



Delft University of Technology

City-zen: New Urban Energy Nicosia 'City-zen Roadshow' REPORT

Martin, C.L.; van den Dobbelen, A.A.J.F.; Pulselli, Riccardo; Vandevyvere, Han; Keeffe, Greg; Jenkins, A.J.; Campbell, Emma

Publication date

2019

Document Version

Final published version

Citation (APA)

Martin, C. L., van den Dobbelen, A. A. J. F., Pulselli, R., Vandevyvere, H., Keeffe, G., Jenkins, A. J., & Campbell, E. (2019). *City-zen: New Urban Energy: Nicosia 'City-zen Roadshow' REPORT*. European Commission.

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

NEW URBAN ENERGY



Nicosia Roadshow REPORT

DELIVERABLE **D9.13**

The opinion stated in this report reflects the opinion of the authors and not the opinion of the European Commission. The European Union is not liable for any use that may be made of the information contained in this document.

All intellectual property rights are owned by the City-zen consortium members and are protected by the applicable laws. Except where otherwise specified, all document contents are: “© City-zen project - All rights reserved”. Reproduction is not authorized without prior written agreement.

The commercial use of any information contained in this document may require a license from the owner of that information.

All City-zen consortium members are also committed to publish accurate and up to date information and take the greatest care to do so. However, the City-zen consortium members cannot accept liability for any inaccuracies or omissions nor do they accept liability for any direct, indirect, special, consequential or other losses or damages of any kind arising out of the use of this information.



This project has received funding from the European Union’s Seventh Programme for research, technological development and demonstration under grant agreement No 608702.

PROJECT INFORMATION

Project Acronym and Full title	City-zen, a balanced approach to the city of the future
Call Identifier	FP7-ENERGY-SMARTCITIES-2013
Grant Agreement	n° 608702
Funding Scheme	Collaborative Project
Project Duration	60 months
Starting Date	01/03/2014

MAIN COORDINATOR

Name	Marjolein Bot
Organization	Amsterdam Smart City
Phone	+31 6 40 2222 17
E-mail	marjolein@amsterdamsmartcity.com

CONSORTIUM PARTNERS

N° DoW	Organization	Acronym	Country
1	Vlaamse instelling voor technologisch onderzoek	VITO	BE
2	Stichting Amsterdamse Economic Board	AIM	NL
3	Universiteit van Amsterdam	UVA	NL
4	Westpoort Warmte B.V.	WPW	NL
5	Alliander	LIAN	NL
6	HESPUL Association	HESP	FR
7	The Queens University of Belfast	QUB	UK
8	Th!nk E	THNK	BE
9	KEMA Nederland BV	KEMA	NL
10	Technische Universiteit Delft	TUD	NL
11	Stichting Waternet	WAT	NL
12	Greenspread Projects BV (subject to reservation, provided acceptance by EU)	GREE	NL
13	Sanquin (subject to reservation, provided acceptance by EU)	SANQ	NL
14	AEB Exploitatie BV	AEBE	NL
15	Daikin Airconditioning Netherlands B.V.	DAIK	NL
16	Siemens Nederland NV	SIEM	NL
17	Universita' degli Studi di Siena	UNIS	IT
18	Ville de Grenoble	MUNG	FR
19	Commissariat a l'Energie Atomique et aux Energies Alternatives	CEA	FR
20	Compagnie de Chauffage Intercommunale de l' Agglomeration Grenobloise	CCIA	FR

21	Gaz Electricite de Grenoble	GEG	FR
22	SAS ATOS Worldgrid	ATOS	FR
23	Clicks and Links Ltd&L	C&L	UK
24	Grenoble-Alpes Métropole	METRO	FR

DELIVERABLE INFORMATION

Number	D 9.13
Title	Roadshow with ‘On-site’ Advice & Summary Report
Lead organization	TUD
Author	Prof. Dr. Craig Lee Martin (TUD)
Contributors	Prof. Greg Keeffe (QUB); Dr. Andy Jenkins (QUB); Prof. Dr. Andy van den Dobbelsteen (TUD); Dr. Riccardo Pulselli (UNIS); Dr. Han Vandevyvere (VITO); Anneleen Vanderlinden (Th!nk-e); Achille Hannoset (Th!nk-e).
Reviewers	Prof. Dr. Andy van den Dobbelsteen (Delft University of Technology); Riccardo Pulselli (University of Siena).
Nature	R – Report
Dissemination level	PU – Public;
Delivery Date	M12-M60 (01/11/2019)

VERSION HISTORY

Version	Date	Author/Reviewer	Description
1.0		Prof. Dr. Craig Lee Martin	Final version

ACKNOWLEDGEMENTS

The Nicosia Roadshow would not have been possible without the commitments and passion of three individuals. Phidias Pilides (Former President, Cyprus Chamber of Commerce and Industry), Fikri Toros (Republican Turkish Party) and Dr. Markella Menikou (Head of Architecture, University of Nicosia). Three highly influential stakeholders that came together across political and geographical boundaries to begin a process within the only divided city in Europe, to co-create a shared sustainable city vision for Nicosia.

The Roadshow team would like to take this opportunity to highlight the impactful contributions of the Dutch Embassy in Cyprus. A special mention must go to Marios Touvanas (Policy Officer, Dutch Embassy). Marios' daily efforts during the preparation period in the months leading up to the Roadshow were vital for success. Marios' unique knowledge of Nicosia and its ongoing efforts to become sustainable gave greater reach to the project. In addition, the roles that Ambassador Nathalie Jaarsma and Mark Rutger (Deputy Head of Mission at Embassy) took were pivotal in encouraging all stakeholders to participate to connect with their wider networks. The Roadshow networking event held at the Ambassador's Residence on the second day of the Roadshow was an outstanding effort and is sure to influence sustainability stakeholder initiatives in the future.

Special thanks must go to the University of Nicosia and their Department of Architecture (ARC) for hosting TU Delft's SWAT Studio for two weeks in February and the later Roadshow. The collaborations made between students, staff and alumni gave a strong foundation for the later Roadshow. For this we thank Dr. Markella Menikou for giving her time, commitment, knowledge and extensive network during some challenging periods during the preparations. Further we appreciate the hospitality given by Nicosia's 'Home for Cooperation' for being exactly that, 'a home' to the Roadshow in those days within the UN buffer zone in May 2019. The venues for the Nicosia Roadshow were selected to optimise participation. They were also unique and challenging in nature being located in the UN Buffer itself. This didn't come without many challenges. Challenges that were made extremely worthwhile and easier thanks to the United Nations Peacekeeping Force in Cyprus (UNFICYP) who donated rooms within their Ledra Palace HQ for the Roadshow design studios and the Go2zero serious game. Further, the final event would be extremely well hosted by director and founder Rita Severis the Centre of Visual Arts and Research (CVAR). Final thanks must go to Prof. Panikkos Poutziouris (Rector, UCLan Cyprus) for showing the team such hospitality during a field trip to the Buffer zone. Prof. Poutziouris' extensive insight of the island history, customs and etiquette helped tremendously in the strategic planning of the Roadshow.

ABSTRACT

The City-zen Roadshow travels with a team of internationally recognized experts, in the field of energy planning and design to help develop a sustainable agenda for cities and their neighbourhoods. It will visit 10 cities in total over a 4-year period who are seeking expert guidance on how to become more sustainable and wish to move towards energy neutrality. The overall aim of the Roadshow team is to work closely with people from the hosting city, whether they be city leaders, energy planners, local architect, professionals, academics, students and citizens. The Roadshow spends 5 days in each hosting city to deliver energy and urban design fun-shops in which all local stakeholders are welcome and encouraged to join and to take ownership of the final outcomes, outcomes that will allow the cities resources, both people and energy, to be directed effectively, by highlighting the energy challenges and potentials to be found in their neighbourhoods, and to finally present a sustainable 'City Vision'.

The following report will describe the activities and outcomes of the City-zen Nicosia Roadshow that took place in Cyprus between the 8th to 15th of May 2019.

TABLE OF CONTENTS

PROJECT INFORMATION	3
DELIVERABLE INFORMATION	5
ACKNOWLEDGEMENTS	6
ABSTRACT	7
TABLE OF CONTENTS	8
CHAPTER 1 – Introduction	9
1.1. CITY-ZEN ROADSHOW AND SWAT STUDIO	9
1.2. AIMS	10
1.3. OBJECTIVES	11
1.4. ROADSHOW AT A GLANCE	17
CHAPTER 2 – ROADSHOW COMPONENTS	18
2.1. 'FUTURE NEIGHBOURHOODS'	18
2.1.1. Background	18
2.1.2. Methodology	18
2.1.5. Outcomes	19
2.2. 'ENERGY TRANSITION WORKSHOP'	20
2.2.1. Background	20
2.2.2. Outcomes	20
2.3. 'CARBON ACCOUNTING'	22
2.3.1. Carbon Footprint of Cyprus	22
2.3.2. Carbon Footprint of Nicosia	23
2.3.3. Carbon mitigation accounting	26
2.3.4. Conclusions	30
CHAPTER 3 – SUSTAINABLE CITY VISION	32
3.1. FINAL DAY	32
3.2. THE PRESENTATION	33

CHAPTER 1 – Introduction

1.1. CITY-ZEN ROADSHOW AND SWAT STUDIO

The Roadshow travels with a team of internationally recognized experts in the field of architectural design and energy planning to co-create a sustainable ‘City Vision’ with city stakeholders. It will visit 10 cities that are seeking expert guidance on how to become zero energy and carbon neutral over a 4-year period. The project has already successfully collaborated with Belfast, Izmir, Dubrovnik, Menorca, Sevilla, Roeselare and Preston. The overall aim of the project team, is to work closely with people from each hosting city, whether they be city leaders, neighbourhood associations, energy planners, architects, academics, students and of course most significantly the citizens themselves. The project consists of a 5-day event model, a culmination of a 3-month preparation including an educational design studio (the SWAT Studio) that promotes the Roadshow whilst building relationships and trust between all contributing partners. Local stakeholders are welcomed and encouraged to join and to take ownership of the process and the final outcomes. Outcomes that will allow the city’s resources, people, knowledge and renewable energy potential to be directed effectively over a realisable timescale that will meet their energy transition. The process starts by identifying a neighbourhood’s urban lifestyle and energy challenges. Then, on the final day of the event model, a definitive sustainable ‘City Vision’ is presented to the city, which responds to all scales of their built and natural environment.

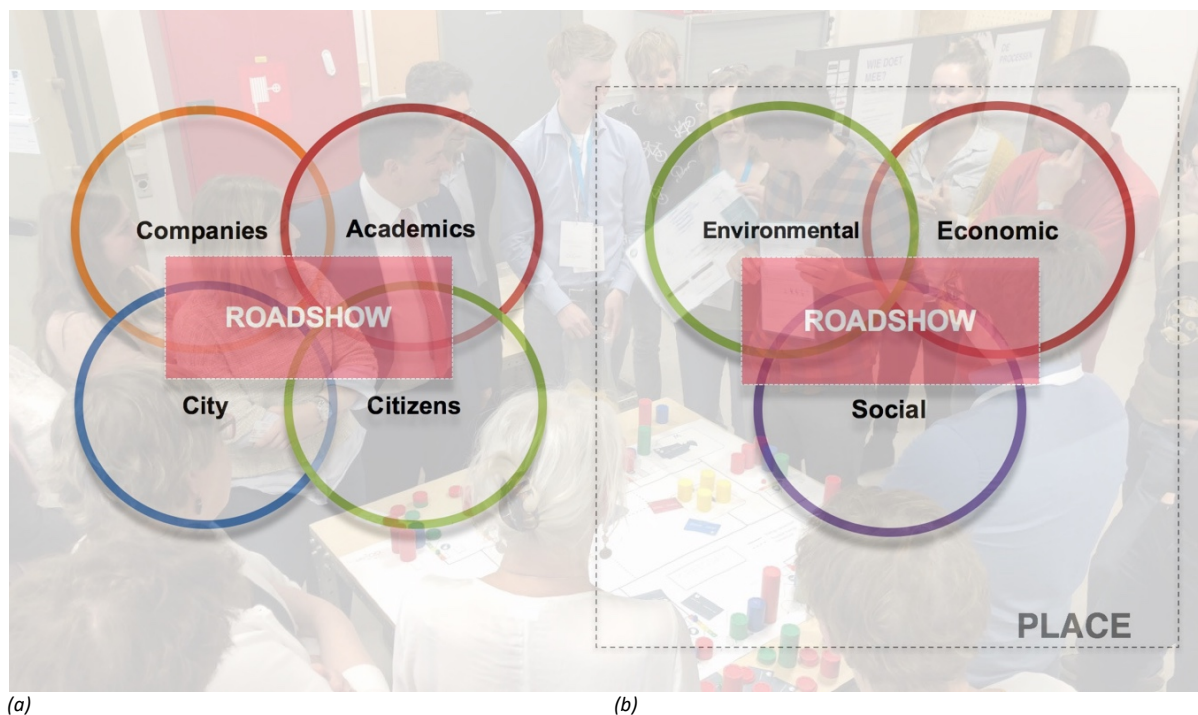


Fig 1. (a) The Roadshow investigates Environmental, Economic and Social aspects of each Roadshow city to develop a ‘City Vision’ that is specifically tailored to respond to place. (b) The Roadshow team brings together all stakeholders, it facilitates this 5-Day event to propose a sustainable ‘City Vision’ that is ‘owned’ by the City itself.

The following describes the underlying approach undertaken in Nicosia and specifically in the project neighbourhood of Nicosia old town, surrounded by the bastion walls. It will include an explanation of the Sustainable 'City Vision' that resulted. City engagement is an exciting and thought-provoking prospect. Many questions arise at the beginning of the journey. Making first contact with a prospective project location, conducting preparations, explanations and agreements is far from an exact science. The method of achieving this successfully has evolved city-by-city and is arguably as valuable as the sustainable solutions that result. There can be many political, cultural and language obstacles that must be overcome. The outcomes have the power to inspire and potentially be realised post-project. The first questions are:

- Who is 'the City'?
- What are the city's sustainable expectations and aspirations?
- What is the current and future calculated energy demand?
- Where are the urban challenges and potentials?
- Are they purely energetic, spatial & social, administrative or a combination of all?
- Does the 'City' even realize or accept they have challenges, despite its desire to be sustainable?

To answer these questions and many more, the project team began the process of identifying the cities that need, and more importantly want to collaborate or co-create with the expert team. First contact begins with an educational architecture design workshop studio (known as the SWAT Studio). This takes place in the months prior to the Roadshow. Developed and led by TU Delft under Prof. Dr. Craig Lee Martin, the student-focused event facilitates an extended and detailed discussion with city stakeholders. The later 'expert' Roadshow event model then follows and is conducted over a 5-day period based on 'themes' that guide the evolution of the vision. Here, expert global input is delivered at key points. Each event is constructed to relate to individual citizen experiences and knowledge, giving confidence in the processes that are extended to relate to streets, neighbourhoods, districts, city and in some circumstances the region or island. The project is not intended to be a one-way stream of information and ideas, instead the process aims to activate, convince, openly invite and encourage 'the City' to be part of the process at any level that they feel comfortable with. The method includes going out of the studio and into the wider community. To engage with various initiatives, to meet and talk with their members, no matter their age or background or expertise. The project leader selects cities that have diverse climates, urban typologies, economies and cultural backgrounds to ensure that the project develops a highly adaptable and compact, yet replicable, approach whatever the city and its circumstances.

1.2. AIMS

The aim is to develop an event model capable of implementation in all cities, in order to co-create, with citizens from all backgrounds, a city's sustainable vision. Proposals developed exclusively by the project team, and not by the city stakeholders themselves, would physically and metaphorically leave with the Roadshow. Hence, a home-grown solution is key. A legacy must remain in which all participatory groups continue to exchange knowledge and speak with a common voice, making any future research bids (beyond the scope of the City-zen project) coherent, effective and impactful. The project wishes to extend its agenda by strengthening connections and bringing together a global family of project cities. Where experiences can be shared together with collaborative research bid proposals across the European community.

The most important target group are inhabitants of the neighbourhood, city and wider hinterland of the hosting city. Companies and start-ups in the field of technology and sustainability are encouraged to be active participants during the project. A key objective is to reach 600 students across the EU by visiting local universities, colleges and secondary schools. Students are the future.

1.3. OBJECTIVES

1.3.1 Student Engagement

It has been a mutually beneficial approach to combine the energy and enthusiasm of building technology 'SWAT Studio' Masters students with the stakeholders and students from the hosting city. Close relationships that were forged of the SWAT Studio with the hosting city lay the foundation on which to build the intensive 5-day City-zen Roadshow. Promotion, active participation and dissemination contribute significantly to overall success. Consequently, the Roadshow and SWAT student workshop leader encourages interested groups such as municipalities, neighbourhood associations and universities to grasp the opportunity to do so. Taking the time to discuss what is expected and dispel any reservations or doubts that may arise, the Roadshow will not criticize a city's perceived lack of sustainability. Roadshow team specialists are aware of many complex global and local level challenges that must be overcome together for a renewable energy transition to take place.

The Nicosia SWAT Studio, in this case a collaboration between TU Delft and the University of Nicosia, has identical project aims as the professional 'expert' Roadshow. It too develops and proposes technologically innovative and sustainability-driven urban interventions. A key ambition of the design workshop is to demonstrate that, through building interventions at all scales – ranging from façade, building, street, neighbourhood and district – that sustainable lifestyles are possible within existing cities. The City-zen Roadshow having a similar approach in its effort to make zero-carbon cities.

The outputs of the SWAT Studio would be presented to a stakeholder audience on day one of the Roadshow. An audience comprising many individuals and companies who had collaborated previously with the SWAT and now would join with the opening of the Roadshow.

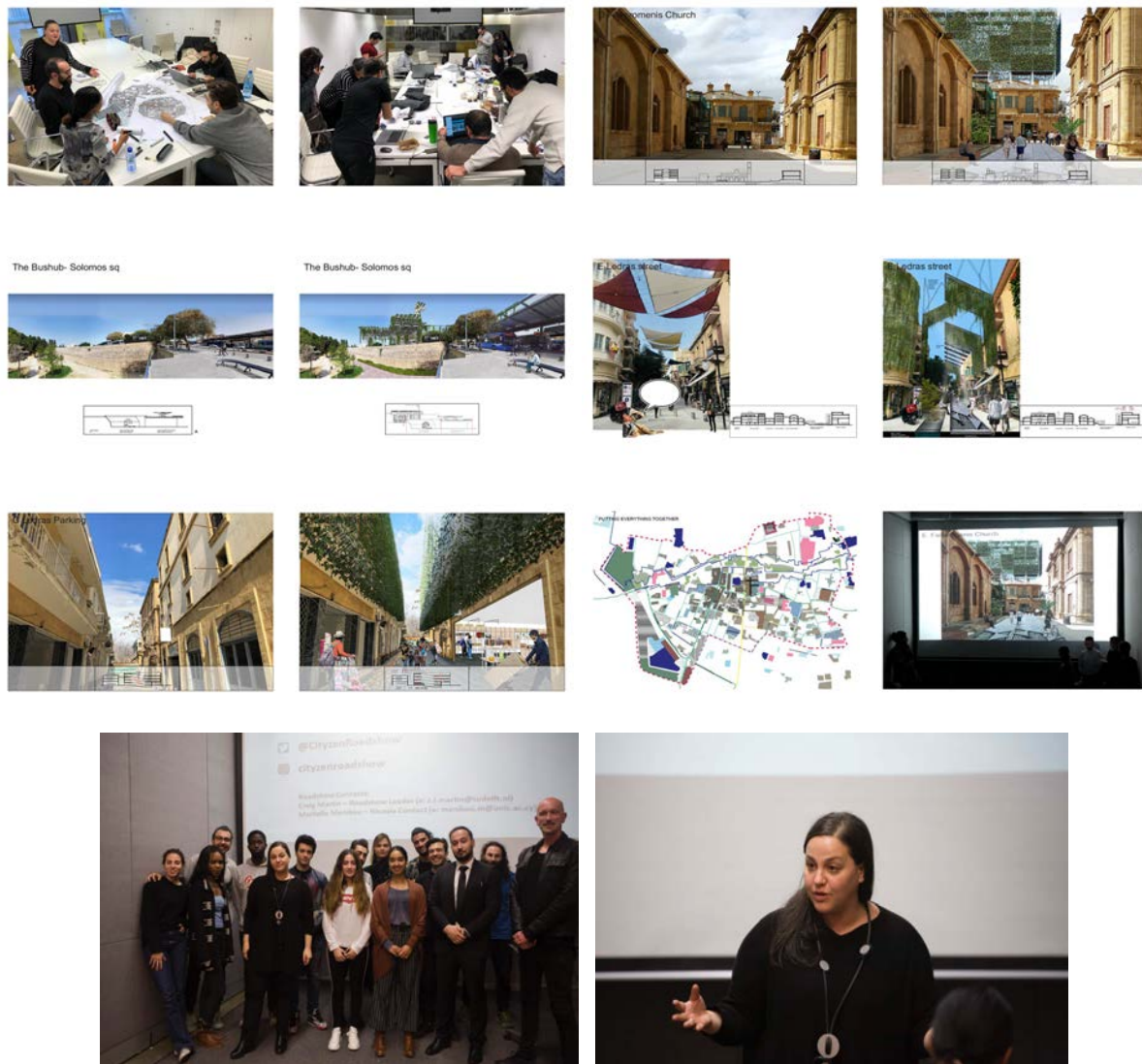


Fig 2. Selected photographs and outcomes of the Nicosia ‘SWAT Studio’ (2-week ‘Intervention’ period - 18th to 28th February 2019), a MSc’s Building Technology ‘Onsite’ design studio (TU Delft, The Netherlands) that took place 3 months prior to the start of the Nicosia Roadshow. During the SWAT Studio, the aims and objectives of the City-zen Nicosia Roadshow would be disseminated at public SWAT presentations/Final reviews and on local media streams through various articles. Student design proposals and associated renders, drawings and models would be used to prompt discussions with stakeholders and communicate the expert aims of the upcoming Roadshow. The neighbourhoods selected for design consideration during the SWAT Studio would also be used for the Roadshow. For Nicosia, two neighbourhoods would be used on either side of the UN Buffer zone. For the Roadshow, the UN Buffer zone would also be an area for proposed intervention.

1.3.2 Process

In Nicosia, the process of Roadshow preparation, as described previously, began 2 months prior to the project start with a collaborative Master’s level Building Technology and architecture student workshop. Both the workshop and the Roadshow itself were developed to be fun and yet ‘intensive’. Components such as seminars, walking tours, design fun-shops and mini-masterclasses within the 9-day period were strategically timed and citizen focused. The outputs, synchronised with specific project team specialisms in energy and urban design. Outputs were qualitatively

spatial and quantitatively energy focused, combining to form the Sustainable City Vision on the final day of the Roadshow on Wednesday 15th May 2019.

1.3.3 Daily Activities

Daily activities would involve citizens, architects, municipality staff, PhD students, academics and energy consultant’s visiting the projects studio base at the Home for Cooperation and the United Nations Peacekeeper base at the Ledra Palace. The 9-day programme was devised in such a way to encourage participants to ‘drop-in’ and ‘drop-out’ so that the project fun-shop activities and mini-masterclasses could fit into their professional and family schedules. This is a strategy that would increase stakeholder involvement dramatically. The overall programme can be seen in Figure 3.

CITY-ZEN NICOSIA ROADSHOW
MAY

8
FUN-SHOP 'WALK'
Join our team on a walkabout around the Old Town. Along the way discuss with our Professors Nicosia's environmental challenges & potentials!
Meet at 'Home for Cooperation' @ 10.00 Finish 12.00

8
FUN-SHOP 'TALK'
'City-zen Roadshow' what's that?
How will this help Nicosia become sustainable?
How can I be part of it?
What's happening now to help make our city sustainable?
Join and Find out.
'Home for Cooperation', 14.00 - 16.30

9
FUN-SHOP 'PAC-MAN'
Carbon? How much? Let's get it to Zero! We'll show you the carbon challenge and zero carbon solutions.
Highly visual, fun and informal. See Pac-man eat that Carbon for a healthier, pollution free future.
'Home for Cooperation', 10.00 - 11.00

9
FUN-SHOP 'DROP-IN' 1
Design? Lifestyle? Energy? Join with us. Shape it, discuss it, contribute it! Whatever you want.
Friendly, informal & fun, but with a serious aim.
'Home for Cooperation', 17.00 - 17.45

10
FUN-SHOP 'DROP-IN' 2
Design? Lifestyle? Energy? Join with us. Shape it, discuss it, contribute. Whatever you want.
Friendly, informal & fun, but with a serious aim.
'Home for Cooperation', 17.00 - 17.45

11
VISIT TO UCLan CYPRUS
TOUR OF PYLA VILLAGE
TOUR OF LARNAKA
- City of Stoic Philosopher Zenon

13
FUN-SHOP 'Go2Zero'
Fun interactive role-playing Game. Play your part, and find out what it really takes to make a truly sustainable city!
UNFICYP Community Rooms Ledra Palace, 09.30 - 13.30

13
FUN-SHOP 'DROP-IN' 3
Design? Lifestyle? Energy? Join with us. Shape it, discuss it, contribute. Whatever you want.
Friendly, informal & fun, but with a serious aim.
UNFICYP Community Rooms Ledra Palace, 14.00 - 14.45

14
FUN-SHOP 'DROP-IN' 4
Design? Lifestyle? Energy? Join with us. Shape it, discuss it, contribute. Whatever you want.
Friendly, informal & fun, but with a serious aim.
Dept of Architecture, Univ of Nicosia, ARC Building, Michal Georgalla, Engomi, Nicosia
17.00 - 17.45

15
FUTURE SUSTAINABLE 'CITY VISION' NICOSIA
Facades, buildings, streets, neighbourhoods, lifestyle, city, island and families.
See the outcomes of your creativity and imagination come alive. Here's what it takes to make a Sustainable Nicosia.
Enjoy, discuss & reflect
Centre for Visual Arts & Research (CVAR), Atrium,
18.00 - 19.30

The EU supported City-zen Roadshow help's cities come to a sustainable urban future by placing citizens in the heart of the creative design process. A process that graphically describes that energy productive, socially enjoyable zero carbon lifestyles and cities are possible.

Whose it for?
All citizens, no matter what background or expertise.
What's it for?
To show what's sustainably possible in the existing built environment.
Why?
To help ensure a healthier, enjoyable and zero carbon city for Nicosian families.

Facebook: @CityzenRoadshow
Twitter: @CityzenRoadshow
Instagram: cityzenroadshow

www.cityzen-smartcity.eu/nl/home-nl/
Contact: Prof.Dr. Craig Lee Martin email: c.l.martin@tudelft.nl

European Commission
New urban energy
The City-zen project has received funding from the European Union's Seventh Programme for Research and Technological Development.

Fig 3. City-zen Nicosia Roadshow Flyer. This 9-day timetable was used to promote the events on social media such as Facebook and Twitter, specifically to networks that would benefit from the Roadshow in Nicosia. The image used for the background is accredited to the Nicosia SWAT Studio (University of Nicosia & TU Delft).

The first stakeholder event took place on the opening morning. Here residents of Nicosia, both North and South, joined the Roadshow team on a walk that would take them around the project site. Figure 4 shows the route that the collaborative group followed. The route was strategic in that it passed key zones and landmarks in the North and South. Along the way, Anita Michail, an expert historical and cultural guide, gave further insights and facts about the environment the team was walking through.

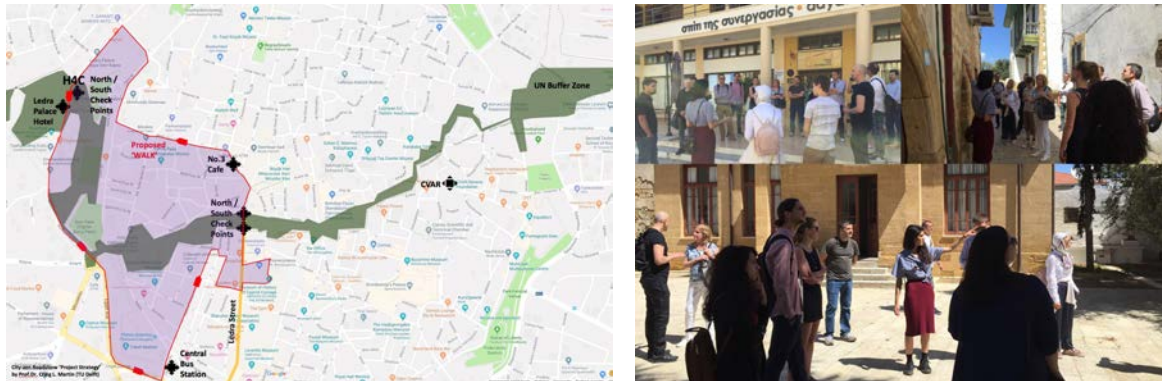


Fig 4. City-zen Nicosia Roadshow 'Walk'. The route would take the team through the UN Buffer zone twice in order for the Roadshow team to get a full understanding the of context implication, challenges and potentials.

'Pecha Kucha' style presentations (meaning 'chit-chat' in Japanese) would be the chosen format of all presentations given by partnering stakeholders and the Roadshow team. This allowed an exchange of concise and fast-paced two-way information flows facilitating a multiple-involvement event. A strategy giving both Roadshow 'ownership' to the stakeholders of Nicosia, and communicated coherently so that participants would know what to expect through the 9 days. The following stakeholder groups contributed to the Roadshow with Pecha Kucha presentation on the first day of the Roadshow. Each outlining past, present and future aspirations for their city:

- Anthi Charalambous (Head of Energy & Environment Division at Cyprus Employers & Industrialists Federation - OEB). Presentation entitled 'Business for Climate'.
- Marios Theristis (FOSS Research Centre for Sustainable Energy). Presentation entitled 'PV Technology in Cyprus'.
- Chariton Lazarides and Pantelis Panteli (Students at University of Nicosia / TU Delft). Presentation entitled 'SWAT Nicosia Studio – Collaborative Sustainability Design Studio'.
- Fiona Mullen & Stelios Hadjiloizou. Presentation entitled 'Famagusta Ecocity Project'.
- Chara Georgiadou (Global Shapers Nicosia). Presentation entitled 'Communal Gardens'.
- Maria Achilleos & Myrto Skouroupathi (Cyprus Energy Agency). Presentation entitled 'Nicosia: Energy Transition from global to local level'.
- Constantinos Constantinou (CAB's Co-Director). Presentation entitled 'Cyclists Across Barriers'.

This co-creative method aims to foster an intensive working environment, yet one, allowing adequate flexibility to ensure maximum stakeholder participation at whatever level they feel comfortable. It must be respected and appreciated that all stakeholders are likely to have full-

time jobs and a family life beyond any project, their attendance is self-financed. Therefore, a role of the Roadshow leader is to strike a balance between stakeholder commitments and availabilities. Discussions involve conveying the urgency of being part of the process, but not to an extent that distances prospective attendees. During the Nicosia SWAT Studio, many face-to-face preparations and negotiations took place with stakeholders at their convenience. Various visual descriptors would be shown to communicate what is expected during the Roadshow. Images taken during the previous Roadshows in Belfast, Izmir, Dubrovnik, Menorca, Sevilla, Roeselare and Preston would be highly effective in translating what was to come in Nicosia. Coloured marker pens, rolls of tracing paper, laptops and notebooks are the tools of choice for the project participants.

Roadshow activities have the same aim: energy neutrality. However, each component is enjoyably diverse and offers new perspectives and skills on how to attain it. Whilst two parallel fun-shops ran continually over the week, participants sign up to play the Go2Zero Serious Game. Nicosia's stakeholders from both sides of the divided city 'role played' within the UN Controlled Buffer, having fun whilst experiencing the cause and effect of energy strategy decisions made at the regional, neighbourhood and family household level.



Fig 5. Nicosia citizens, getting into the game and having 'energetic' role-playing fun whilst learning the implications of energy choices at the large commercial and domestic level. Venue: Ledra Palace, United Nations Peacekeeping Force in Cyprus (UNFICYP), UN Buffer zone.

Preparations for the Nicosia Roadshow began 3 months before the first day of the Roadshow. In consideration of the political sensitivities in the region, several embassies were personally contacted by the Roadshow leader to make them aware of the Roadshow visit in order to gain their support, participation, insights and past experiences. The German, Italian, British High Commission and the Dutch Embassy were contacted. The Roadshow strategy was to make the buffer zone the studio base. This would be logistically practical in that the site was in close proximity. Another reason being one of strategy, such a location being symbolic in that it demonstrated the projects intentions to gain support from all Nicosia citizens and key city decision makers. This message of Roadshow intention in the region and the overall aims of sustainability would be conveyed to the embassies securing their support. Following more detailed discussions with the Dutch Embassy on how Nicosia could gain most from the Roadshow it was decided that key stakeholders would be invited on Roadshow day 2 for a 'City-zen Roadshow Networking Event' (Fig 5). The theme being urban sustainability and the outcomes of the Roadshows completed.



Fig 6. The ‘City-zen Roadshow Networking Event’ hosted at the Netherlands Ambassador’s Residence on Thursday 9th May. A speech by Ambassador Nathalie Jaarsma began the proceedings, to be followed by speeches of encouragement by Mr Phidias Pilides (Former President CCCI) and Mr Fikri Toros (Republican Turkish Party). From the Roadshow team, Prof. Craig Martin described the Roadshow aims and its successes; Prof. Greg Keeffe presented the Sevilla Roadshow outcomes; Prof. Andy van den Dobbelsteen presented the film ‘Energy Slaves’ he produced.

This event would ensure that the project received wider dissemination and key involvement. The guest list for the ‘City-zen Roadshow Networking Event’ can be seen below:

Lefki Lambrou	Director Home for Cooperation
Dr. Markella Menikou	Head – School of Architecture, University of Nicosia
Fikri Toros	Republican Turkish Party
Phidias Pilides	Former President CCCI
Karin Varga	Goethe Institute
Prof. Panikkos Poutziouris	Rector - UCLan Cyprus
Leonidas Paschalides	Head Dept. of International & Public Relations, CCCI
Alexander Apostolides	Head Economic / EU, British High Commission
Tommaso Coniglio	Italian Embassy
Marina Vasilara	Civil Affairs Officer
Savvas Vlachos	Director Cyprus Energy Agency
Chara Georgiadaou	Global Shapers Nicosia Hub / Union of Cypriot Municipalities
Marios Theristis	University of Cyprus, Centre for Sustainable Energy
Michalis Lambrinos	Public Works, Ministry of Transport
Anthi Charalambous	OEB Head Energy & Environment
Alexandros Charalambides	Director, Climate-KIC / CUT Sustainable Energy Laboratory
George Artopoulos	Cyprus Institute, STARC
Pembe Mentesh	EU Info Point, Team Leader & Communication Expert
Burak Doluay	UN SDGs Young Leader
Andreas Papacharalambous	Mayor of Strovolos
Giorgos Partasides	Renewables coordinator Ministry of Energy
Christos Maxoulis	Technical Chamber
Stelios Achiotis	President Technical Chamber
Theodoulos Mesimeris	Ministry of Agriculture, Environment Department
Alexis G. Michael	Electricity Authority
Constantinos	Cyclists Across Barriers
Theodoulos Makryiannis	CYTA
Chrysses Nicolaidis	Smart Cities Mediterranean
Miltiades Elliotis	Ministry of Interior (Technical Services)
Pavlos Michael	Cyfield
Harris Kannas	T.S.O. (National Energy Control Center)
Antigoni Michael	Tour Guide / UNDP
Georgia Vasila	Athienitis contractors
George Georghiou	Director Foss Research Centre for Sustainable Energy
Glafkos Constantinides	Technical Committee Cultural Heritage

Following on from the Networking Event at the Ambassadors residence, other networking opportunities would be investigated. One such initiative during the Nicosia Roadshow would be

the 9th International Design Week hosted by the Eastern Mediterranean University (EMU). By offering lectures and talks at University to support their Design Week, the Roadshow reached an even greater audience, and by doing so promoting the Roadshow, and disseminating the gained knowledge from over 4 years of Roadshows to prospective young professionals, students and academic staff from Northern Cyprus.



Roadshow Event - The 9th International EMU Design Week, 08 May 2019 “in|dependence” held at the Eastern Mediterranean University (EMU), Faculty of Architecture, 08-10 May 2019, Famagusta, North Cyprus. Sustainability seminars would be delivered by Prof. Greg Keeffe on ‘Biomimetic Design’ and by Prof. Dr. Martin on ‘The Roadshow’ at the EMU.

1.4. ROADSHOW AT A GLANCE

The following points list 18 keywords that best describe the story and ambitions of the City-zen Roadshow:

1. **ZERO ENERGY** Aims to develop and demonstrate Zero-Energy Cities with a central role for citizens.
2. **MOTIVATE & EMPOWER** End-users to a long-term energy saving attitude.
3. **CITIZENS** Placed in the heart of a creative process that develops designs, strategies, guidelines and timelines at all scales of their own cities built environment.
4. **NUMBERS** 4 Cities completed - 3 months prep / city - 5 days onsite / city - all citizens - 7 International sustainability experts - 6 Cities next.
5. **IMPACT** Healthy lifestyles, environmental comfort, building efficiency, independence from fossil fuel uncertainty. But most of all confidence that sustainability is for all who want it.
6. **TRUST** Citizen’s need belief in the process, objectives and solutions, no matter how radical or unfamiliar. Students open the door!
7. **OWNERSHIP** Citizen’s take ownership of their built environment without fear of hidden agendas, affiliations or political constraint.
8. **HOMEGROWN** The solutions stay with the people.
9. **WHO IS THE CITY?** Doesn’t matter where the ideas come from, as long as they come and begin to be realized.
10. **DISRUPT** Project rocks the status quo to reach zero energy.
11. **GLOCAL** Specialist global expertise combined with local stakeholder energy and knowledge of context and lifestyle.
12. **GRAPHICAL** Use graphical descriptions to get your messages across.
13. **SACRIFICE?** It’s not about losing, it’s about what you gain. Replacing it with something better for your children and community.
14. **TIMETABLE TO SUIT** Schedule to fit stakeholders, not the other way around. Remember, stakeholders are not on the payroll, they have other daily priorities.
15. **INDIVIDUAL PERSPECTIVE** Make sure activities relate to the people and their experiences. These can be expanded later to other scales.
16. **COMPARISONS** To design what is possible is one thing, to show what has been realized or what can occur under the right circumstances is even better.
17. **HIGHLY VISUAL** Outcomes to be colourful representations of the future, before/after scenarios.
18. **BE INSPIRATIONAL** Encourage ‘City Vision’ participants to take the lead in the next step!

CHAPTER 2 – ROADSHOW COMPONENTS

Two parallel workshops continue throughout the project week. On arrival, stakeholders are guided to select one workshop, depending on their interests or specialisms, however migration to each is recommended in order to get a full overview of energy and urban strategies and their implementation. At the end of each day the workshops meet to summarise their findings and to agree on that evenings and the following day's objectives. As an example of how the project approaches each city, the following describes the journey and activities undertaken in Nicosia Old Town, North and South of the UN Buffer zone.

2.1. FUTURE NEIGHBOURHOODS (WORKSHOP 1 – DAY 1 TO 5)

Led by Prof. Greg Keeffe (Queens University Belfast, United Kingdom)

2.1.1 Aim & Objectives

The aim of the workshop was to develop strategies at a range of scales that allow a process-based adaptation of the city to carbon neutrality. The scales utilised were: the city, the neighbourhood, and the building. The city scale is important because city form is the basis for the behaviours engendered in the city. Here urban grain can encourage or discourage car usage, can allow safe routes for schoolchildren, and connect the inner city with the countryside. The neighbourhood scale allows us to visualise the commons – i.e. the things we share. This may be things such as smart grids, or other networks, but may also be spaces for meeting, playing or growing. Green networks are important too, not only allowing citizens to enjoy nature and travel free from traffic, but also that the softness helps to prevent flooding and adds eco-services to the city. Energy storage is most cost-effective at this scale too, as is car share. In addition, density is one of the key factors in making neighbourhoods function, and many behaviours are linked to this – such as car usage, local economy etc. The house or building scale is crucial, because here we see many of the technologies for neutrality being employed. Technologies such as PV cells, heat-pumps, shading devices, DHW production all have been developed to work at this scale.

2.1.2 Methodology

The workshop starts with an understanding of city form, historic and future growth, urban grain, climate, eco-system services and density. From these initial studies, an understanding of the city as a holistic super-organism is developed. This bioclimatic understanding allows new insights into current trajectories. Urban design is based on understanding urban trajectories and deflecting or manipulating them, to create new futures in a seamless way. Once a sustainable urban design strategy for the city is developed, we change to the neighbourhood and building scales to look at the issues this strategy creates at the smaller scales. More detail can be developed here, and the solutions become more technological. We then visualise the impact these technological insertions have on the built environment and the lifestyles of the residents.

2.1.3 Outcomes

The design outcomes are integrated in the presentation that was delivered at the Centre for Visual Arts and Research (CVAR), Nicosia Old Town on Wednesday 15th May 2019. The full presentation is illustrated in Chapter 3 ‘Sustainable City Vision’.

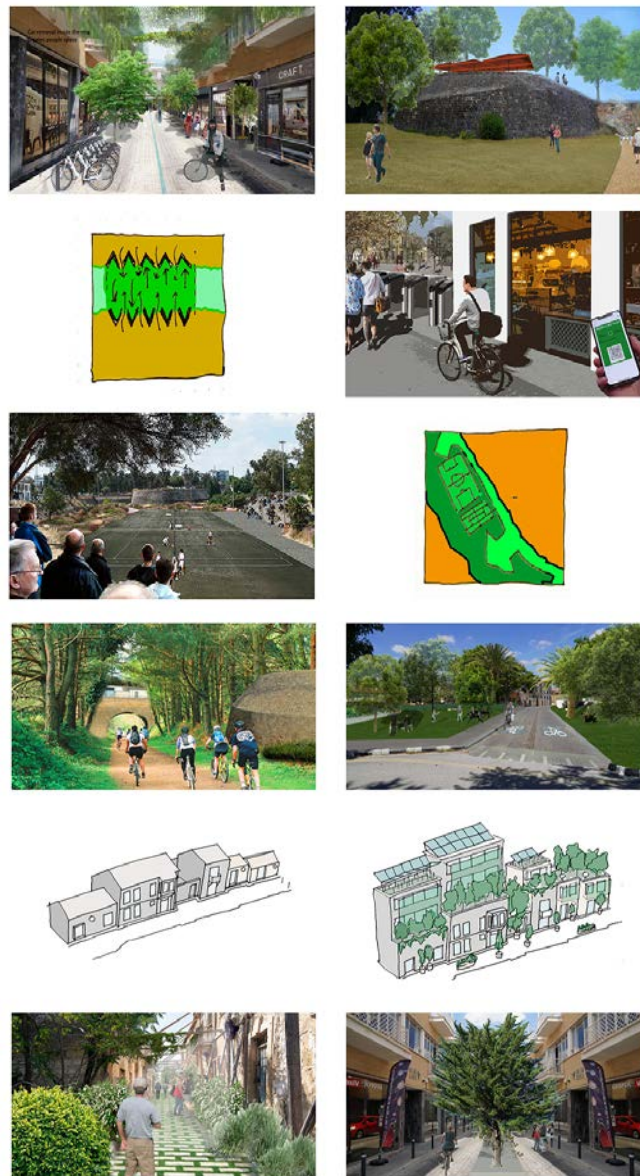


Fig 8. Selected images from the Future Neighbourhood workshop.

The studio looked to re-inventing the street and reclaiming territory from the car that currently dominates. It looked to a new community with increased density. Here, once the cars are removed from the landscape, the inner-city changes, people become a priority surrounded by a new green infrastructure. The Green Line Buffer zone becomes a positive green corridor that facilitates healthy and community functions. To enter this, a new ‘seamless’ check-in and out zone, where shared sports are located in-between the bastions. The new ‘Bastion Park’ has increased green and new infrastructure for energy, mobility, social gatherings. Activities that enable tourism and heritage to be valued and enjoyed. A sustainable city, needs densification, shade, which in turn increases intensity.

2.2. ENERGY TRANSITION (WORKSHOP 2 – DAY 1 TO 5)

Led by Prof. Dr. Andy van den Dobbelsteen (TU Delft, The Netherlands)

2.2.1 Background

The Energy Transition Approach developed for and during the roadshows has evolved in time and the results depend, amongst other factors, on the availability of data of energy use and other data. The energy transition workshop, also that of the Nicosia Roadshow, always starts with an analysis of the characteristics of the place under scrutiny by looking at the local climate, the technical features of buildings and the urban situation, as well as a quantitative assessment by means of Carbon Accounting and Energy Potential Mapping. This concerns the definition of current energy demands, carbon emissions and energy potentials. Next, scenarios are discussed and the most feasible one, fitting the future goals, is elaborated and calculated. As basis for effective energy interventions, the New Stepped Strategy is used: Reduce, Reuse, Produce. Different energy interventions are proposed throughout all scale levels, from the scale of single households to that of building blocks and streets, up to the neighbourhood and the whole city. Finally, the proposed future scenario for the municipality is assessed again by Carbon Accounting.

2.2.2 Outcomes

The design outcomes are integrated in the presentation that was delivered at the Centre for Visual Arts and Research (CVAR), Nicosia Old Town on Wednesday 15th May 2019. The full presentation is illustrated in Chapter 3 'Sustainable City Vision'.

The particular Venetian circular shape of the ancient city centre of Nicosia was made symbolic for the idea that the city should focus on solar energy, circular resource flows, a doughnut economy as well as becoming a connected city. The former run of the river now comprises the UN buffer zone, a divide that once can become a connecting part again, as described by the Future Neighbourhoods team. The main concept by the Energy Transition team encompassed the use of the city's bastion ring as connector for energy and water utilities, with the UN buffer zone as green park in the middle. The bastions would each get a new function in the circular system of the city, some as electricity storage, some as heat and cold storage, some as rainwater storage, place for waste water treatment and bio-digestion facility. Being connected with each other, the bastions would be feeding into the city's system, both north and south. They would therewith become the core elements of the city's 'reuse' strategy, helping to attune, exchange, cascade and store energy and other resources. A specific plan for the bastion as battery for heat, cold and electricity was elaborated and presented with the Sustainable City Vision.

For Nicosia, the Energy Transition team found that the traditional, vernacular way of building, which could still be found in many places within the city, north and south, actually is quite sustainable and energy efficient. Therefore, an important part of the proposed interventions related to re-introducing old bioclimatic principles in modern buildings, especially those that help to keep the city cool. These were combined with proposed energy-saving measures for individual buildings, introducing overhangs and sunshading, thermal insulation and shutters, tropical roofs with photovoltaics and also vertical, integrated PV. Proposals were made for integrating heritage PV on ramparts.

Also, the options for local energy communities were explored and deemed a feasible solution for Nicosia.

All in all, a final Carbon Accounting calculation that all solutions proposed by the Future Neighbourhoods team and Energy Transition team, focused on interventions in the urban structure, building design, mobility and behaviour, and especially the introduction of a lot of PV would lead to a reduction of carbon emissions by 97.5%, keeping the necessity of a forest the size of the inner city itself in order for it to become zero carbon, which could be partly solved by introducing a lot of green in the centre: in streets, on facades, on roofs.

2.3. CARBON ACCOUNTING

Led by Dr. Riccardo M. Pulselli (University of Siena, IT)

2.3.1 Carbon Footprint of Cyprus

As proxy for estimating the impact of human activities, the greenhouse gas inventory of Cyprus, developed by the *Department of Environment - Ministry of Agriculture, Rural Development and Environment*, has been taken as main reference, published on the “2018 7th National Communication and 3rd Biennial report under the UNFCCC of Cyprus”. Since it refers to the Southern part of the island and does not take into account the area occupied by the *Turkish Republic of Northern Cyprus*, the impact of the full island has been estimated by proportioning based on the population: Cyprus: 1,197,152 people; South: 864,200 (72%).

The Carbon Footprint of Cyprus is 8,631,000 tons CO₂eq. Table cf.1 shows the contribution of different sectors of activities, including the carbon uptake by local ecosystems.



Table cf.1: Carbon Footprint of Cyprus. Source: 2018 7th National Communication and 3rd Biennial report under the UNFCCC of Cyprus.

Figure cf.1 shows a representation of the total Carbon Footprint in terms of virtual forestland that would be needed to compensate the emission through carbon sequestration. Given the total area of Cyprus of 9251 km², the virtual forestland is estimated 8860 km² that is almost the entire available land. The area of virtual forest has been estimated considering 1.35 kg CO₂eq/m² absorbed by a young (20 years old) forest with an intense rate of biomass growth; based on this coefficient the absorption by the existing forest of pine corresponds to just 12 km², less than 2% of the total emission. The map also shows the location of the four main urbanised areas in Cyprus, where most of the emission sources are located.

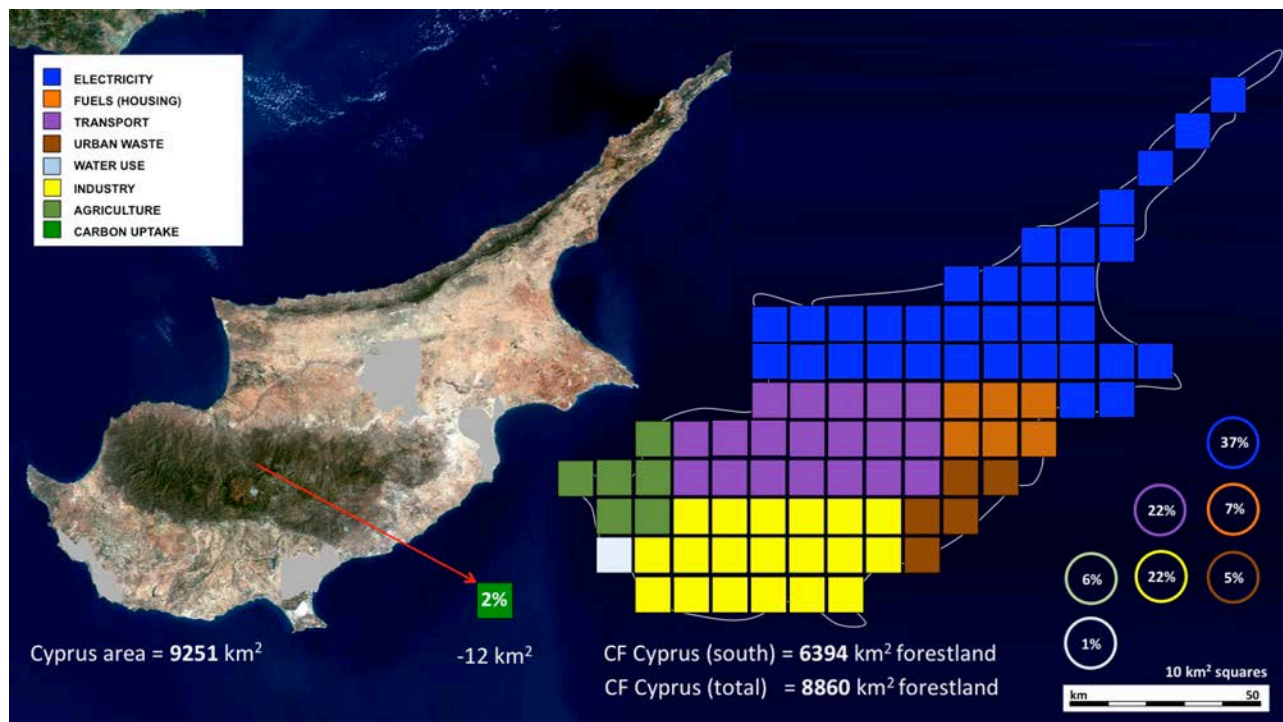


Figure cf.1: Representation of the virtual forestland, i.e. Carbon Footprint of Cyprus per activity sector and Carbon Uptake. Each square is 10 km².

2.3.2. Carbon Footprint of Nicosia.

A specific focus has been developed for the city of Nicosia. The procedure followed for the assessment of greenhouse gas emissions in Nicosia refers to Pulselli et al. (2018) [Pulselli RM, Marchi M, Neri E, Marchettini N, Bastianoni S. “Carbon accounting framework for decarbonisation of European city neighbourhoods”. *Journal of Cleaner Production* 208 (2018) 850-868], including the Emission Factors (EF) used, e.g. electricity use, fuel combustion, driven km by car and other transport, waste management (disposal in landfill, incineration, organic composting, recycling), water depuration and distribution).

The EF, given in kg CO₂-eq /unit process, have been assessed on the bases of the 2006 IPCC guidelines except for the EF of electricity depending on the local primary sources and share of renewables. This has been estimated based on the national electricity grid mix (Cyprus Statistical Service: https://www.mof.gov.cy/mof/cystat/statistics.nsf/index_en/index_en?OpenDocument) as shown in Table cf.2 (the EF used are LCA based).

Table cf.2: Assessment of the Emission Factor of Electricity in Cyprus (2017), i.e. 0.712 kg CO₂eq/kWh.

electricity production TOT	Value	UNIT	%	kg CO ₂ eq/kWh	kg CO ₂ eq
Thermo-electricity production	4,569,154	MWh	91.3%	0.778	3,554,802
RES electricity production	435,015	MWh	8.7%	–	–
PV	172,013	MWh	3.4%	0.013	2,236
WIND	211,447	MWh	4.2%	0.010	2,114
BIOMASS	51,555	MWh	1.0%	0.028	1,444
	5,004,169	MWh	100.0%	0.712	3,560,596

Moreover, the Emission Factors of fuel mix per activity have been estimated based on current use of fuels, as shown in Tables cf.3, cf.4 and cf.5.

Space heating fuel mix in house	Value	UNIT	%	kg/kWh	kg CO ₂ eq
Heating oil	3303	kWh	62.1%	0.281	928.97
Kerosene	407	kWh	7.7%	0.281	114.47
LPG	640	kWh	12.0%	0.263	168.12
Biomass	965	kWh	18.2%	0.114	110.00
Charcoal	0	kWh	0.0%	0.114	0.00
	5315	kWh	100.0%	0.249	1,321.55

Table cf.3: Assessment of the Emission Factor of fuel mix for space heating in houses, i.e. 0.249 kg CO₂eq/kWh.

Water heating fuel mix in house	Value	UNIT	%	kg/kWh	kg CO ₂ eq
Heating oil	233	kWh	62.5%	0.281	65.53
Kerosene	23	kWh	6.2%	0.281	6.47
LPG	105	kWh	28.2%	0.263	27.58
Biomass	12	kWh	3.2%	0.114	1.37
Charcoal	0	kWh	0.0%	0.114	0.00
	373	kWh	100.0%	0.271	100.95

Table cf.4: Assessment of the Emission Factor of fuel mix for water heating in houses, i.e. 0.271 kg CO₂eq/kWh.

Cooking fuel mix in house	Value	UNIT	%	kg/kWh	kg CO ₂ eq
Heating oil	0	kWh	0.0%	0.281	0.00
Kerosene	0	kWh	0.0%	0.281	0.00
LPG	861	kWh	66.1%	0.263	226.17
Biomass	47	kWh	3.6%	0.114	5.36
Charcoal	395	kWh	30.3%	0.114	45.02
	1303	kWh	100.0%	0.212	276.55

Table cf.5: Assessment of the Emission Factor of fuel mix for cooking in houses, i.e. 0.212 kg CO₂eq/kWh.

As first step in the procedure, in order to focus on the greenhouse gas emission of Nicosia, the impact of a typical household in Nicosia has been estimated, based on average data from the Cyprus Statistical Service. Table cf.6 shows general data on energy consumption for housing and mobility, water use and waste production of a typical house unit of 2.7 persons.



Table cf.6: Assessment of the Carbon Footprint of an average household in Nicosia, i.e. 12.37 t CO₂eq/yr.

The CF of the typical household in Nicosia is 12.37 t CO₂-eq/yr. This value corresponds to an equivalent quantity of CO₂ that is yearly absorbed by 0.97 hectares of a young forest. In other words, every single household in Nicosia should have a backyard forestland equivalent to 1.5 football fields.

As second step of the procedure, data have been scaled-up at the urban level based on number of households and population. The carbon accounting for the old city (the area within the ancient ring) is based on the profiling of the household, therefore it follows a bottom-up approach. The old city has a population of 35,000 people (approximate assumption based on available data on census unit from the “administrative division of Nicosia” Table at this link: https://en.wikipedia.org/wiki/Administrative_divisions_of_Nicosia; unavailable data in Northern areas have been estimated proportionally based on average density) living in 13,258 households (avg. 2.7 people/house) and a carbon footprint of about 164,000 t CO₂-eq/yr.

Figure cf.2 shows the virtual forestland needed to compensate the emission of Nicosia old city, i.e. 12,152 ha (without food). Considering the area of the ring is 153 ha, the forestland is 80 times bigger than the city itself.

Impacts of food consumption are also shown; since local diet is generally based on high consumption of meat, the impact of food corresponds to an increase of 41%. Anyhow, different scenarios for a more balanced diet (just 500 g meat per week: +27%) and for a balanced diet based on short production chains (local food: + 16%) have been also shown demonstrating that food attitudes of people can have relevant effects in terms of environmental impact mitigation. Colours in the map show the contribution of different sectors of activities.

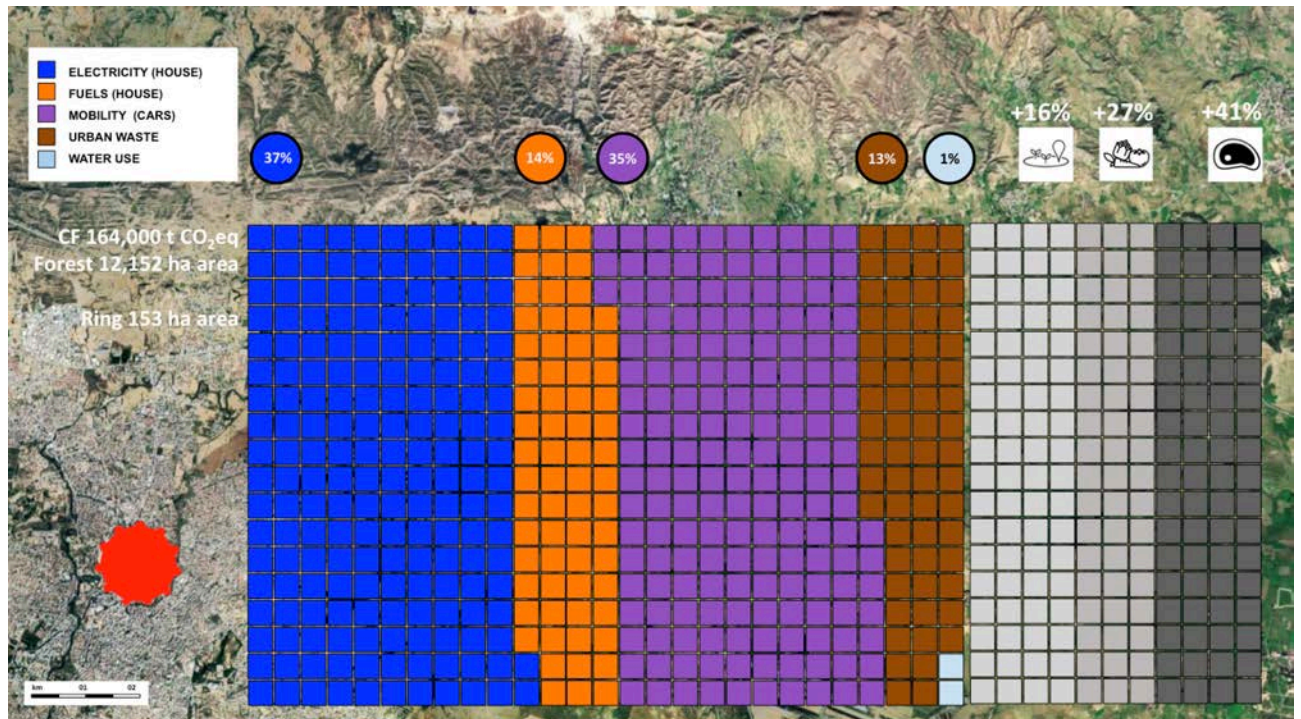


Figure cf.2. Virtual forestland needed to compensate the emission of Nicosia old city, i.e. 12,152 ha, including impact of food from +16% (balanced diet, local food) to +41% (meat lover diet). Each square is 25 ha.

The high impact of electricity is due to the high Emission Factor depending on fossil fuels (91%); the high impact of mobility depends on the high use of private cars (among the highest rate in Europe); the high impact of waste management depends on the high rate of landfilled waste (80%) and no differentiation of organic and other fractions.

2.3.3. Carbon mitigation accounting.

The CF of the old city of Nicosia (without food) is taken as the starting point to plan integrated measures and policies for energy retrofitting and decarbonisation. The visualisation of outcomes at the scale of the household and the city allows to quickly figure out an integrated vision combining technologies with other measures, such as campaigns of awareness raising to change citizens' behaviour. This aims to show how the designed measures as well as changes in individual behaviours can contribute to decrease the Carbon Footprint towards a zero-carbon community.

A combination of measures for energy transition has been proposed together with the technological partners of TU Delft. The scope is to figure out possible scenarios towards zero energy and carbon neutrality by 2050. In particular, the Carbon Accounting framework allowed for estimating the Carbon Footprint mitigation effects of the proposed measures concerning energy retrofitting and renewable energy generation, sustainable mobility, waste management and water use.

The assessment starts from the design of suitable solutions and the estimate of benefits in terms of energy saving or energy production. Based on the spatial representation of the impact of the city in terms of virtual forestland, the contribution of designed measures to decrease the impact towards a zero-carbon community is visualized by progressively subtracting squares (25 hectares each) of equivalent forestland from the initial Carbon Footprint.

One possible scenario of 14 measures scheduled for the old city of Nicosia follows, corresponding to the sequence shown in Figure cf.3 until the final goal of carbon neutrality. The left side of each image shows the level of penetration of the measure hypothesized (for example the % of households involved) and the estimate effect in terms of energy saving, renewable energy generation rate, decrease of waste production and water use. The selected measures that constitute the scenario follow:

#1 Energy saving through greenery and shading systems and behavioural changes of citizens e.g. use of LED lights;

#2 Energy saving through increased insulation and energy performances of building envelopes - Technological solutions at household/building scale

#3 Increased public transport - Behavioural change + infrastructural improvement;

#4 Biking-walking to work/school – Behavioural change + infrastructural improvement (e.g. cycling roads, electric bike sharing);

#5 Waste reduction/reuse and landfilled waste reduction - Behavioural change (differentiation by citizens) + infrastructural improvement (integrated waste management system);

#6 Water use reduction - Behavioural change at home + Technological solutions (e.g. rainwater harvesting for gardening);

#7 High Temperature heat supply - Technological solutions at household/building scale (HT single solar collectors);

#8 Medium Temperature heat supply - Technological solutions at household/building scale (shared MT solar collectors + heat pumps);

#9 Low Temperature heat supply - Technological solutions at household/building scale (LT aquifer storage + heat pumps);

#10 PV on roofs – Renewable electricity generation (estimated 52 GWh/yr electric generation on 174,000 m² building roofs, corresponding to 66 GWh/yr total PV potential).

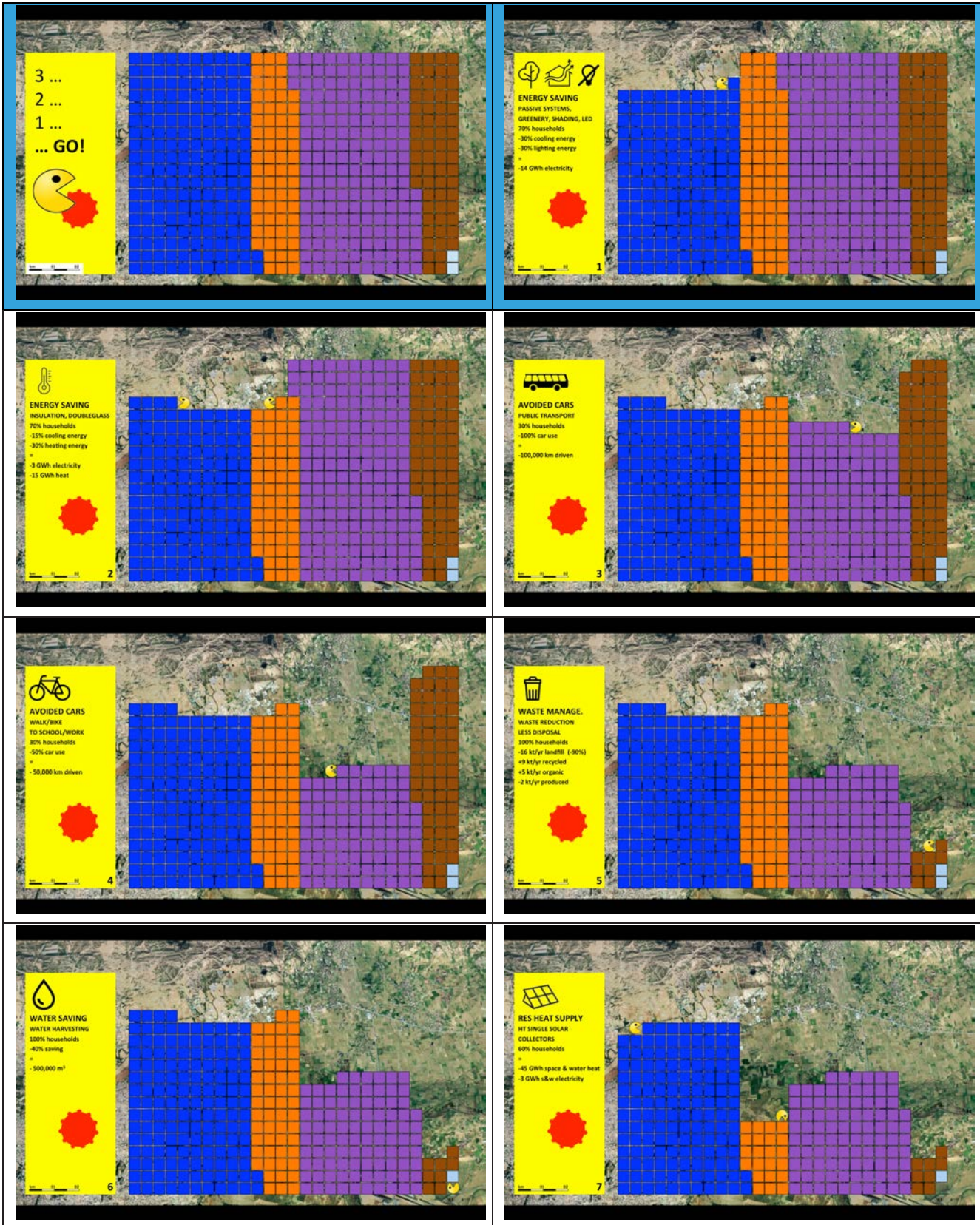
#11 Vertical PV on facades – Renewable electricity generation (estimated 8 GWh/yr electric generation).

#12 Transition to electric mobility - Technological solution + infrastructural improvement (estimated additional 32 GWh electricity demand for the full transition)

#13 Shared PV on canopies – Renewable electricity generation (estimated 32 GWh/yr electric generation on 107,000 m² surface).

#14 Urban forestry – compensation of the remaining emission by 230 hectares forestland.

The Carbon Accounting framework, developed to be easily and quickly implemented, provides a reliable ex-ante evaluation of measures that can be designed and implemented at the scale of the city, neighbourhood, building or single household as well as individual citizen (behavioural change). It provides quantitative information and visual representations, to support design and raise awareness.



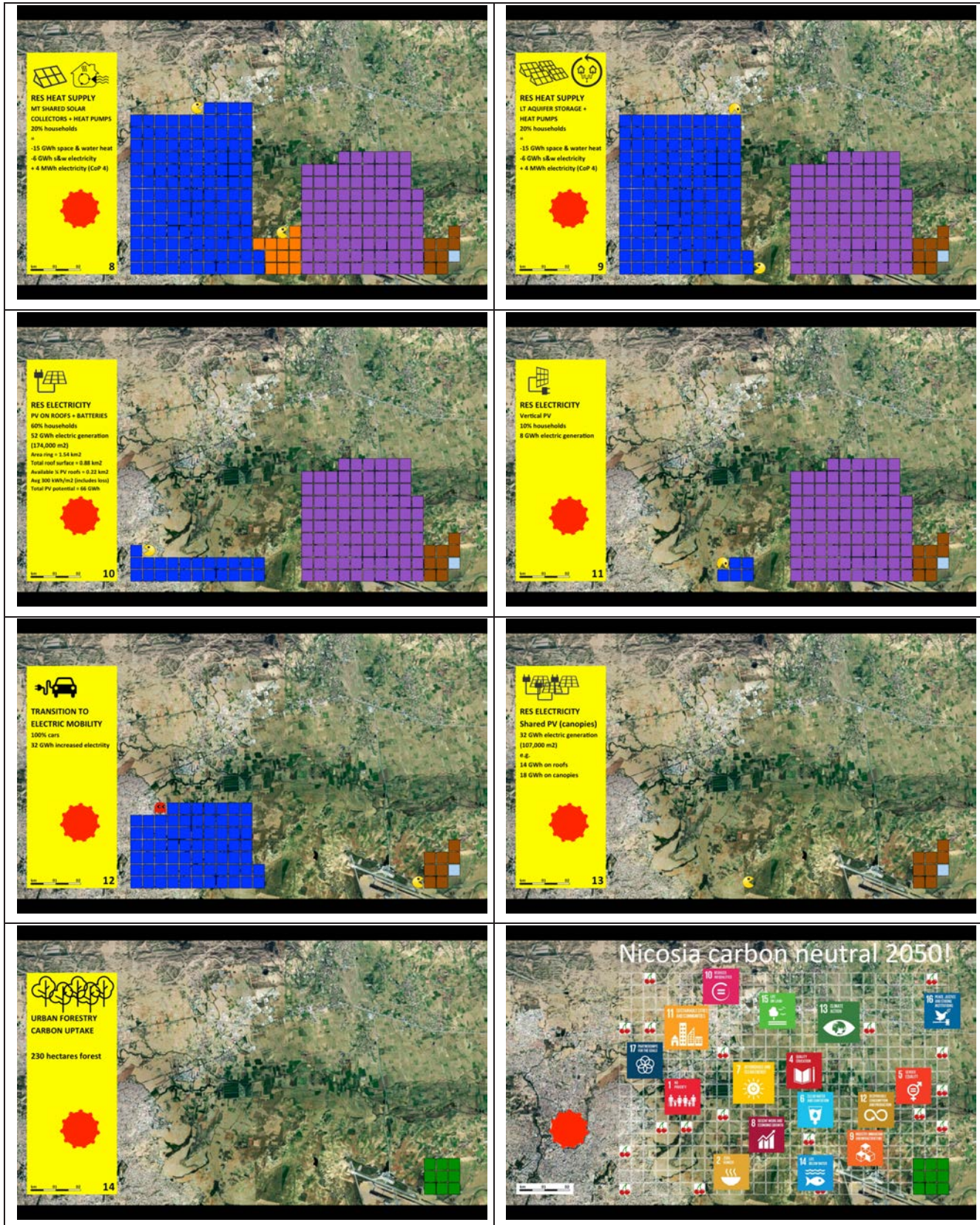


Figure cf.3. Sequence of Carbon Footprint mitigation measures to achieve the goal of carbon neutrality.

2.3.4. Conclusions

For increasing attractiveness, the graphic representation simulates the Pacman game where the Pacman eats squares of forestland due to energy saving, renewable energy production or other emissions avoided. As far as additional energy inputs are required, the ghost appears to add new squares such as, for example, when the use of heat pumps support the heating demand through renewable energy by using electricity (Pacman eats orange squares but new blue squares appear) or in case of a transition to electric mobility (Pacman eats purple squares but new blue squares appear). A consistent electricity generation from renewable sources can contribute to support the electricity demand and let the Pacman move forwards.

The carbon mitigation accounting and its representation through the Pacman game have been developed as a communication tool to allow a wide audience understand that, based on a collective and participative process, zero-carbon cities are an achievable goal to push forwards.

The last image shows the remaining forestland compared to the current Carbon Footprint. Referring to the metaphor of Pacman, a few cherries have appeared in the grid, some of which are replaced by the well known logos of the UN Sustainable Development Goals. Just like Pacman that eats cherries to gain scores, these represent the many opportunities throughout the pathway to a more sustainable Nicosia. Especially the activity of urban design, developed by the QUB team, shows potential benefits in terms of health, social equity, quality of life, in compliance with the UN recommendations, and demonstrates that sustainability does not concern with losses in our lifestyle but, in many regards, with gains and a more prosperous future.

A list of possible keywords and actions that have been hypothesized follows, showing possible interrelations with the UN Sustainable Development Goals.

# issues	Actions					
Sun city	Sunlight source					
Circular city	Circular economy					
Doughnut city	Economy within limits					
Co-developed city	Shared buffer zone, ex vital river					
Both side clearance	Airport pass (Cypriots)					
Facilitating tourism	Airport pass (tourists)					
Ring energy network	Energy generation + storage					
Energy community	Local consumer					
Citizen size	From car dominated to pedestrian. People first!					































Enhanced cultural heritage	Local identity/history; building value; UNESCO site					
Ecosystem services	sport + recreational + educational facilities (e.g. biodiversity)					
Ecosystem services	climate protection; lower hydrogeological risk					
Ecosystem services	food production (fruit trees); plant nursery; urban agriculture; autochthonous food					
Ecosystem services	light mobility (cycling route)					
Ecosystem services	green infrastructures (city as forest): shadow effect, UHIE mitigation					
Ecosystem services	Community services, safer and healthier for kids					
Connected work environment	new entrepreneurship					
Sustainable mobility	easier commuting					

Table cf.7. Correlations of planned design issues with the UN Sustainable Development Goals.

CHAPTER 3 – SUSTAINABLE CITY VISION

3.1. FINAL DAY PRESENTATION AT THE CVAR

The final day of the Nicosia Roadshow took place in the Centre for Visual Arts & Research on the 15th of May 2019. The final ‘Sustainable City Vision’ was presented to an audience comprising the Chamber of Commerce leaders, Ambassadors and Embassy policy officers, Members of the Parliaments, Council Department Heads, professionals, artists, energy consultants, academics, students and citizens from North and South Nicosia.



Fig 9. Scenes from the final presentation (Day 5) of the City-zen Nicosia Roadshow, CVAR, Nicosia Old Town. Team photo (May 2018).

The final day of the Nicosia Roadshow took the form of several integrated presentations. The first briefly outlined the overall objectives, ambitions, format and activities completed during the week. The second and third components composed the major body of the 'City Vision'. These being the 'Energy' workshop presentation, a complementary quantitative approach focused on energy strategies, scenarios and carbon offsetting measures at overlapping scales. The 'Future Neighbourhoods' workshop, more qualitative in nature, including urban planning intervention proposals at the façade, building and neighbourhood and city scale, together with spatial, social and guidelines. These elements would be brought together by urban observations instigated by the walking event and in-depth carbon investigations that graphically demonstrated how the city would reach zero-carbon by implementing the variously scaled interventions outlined earlier in the presentation.

The Roadshow continues to build upon previous experiences and looks forward to the final Roadshow, which is set to be Amersfoort in The Netherlands. The key to success has been to identify, reach and gain the trust of city inhabitants and 'decision makers'. To achieve this, an exchange of knowledge, experience and commitment continues to be crucial. The Roadshow will continue to develop and implement innovative methods that increase city engagement, awareness and understanding of the solutions needed to counter climate change, become carbon neutral and make cities happier and healthier places to live.

3.2. THE PRESENTATION

The Sustainable 'City Vision' presentation (Roadshow outcomes) presented at the Centre for Visual Arts and Research (CVAR), Nicosia Old Town, on Wednesday 15th of May 2019, can be seen hereafter.