

City-zen Nicosia Roadshow (May 8-15 2019)



Presentation by

Prof.Dr. Craig Lee Martin

City-zen Roadshow Leader

The Delft University of Technology (NL)
The Grenfell-Baines Institute of Architecture, UCLan (UK)

Roadshow Team:

Prof. Greg Keeffe (QUB)
Prof.Dr. Andy vd Dobbelsteen (TUD)
Dr. Riccardo Pulselli (UoS)
Prof.Dr. Craig L.Martin (TU Delft / UCLan)
Prof.Dr. Han Vandevyvere (VITO)
Dr. Andy Jenkins (QUB)
Dr. Markella Menikou (UoN)
Anneleen Vanderlinden (Th!nk-e)
Achille Hannoset (Th!nk-e)
Maryam Al-Irhayim (UCLan)
Emma Campbell (QUB)
Sam van Hooff (TU Delft)
Rainer Townend (UCLan)
Alexis Postekkis (UoN Alumni)
Andreas Prokopiou (UoN Alumni)
Christos Xenofontos (UoN Alumni)

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



FUN-SHOP - WALK

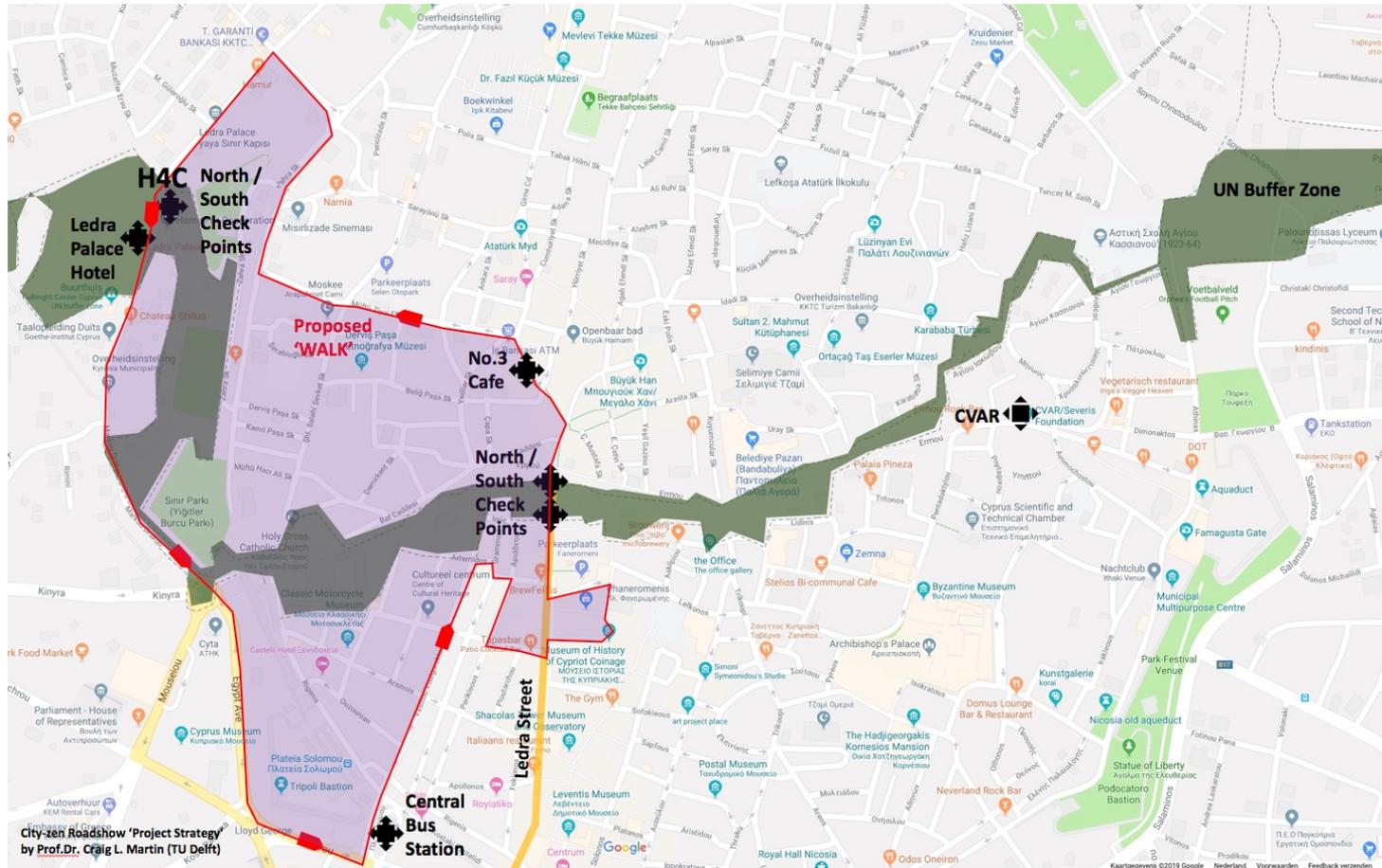


To place Citizens in heart of process to create a healthier, happier and energy efficient city.

To openly invite Nicosia's stakeholders to come and get involved no matter what background and expertise.



FUN-SHOP - WALK



To place Citizens in heart of process to create a healthier, happier and energy efficient city.

To openly invite Nicosia's stakeholders to come and get involved no matter what background and expertise.



FUN-SHOP - TALK



Global experts combine with local stakeholder passion, knowledge and close familiarity of place to reach zero energy.

To ensure that solutions stay with the people who helped create them.



FUN-SHOP - TALK (DUTCH EMBASSY/RESIDENCE)



Embassy of the
Kingdom of the Netherlands

- Sustainability event at the residence of the Dutch Ambassador

FUN-SHOP - TALK (EMU DESIGN WEEK)



- 9th International EMU Design Week



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.

City-zen Roadshow Leader – Prof.Dr. Craig Martin



Nicosia, Cyprus, May 2019

FUN-SHOP - Go2Zero



City-zen Roadshow Leader – Prof.Dr. Craig Martin



- Energy Transition role playing game



Nicosia, Cyprus, May 2019

FUN-SHOP - Go2Zero



City-zen Roadshow Leader – Prof.Dr. Craig Martin



- Energy Transition role playing game



Nicosia, Cyprus, May 2019

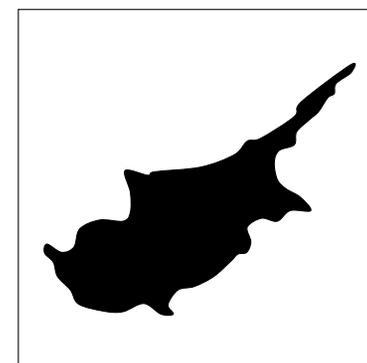
FUN-SHOPS – DESIGN (URBAN & ENERGY)



- Studios for energy and urban design continued throughout the week in different locations.

CYPRUS GREENHOUSE GASES INVENTORY 2016

	ELECTRICITY	91% heavy oil 3% PV 4% Wind 1% biomass	3197 kt CO₂-eq	37.0 %	 8631 kt CO₂eq
	HOUSING	51% Diesel oil 6% Kerosene 23% LPG 15% Biomass 6% Charcoal	570 kt CO₂-eq	6.6 %	
	TRANSPORT		1889 kt CO₂-eq	21.9 %	
	INDUSTRY		1901 kt CO₂-eq	22.0 %	
	AGRICULTURE		559 kt CO₂-eq	6.5 %	
	WASTE	79% landfilled 9% organic 12% recycled	466 kt CO₂-eq	5.4 %	
	WATER		49 kt CO₂-eq	0.6 %	
	CARBON UPTAKE		-168 kt CO₂-eq	1.9%	



CYPRUS

Area: 9251km²

Citizens: 864,200

Population South: 72%

Population North: 28%

2018 7th National Communication and 3rd Biennial report under the

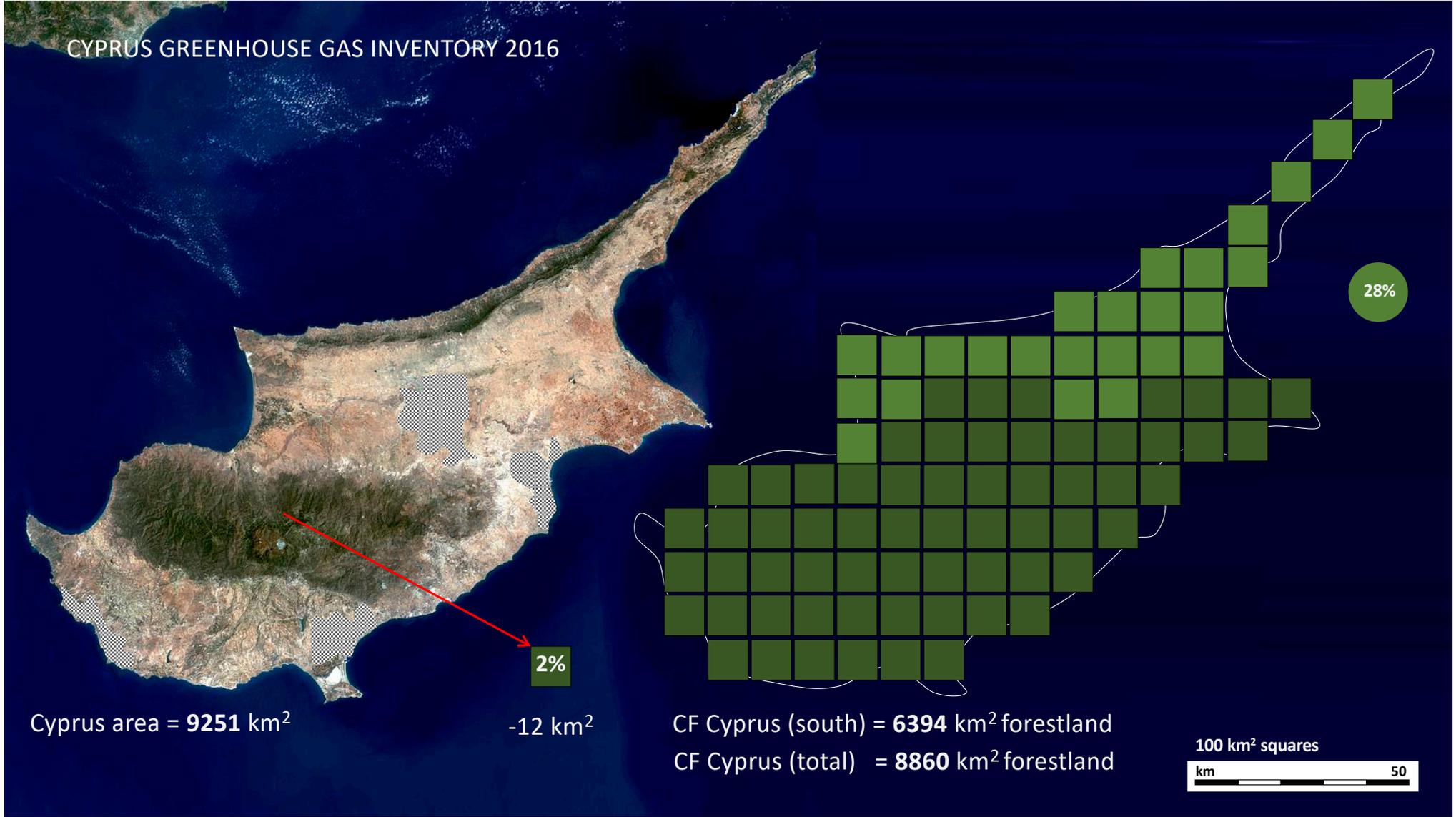
UNFCCC of Cyprus

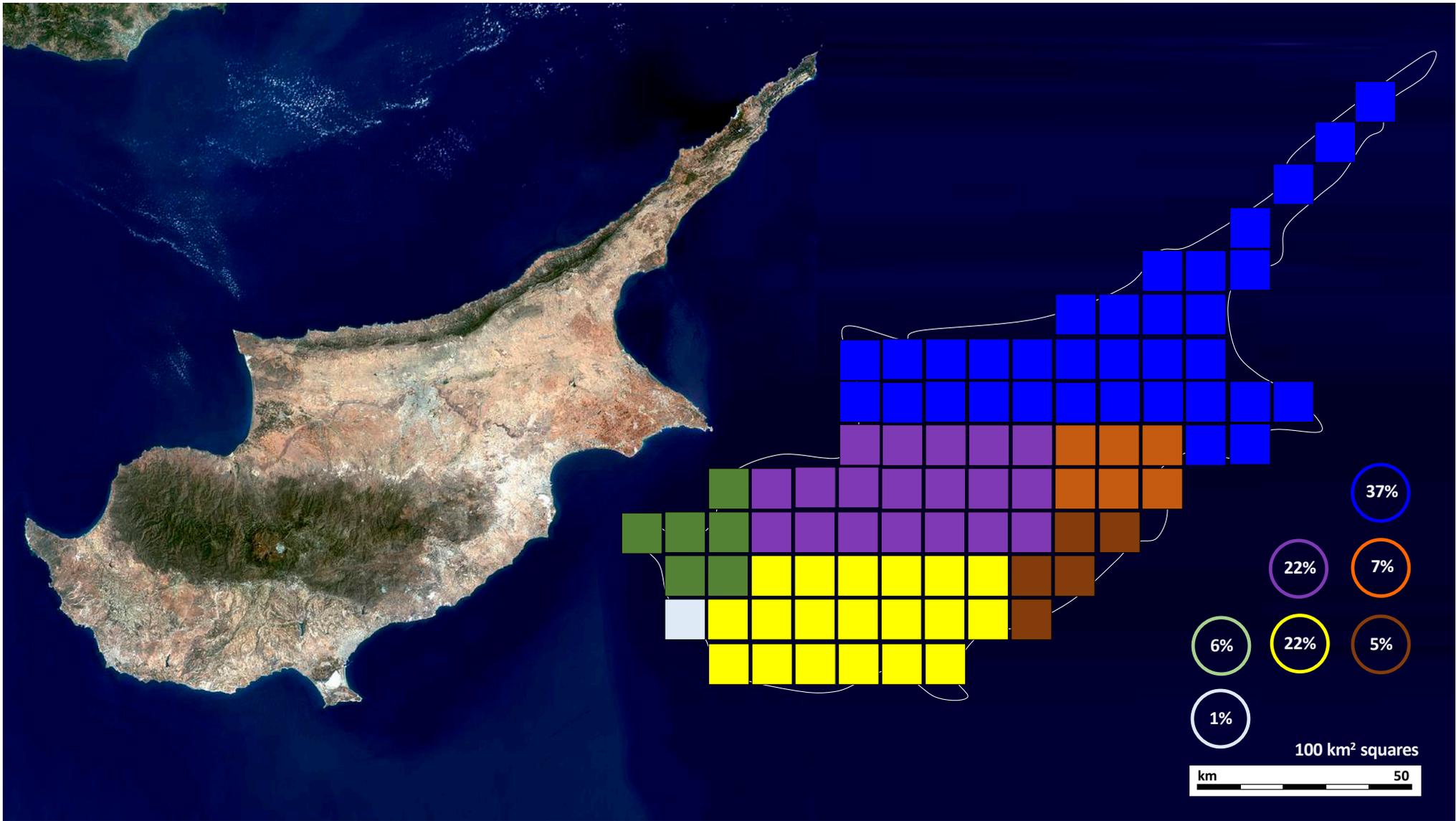
Department of Environment

Ministry of Agriculture, Rural Development and Environment

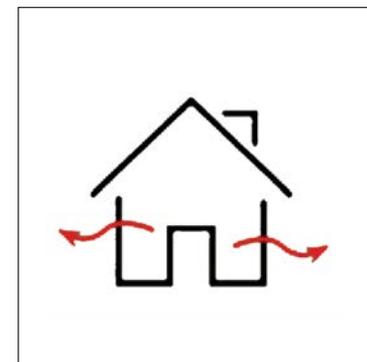
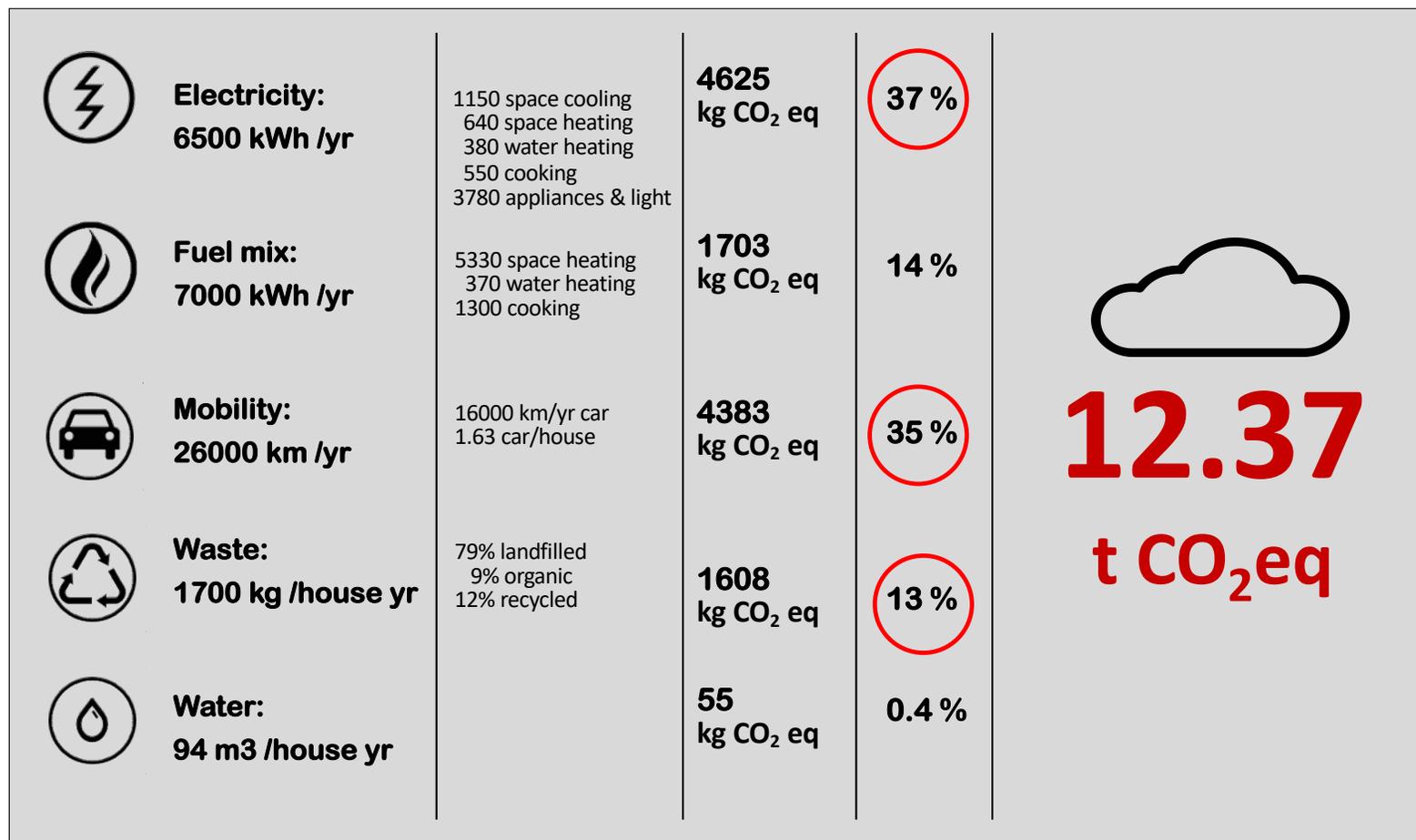
Nicosia, Cyprus, May 2019

CYPRUS GREENHOUSE GAS INVENTORY 2016





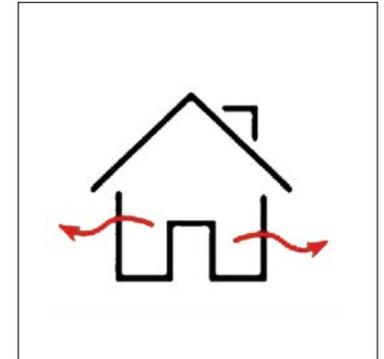
Household profiling in Cyprus



Household
2.7 citizens

Household 2009:
https://www.mof.gov.cy/mof/cystat/statistics.nsf/energy_environment_81main_en/energy_environment_81main_en?OpenForm&sub=1&sel=2

Carbon Footprint per household



Household

2.7 citizens

12.37 t CO₂ eq

0.92 ha

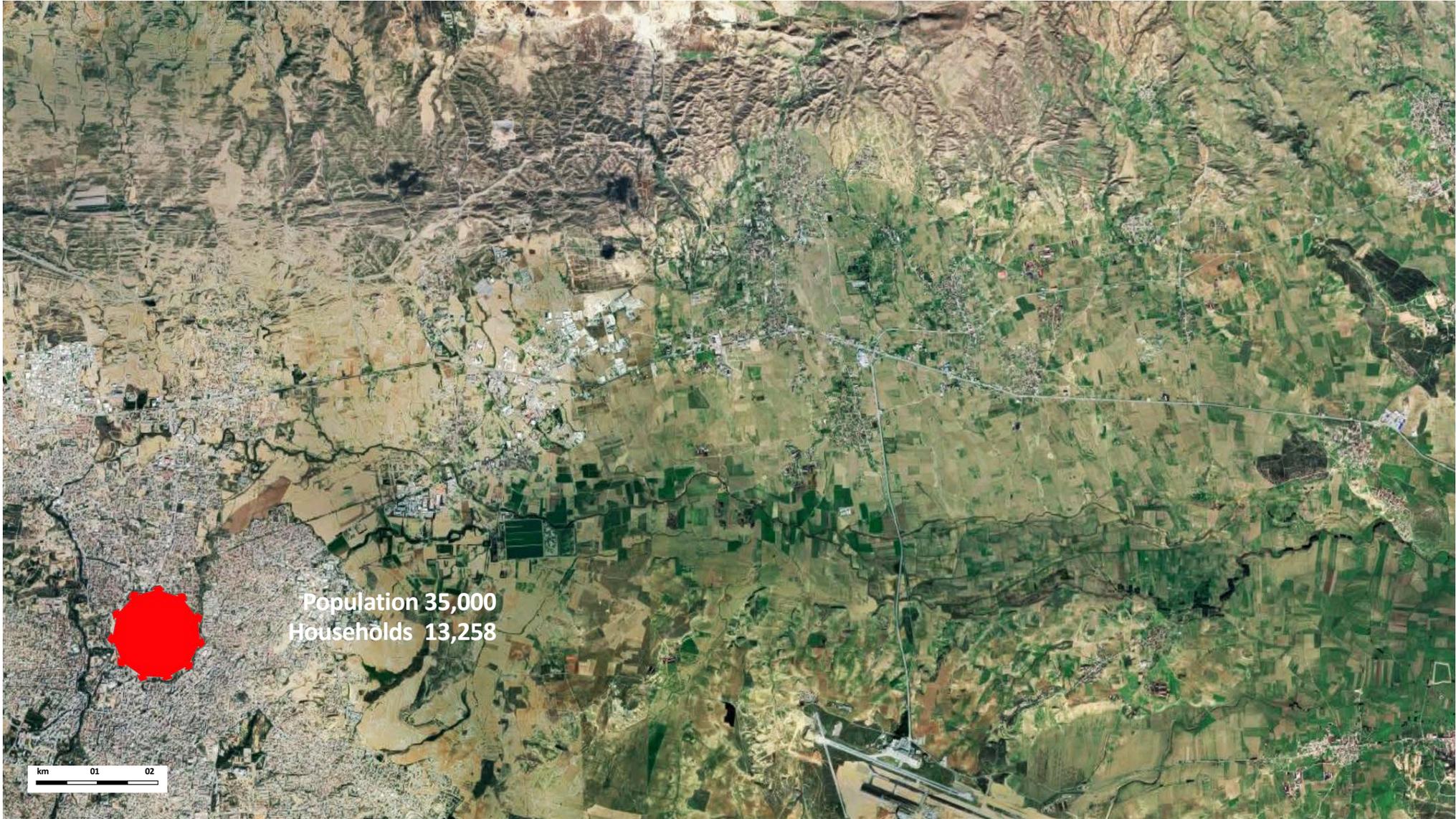
Virtual forestland

1.5 fields

Pulselli et al. "Carbon accounting framework for decarbonisation of European city neighbourhoods". Journal of Cleaner Production 208 (2018) 850-868.

Analysis: Dr Riccardo Pulselli, INDACO2 / Università di Siena

Nicosia, Cyprus, May 2019



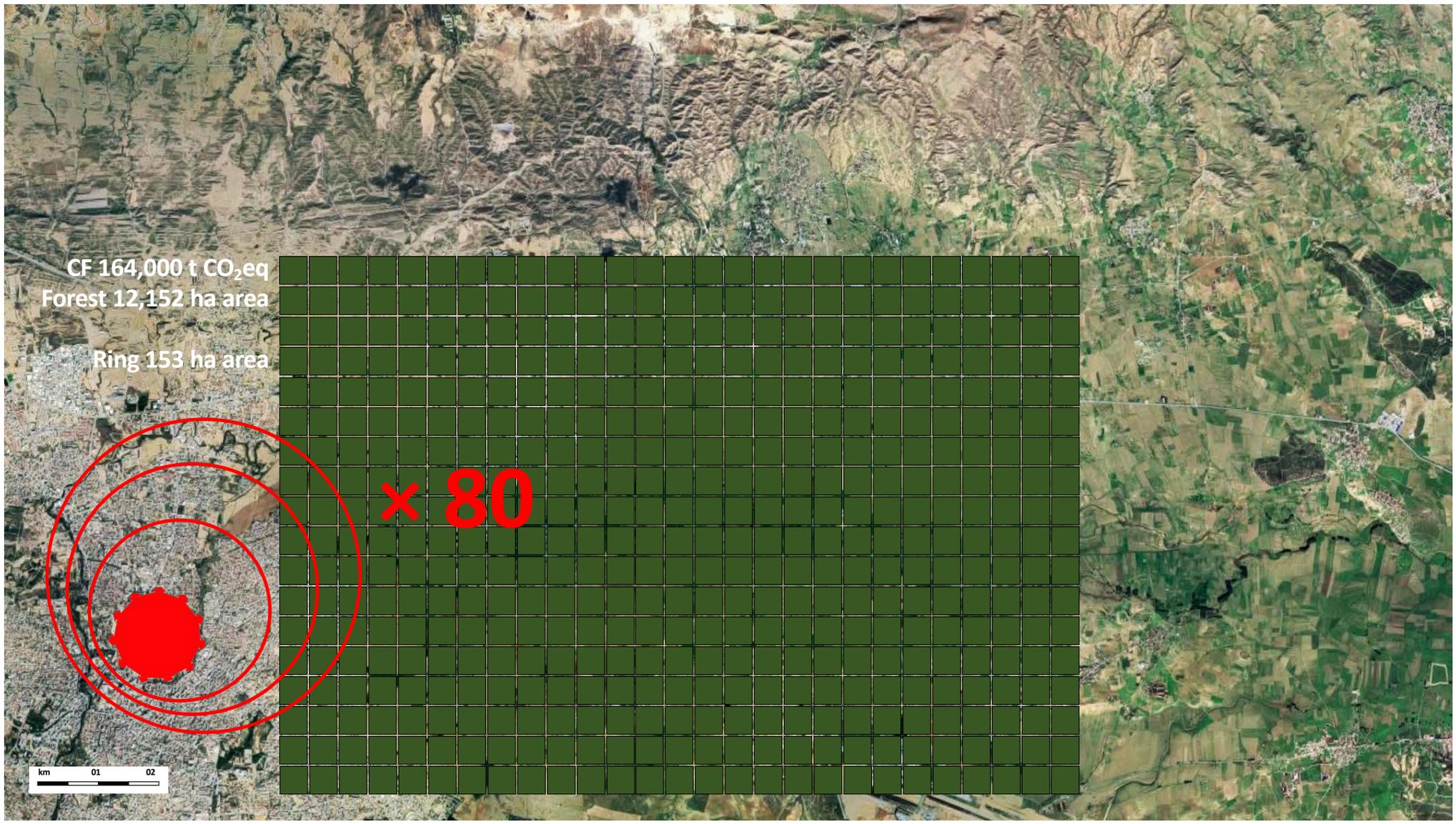
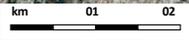
Population 35,000
Households 13,258

km 01 02

CF 164,000 t CO₂eq
Forest 12,152 ha area

Ring 153 ha area

x 80



- ELECTRICITY (HOUSE)
- FUELS (HOUSE)
- MOBILITY (CARS)
- URBAN WASTE
- WATER USE

37%

14%

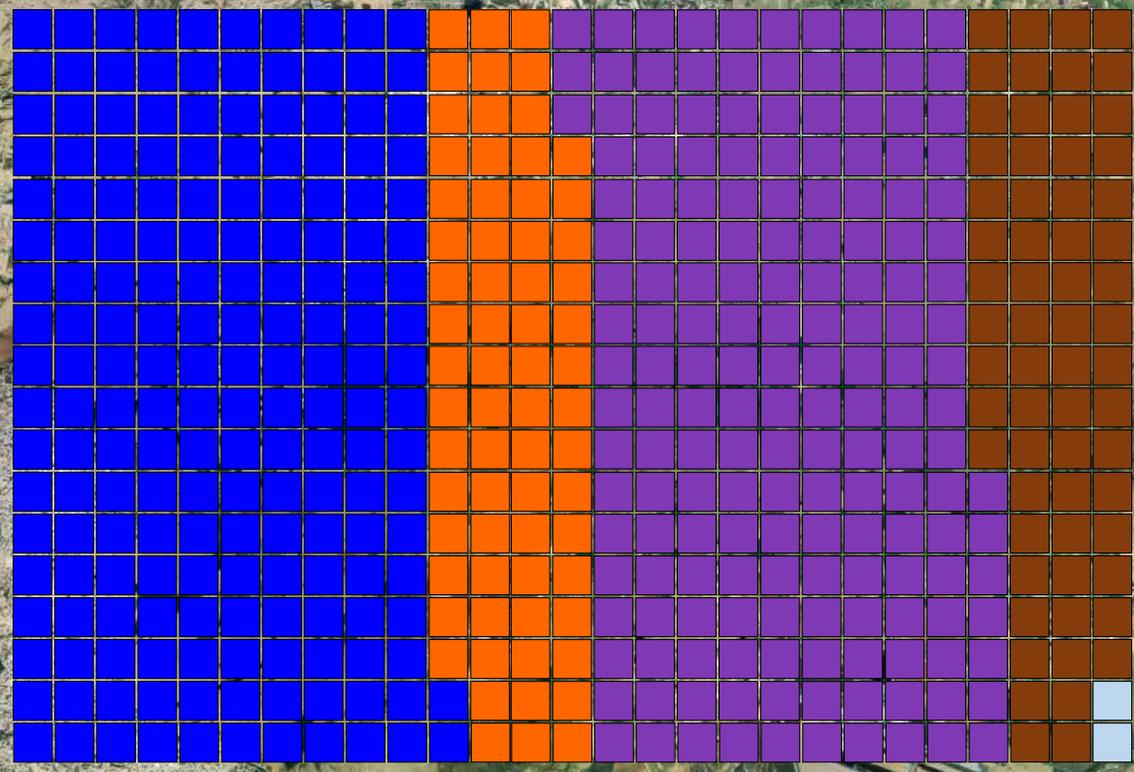
35%

13%

1%

CF 164,000 t CO₂eq
Forest 12,152 ha area

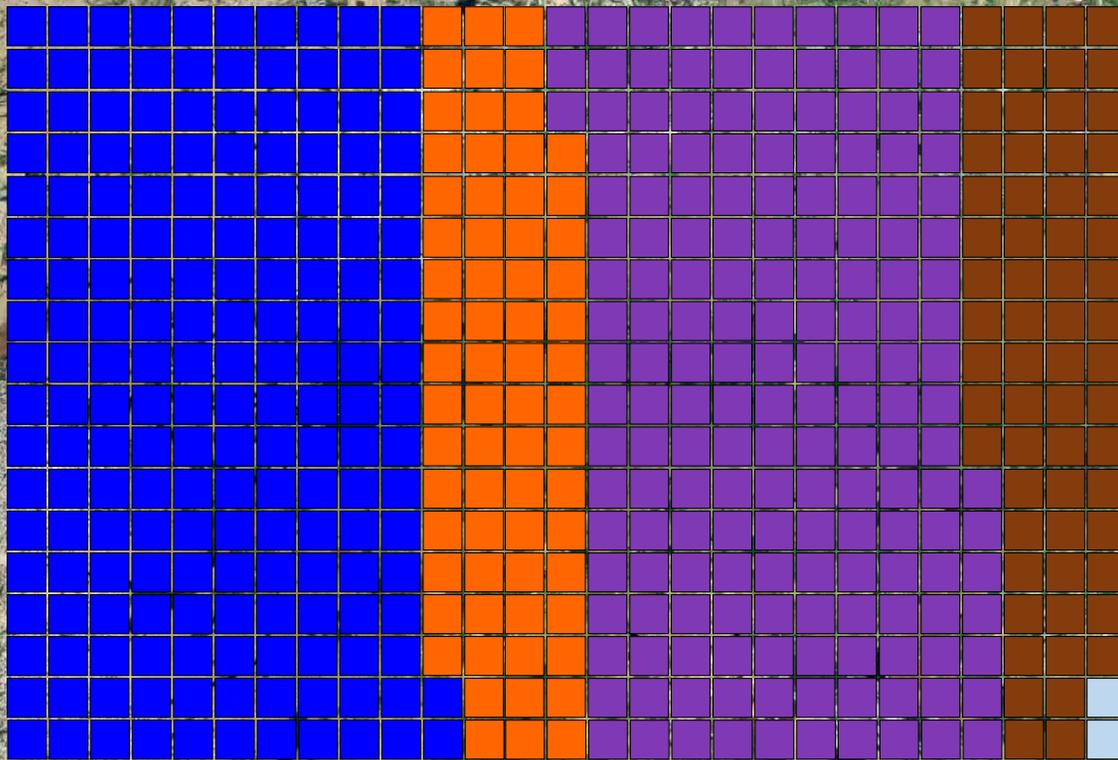
Ring 153 ha area



What about food?

CF 164,000 t CO₂eq
Forest 12,152 ha area

Ring 153 ha area



km 01 02

What about food?

+27%



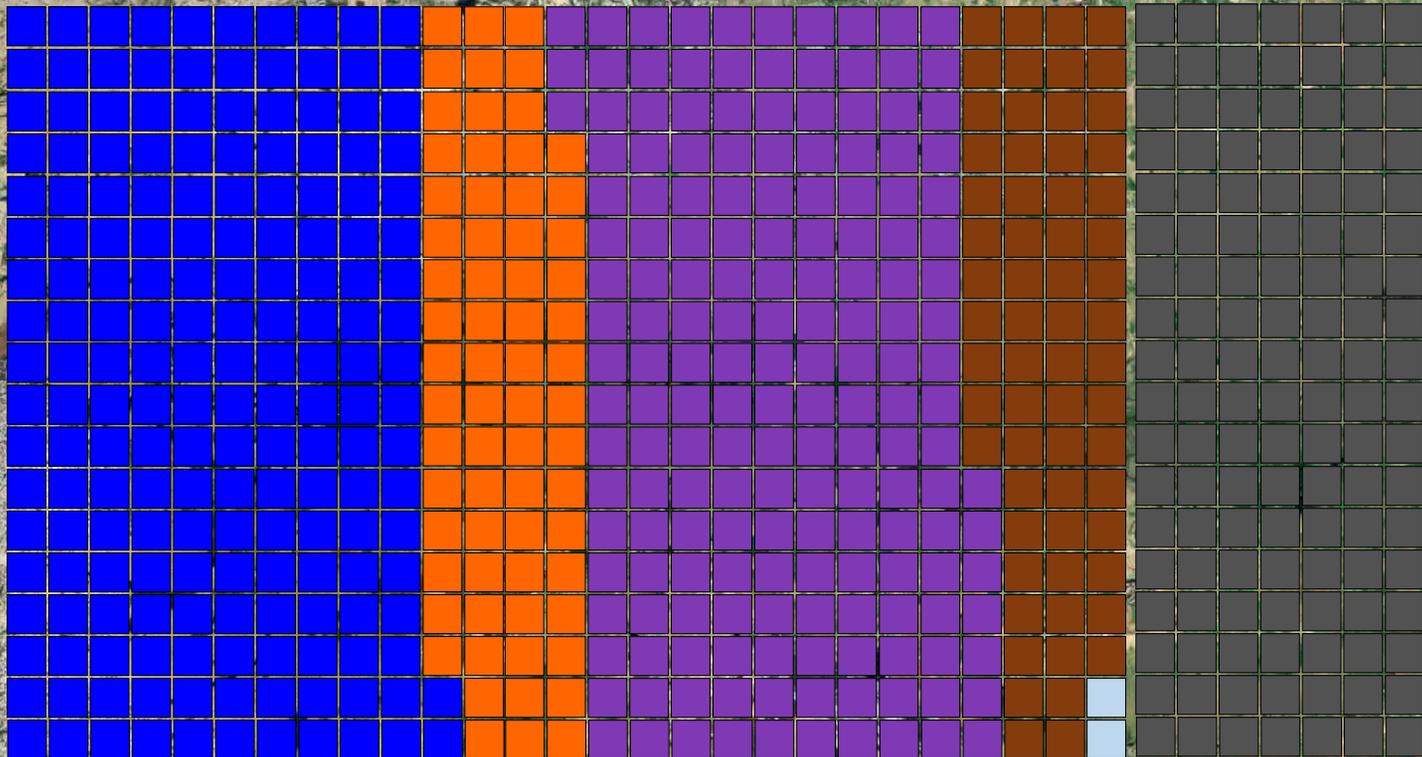
ADD CF 44,000 t CO₂eq
Forest 3280 ha area

Ring 153 ha area

x 21

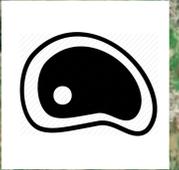


km 01 02



What about food?

+41%



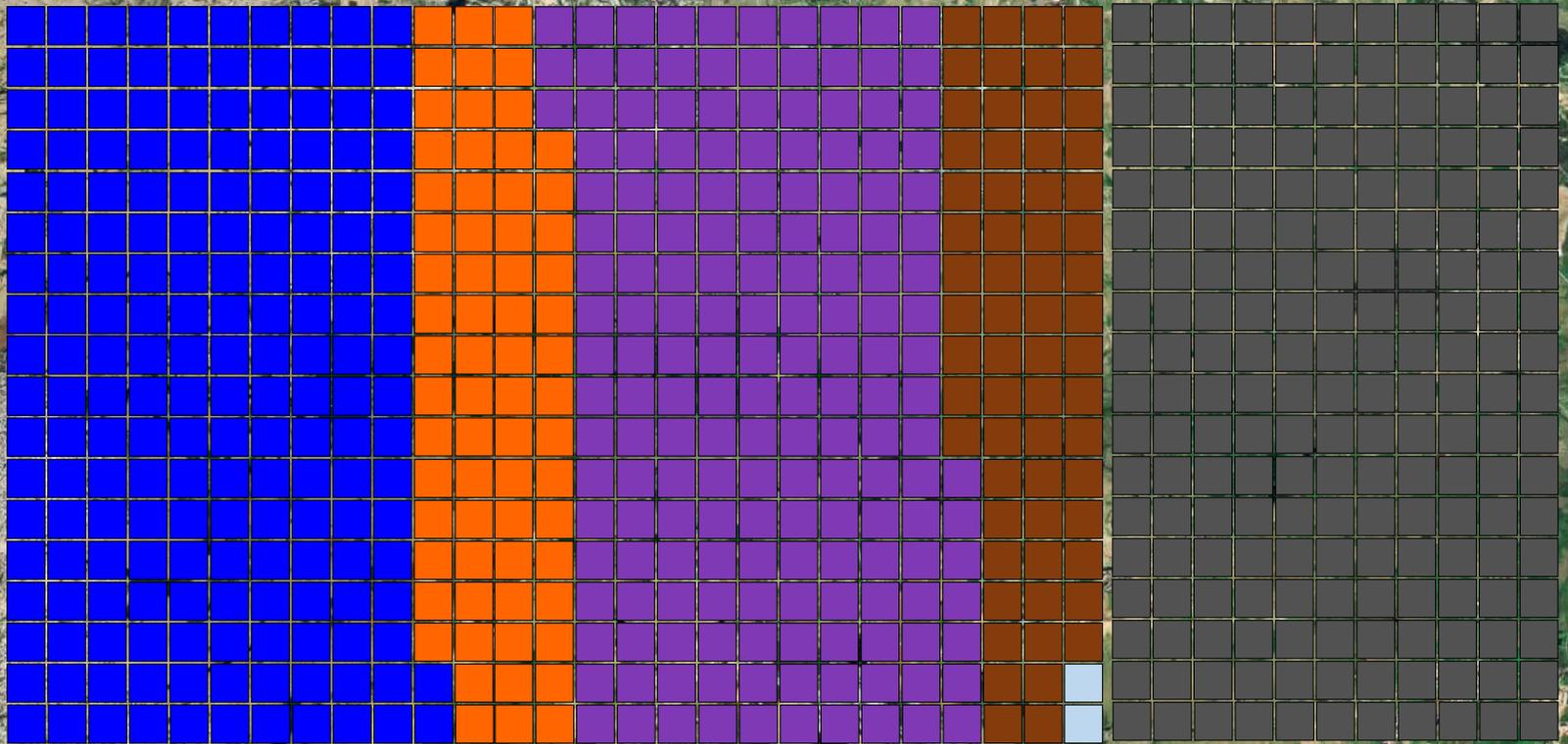
ADD CF 67,000 t CO₂eq
Forest 4982 ha area

Ring 153 ha area

x 32



km 01 02



What about food?

+16%



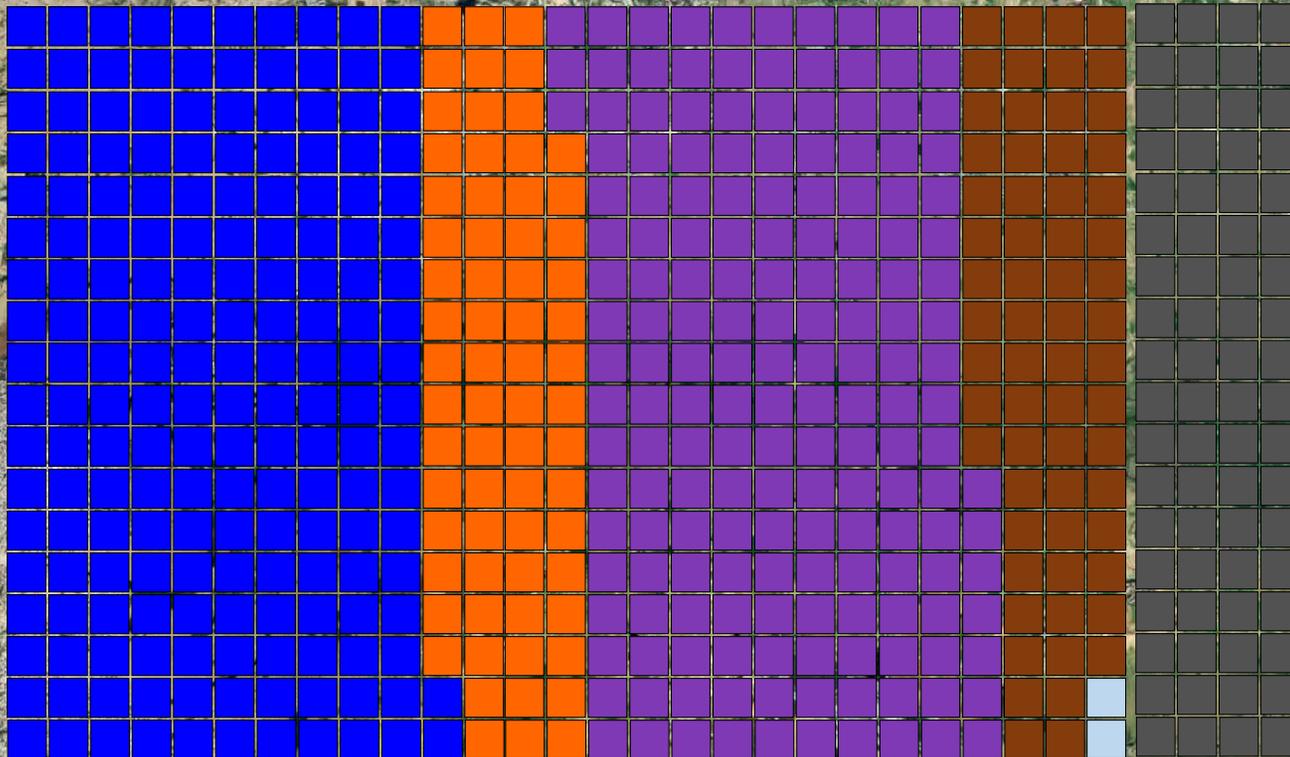
ADD CF 26,000 t CO₂eq
Forest 1944 ha area

Ring 153 ha area

x 12



km 01 02

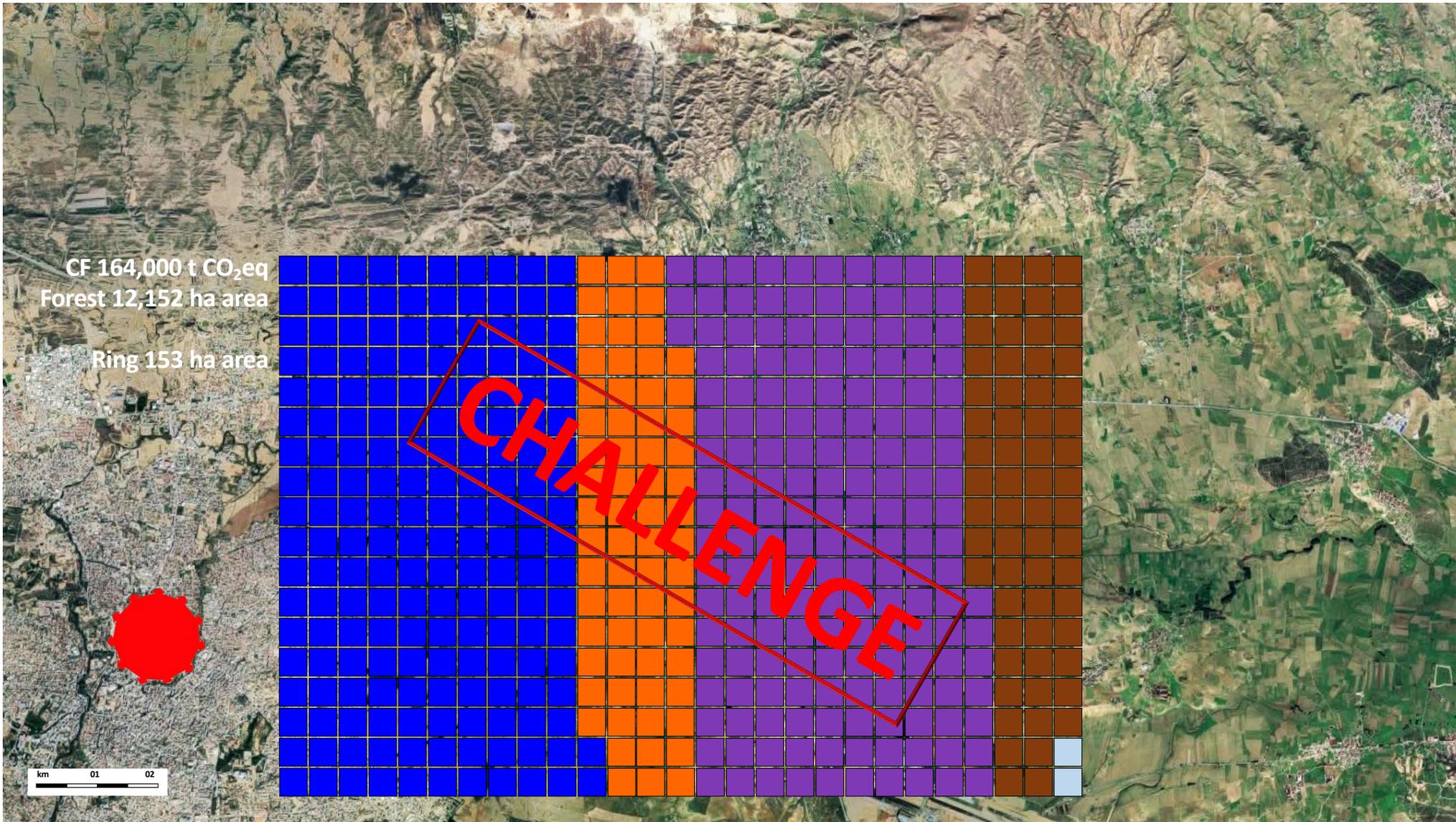


CF 164,000 t CO₂eq
Forest 12,152 ha area

Ring 153 ha area

CHALLENGE

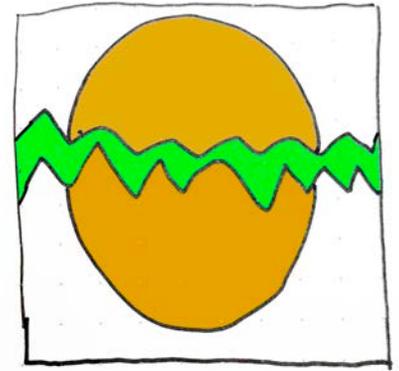
km 01 02



Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Problems

Division

Not the biggest.....

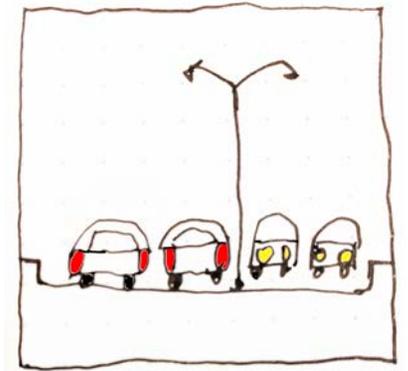


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Problems

Car usage

Bigger...

Heat island

Climate change
Sustainability

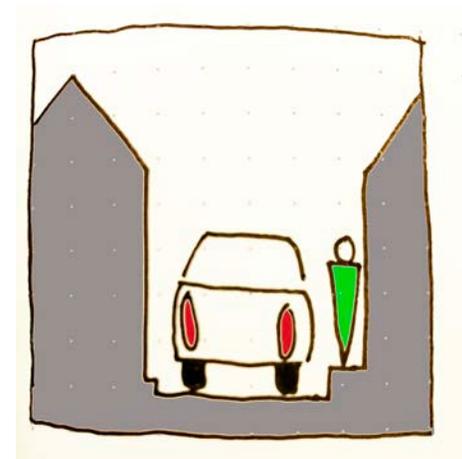


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Problems

People unfriendly
space

Car dominated...

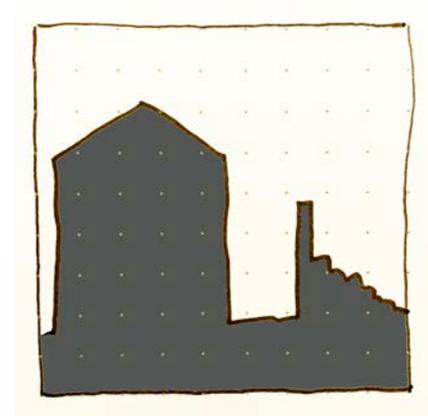


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Problems

Heritage at risk

The possibilities
are endless.....

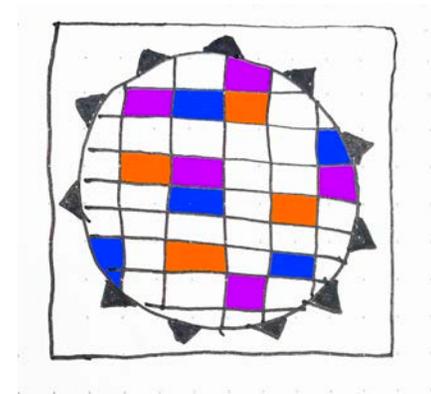


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Problems

No obvious centre
public space in the
city



Nicosia, Cyprus. May 2019

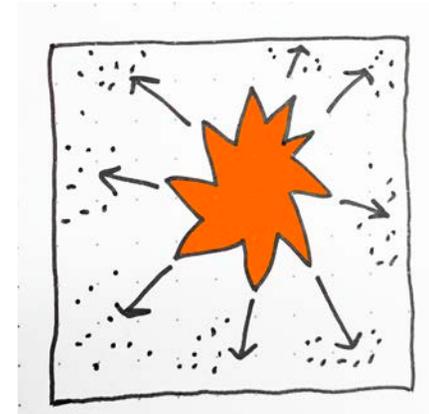
Urban Design

Problems compounded by

Suburban growth



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Problems

Suburban growth

No transport
infrastructure

Car-based transit



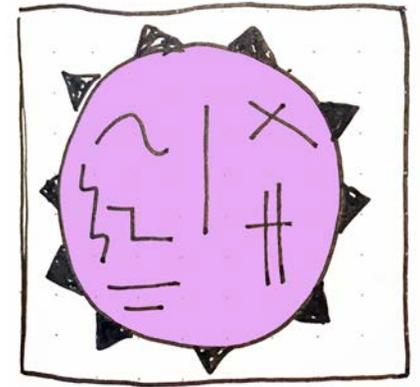
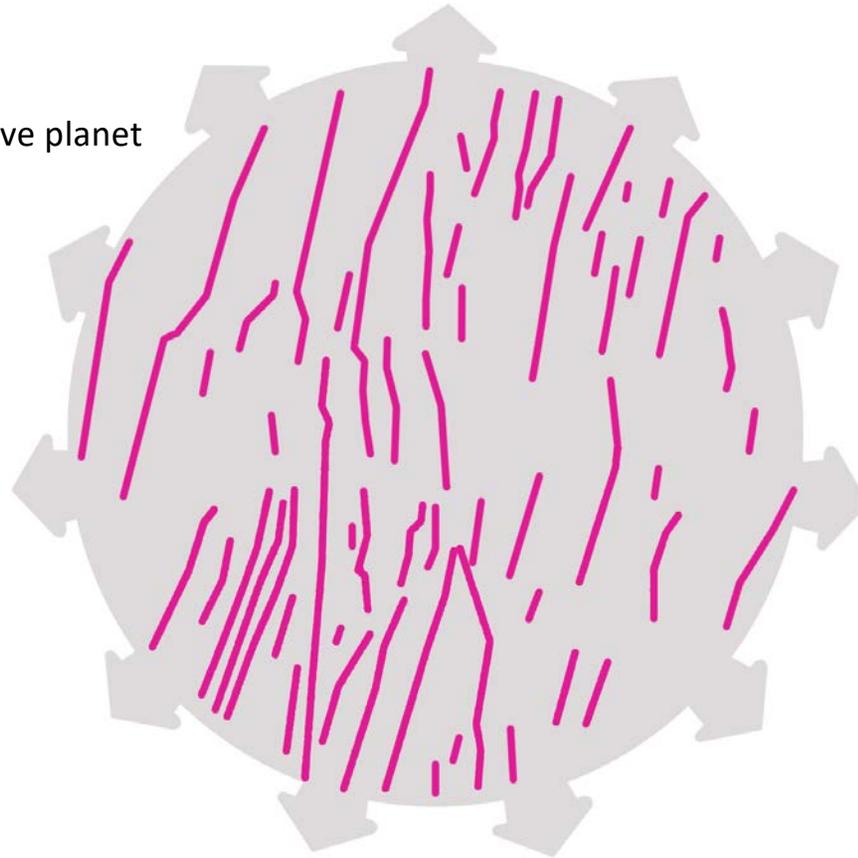
Nicosia, Cyprus. May 2019

Urban Design

Key Premise

Change space – change behavior – save planet

Network issues
N-S



Network issues

Change space

Change behaviour

Save lives

Save planet

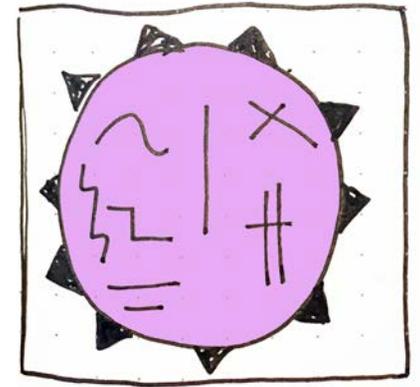
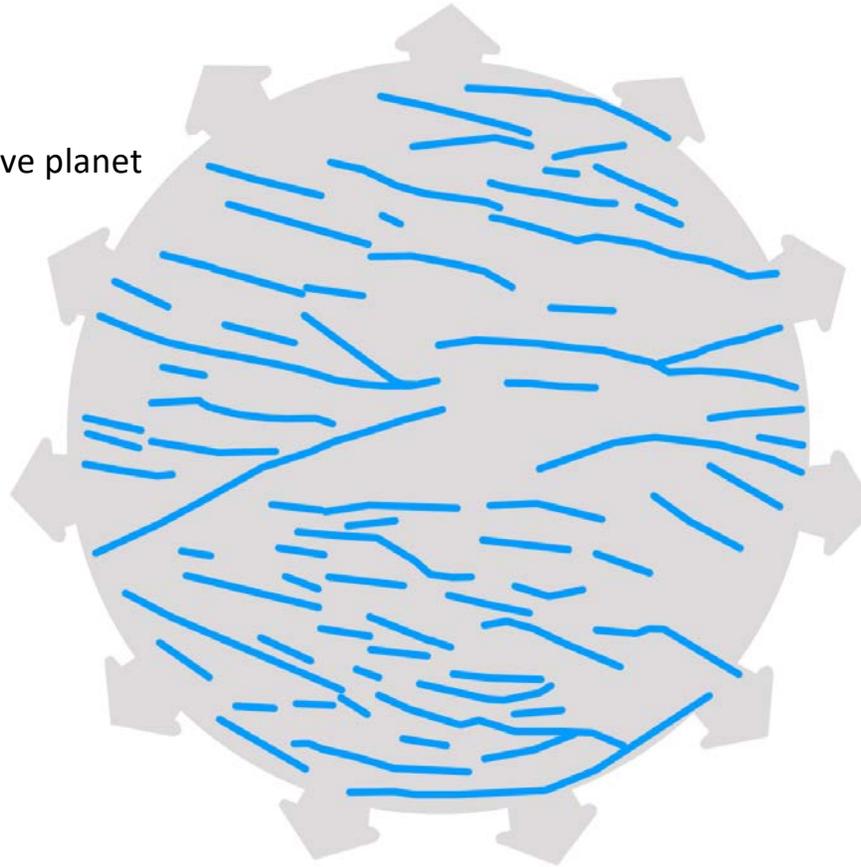


Urban Design

Key Premise

Change space – change behavior – save planet

Network issues
E-W



Network issues

Change space

Change behaviour

Save lives

Save planet



Urban Design

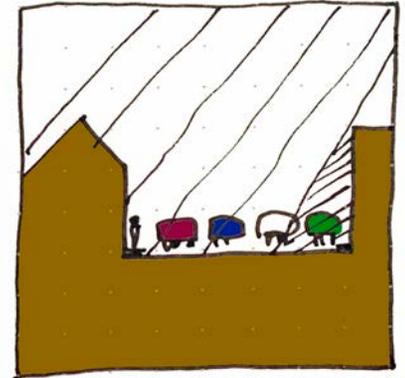
Key issues

Change space – change behavior – save planet

Get people out of the car.... 2000 deaths a year from circulatory problems....



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Get people out of the car

Change space

Change behaviour

Save lives

Save planet



Nicosia, Cyprus. May 2019

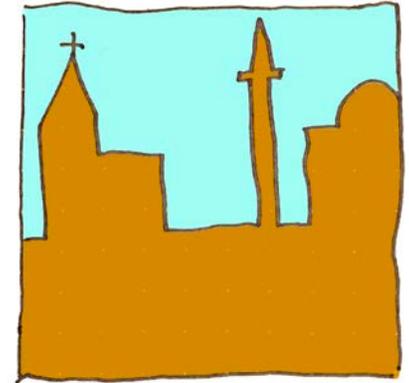
Urban Design

History to heritage

How do we unlock resilience and keep all histories.....



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



History to heritage

History

History

History

People

Local global



Nicosia, Cyprus. May 2019

Urban Design

The Challenge

Invent something that you will actually do !

Affordable

Time-bound

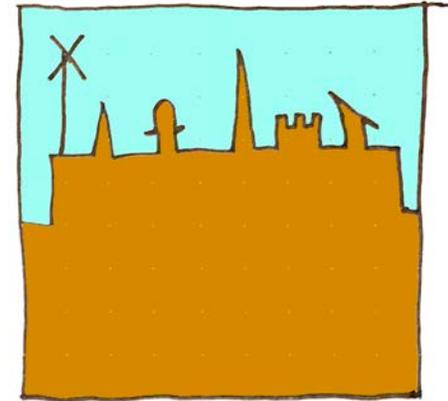
Methodological and Emergent

Politically acceptable

Understandable by all

Yet.....

Radical – because it's an emergency!!



The Challenge

Community buy-in

But radical change

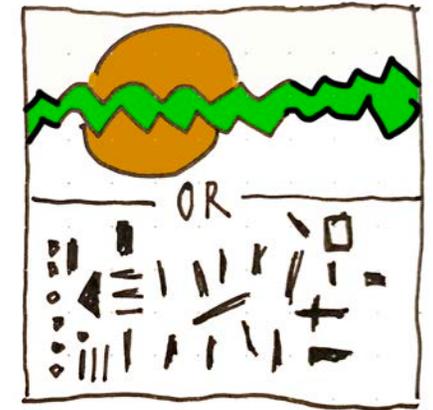


Urban Design

Greenzone



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Green zone analysis

Green zone

Geographically
immense

Spatially invisible



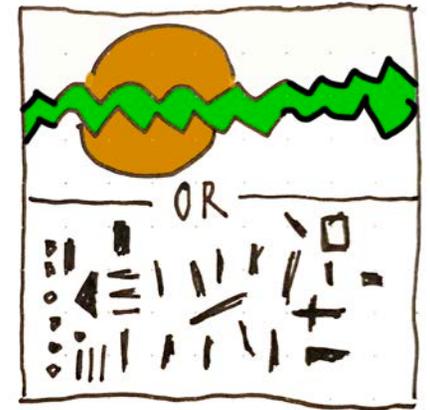
Nicosia, Cyprus. May 2019

Urban Design

Greenzone



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Green zone analysis

Green zone

Geographically
immense

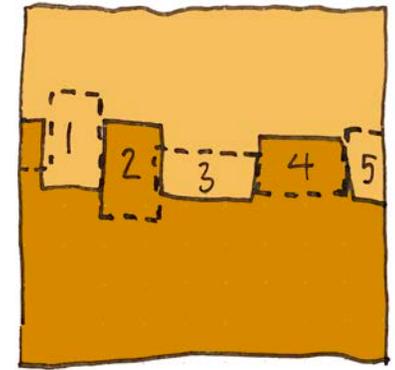
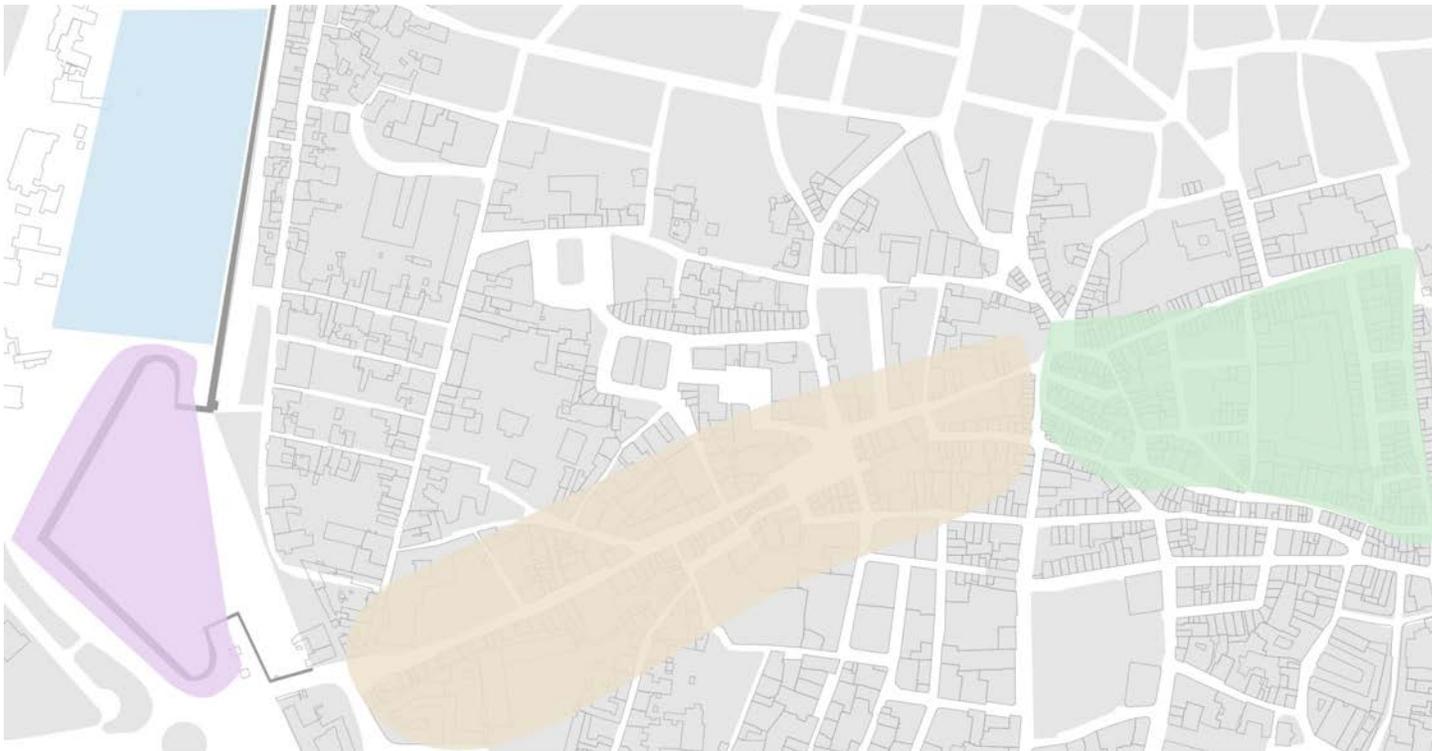
Spatially invisible



Nicosia, Cyprus. May 2019

Urban Design

Zoning the Greenzone



Peacemeal Green-zone

Green zone

Too complex to remove wholly

So do in bits.....

Benefit each side

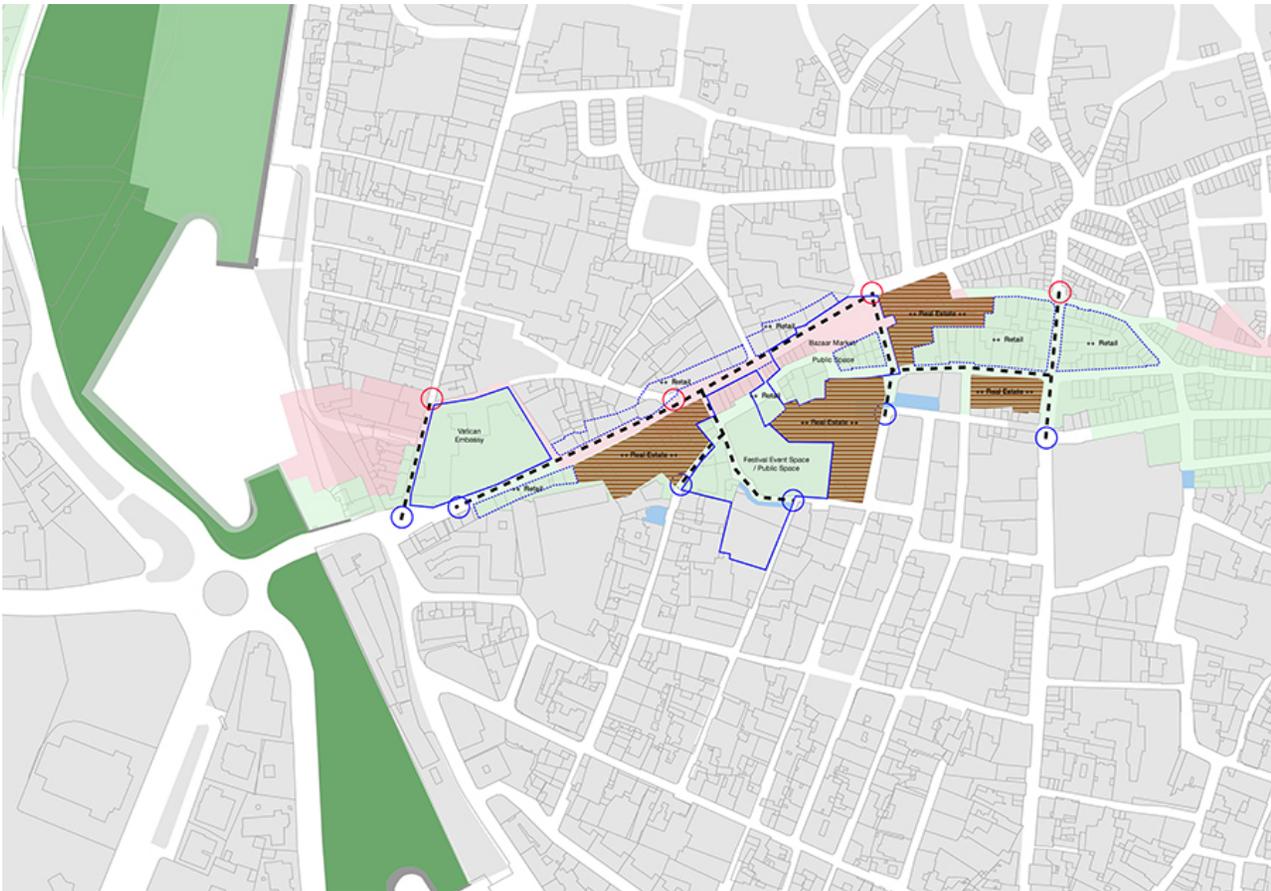


Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.

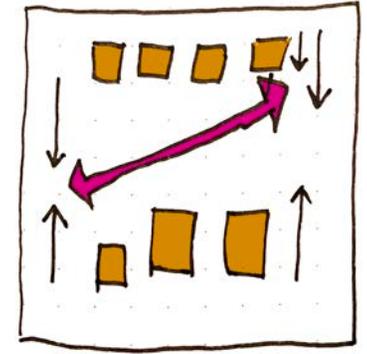
Nicosia, Cyprus. May 2019

Urban Design

Create a centre. Green Line changes



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Create a shared Centre

New centre

One new gate

Neutral space

Co-developed



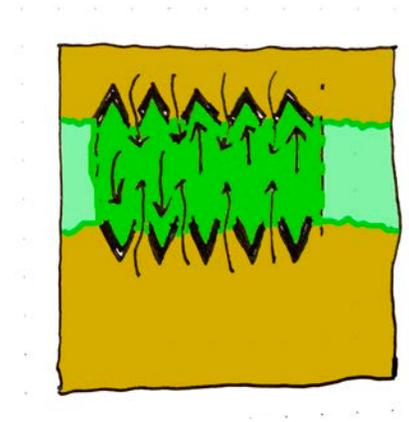
Nicosia, Cyprus. May 2019

Urban Design

Create a centre. Green Line changes. Airline pass



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Create a centre

Airport pass

All Cypriots

Tourists pay in advance

One side or both side clearance

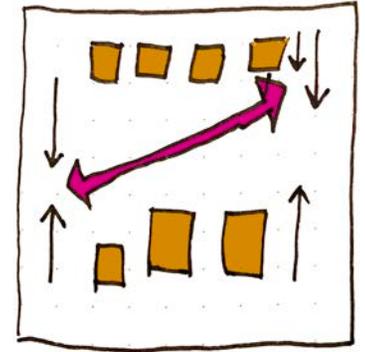


Nicosia, Cyprus. May 2019

Urban Design

Create a centre. Green Line changes

From



The Bazaar

New centre

One new gate

Neutral space

Co-developed



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.

Nicosia, Cyprus. May 2019

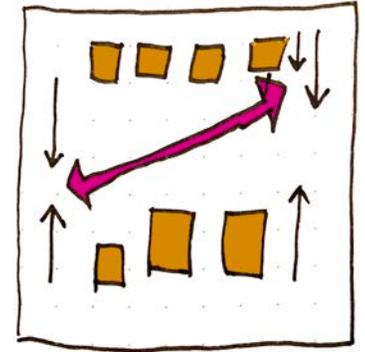
Urban Design

Create a centre. Green Line changes

To



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



The Bazaar

- New centre
- One new gate
- Neutral space
- Co-developed



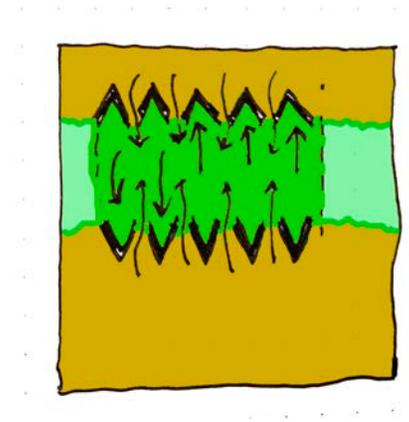
Nicosia, Cyprus. May 2019

Urban Design

Green line moves Central zone. Ledra Street westwards.



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Green line detail

Check-in to zone

Airport gate... register
in advance

Seamless check in and
out



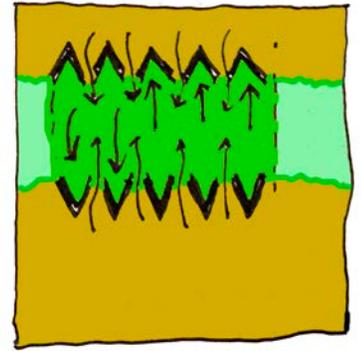
Nicosia, Cyprus. May 2019

Urban Design

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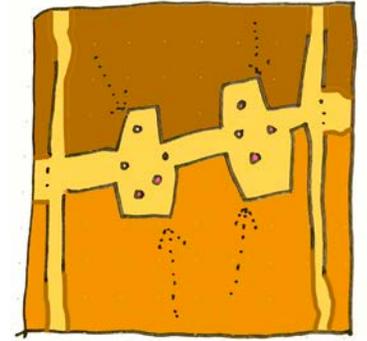
Nicosia, Cyprus. May 2019

Urban Design

Green line moves
New streets, New square.



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



New shared centre

New streets

Shared heritage



Nicosia, Cyprus. May 2019

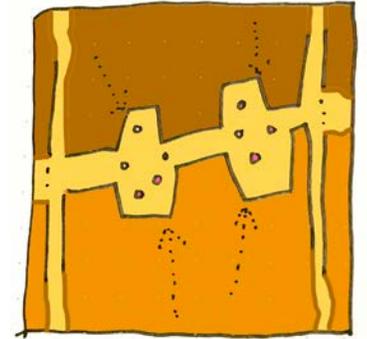
Urban Design

Green line moves

New street



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



New shared centre

New streets

Global/Local
infrastructure



Nicosia, Cyprus. May 2019

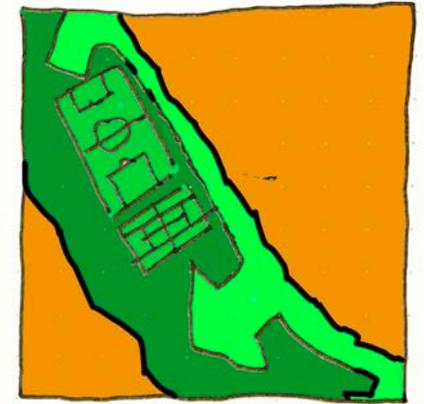
Urban Design

Green line moves

New Sports place.



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



New shared centre

Shared sports in
between the
bastions....

Click in/Click out

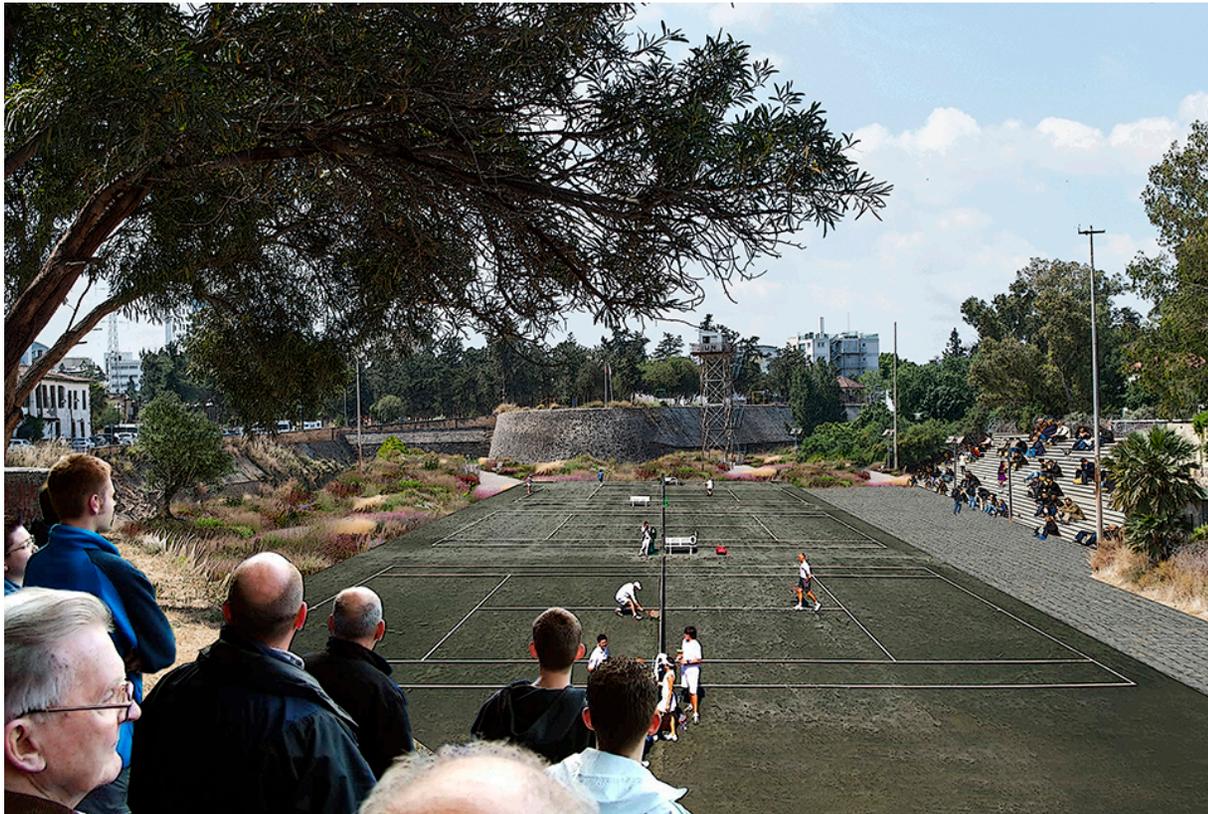


Nicosia, Cyprus. May 2019

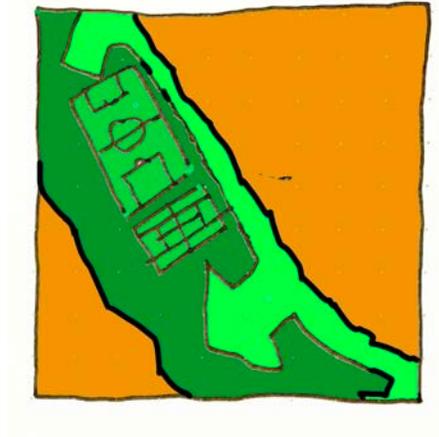
Urban Design

Green line moves

New Sports place.



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



New shared centre

Shared sports in
between the
bastions....

Click in/click out



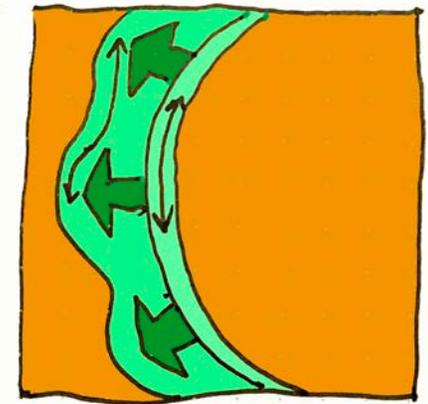
Nicosia, Cyprus. May 2019

Urban Design

The Green ring.....



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



New green park

Sports

Cycle routes

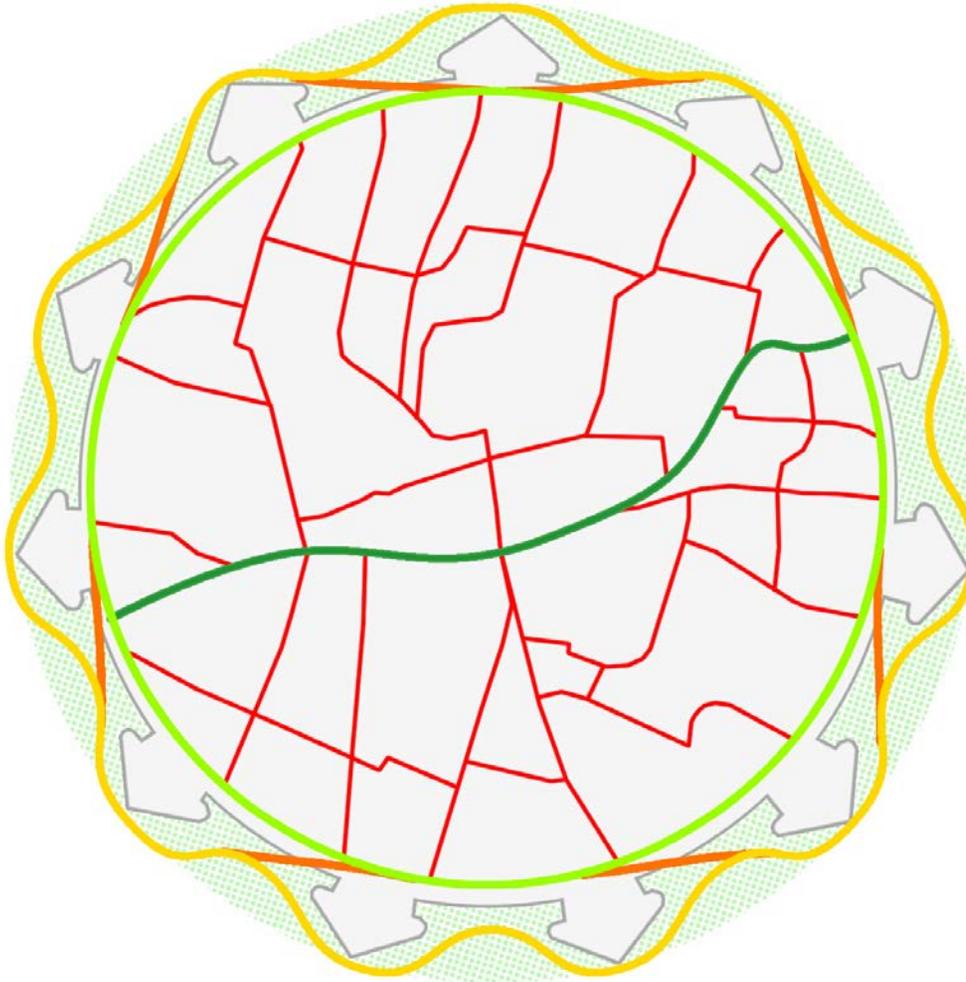
Tree nursery

Climate protection



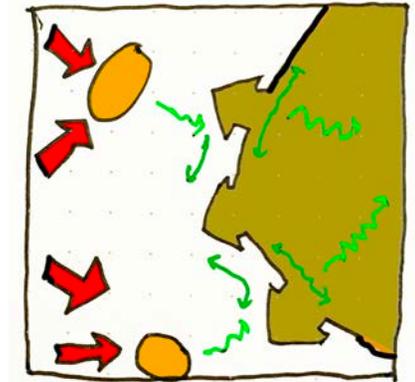
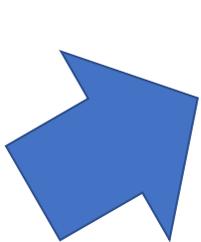
Nicosia, Cyprus. May 2019

Urban Design



Remove the car from the centre

Use the Bastions and moat as a park



Car removal

- reduced intensity
- Everyone exercises
- Shaded routes
- Lower temperatures



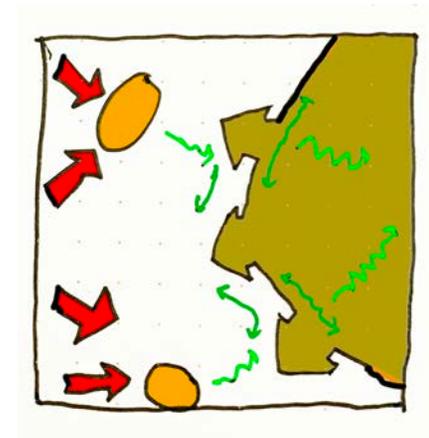
Urban Design

Car removal

Park and Ride (a bike) or walk



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Car removal

reduced intensity

Everyone exercises

Shaded routes

Lower temperatures



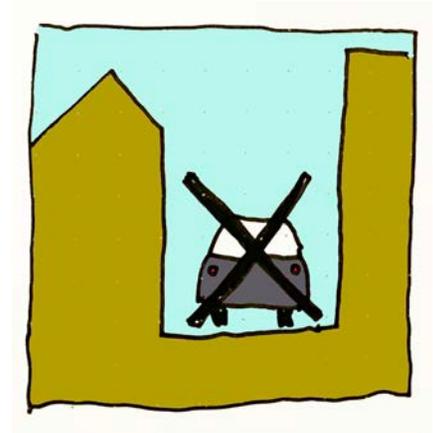
Nicosia, Cyprus. May 2019

Urban Design

Car removal inside the ring



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Car removal

Inner city changes

People first

Green
infrastructure



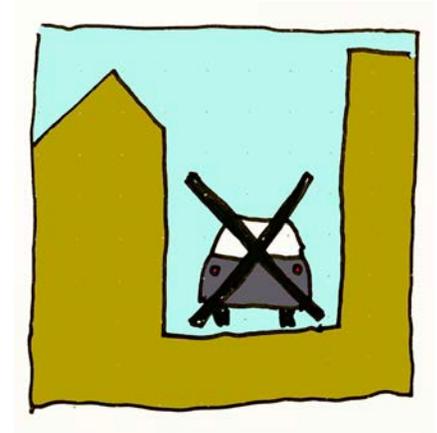
Nicosia, Cyprus. May 2019

Urban Design

Car removal inside the ring
Creates people space



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Car removal

Inner city changes

People first

Green
infrastructure



Nicosia, Cyprus. May 2019

Urban Design

The Bastion park



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



The Bastion Park

Increased green

New infrastructure

Energy/mobility/social

Tourist/heritage
enabling



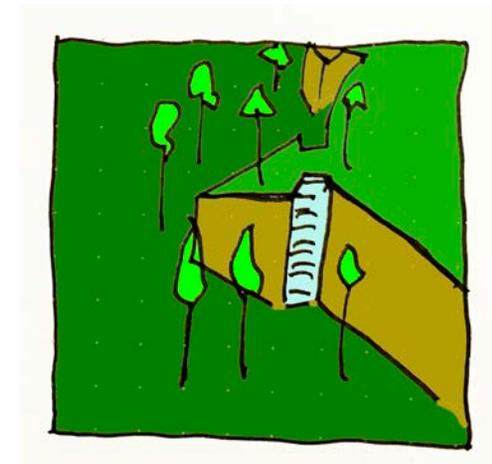
Nicosia, Cyprus. May 2019

Urban Design

The Bastion park



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



The Bastion Park

- Increased green
- New infrastructure
- Energy/mobility/social
- Tourist/heritage enabling



Nicosia, Cyprus. May 2019

Urban Design

The Bastion Park



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



The Bastions

- Increased green
- New infrastructure
- Energy/mobility/social
- Tourist/heritage enabling



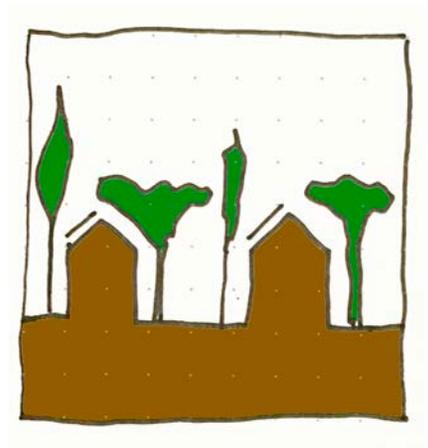
Nicosia, Cyprus. May 2019

Urban Design

City as forest

Hide the city in a forest

Hide a forest in the city.....



City as forest

Increased intensity

Community services

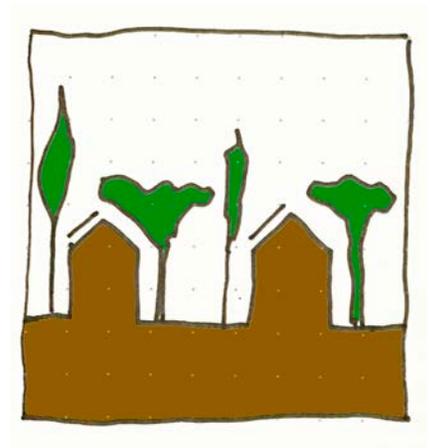
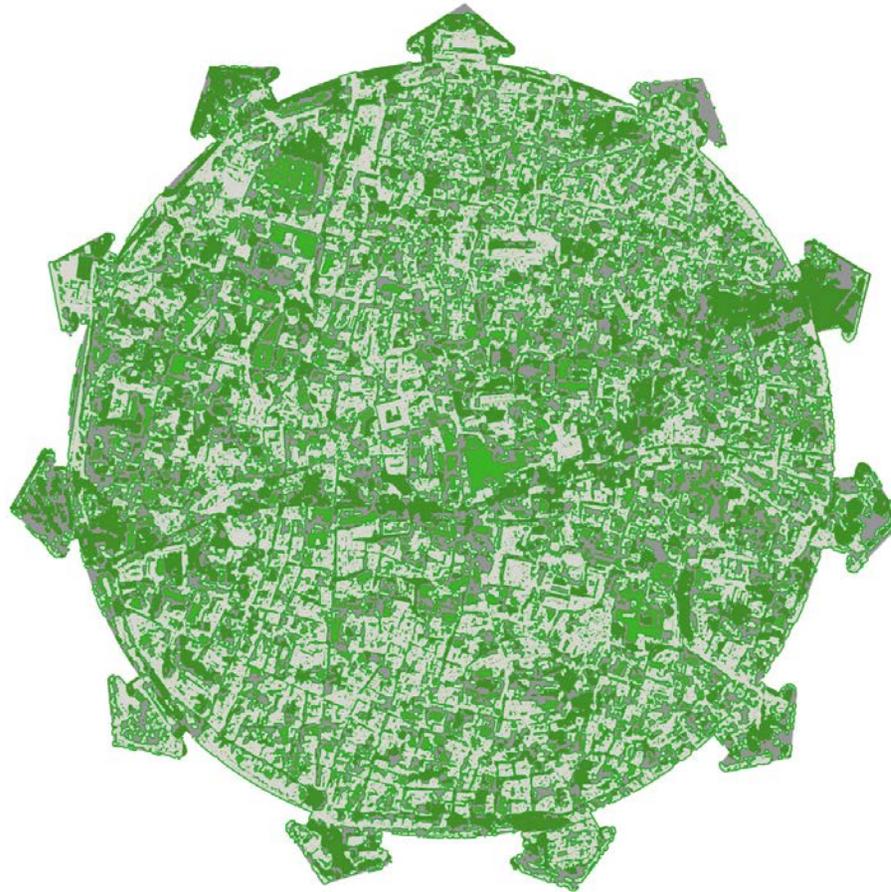
Increased density

Reason to visit



Urban Design

Green the city



City as forest

Increased intensity

Community services

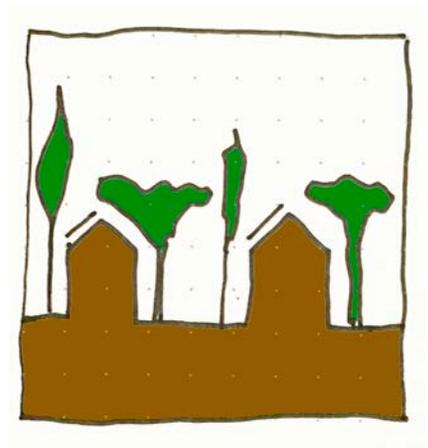
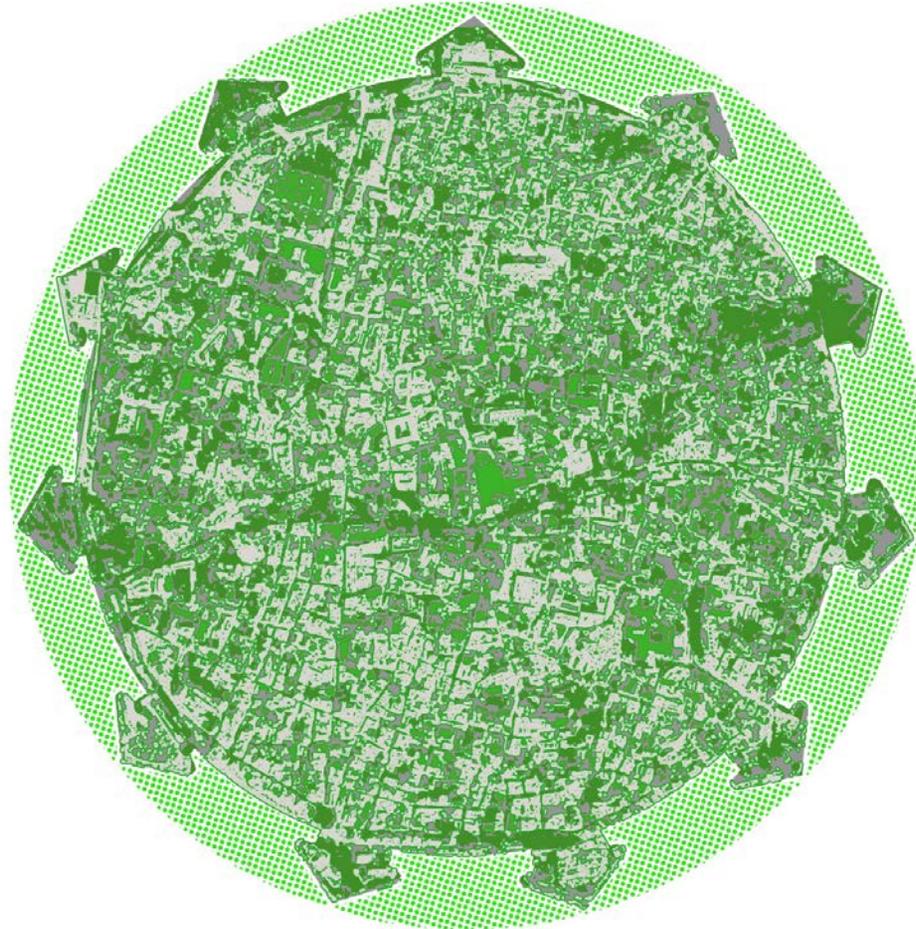
Increased density

Reason to visit



Urban Design

Green the Bastions



City as forest

Increased intensity

Community services

Increased density

Reason to visit



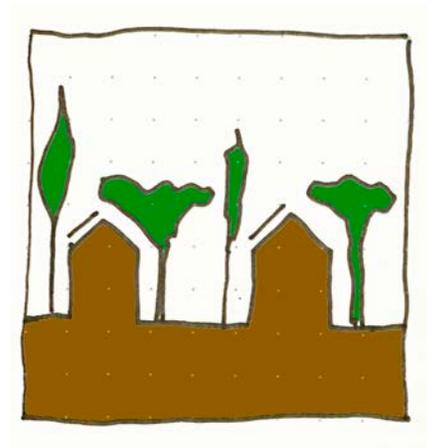
Urban Design

City as forest

Hide the city in a forest –
Hide a forest in the city.....



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



City as forest

Increased intensity

Community
services

Increased density

Reason to visit



Nicosia, Cyprus. May 2019

Urban Design

City as forest

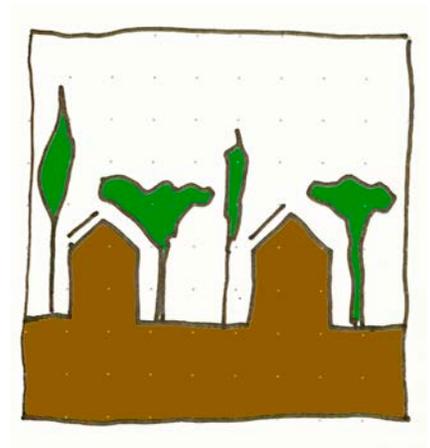
Hide the city in a forest –

Hide a forest in the city.....

Greywater facades



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



City as forest

Increased intensity

Community
services

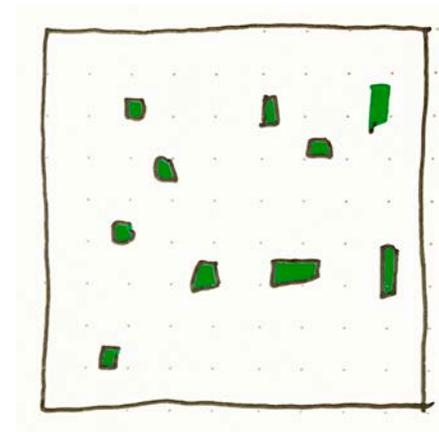
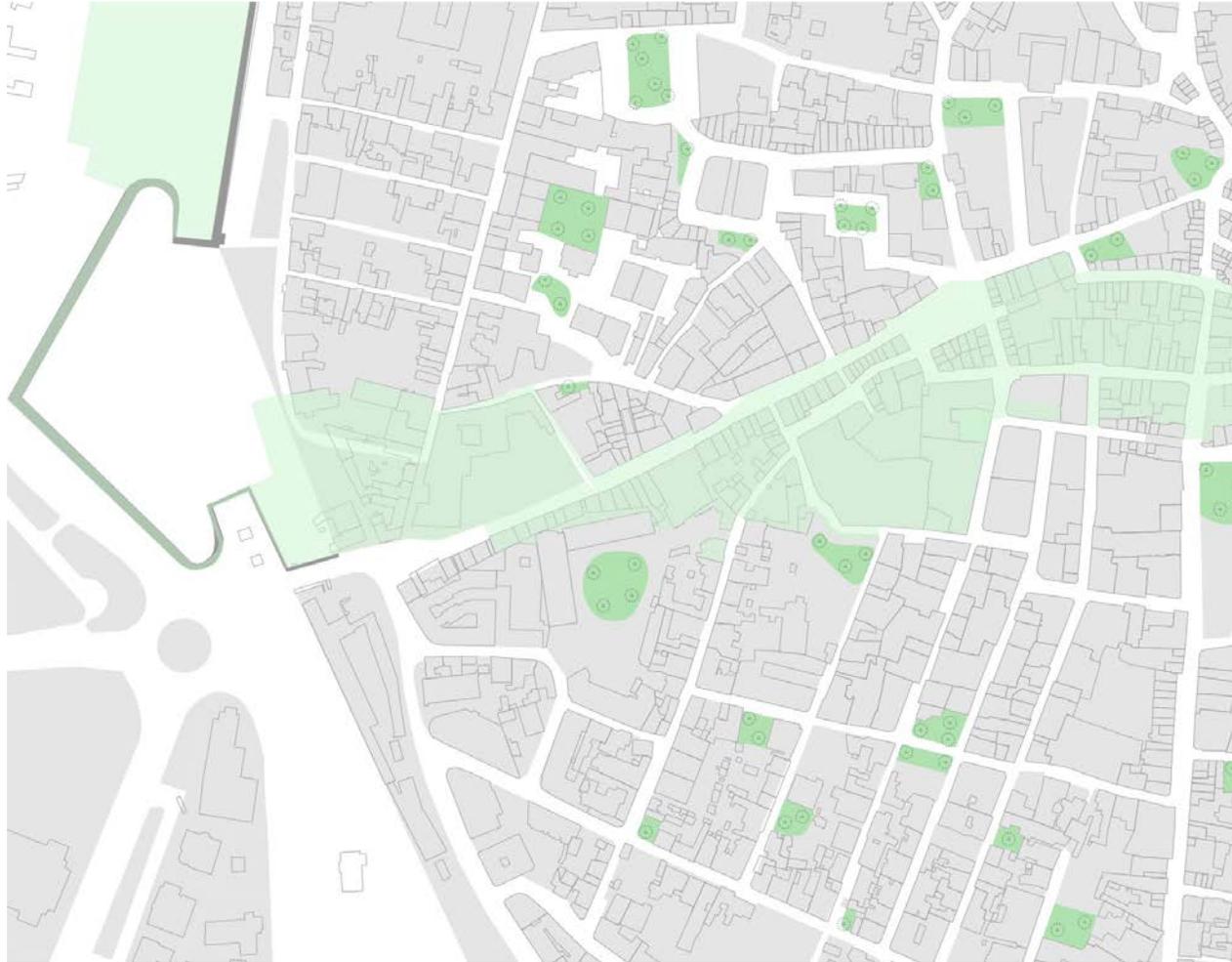
Increased density

Reason to visit



Nicosia, Cyprus. May 2019

Urban Design



Pocket parks

Re-purpose car-parks.

New 100m infrastructure that reduces heat island effect



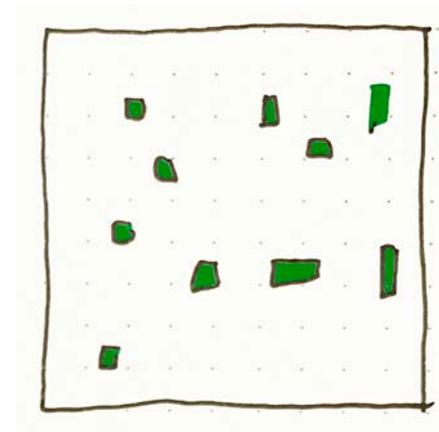
Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.

Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Pocket parks

Re-purpose car-parks.

New 100m infrastructure that reduces heat island effect

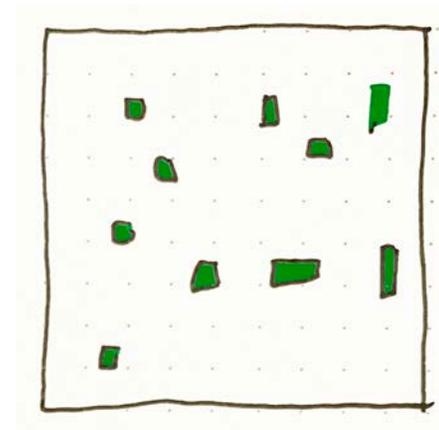


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Pocket parks

Re-purpose car-parks.

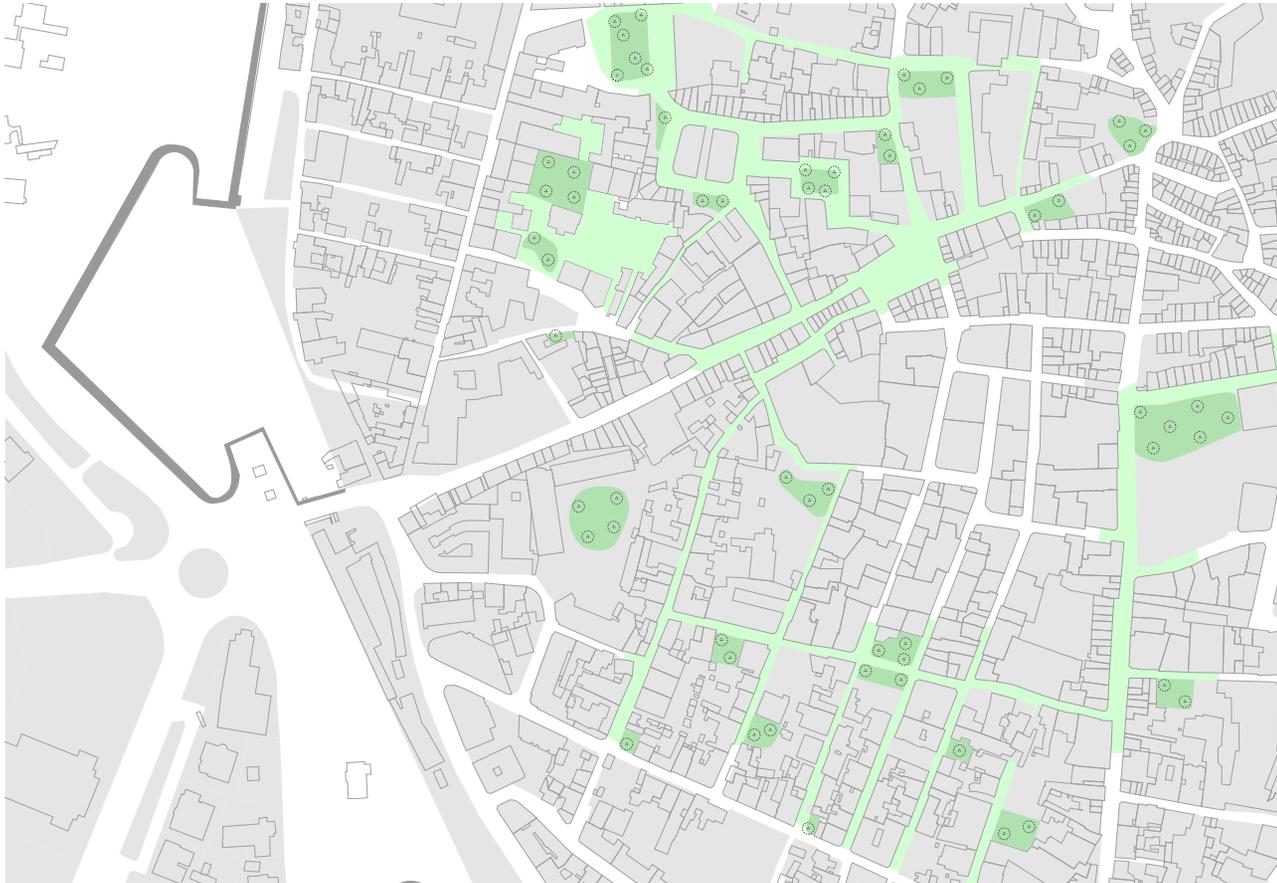
New 100m infrastructure that reduces heat island effect



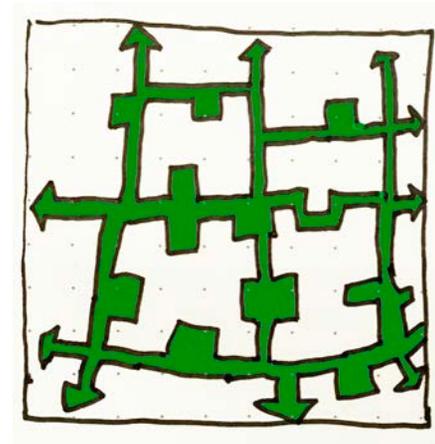
Nicosia, Cyprus. May 2019

Urban Design

Green network



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Green Network

Connect inner-city
Pocket parks.

Make shaded
network of places
to walk

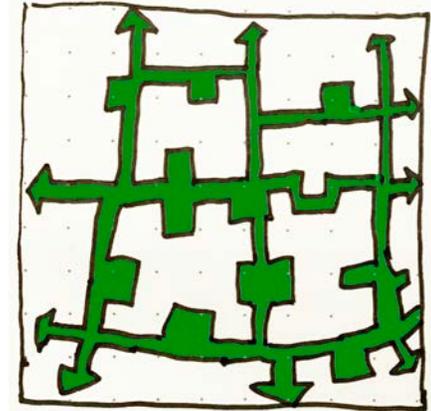


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Green Network

Connect inner-city
Pocket parks.

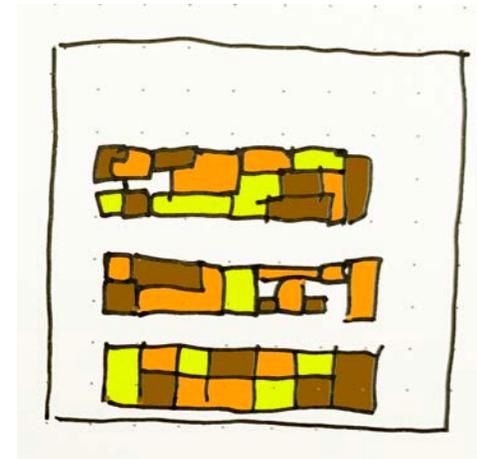
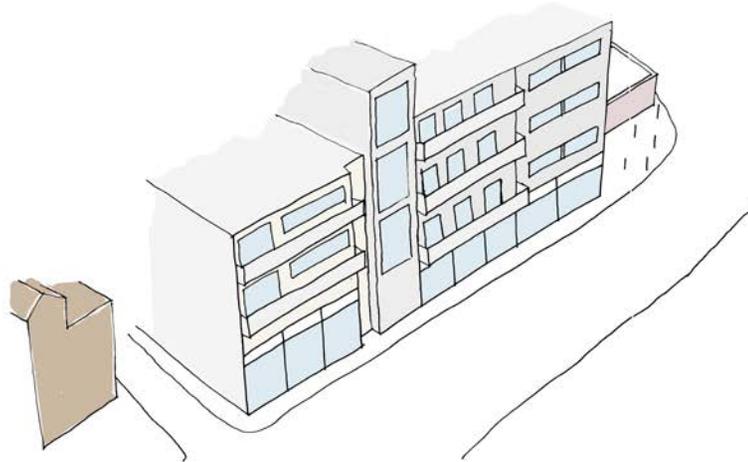
Make shaded
network of places
to walk



Nicosia, Cyprus. May 2019

Urban Design

Densification - south



Densification

Increased density

Increased intensity

More shade

Better community
services

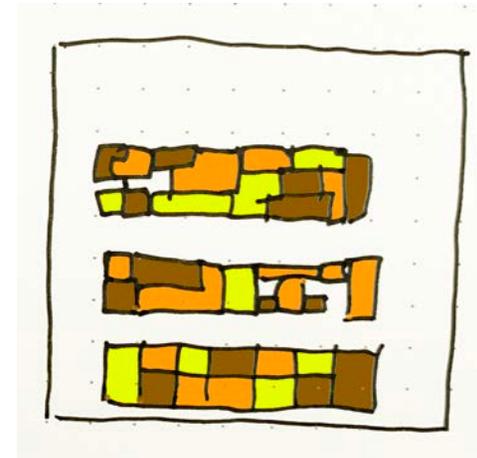


Urban Design

Densification + greening



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Densification

Increased density

Increased intensity

More shade

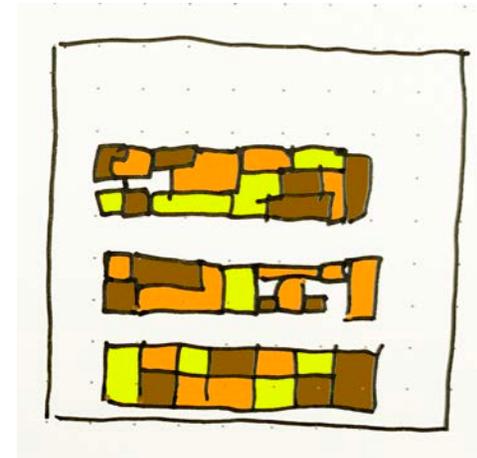
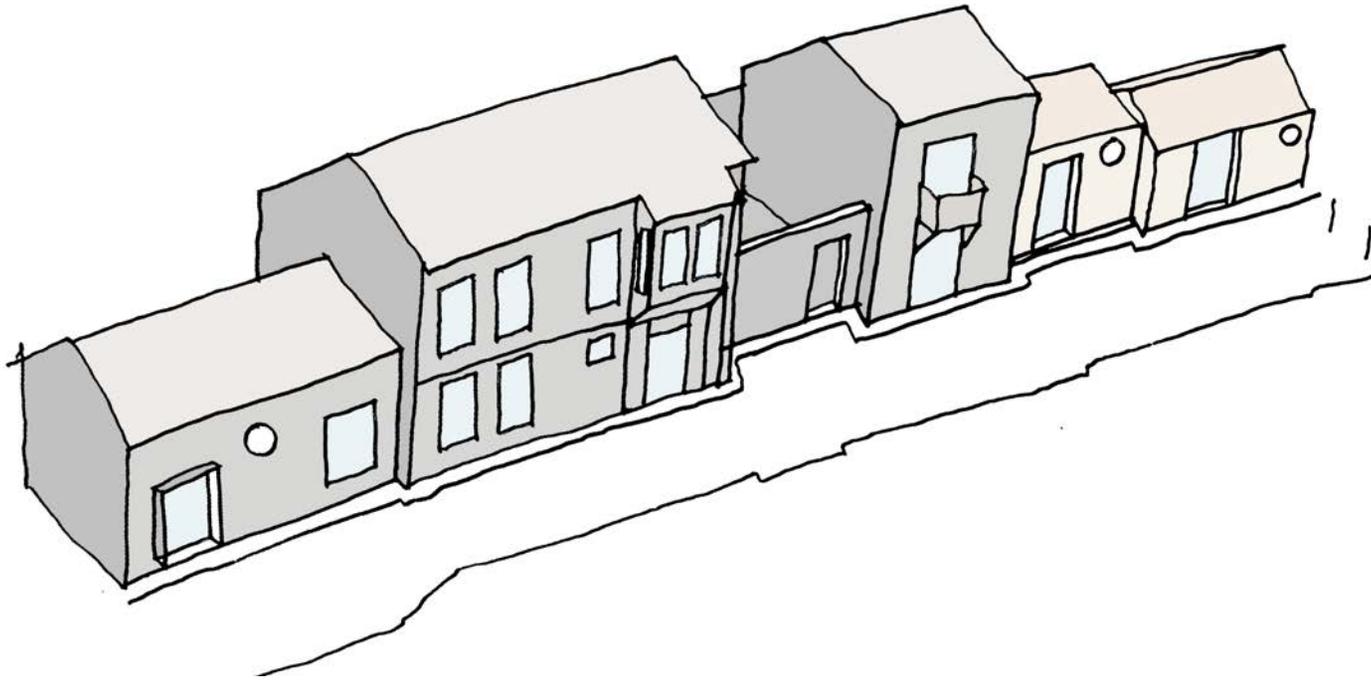
Better community services



Nicosia, Cyprus. May 2019

Urban Design

Densification North



Densification

Increased density

Increased intensity

More shade

Better community services

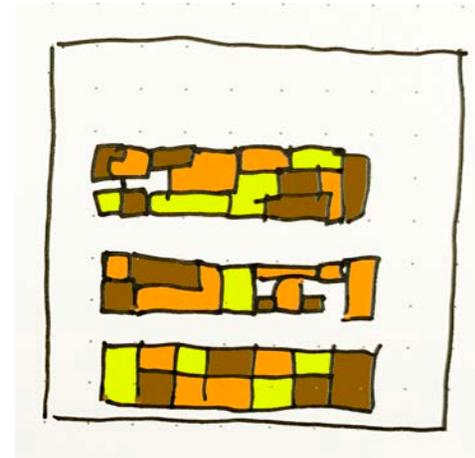


Urban Design

Densification and greening



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Densification

- Increased density
- Increased intensity
- More shade
- Better community services

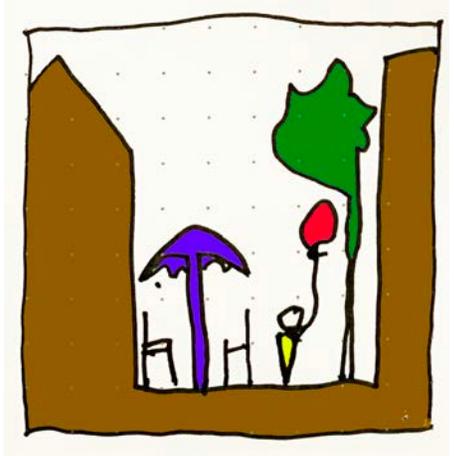


Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Re-invent the street

Reclaim territory
from the car

New community

Increased intensity



Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Re-invent the street

Reclaim territory
from the car

New community

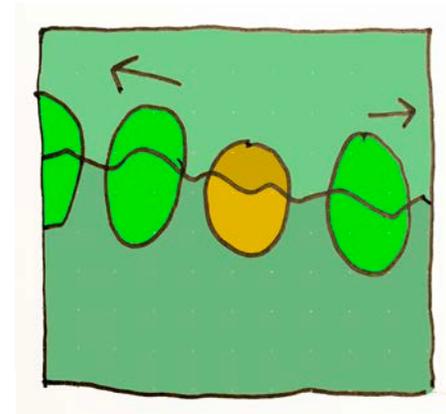
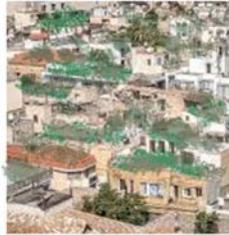
Increased intensity



Nicosia, Cyprus. May 2019

Urban Design

Climate sequestration... grow the forest in the city and plant it out.....



Climate sequestration

World issue

Do your share

1.2 million trees per year for a century

100 cities.....



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.

Nicosia, Cyprus. May 2019

Urban Design



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.

Mustafa Ozan

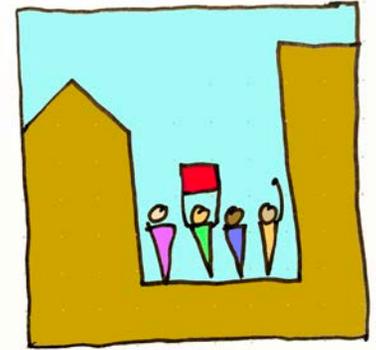
“Hi, I’m Mustafa,

I lived and worked within the walls of Nicosia all my life and run my own business creating hand crafted belts, and bags. The new co-community bazaar in the Green zone, has allowed me to connect better with more customers and especially tourists.

Since pedestrianisation and the electric car share facility I have found the city to be much safer for my children, I too feel so much healthier, and happier and I’ve found that I have met many new people and made new friends, as I no longer confine myself to my car.

The new car share at the city walls has allowed me to use different vehicles when I need them. I can now get a van when I need to collect materials and a campervan for the family trips at the weekend

I was sceptical at first but I feel the changes in the city have really improved my quality of life.”



Pen picture 1

Keep it local



Nicosia, Cyprus. May 2019

Urban Design

Helen Papoulis

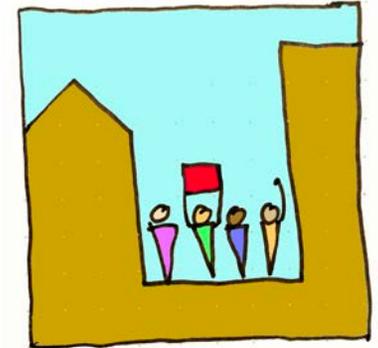
“I’m 10 years old and now that it’s safer to walk my mum let’s my brother and I walk to school. After school me and my friends would go and play on the swings in the park. It’s very fun! My brother likes to play football with his friends there as well. It seems everyone is at the park!

We even have events in the old chariot race area and loads of people gather to watch!

It’s like we are back in time celebrating sports.”



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Pen picture 2

Kids deserve a better future



Nicosia, Cyprus. May 2019

Urban Design

Ela Sari

“Hello, my name is Ela,

My family home is in the suburbs of Nicosia. I spend much of my time within the walls of the city as my children go to school there and I work as an architect in the walls.

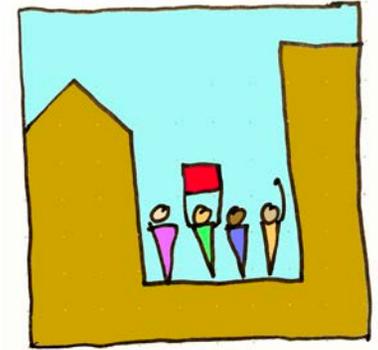
I can take the kids after School to the Park. There’s more wildlife within the city walls now, and the city air also seems to be easier to breath and cleaner.

My new P.V. panels on my roof have drastically decreased are energy bills making it possible for us to now afford more meals out, and the ability to go do activities with the kids means a less stressful life. I feel the changes to Nicosia have really made mine and my children’s lives better.

I now cycle to work every day from outside the walls using the bike share and really enjoy it. We are now considering, when the kids are older ,moving into the walled city to get more out of the new streets and parks.”



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.



Pen picture 3

Help the commuter



Nicosia, Cyprus. May 2019

Urban Design

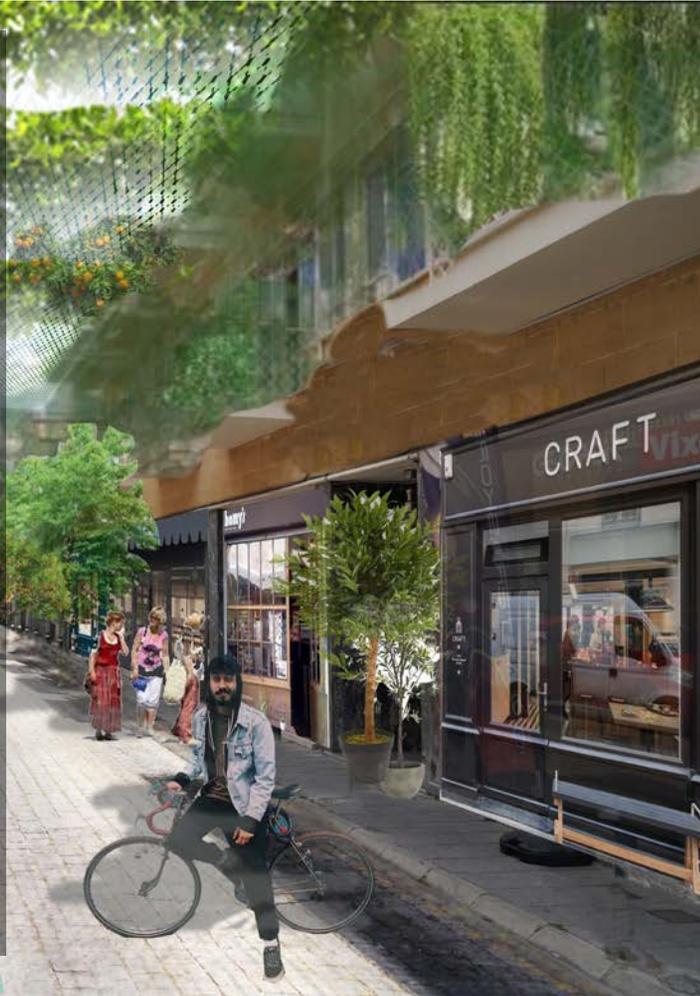
Alexandro Angelos

“I came to study from abroad at the University. I really enjoy the lifestyle and culture. I can now rent in the middle of the city and all the restored buildings make the experience very unique. There is nowhere else I would rather work!

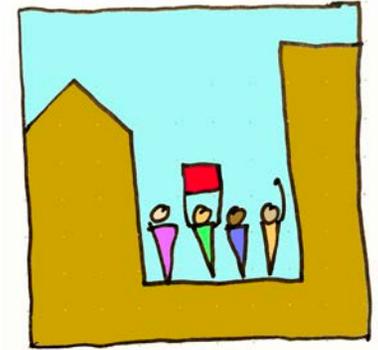
The city has become a hub for new bands and up and coming artists. Every Friday evening there are usually performances in new public space that everyone comes to. The shared public spaces have allowed people from the north and south to mix and spend time together. This has increased trade and hand-crafted items within the walls.

I now cycle everywhere it's a lovely way to see Nicosia and its historical features. Me and my friends have all stayed within the city to work and live after are study's. Many more people want to live within Nicosia now and not many people are moving away to work elsewhere.

I would not move from my Nicosia now as it is as good as New York, London and Amsterdam if not better in my eyes and would recommend this city to anyone who asked.”



Urban design strategy: Prof Greg Keffe, Queens University, Belfast.



Pen picture 4

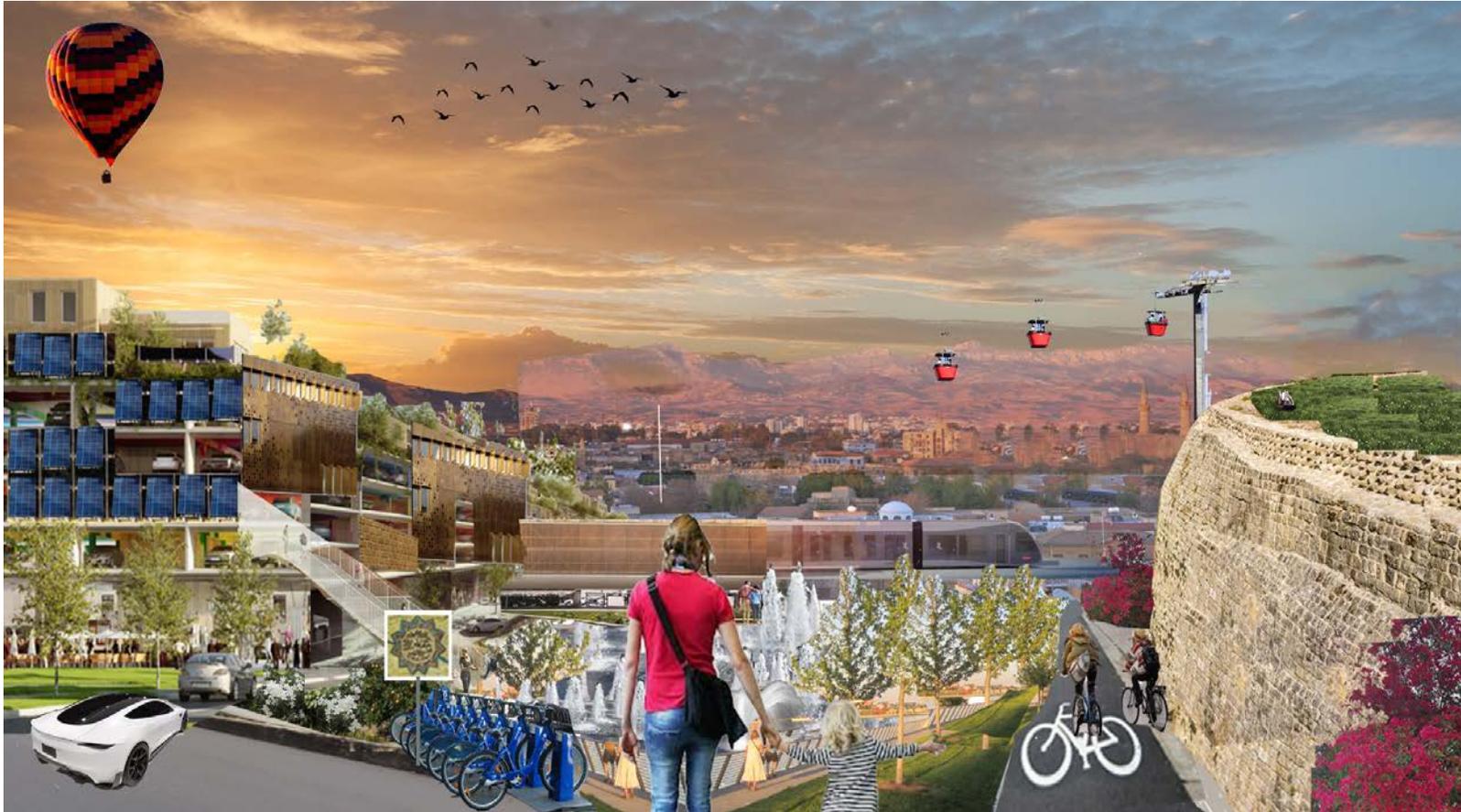
New
entrepreneurship



Nicosia, Cyprus. May 2019

Urban Design

More More More More...



Urban design strategy: Prof Greg Keeffe, Queens University, Belfast.

Queens

Prof Greg Keeffe

Dr Andy Jenkins

Ms Emma Campbell

TU Delft

Sam van Hooff

UCLAN

Ms Maryam Al-Irhayim

Rainer Townend

More History

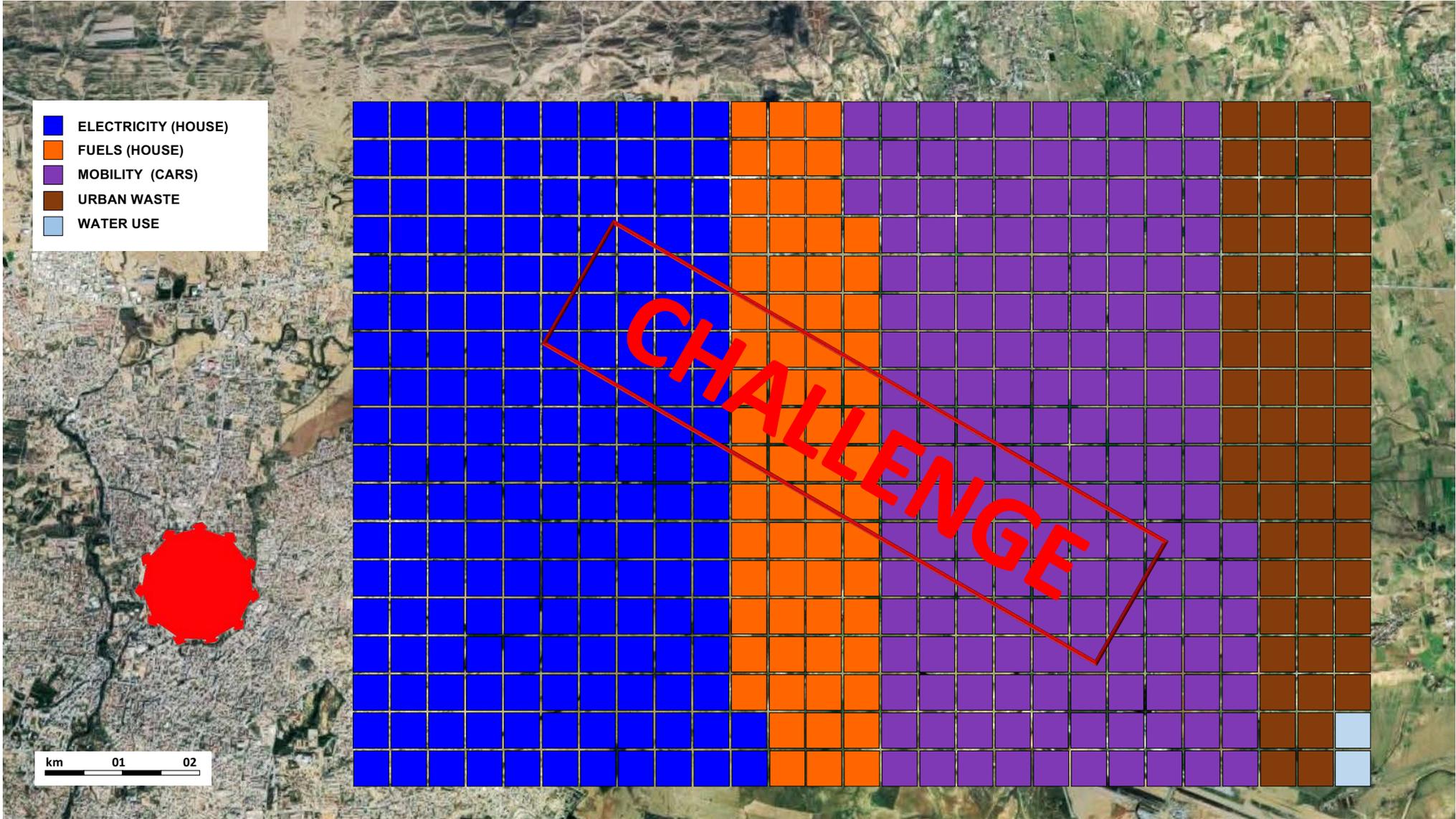
More Green

More renewables

More Fun



Nicosia, Cyprus. May 2019



3 ...

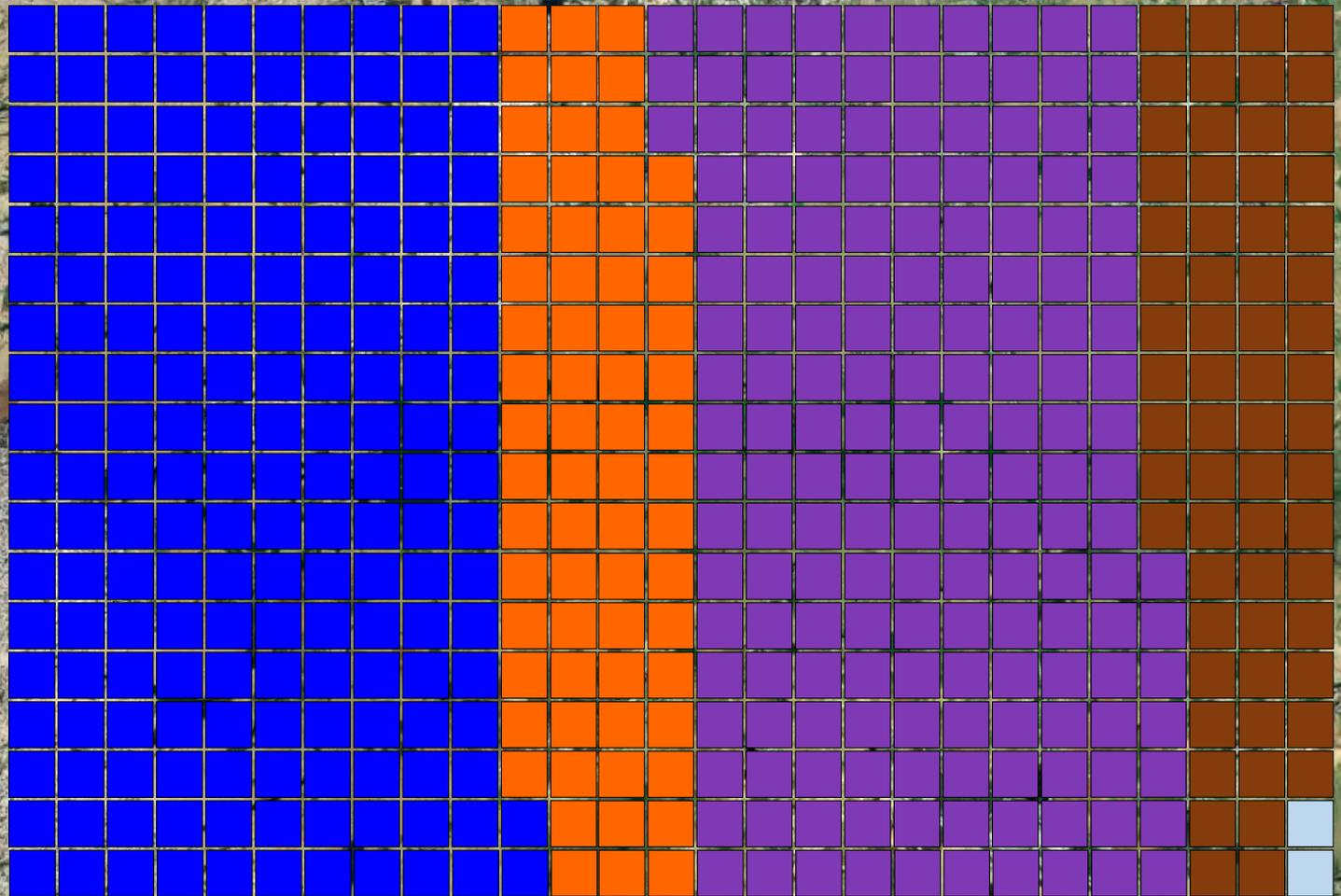
2 ...

1 ...

... GO!



km 01 02





ENERGY SAVING

PASSIVE SYSTEMS,

GREENERY, SHADING, LED

70% households

-30% cooling energy

-30% lighting energy

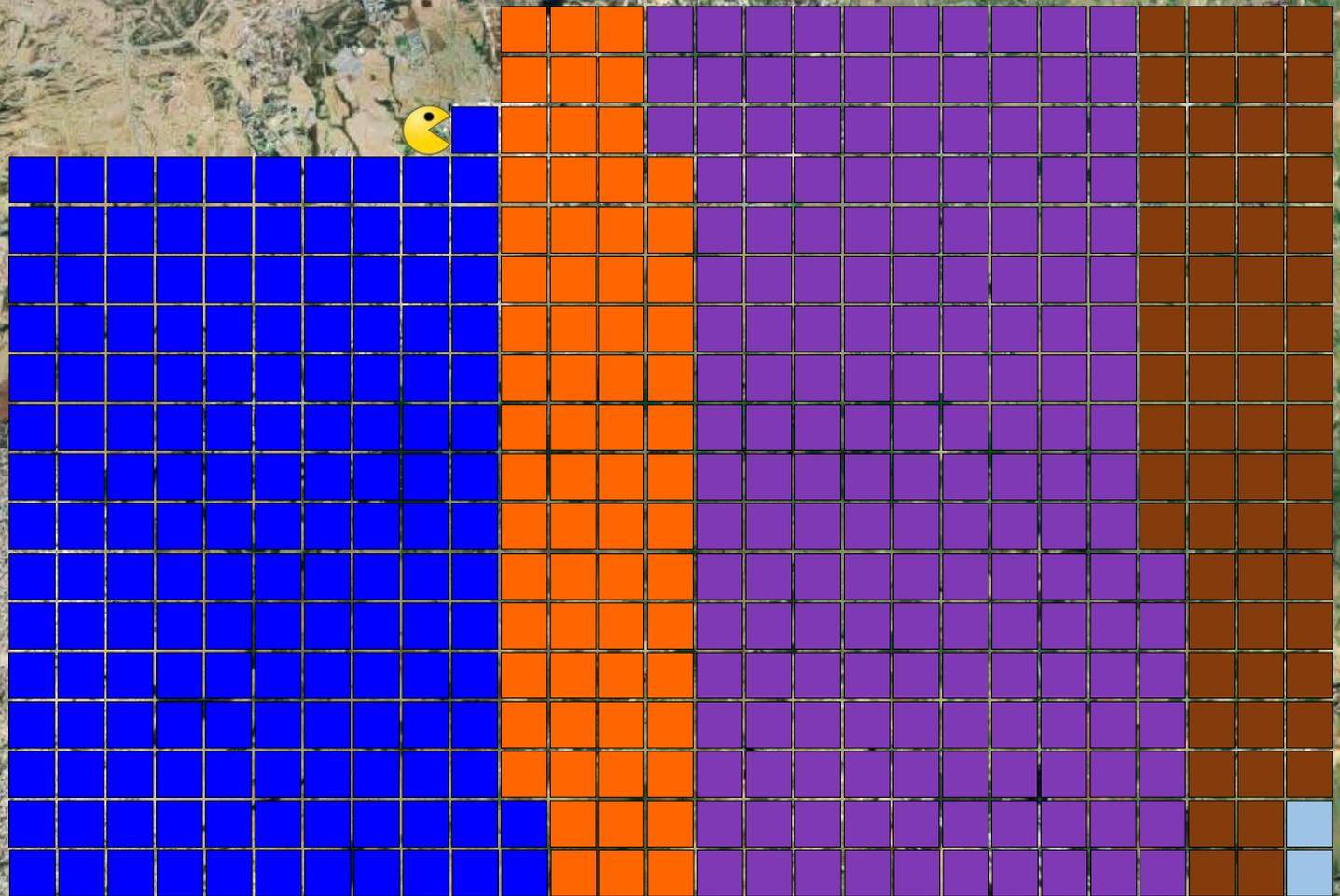
=

-14 GWh electricity



km 01 02

1





ENERGY SAVING

INSULATION, DOUBLEGLASS

70% households

-15% cooling energy

-30% heating energy

=

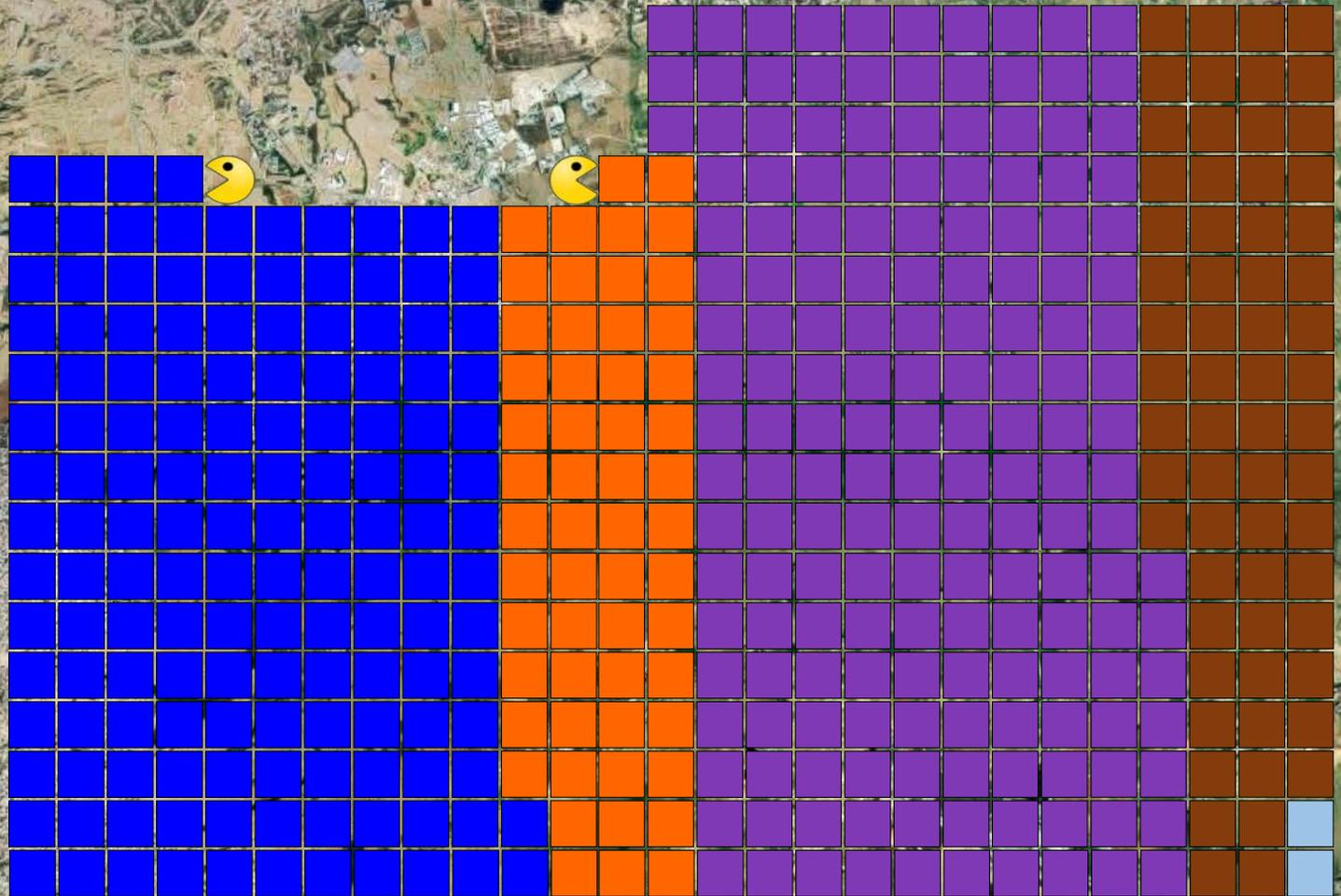
-3 GWh electricity

-15 GWh heat



km 01 02

2



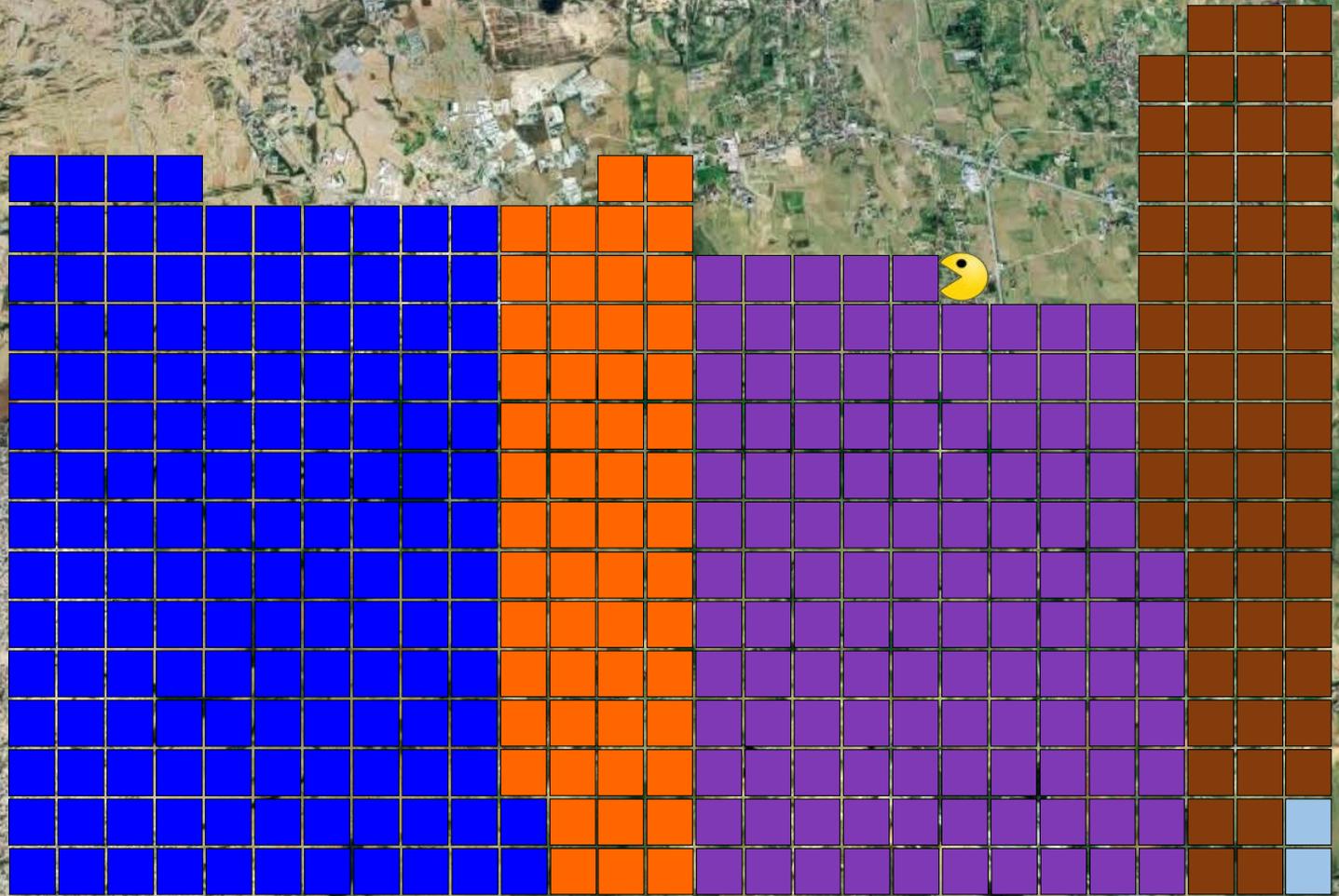


AVOIDED CARS
PUBLIC TRANSPORT
30% households
-100% car use
=
-100,000 km driven



km 01 02

3



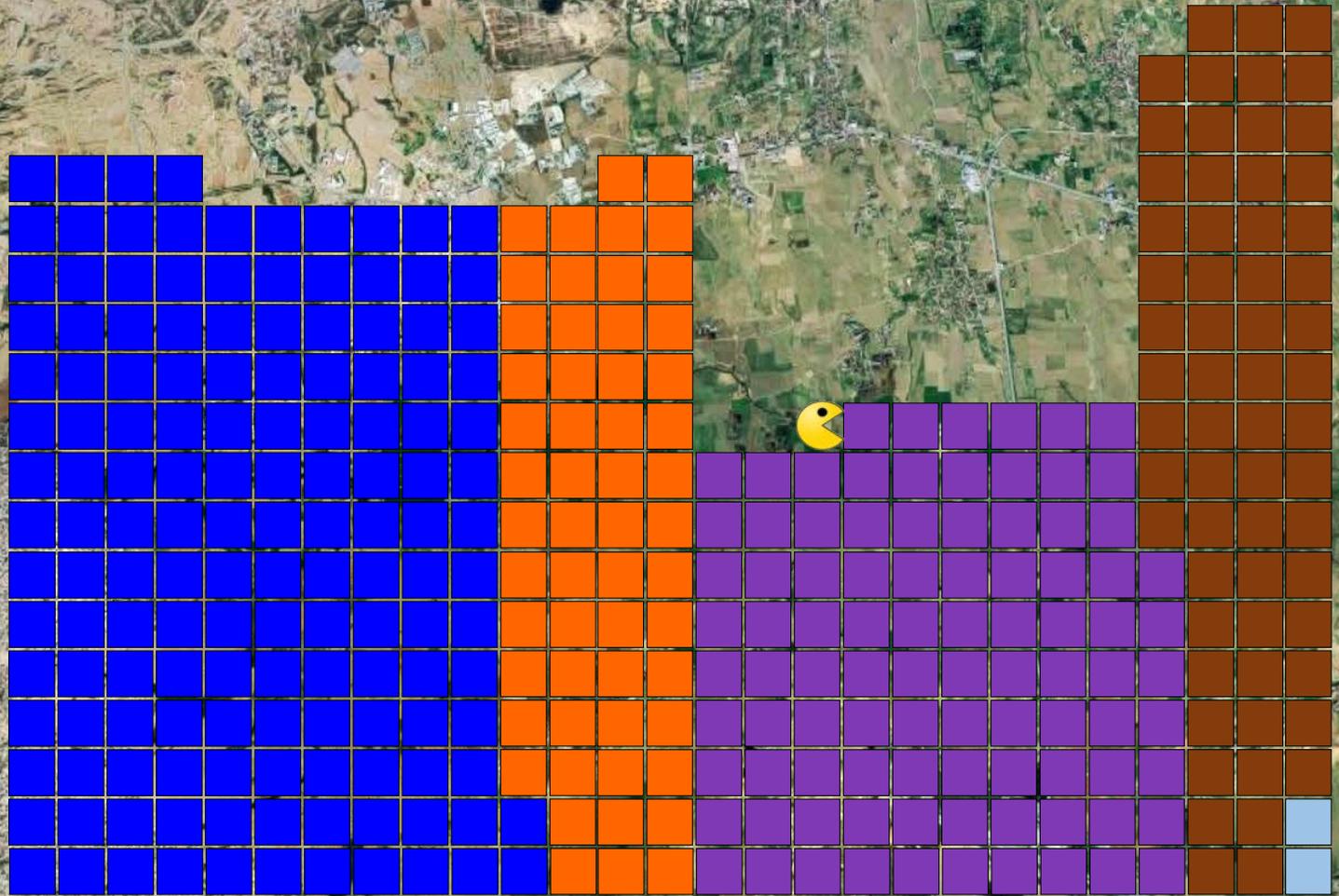


AVOIDED CARS
WALK/BIKE
TO SCHOOL/WORK
30% households
-50% car use
=
- 50,000 km driven



km 01 02

4





WASTE MANAGE.

WASTE REDUCTION

LESS DISPOSAL

100% households

-16 kt/yr landfill (-90%)

+9 kt/yr recycled

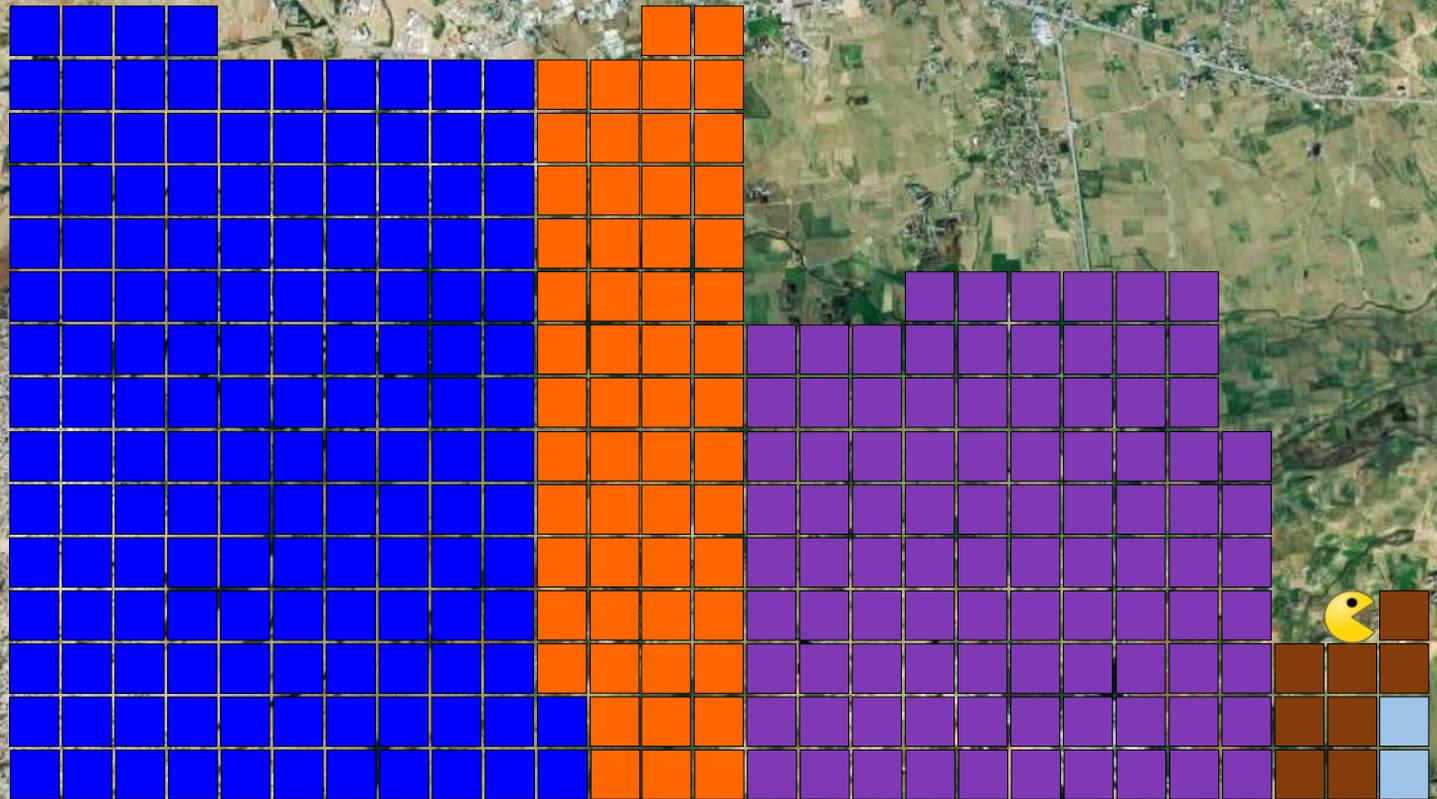
+5 kt/yr organic

-2 kt/yr produced



km 01 02

5





WATER SAVING

WATER HARVESTING

100% households

-40% saving

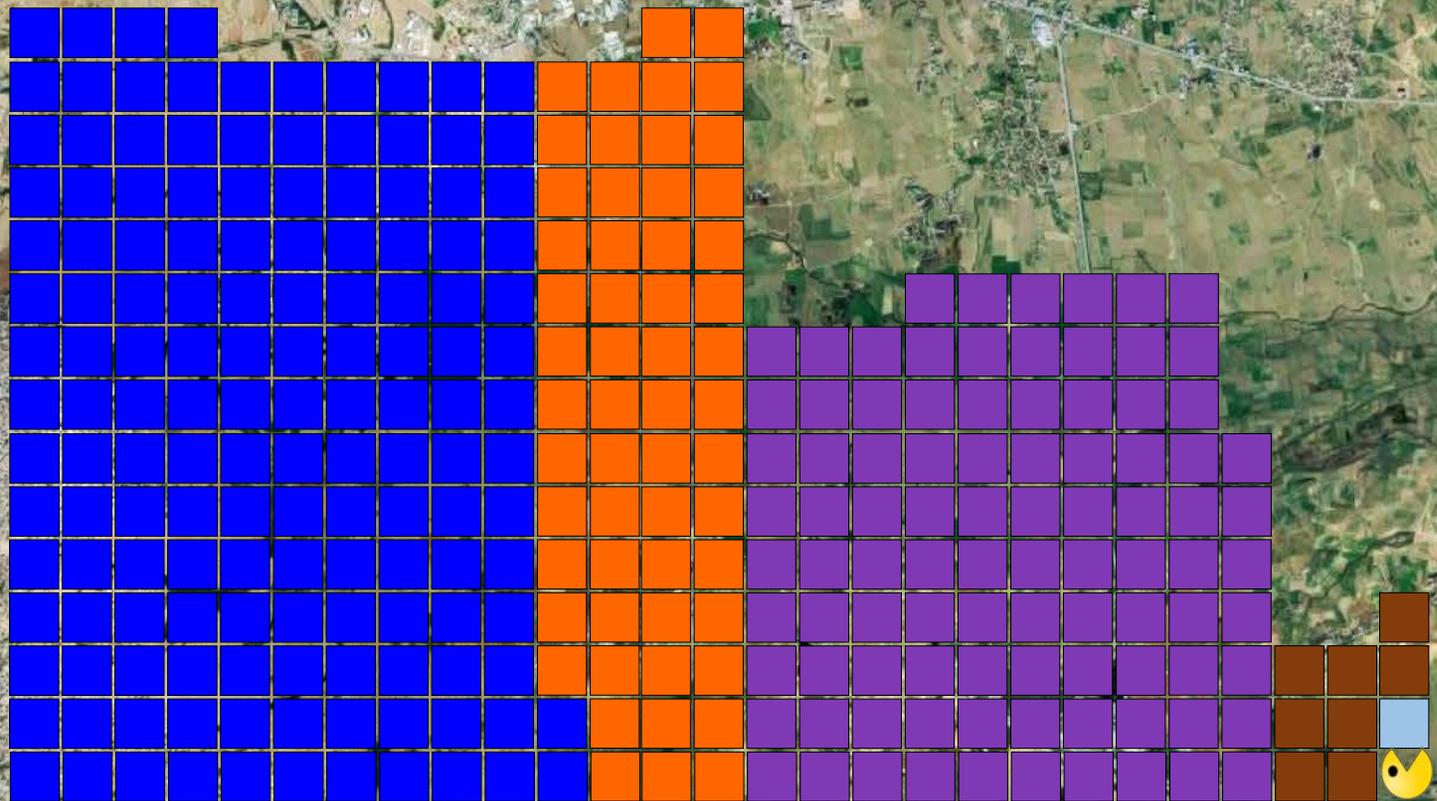
=

- 500,000 m³



km 01 02

6





RES HEAT SUPPLY

HT SINGLE SOLAR
COLLECTORS

60% households

=

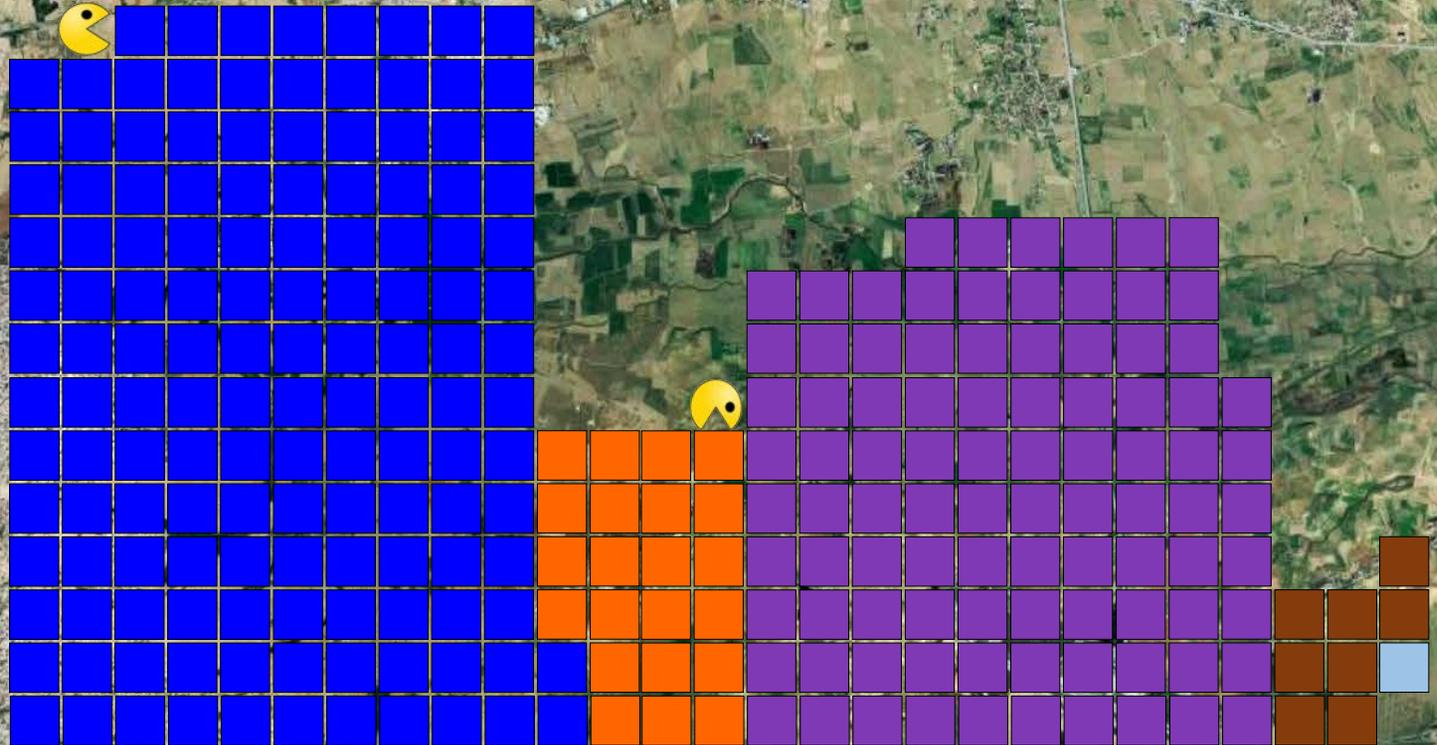
-45 GWh space & water heat

-3 GWh s&w electricity



km 01 02

7





RES HEAT SUPPLY

MT SHARED SOLAR

COLLECTORS + HEAT PUMPS

20% households

=

-15 GWh space & water heat

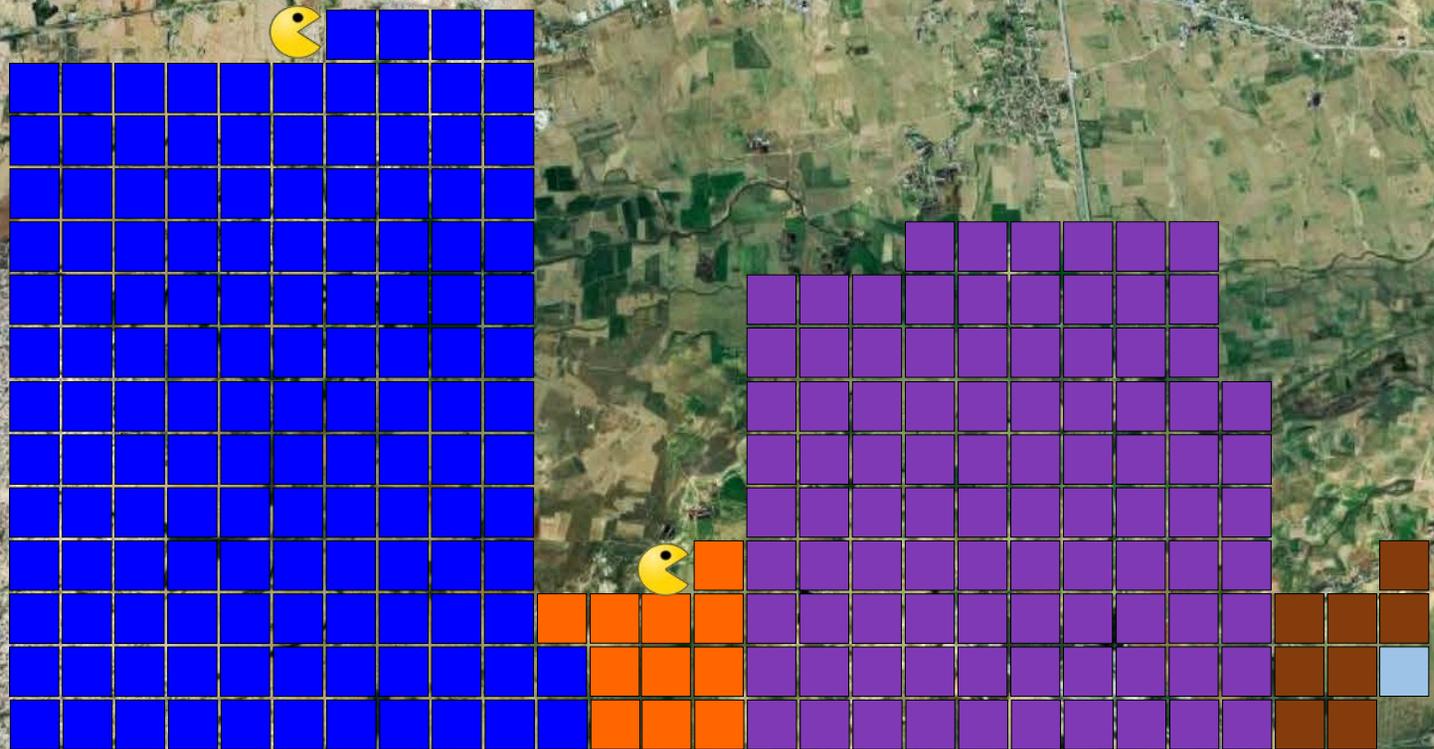
-6 GWh s&w electricity

+ 4 MWh electricity (CoP 4)



km 01 02

8





RES HEAT SUPPLY

LT AQUIFER STORAGE + HEAT PUMPS

20% households

=

-15 GWh space & water heat

-6 GWh s&w electricity

+ 4 MWh electricity (CoP 4)



km 01 02

9





RES ELECTRICITY

PV ON ROOFS + BATTERIES

60% households

52 GWh electric generation
(174,000 m²)

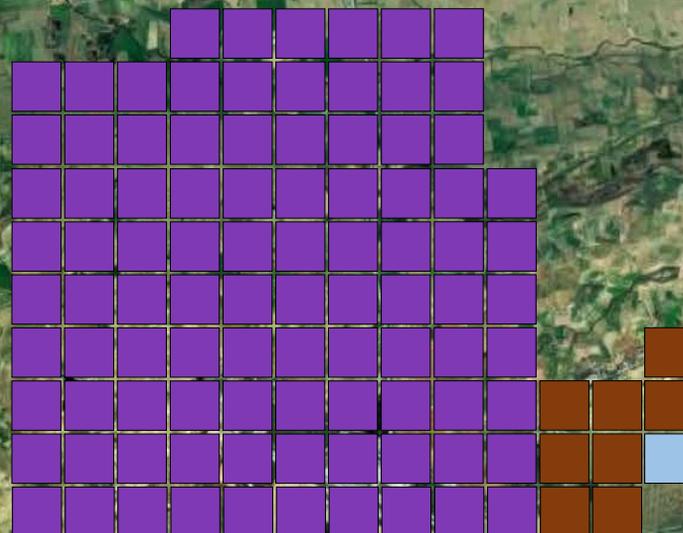
Area ring = 1.54 km²

Total roof surface = 0.88 km²

Available ¼ PV roofs = 0.22 km²

Avg 300 kWh/m² (includes loss)

Total PV potential = 66 GWh



km 01 02

10



RES ELECTRICITY

Vertical PV

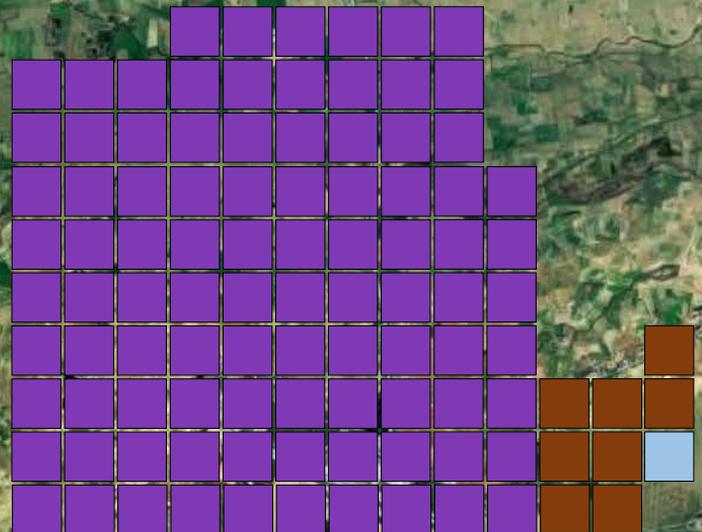
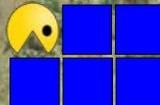
10% households

8 GWh electric generation



km 01 02

11





TRANSITION TO ELECTRIC MOBILITY

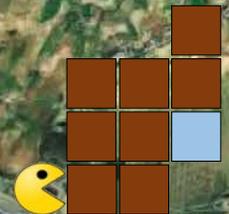
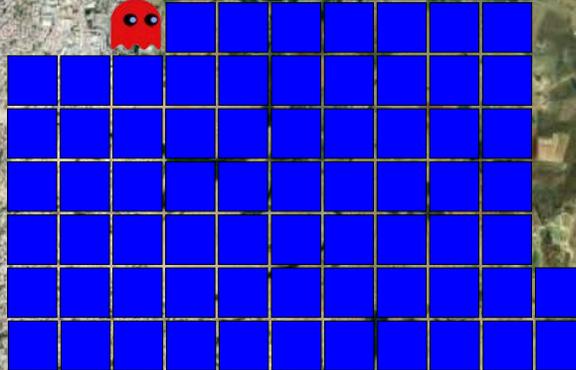
100% cars

32 GWh increased electricity



km 01 02

12





RES ELECTRICITY

Shared PV (canopies)

32 GWh electric generation
(107,000 m²)

e.g.

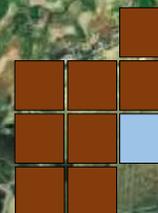
14 GWh on roofs

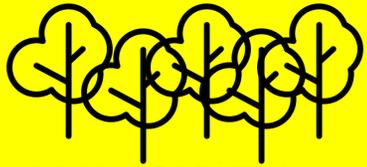
18 GWh on canopies



km 01 02

13





**URBAN FORESTRY
CARBON UPTAKE**

230 hectares forest

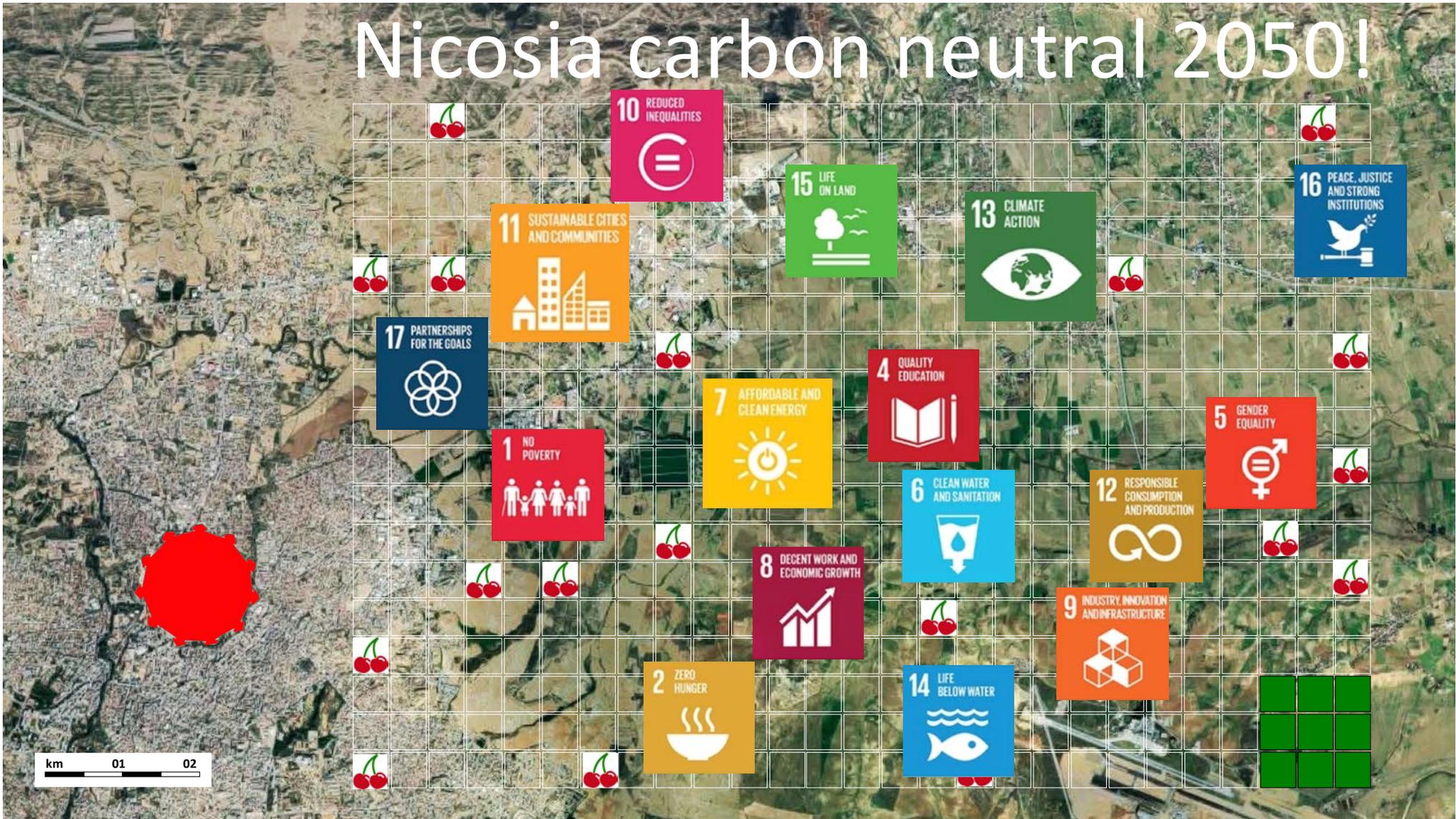


km 01 02

14



Nicosia carbon neutral 2050!



City-zen Nicosia Roadshow (May 8-15 2019)



Presentation by

Prof.Dr. Craig Lee Martin

City-zen Roadshow Leader

The Delft University of Technology (NL)
The Grenfell-Baines Institute of Architecture, UCLan (UK)

Roadshow Team:

Prof. Greg Keeffe (QUB)
Prof.Dr. Andy vd Dobbelsteen (TUD)
Dr. Riccardo Pulselli (UoS)
Prof.Dr. Craig L.Martin (TU Delft)
Prof.Dr. Han Vandevyvere (VITO)
Dr. Andy Jenkins (QUB)
Dr. Markella Menikou (UoN)
Anneleen Vanderlinden (Th!nk-e)
Achille Hannoset (Th!nk-e)
Maryam Al-Irhayim (UCLan)
Emma Campbell (QUB)
Sam van Hooff (TU Delft)
Rainer Townend (UCLan)
Alexis Postekkis (UoN Alumni)
Andreas Prokopiou (UoN Alumni)
Christos Xenofontos (UoN Alumni)

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