for each team member. In addition, the winners and the runners-up received certificates of occupying the 1st or 2nd place as well as urban gadgets and ClairCity postards.

1.6.5 Evaluation of the competition

Some example about the selected measures:

All school teams supported the replacement of old vehicles with modern ones, the uptake of smart solution (apps and softwares) for mobility planning, construction of highly energy efficient new buildings, insulation of old buildings and expanding the district heating networks. Except one team, all teams supported the improvement of public transport, the measure on increasing green spaces by imposing a minimum m² per capita that should be provided in cities, application of urban planning tools for better air quality and less emissions, and extended communication and campaigning activities. The school teams were not really in favor in restrictive measures. like introducing a congestion charge in city centre, increase the price of fossil fuels (gasoline, diesel) and/or increase road tolls to encourage people to drive less, and the lowering of the speed limit in all residential areas to 30 km/h.

The evaluation form was completed by 5 teachers, whose teaching specialisation was Biology, Geography, Chemistry, Science, Introduction to Entrepreneurship and early education. 4 out of 5 teachers were female and all of them them were aged 25-49.

When it comes to the question 'How did you enjoy working with the ClairCity project?' each answer was different: Really enjoyed it, Enjoyed it, It was OK, Didn't enjoy it, Didn't enjoy it at all. The person, who selected the last answer explained her selection with additional comment: ' Not enough possibilities to justify the group's decision, analyze the situation and explain why the decisions made are strategic for our region'. Activity design was rated as very good, good

(x3) and OK; general organisation – good (x2), OK, poor and very poor; and materials provided – good (x2) and OK (x3). In other comments to this part of evaluation, one of teachers wrote: 'No adjustment to the realities of specific regions of Poland. We have often felt with the group that the project is quickly transferred from the foreign version and lacks the reality of our country, our capabilities or principles'. Answering the question 'How useful were the activities in supporting your teaching about air pollution, carbon emissions and health?' one person selected the option 'very useful', three persons 'quite useful' and one person neither useful, nor useless'. Explaining further these choices, teachers wrote that the activities made students aware of how many aspects of life can be responsible for the world around us and that sometimes they value their own comfort more. They made pupils realize that changes should be made in the school regarding waste segregation and it inspired them to consider creating a new project group that would help mark other waste containers in school and create new posters over them - in line with the current waste sorting system. There was also remark that the specificity of the questions made it possible to spread knowledge in a rather unusual way without clichéd questions and tasks. Rating successfulness of the competition in achieving its goals, the respondents evaluated increasing their students' awareness and knowledge of air pollution, carbon emissions and health as very successful (x2), quite successful (x2) and not very successful; motivating their students to make changes to their daily lives to reduce air pollution and carbon emissions as very successful, quite successful (x2), OK and not very successful; and motivating their students to take an interest in their city's issues around air pollution and carbon emissions as very successful, quite successful (x3) and OK.

Four teachers were planning on doing something to reduce air pollution and/or reduce carbon emissions, as a result of participating in this ClairCity activity. They planned to walk or cycle more often, to choose a greener car, to campaign for change, as well as to travel more often by public transport, by bike, or on foot, to accelerate the change of heating in the house from coal and wood to heat pumps, to make the next years of youth aware and to propagate the thesis that it is in our hands to make changes. The person who were not planning on doing anything gave reason that it's up to local and national government to take action. Regarding the question if the students were planning on doing anything to help reduce air pollutions and/or reduce carbon emissions, as a result of participating in this ClairCity activity, 3 teachers did not know it and 2 of them answered 'no'.
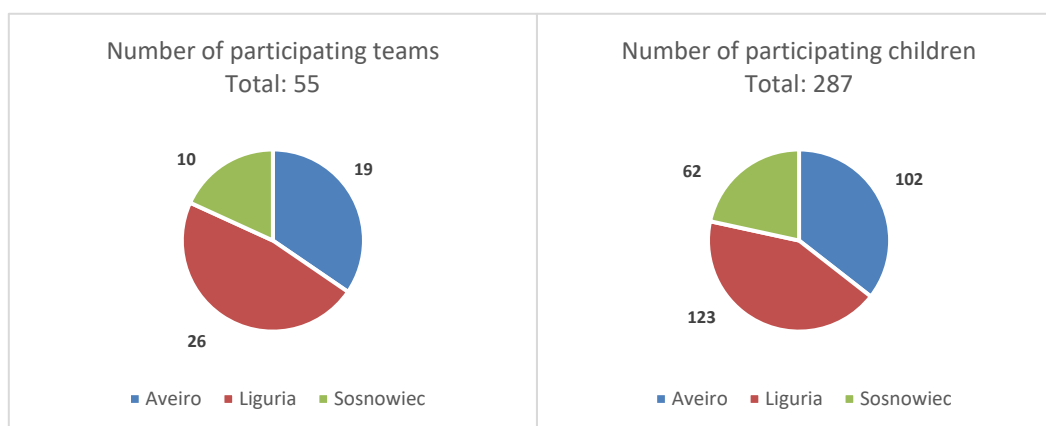
1.6.6 Conclusion

Due to the fact that there were very few inquiries from teachers and only one technical problem with access to the tool, one can conclude that the information package and tools for conducting the competition were very well prepared. The number of registered teams indicates that information about the competition has reached all potential interested parties.

Evaluating the results, 3 teams with the biggest number of points were students from the secondary schools. This shows that older children have greater knowledge about air pollution and ways to stop it. However the schools competition was a good opportunity for younger children to extend their knowledge on this topic and raise their awareness.

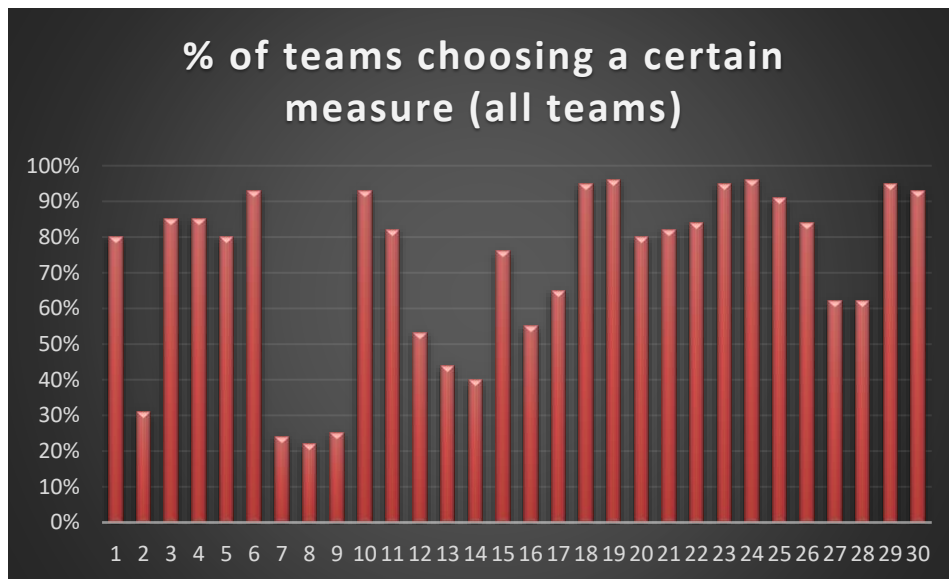# 2. Summary and overall conclusion of the school activity

In total 447 school children were engaged in the My School, My City, My Home school competition activity. 63 teams registered altogether. Out of that 55 teams involving 287 children played with the full software (Aveiro: 19 teams, 102 children, Liguria: 26 teams, 123 children, Sosnowiec: 10 teams, 62 children).

The online tool had two main parts, one is a questionnaire about the current situation in the city/region and the other one is on potential measures for the future.

The questionnaire worked well; it covered all relevant topics and helped to create a starting point from which children could think further using the measures. The measures were selected carefully in order to cover relevant aspects and give a wider view to children, showing soft measures, but also technical ones, including very strict measures as well (speed limits, bans, price increase, charges etc.). As climate, air quality and health aspects were taken into account parallelly, the measures had different effects on the different aspects, which was reflected in the scoring system working behind the software. Reviewing the results, we can state that this scoring worked well, but here some fine tuning could be useful if further use of the software is planned.

The software included 30 measures (see Annex E)

% of teams choosing a certain measure (all teams)

Highlights from the results:

1. Most (more than 80%) of the teams supported half of the suggested measures (15 measures). These mostly concerned modernization in energy systems, energy efficiency modernizing bus and car fleets and soft measures.

2. Out of the 63 teams more than 60% disagreed with 5 measures:

   o *Measure 8: Increase the price of fossil fuels (gasoline, diesel) and/or increase road tolls to encourage people to drive less.* (78%)
   o *Measure 7: Reduce the speed limit in all residential areas to 30 km/h.* (76%)
   o *Measure 9: Reduce road capacity.* (75%)
   o *Meausre 2: Introduce a congestion charging scheme in the city center.* (69%)
   o *Measure 14: Reduce car size (and the corresponding fuel consumption) by law.* (60%)

From this it can be seen that children were mostly not in favor of quite restrictive measures, which would be not very popular (it should be highlighted though that their attention was drawn to this aspect as well).

3. Some of the measures divided the teams (around 30-50% of disagreement), like *banning green waste burning, restrictions on the use of solid fuels for domestic heating and on tax benefits.*

4. Interestingly no big differences among the cities/regions can be identified based on the acceptance of the possible measures. Relevant differences can be seen only in the case of two measures:
   - Measure 3: *Support the accelerated uptake of vehicles running on alternative fuels -* Liguria (96% of teams), Aveiro (86%) and Sosnowiec (60%).
   - Measure 20: Impose a compulsory rate of renewable energy sources for domestic heating and electricity (e.g. solar panels, wind turbines and heat pumps) for new houses and for refurbishments. - Aveiro (95% of teams) Liguria and in Sosnowiec (73% and 70%, respectively).

From the technical point of view the software operated well. Problems occurred only related to the feedback module element added to the software.

For possible future use, the registration system is a question, whether to make it open or keep the registration element in the software.

Overall we conclude that the schools activity was successful in the cities and regions of the project.

Annex A: Guidelines for the cities/regions

Concept of the school competition

Competition for Schools connect the environment of the city, the school and the home.

The selected schools of the city/region can participate in the school competition. The school teams are asked to use a web based interactive game.

The school teams need to collect environmental and health data from the city, the school and the home. The collected data should be inserted to the web based interactive software which can show how the city looks like nowadays. Then the teams candecide on potential measures to change the future, based on which the software will show the possible future of the 'Clean air and healthy city' in 2030 and 2050.

The best/sustainable 'Clean air and healthy city' cityscape can be used to evaluate the results of the participating school teams.

How to select the schools for the competition?

The schools will be selected by The cities/regions in cooperation with the WP4 leader are asked to select the schools for the competition .

The students with the age of 13-16 can can form groups for participation in the competition. (Original proposal was age 14-16 but some cities expressed the need to move to 13-16 due to the school system in the country). It is expected that 10-15 school teams are selected for participation per city/region. One team should consist of around 5 pupils, with a maximum number of 10.

Promotion of the school competition can be done with the help of the cities/regions. One of the useful tool for promotion of the competition is the Poster about the ClairCity school competition. The posters can be put on the information table in the schools.

Each school with the team will apply for participation in the competition via a standard application form.

The application process, the content and format of the poster and the application form are developed by the WP4.4.2 leader (REC) in English and were translated into national languages by the city buddy/cities/regions.

Tasks for the school teams

The participating school teams collect data

- on their city energy use, transport and air quality

- on their school energy use, transport and air quality
- on their own housing, transport, food consumption and health

RECprovides the format for the data collection (Excel) that is incorporated into the software.

The interactive software processes the collected data by the school teams as entry data and calculate the overall air quality, health impact and carbon footprint.

The online tool offers potential measures for the participating groups towards the future smart consumption, good environment, reduced emission and healthy lifestyle. Teams can decide on selecting or dropping measures. Based on this future cityscapes are created.

The evaluation of the school competition is based on the followings:

- the data collected by the school team
- the selection of future measures
- the short explanation on decesions given by the Teams.

The awarding process can differ between cities. Where possible an attractive price is available to promote participation. Ideas for the prize: a visit to a National Park in the country or an interesting environmental organisation, sport season ticket to swimming pool or other sport center or other health related activity in the city/region. Also presentation of their ideas on a special occasion to the public or to city-officials can be part of the package.

Work plan for the WP4 coordinator and the cities/regions

- REC completed the concept and the design of the Competition for Schools: My City, My School, My Home. The concept includes the structure, the content elements, timeframe for the development and implementation of the competition, and the visual design. (July-Aug 2016, update Nov/Dec 2016, second update April 2017).
- REC has circulated for feedback the concept and the design of the School competition for the WP4 partners and cities. (Dec 2016/Jan 2017, circulation of the updated document April 2017).
- The detailed Competition design is translated to the national languages by the partners/cities (6 languages including English). (May 2017 - optional).
- The IT technical work of the web based competition (school game) is done by a subcontracted organisation. Company selected and contracted by REC by April 2017.
- Web surface development by April 2018.
- The city buddy and city/region are responsible for the implementation: selection of the school teams, running the Competition and deliver the feedback/outcome to the REC. (From May 2018).
- The city/region can design a prize for the winner school of the Competition with the city buddy. The winner ceremony is organised by the city/region, maybe linked to the City day (indication: early 2019).
- The overall results of the Competition is uploaded to the project website (by May 2019).

Annex B: School Competition Post-participation Survey

ClairCity needs to evaluate how effectively it has achieved its aims over the course of the project. In order to get information about the Schools Competition teacher participants and how they found taking part we need to collect demographic information, as well as asking them attitudinal questions.

Following participation in the competition, teachers will be sent an email asking them to complete a review survey.

Researcher: Margarida Sardo

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Thank you for taking part in the ClairCity Schools Competition. We would like to evaluate your experience of the project through a short online questionnaire. Participation is voluntary.

The questionnaire will take about 10 minutes to complete. Data will be stored securely in accordance with the terms and conditions of the 1995 EU Data Protection Directive. Your answers will be anonymised and then grouped thematically with other respondents so they are not identifiable to you. Overall outcomes from the evaluation will be published in an evaluation report to the European Commission and communicated more widely where possible.

It is up to you to decide whether or not to take part. If you do decide to take part, please proceed and complete the online questionnaire. This study was given ethics consent by the Research Ethics Committee of the University of the West of England, UK researchethics@uwe.ac.uk .

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1.   How did you enjoy working with the ClairCity project?

☐ Really enjoyed it

☐ Enjoyed it

☐ It was OK

☐ Didn't enjoy it

☐ Didn't enjoy it at all

Other comments:

2.   How would you rate the following aspects of the ClairCity Schools Competition?

	Very good	Good	Poor	Very Poor
Activity design				
General organisation				
The materials provided				

Other comments:

3.   How useful were the activities in supporting your teaching about air pollution, carbon emissions and health?

☐ Very useful

☐ Quite useful

☐ Not very useful

☐ Not at all useful

Please explain further:

4.   How successful do you feel the competition was in achieving the following aims?

	Very successful	Quite successful	Not very successful	Not at all successful
Increasing your students' awareness and knowledge of air pollution, carbon emissions and health?				
Motivating your students to make changes to their daily lives to reduce air pollution and carbon emissions?				
Motivating your students to take an interest in their city's issues around air pollution and carbon emissions?				

5.   Are <u>you</u> planning on doing anything to reduce air pollution and/or reduce carbon emissions, as a result of participating in this ClairCity activity?

☐ Yes

☐ No

If Yes please give details:

If No, why not?

☐ I haven't thought about it

☐ There is nothing I could personally change

☐ I feel it's too difficult to change

☐ It's up to local and national government to take action

☐ Other: _____

6.   Are your *students* planning on doing anything to help reduce air pollutions and/or reduce carbon emissions, as a result of participating in this ClairCity activity?

☐ Yes

☐ No

☐ Don't know

Please give details:

Demographics

We need to collect information on the teachers and school's demographics.

Are you:	Male	Female	Prefer not to say		
Age (years):	18-24	25-34	35-49	50-64	65+

Teaching specialism:

School location:

Thank you for your time.

Annex C: Ethics consent for participation

The teachers or head teachers will be approached forparticipation in the competition. The Participant Information Sheet (see below) can help to inform them. When they are enthusiast and want to particpate and when required (different per country) the teachers need to sign an Organisational Consent Form.

Special attention is given to offer participating schools not only extra workload but also a very interesting and high quality informative package of information on Climate Change, Air Quality and Health implications that can help them in their further work on this topic.

Teachers' Participant Information Sheet

Your school is being invited to take part in the ClairCity Schools Competition, a project and research study. ClairCity is an innovative project involving thousands of people in cities across Europe, enabling us all to decide the best local options for a future with clean air and lower carbon emissions.We would like to invite children from your school to take part in our ClairCity Schools Competition. The children will form teams to take part in a competition to learn about air pollution, climate change and health along with the barriers and solutions to a future with clean air. This will eventually contribute to the outcomes of our project.
The goal of the activity is to engage interested schoolchildren to act towards a good environment, low carbon emission, healthy city, health promoting school, and healthy home environment. The school teams will use a web based interactive tool. They will collect environmental and health data from the city and the school. The collected data will be inserted to the web based interactive software that will then show potential measures/options in terms of progress towards clean air and a healthy city by 2030 and 2050.
When the competition has finished, you will be invited to complete a questionnaire to evaluate the project. All participation is voluntary.

Your school details will be processed by the ClairCity project in accordance with the terms and conditions of the 2016 EU General Data Protection Regulations.

The competition outcomes will be publicized to celebrate your school's achievements. All the children's answers will be grouped to your school, so no children will be personally identifiable, unless they wish to be celebrated. Overall outcomes from the competition will be published in reports to the European Commission, on our website www.claircity.eu, and through wider media.

It is up to you to decide whether or not to take part in the competition. You can withdraw your participation from the project at any time. This study was given ethics consent by the Research Ethics Committee of the University of the West of England, UK, researchethics@uwe.ac.uk.

ClairCity Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 689289.

Please do ask us if there is anything that is not clear or if you would like more information.

ClairCity: Citizen Led Air Pollution Reduction in Cities

Teachers' Consent Form

I have read the information on the Participant Information Sheet and consent to students from my school being contacted about the ClairCity Schools Competition. ☐

I understand the competition winners could be celebrated publicly. ☐

I understand we are free to withdraw from the project up at any time. ☐

I understand I will be asked to complete an online questionnaire when the competition finishes. ☐

Name _____

Position _____

Signature of Participant _____

Date _____

Name _____

Signature of Researcher _____

Date _____

Annex D: Some snapshots of the online surface

Welcome to ClairCity's Interactive Cityscape!

How it works...

Congratulations, you have successfully regsitered to the programme! Now you will have to work through this online surface. As a first step you will have to add the name of all the team members. Then you can start fill in the questionnaire. Be aware that where it is indicated, all members will have to answer to the question. Plus there will be questions referring to your city and your school where you will have to give one answer at team level. We advise you to run through the questions and be prepared with the answers in advance as in some cases you should consult with your parents and your teachers. You can start entering your answers when you have all the information as the questionnaire should be filled in one run, partly filled elements cannot be saved.

Change the future...

Once you entered all the data and saved your questionnaire you will receive a visualized picture of your city. Then you can enter the next phase where you can change the future! You will see 41 measures with explanations that you can decide to implement or not. Discuss the measures among yourselves and decide togetehre on them. When you are done you will see how much you influenced the three indicators: climet chnage, air quality and health. If you are not happy with your results you can try it again and select another set of measures to be implemented. When are happy with your results you can save it and end a short description on why you choose the measures. After submission you will receive an e-mail with your results.
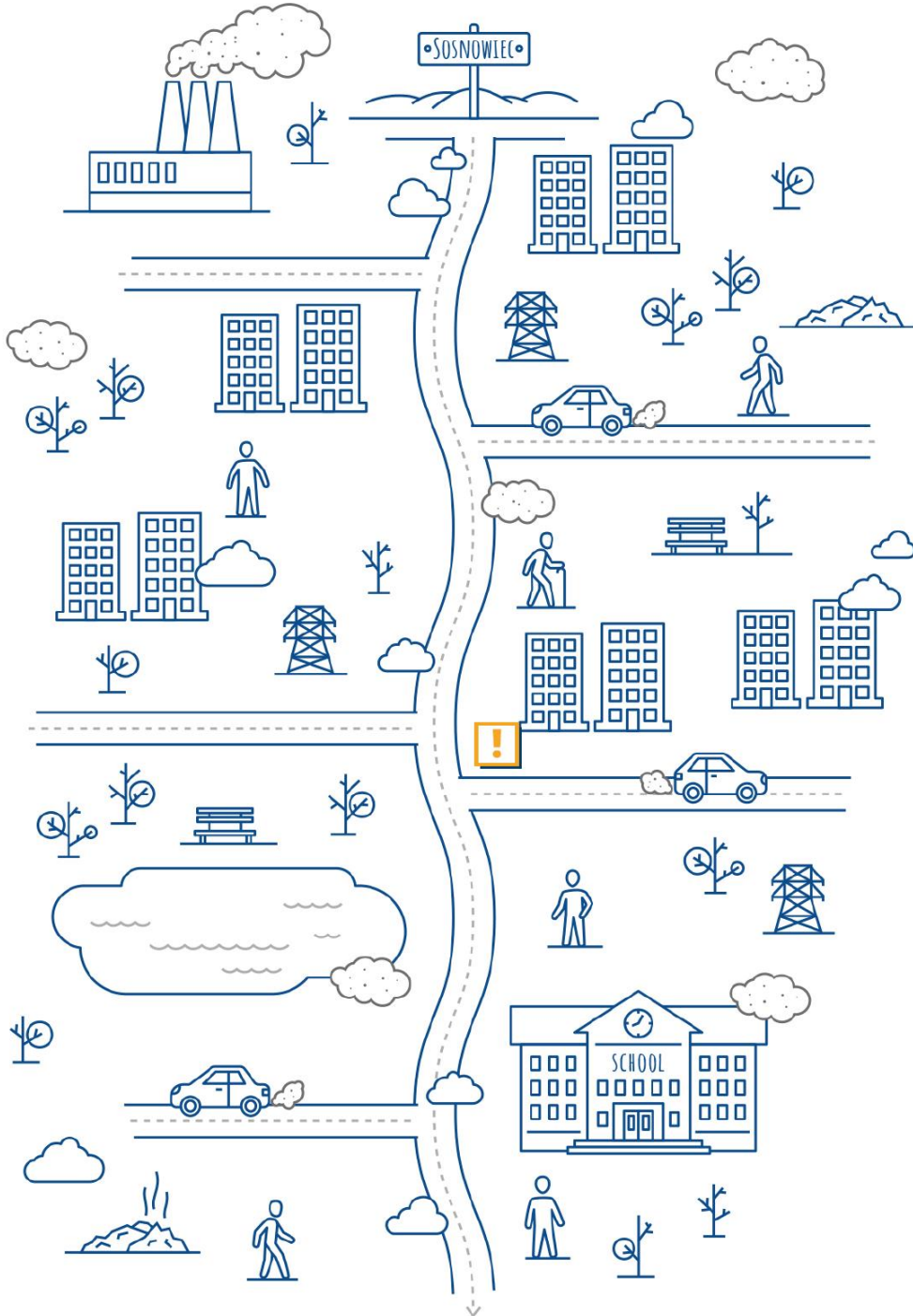
START

Questionnaire Rules

Where does the future lead from here?

This is how we currently see your city, your home and your school's state based on your answers.
Is it good, or is it bad?
People's actions, lifestyles can change our enviroment for the better, but for the worse too.

Your city's future is now in your hands!

In the next step you will be given some potential measures that can help improving the environmental performace of your city
and the health of its citizens. You can either accept or reject them, it's your choice!

CHANGE THE FUTURE

Measures

Now you will be given some potential measures that can help improving the environmental performance of your city and the health of its citizens. You can either accept or reject them, it's your choice! Your home city will be transformed according to your chosen actions.

For all measures you can find a short explanation as well. Discuss the measures among yourselves and if needed consult with your teachers. Then click 'yes' or 'no' for each mesures and then by clicking on the 'See the future' button check what you made.

If you are not happy with the result you can get back to the measures list and modify your choices as many times as you want. When you think you reached the best results you can click on the 'Save measures' button to finish and submit your final version. Once you submitted you will no longer be able to restart it

1. Create an area in the city where the most polluting vehicles are not allowed.

(i) *There are many successful examples of such "low-emission zones" in Europe, which makes...*   **Read more**

YES	NO

2. Introduce more electric vehicles.

(i) *In general, introducing a greater number of electric cars rather than vehicles running on petr...*   **Read more**

YES	NO

3. Motivate people to commute to work/school in shared vehicles.

(i) *Even if you or your parents need to drive a car, it does not have to be your own. You might ta...*   **Read more**

YES	NO

4. Improve public transport services to attract car drivers.

(i) *Improvements include ensuring greater frequency and reliability, introducing better-quality...*   **Read more**

YES	NO

5. Organise a campaign to promote walking and cycling rather than driving.

(i) *Walking and cycling more often helps you save money and improves your health. Walking...*   **Read more**

YES	NO

6. Reduce the speed limit in all residential areas to 30 km/h.

(i) *Lower speed limits are associated with fewer accidents and lower emissions. Cutting vehic...*   **Read more**
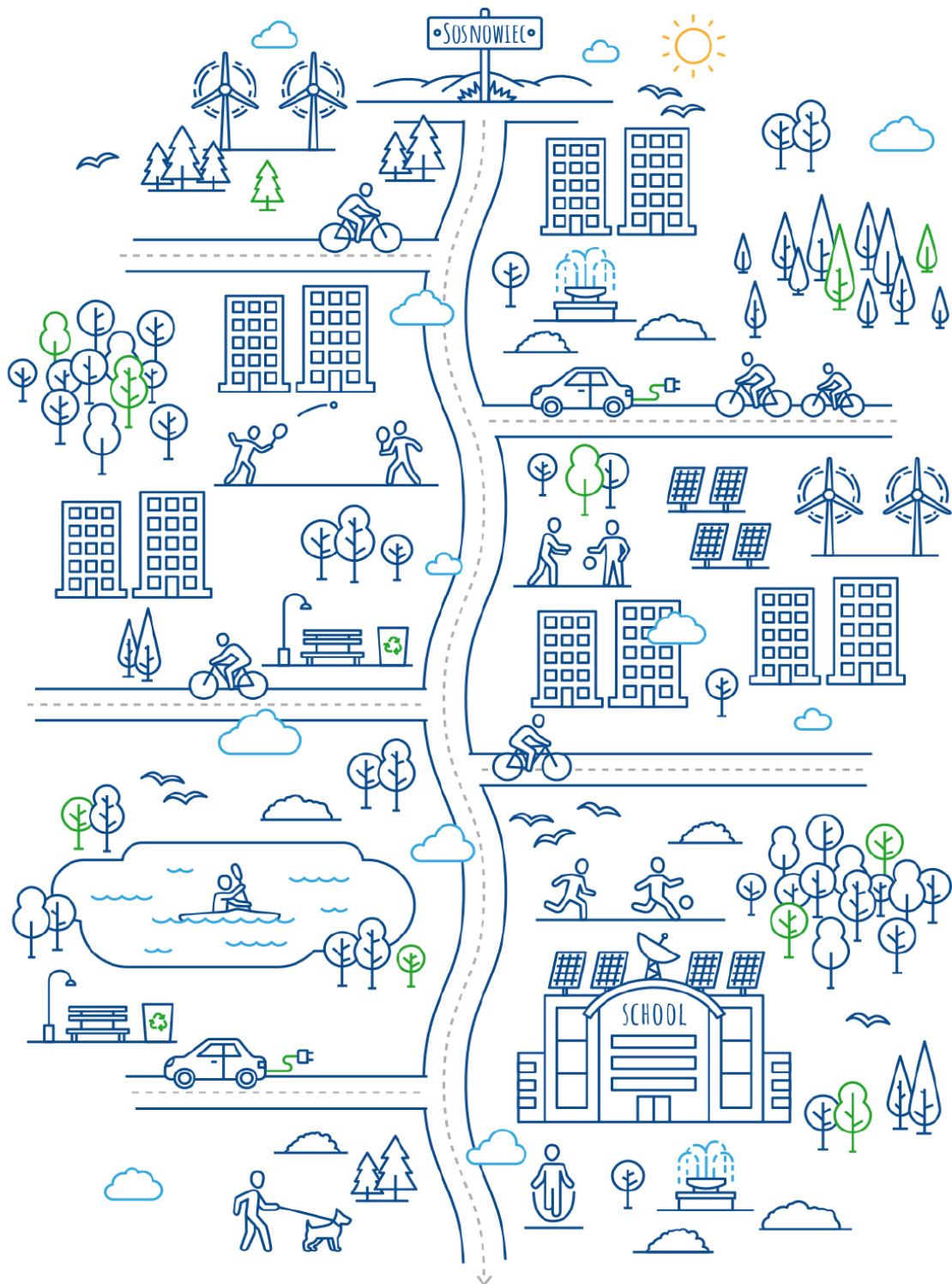
YES	NO

Congratulations, you have reached the end of the list!
After clicking on the 'See the future' button **you will be taken to your future cityscape!**

SEE OUR FUTURE

Do you like how your decisions changed your city?

As you can see people's actions can change our enviroment for the better, but also for the worse.

If you don't like what you reached you can restart the measures. **But if you think you would be happy to live in this city in the future, then click on the 'Finish and submit' button below.**

RESTART MEASURES   FINISH THE QUESTIONNAIRE

Annex E: Full list of measures from the software

List of measures from the software

1	Create or enlarge the area in the city where the most polluting vehicles are not allowed to enter.
2	Introduce a congestion charging scheme in the city centre.
3	Support the accelerated uptake of vehicles running on alternative fuels.
4	Replace old vehicles with modern ones.
5	Motivate people to commute to work/school in shared vehicles.
6	Improve public transport services to attract car drivers.
7	Reduce the speed limit in all residential areas to 30 km/h.
8	Increase the price of fossil fuels (gasoline, diesel) and/or increase road tolls to encourage people to drive less.
9	Reduce road capacity.
10	Develop new/better apps and software to help journey planning.
11	Organize a campaign to introduce people to the concept of fuel-efficient driving techniques.
12	Make the night-time delivery of goods compulsory in cities.
13	Make car driving inconvenient.
14	Reduce car size (and the corresponding fuel consumption) by law.
15	Provide tax benefits for employers who encourage their employees to commute by public transport, bicycle or on foot.
16	Require schools to calculate the CO_2 emissions of the journey to school of teachers and pupils.
17	Restrict the use of solid fuels for domestic heating.
18	Expand and modernize district heating networks.
19	Ensure the energy-efficient construction of new buildings (e.g. low-emission and zero-emission buildings).

20	Impose a compulsory rate of renewable energy sources for domestic heating and electricity (e.g. solar panels, wind turbines and heat pumps) for new houses and for refurbishments.
21	Increase the efficiency of lighting in households, official buildings and outdoors.
22	Increase the efficiency of window insulation.
23	Insulate the walls and roofs of buildings.
24	Increase green spaces by imposing a minimum m² per capita that should be provided in cities.
25	Ensure that urban planning addresses air pollution and greenhouse gas emissions as priority issues.
26	Increase the frequency of street cleaning (sweeping and washing roads).
27	Ban the burning of agricultural waste, organize the collection of organic waste, and ban bonfires and fireworks.
28	Make green infrastructure such as green walls and roofs compulsory in new buildings.
29	Organize a campaign to promote walking and cycling rather than driving and to generally promote healthy lifestyles.
30	Provide continuous and credible communication about air pollution and its health impacts in cities and develop supporting apps.