

THE URBAN PLANET

HOW CITIES SAVE OUR FUTURE



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Editor and author

German Advisory Council on Global Change (WBGU)

Concept and script

Alexandra Hamann

Illustrations and scenarios

Aike Arndt, Elyon's aka Joëlle E.M., Maki Shimizu,
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WBGU

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Jonathan Lutes

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The Scenario is based on the WBGU report *Humankind on the move – Unlocking the transformative Power of cities* (2016). The report can be downloaded from www.wbgu.de/urbantransformation.

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WBGU
German Advisory Council on Global Change



Foreword

The future of our civilization will be decided in the cities. The internationally agreed Sustainable Development Goals of the United Nations and the Paris Agreement on climate change can only be achieved if we design sustainable and liveable cities across the globe.

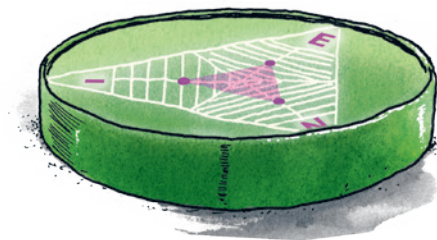
The problems and potential solutions faced in doing so can vary widely across cities and urban communities. The cities of this world are quite different from another; they develop very 'personal qualities'. In this comic, too, they appear as markedly distinct characters.

The goal of the cities in this comic is to find pathways for a transformation towards sustainability. A 'normative compass' provides orientation in the process, helping to design urban development so that natural life-support systems remain intact, participation is guaranteed in all its dimensions and the urban diversity of our cities and the quality of life of their populations remain priorities.

To do justice to this urban socio-cultural diversity, we collaborated with artists from various cultures and countries – Cameroon, Germany, England, India and Japan. Thus, the peculiarities and character of the cities and their urban communities are also reflected in the book's graphical realization.

This comic condenses into an illustrated story the fundamental findings of *Humanity on the move – Unlocking the transformative power of cities*, a report published by the German Advisory Council on Global Change (WBGU). We hope this book encourages urban societies to champion the liveable and sustainable design of their cities with creativity and fun.

WBGU



The history of cities began around 12,000 years ago when individual humans ...



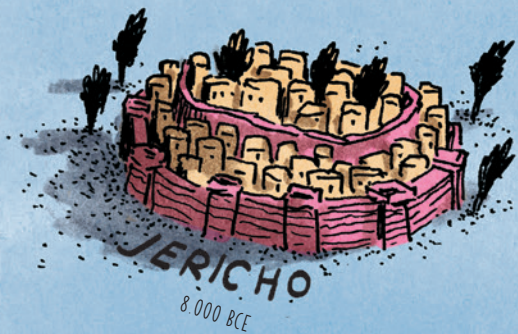
... began banding together into groups ...



... to form bigger and bigger structures.

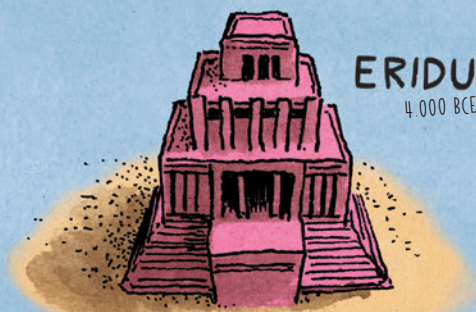


They developed outer walls to protect from invaders ...



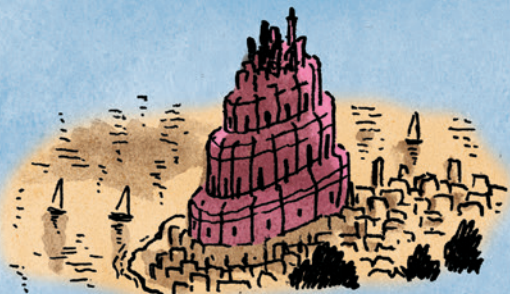
JERICHO
8,000 BCE

... and spiritual centres arose.



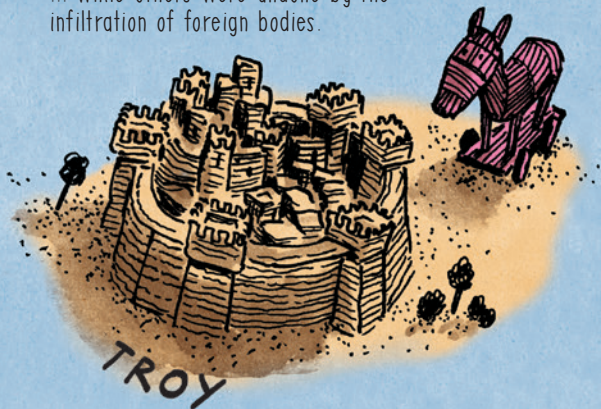
ERIDU
4,000 BCE

Some failed to flourish in the long run ...



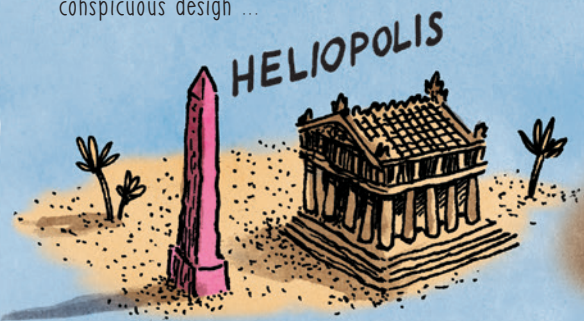
BABYLON

... while others were undone by the infiltration of foreign bodies.



TROY

Places were adorned using conspicuous design ...



HELIOPOLIS

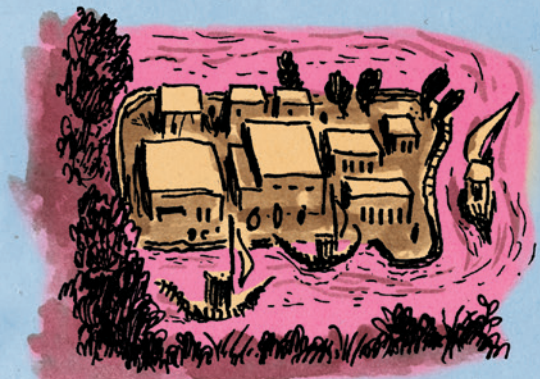
3,000 BCE

or special effects



CARAL

... and people sought to settle in fertile river valleys.



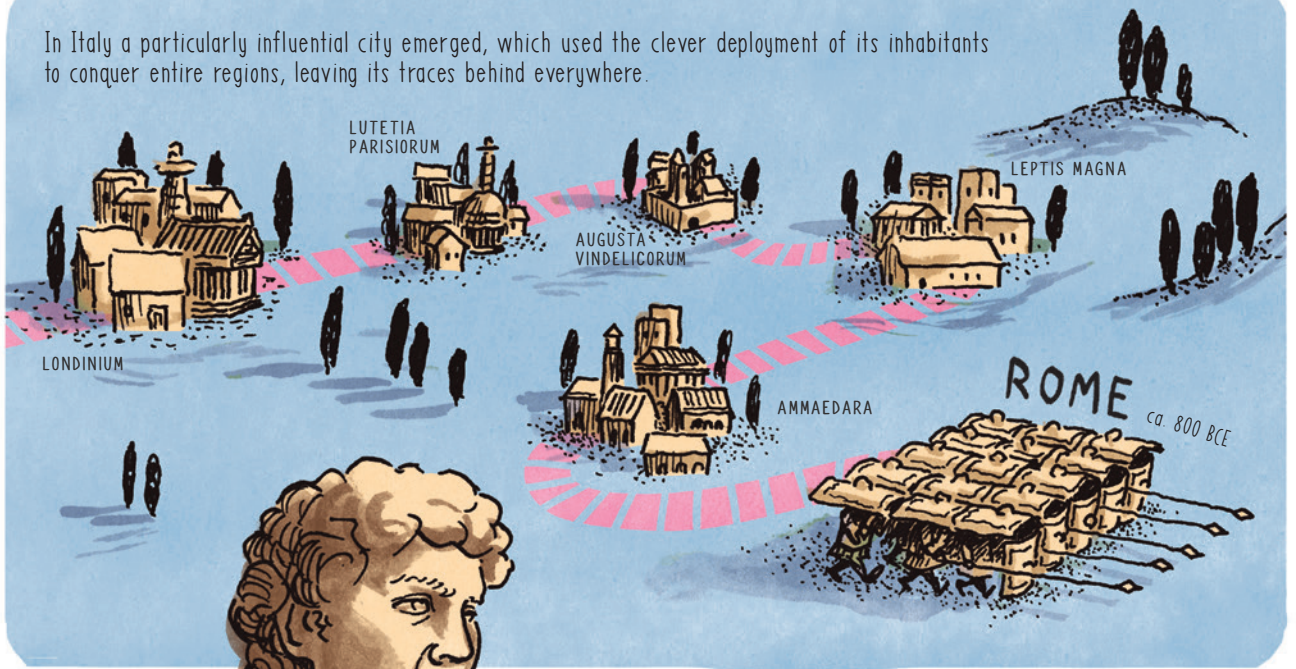
HARAPPA

To safeguard the population and its needs, territories were demarcated and defended.



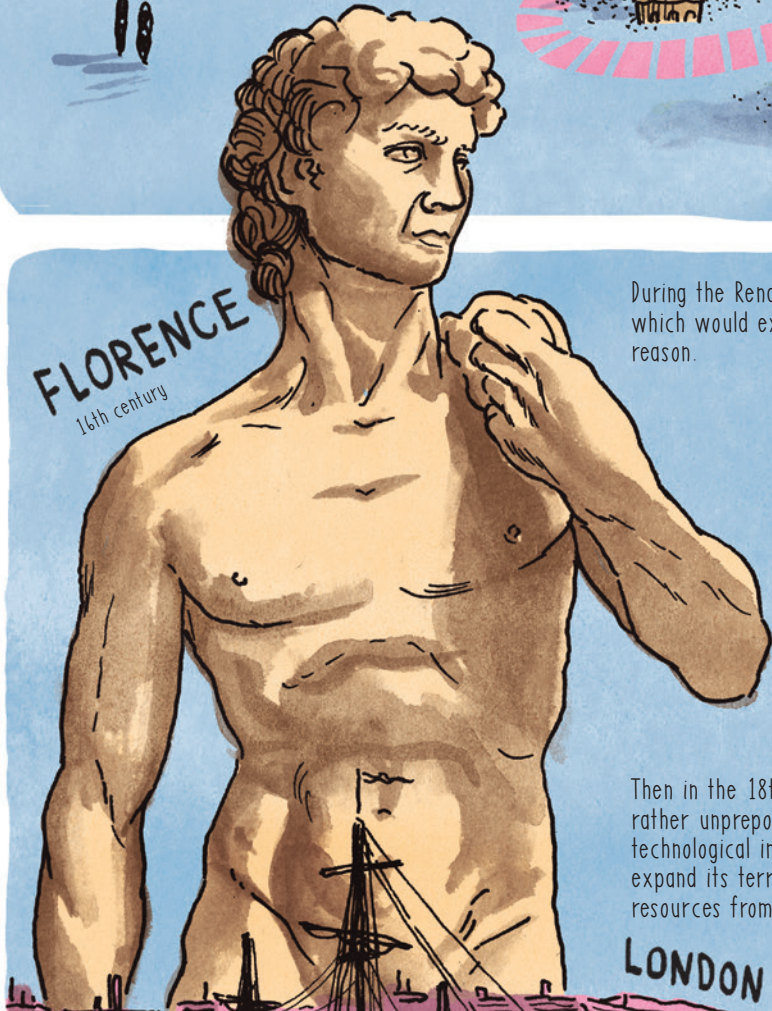
LUOYANG
ca. 1,000 BCE

In Italy a particularly influential city emerged, which used the clever deployment of its inhabitants to conquer entire regions, leaving its traces behind everywhere.



FLORENCE
16th century

During the Renaissance people dreamed of the ideal city, which would exhibit perfect design resulting from pure reason.



Then in the 18th century, London, which was still rather unprepossessing, was able to profit from the technological innovations of other English cities, expand its territory and thus gain access to extensive resources from all over the world.



The cities grew and continued to multiply, developing into the most successful form of living in the world. By 1950 almost one-third of all humans lived in cities; today the figure is over one-half. This phenomenon has resulted in the formation of three different urban settlement patterns:

NEWLY PLANNED

MATURE



Historically grown city-district pattern with a solid building stock and established infrastructure.
Driving force: time



Publicly or privately planned settlement usually characterized by rapid expansion.
Driving force: power

INFORMAL



Settlement pattern characterized by poverty, usually having poor housing standards and inhumane living conditions.
Driving force: hardship

A mix of all three can be found in most cities.



Every city is shaped by its residents as well by its physical qualities, which combine to form its unique character. A few examples:



Mumbai
Born in the 16th century
Population: ca. 12.4 million
Metropolitan region: ca. 18.4 million



Copenhagen
Born in the 13th century
Population: ca. 0.6 million



Berlin
Born in 1250
Population: ca. 3.5 million



Cairo
Born in 969
Population: ca. 10 million
Metropolitan region: ca. 18 million



Guangzhou
Born in the 2nd century BCE
Population: ca. 12.4 million
Metropolitan region: up to 15 million



São Paulo
Born in 1554
Population: ca. 12 million
Metropolitan region: ca. 20 million



Tokyo
Born in the 16th century
Population: ca. 9.4 million
Metropolitan region: ca. 37 million



Kigali
Born in 1907
Population: over 1.2 million



London
Born around 50
Population: ca. 8.5 million
Metropolitan region: ca. 13.5 million



Ruhr Area
Born in the Early Middle Ages
Rise to prominence: ca. 1850
Population: over 5 million

We'll soon have a huge problem! Cities need so many resources and emit so much greenhouse gas that the natural life-support systems are in jeopardy. This means that we'll soon overrun our planetary guard rails!*

The notion of a city in which living and working are kept separate, which is chiefly characterized by suburbs with single-family homes and an inner city dominated by individually driven motor vehicles, is an outdated model. Even the bundling of a country's economic clout in only one centre is no longer a functioning concept.

Ha! Between 2008 and 2010 - in only three years! - China alone built with more cement than did the US in the entire 20th century!

I wouldn't be quite so smug, considering we'll have to double our urban infrastructure again within the next 30 years!

Global urban population

2050: 2/3
2015: 1/2

By 2050 between 6.5 and 7 billion people will be living just in the cities, which is at least 2 billion more than today!!!

And most of the growth will occur in Asia and Africa.



* Limits to the damage that our natural life-support systems can withstand

The metropolises meet with a few smaller cities in one of the many hip cafés.

Sure, but that's likely to affect the poorer among us first.

Not really! The rich have to rethink their situation too!

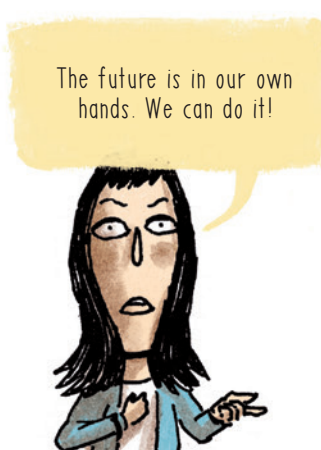
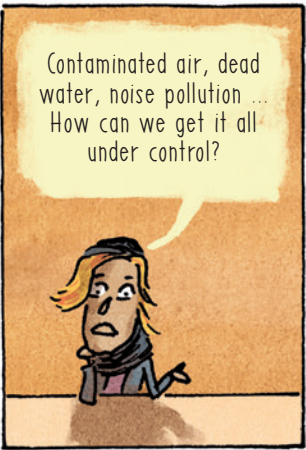
OK ... but the newcomers are positioned best to explore new avenues.

YOU HAVE REACHED THE PLANETARY GUARD RAILS! DECREASE YOUR CONSUMPTION AND START OVER AGAIN.

This problem involves all of us! We've already agreed on 17 goals.* If we adhere to them, we will have achieved the transformation* towards sustainability by 2030. And this will be decided in the cities!

* Sustainable Development Goals: In 2015 the international community agreed on 17 global sustainability goals to be achieved by 2030.

* Transformation: processes of far-reaching societal and technological change, such as the energy transition ('Energiewende') as a prerequisite for sustainable development.





THE NORMATIVE COMPASS

For urban transformation towards sustainability, there are three things to keep in mind:

SUSTAIN **N**ATURAL LIFE-SUPPORT SYSTEMS

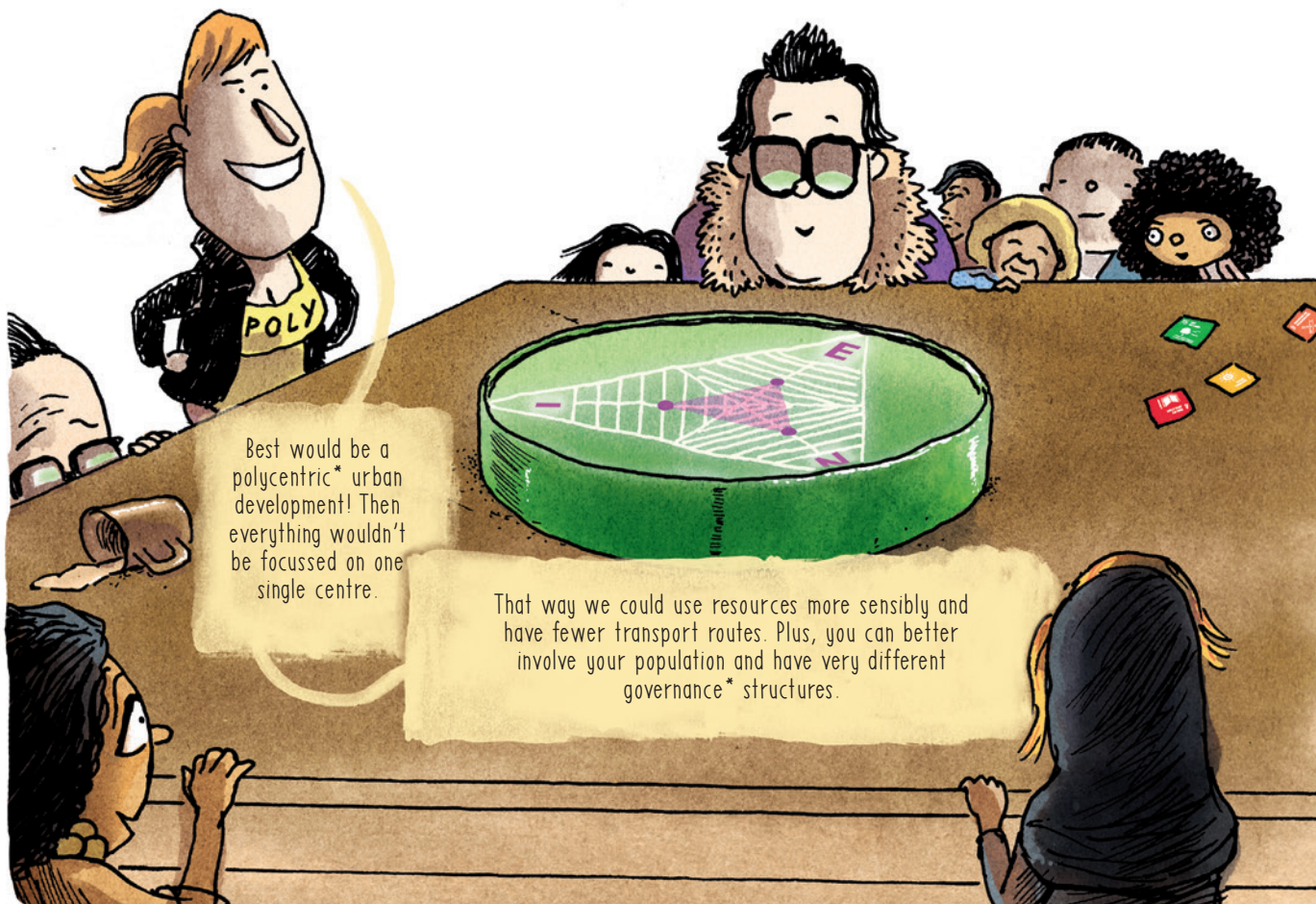
All cities and urban societies should pursue development pathways that abide by the planetary guard rails.

ENSURE **I**NCLUSION

Universal minimum standards for substantive, political and economic inclusion should be met in all urban societies.

PROMOTE **E**IGENART*

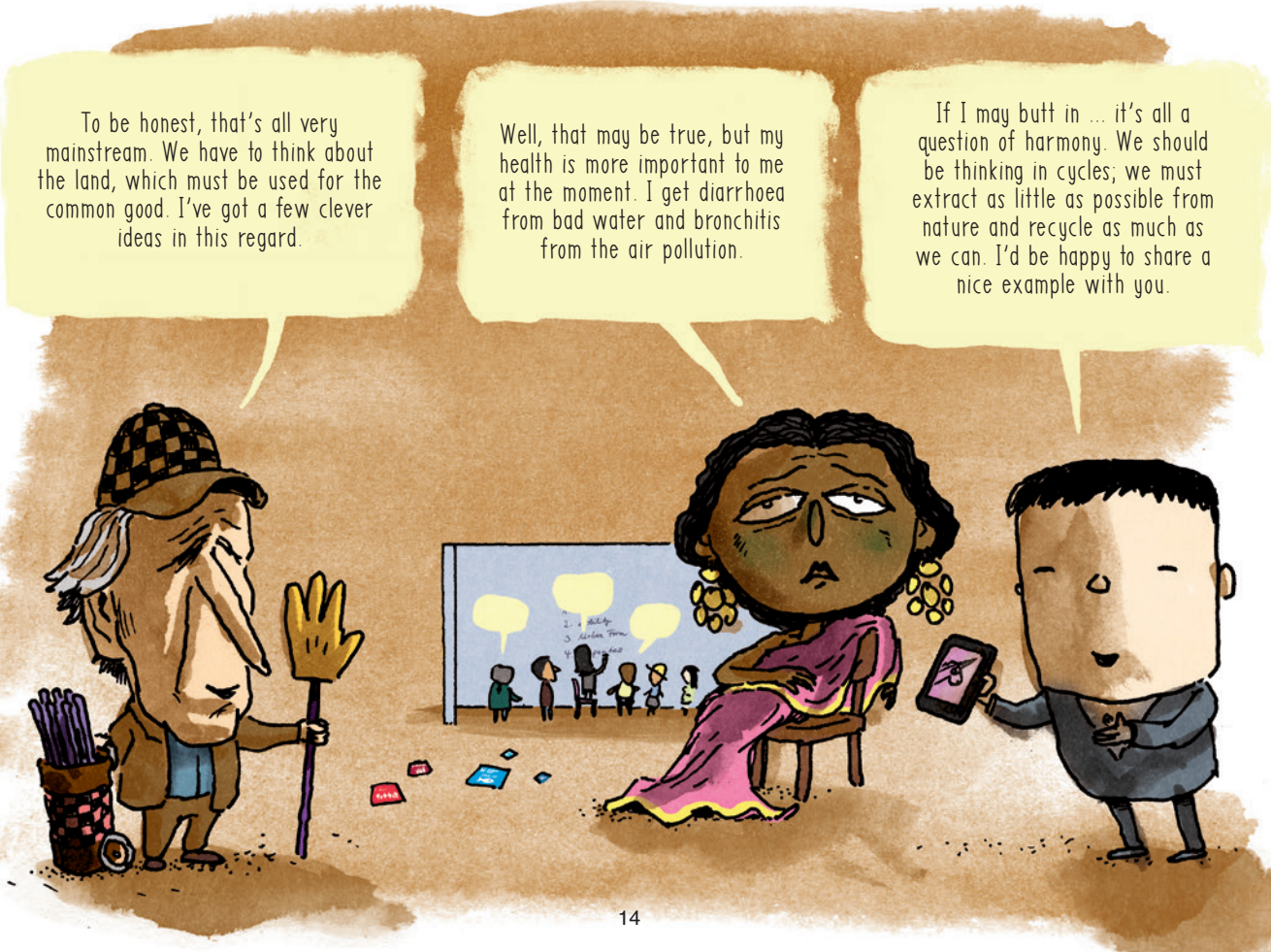
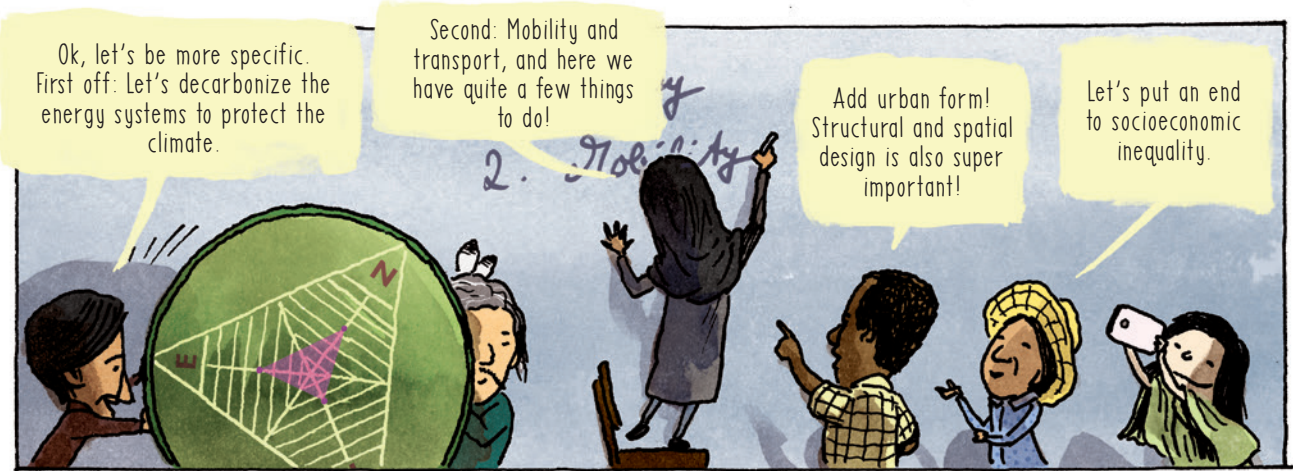
1. All decision-making should take into account the socio-cultural and spatial diversity of cities.
2. Cities should create preconditions for self-efficacy, quality of life and local identity.



* Eigenart: a German word meaning 'character'

* Polycentric: having many centres

* Urban governance is the organization of a city's common affairs through politics, administration, business and civil society.



I think our most important task is to bring the poorest among us on board, fortify their rights and improve their living conditions.

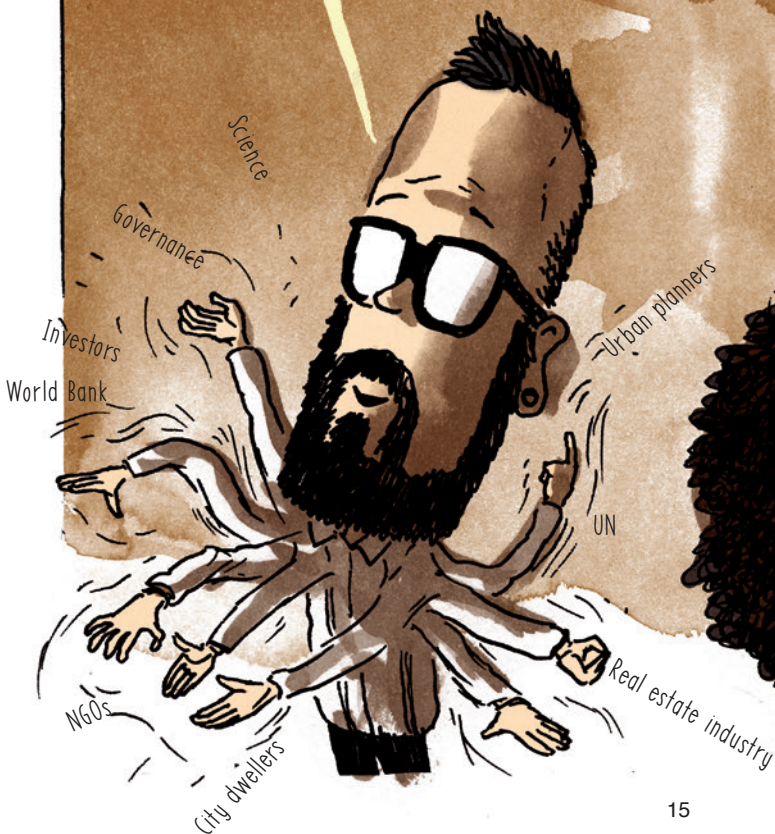
850 million people worldwide live in informal settlements or slums. This applies to 90% of my own urban area.

Tell me about it! And the number's only going up!

I couldn't agree more. Relieving poverty and equalizing opportunities should become a central urban policy goal.

The topic must be made unconditionally visible in international cooperation. This requires a bundling, acceleration and considerable scaling up of all political, economic, social, planning and scientific activities relating to sustainable urban development.

I'd rather talk to you about a terrific example of what, in my opinion, people ought to "scale up"!





COME OVER AND
TAKE A CLOSER
LOOK.



KIGALI, 2016

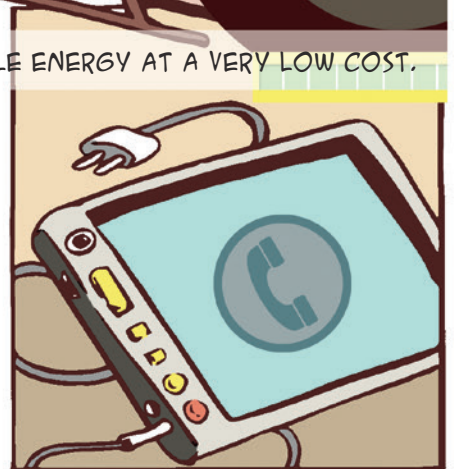
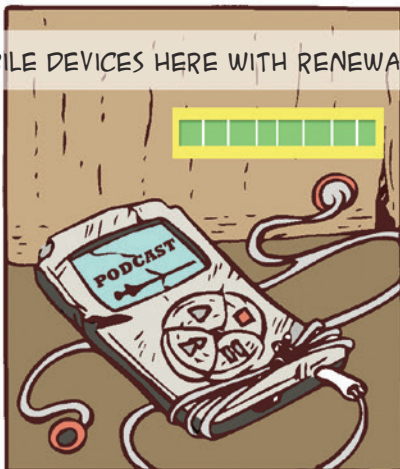
THIS IS A SOLAR KIOSK, WHICH PROVIDES INTERNET AND COMMUNICATION CAPABILITIES ...

... ALL ACROSS THE COUNTRY AND ...

... IN NEIGHBOURHOODS WITHOUT ELECTRICITY ...

... WHILE OFFERING PEOPLE A POSSIBILITY FOR EARNING MONEY.

PEOPLE CAN CHARGE THEIR MOBILE DEVICES HERE WITH RENEWABLE ENERGY AT A VERY LOW COST.



THIS HELPS PEOPLE IN MANY WAYS.

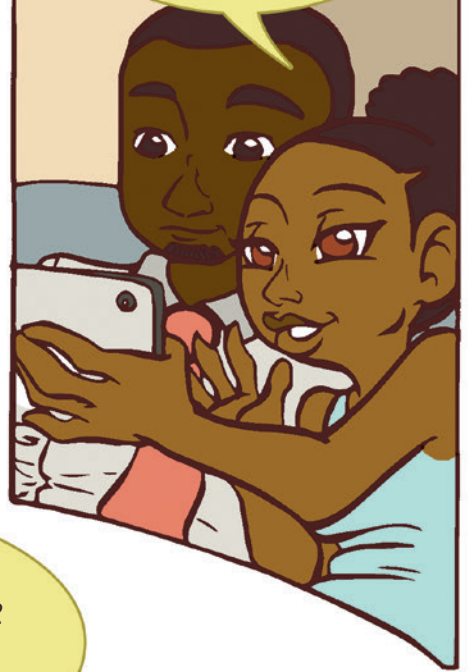
THE CURRENT PRICES OF SOY, MANIOC AND COFFEE ARE ...



LESSON 1: IN MATHS, AN ALGORITHM SIGNIFIES A CLEARLY DEFINED SET OF OPERATIONS ...

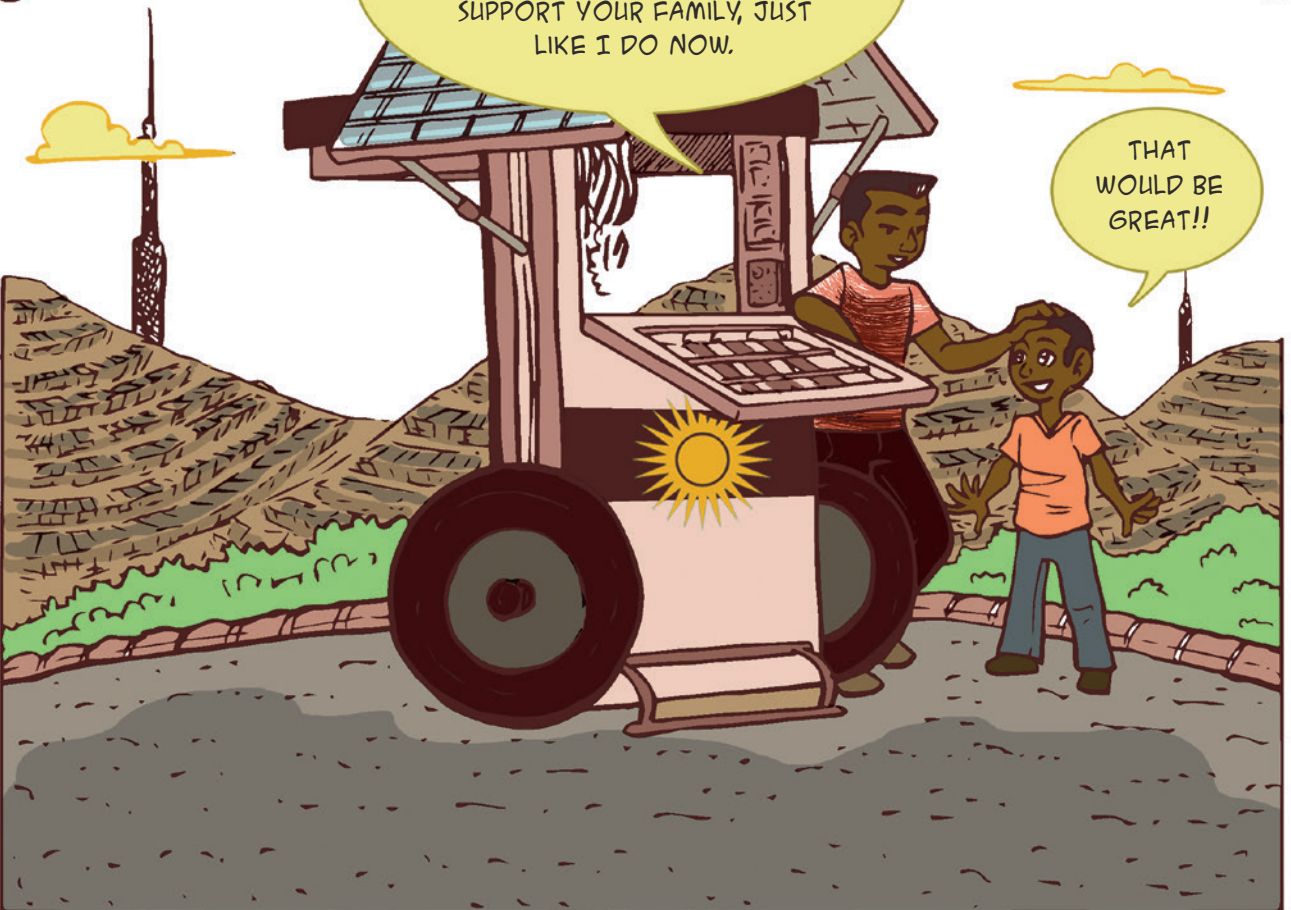


HI GRANDMA, HOW ARE YOU?



WHEN YOU'RE AS OLD AS I AM, YOU CAN HAVE YOUR OWN CHARGING KIOSK TO SUPPORT YOUR FAMILY, JUST LIKE I DO NOW.

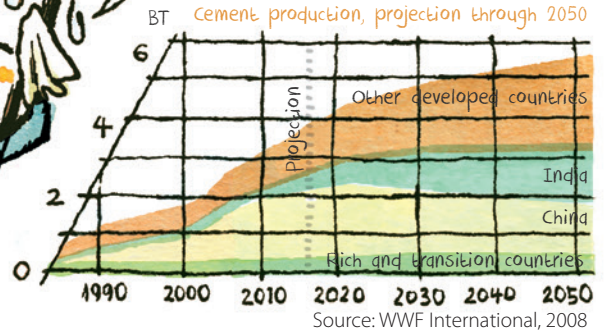
THAT WOULD BE GREAT!!



That's a very nice example, Kigali-san, as it shows that development can also be achieved sustainably. Mature urban districts, which there are many of in my home city of Tokyo, are often mired in path dependencies,* and newcomers often simply replicate what they've done. This is where we all have to begin to think in cycles.



For example, most of today's urban infrastructure is made from concrete.



Energy-related and process-related emissions

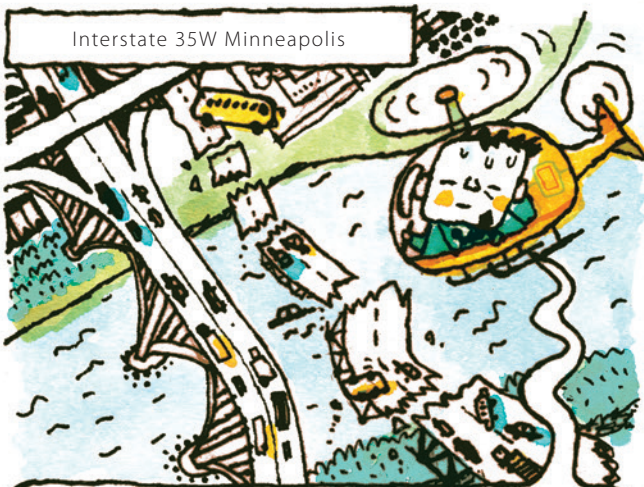


The traditional form of urban infrastructure construction would claim a significant portion of our available Global Carbon Budget* for complying with the 2°C climate-protection guard rail.



The manufacturing of cement, an essential component of concrete, releases the greenhouse gas CO₂.

Interstate 35W Minneapolis



Moreover, qualitatively poor, low-durability concrete is often used, so infrastructure must be replaced after a short while. The used building material, however, is only scarcely recyclable.



If we want to conserve the natural life-support systems, we must soon develop emissions-free building materials.

* Path dependency: development in which a path, once chosen, proves very difficult to change for years to come.

* Carbon budget: The maximum amount of CO₂ that humanity can emit and still avoid a certain level of global warming.

The MoriYama house in Tokyo is a good example of how we can conserve resources while building, use minimal space effectively and design cost-effective, socially flexible housing as a place for people to come together.



Cuboids of various size and height - with floor plans ranging from 16m² to 30m² - are easily allotted.

Integrates seamlessly with the surrounding single-family houses

Housing complex with 10 residential units

Architecture and nature

House as city

Offset windows allow privacy even without curtains.

An apartment offering a high quality of life is very important to us.

A socially flexible, expandable, space- and resource-efficient housing concept

Residential landscaping with paths, squares and niches

People can only live healthily under good housing conditions, yet the health of urban populations is also influenced by many other factors.

We mustn't worry too much about symptoms and instead focus more energy on prevention. Health is best maintained by not allowing illnesses to occur in the first place.



Bandra Beach in Mumbai is an encouraging example. Over the years the shore had deteriorated into a rubbish dump. People with various motivations then joined forces ...



This could be a perfect place to play *Lagori*!

We'd like to show corporate social responsibility by offering funding!



A city's quality of life is reflected in the condition of its public spaces.



We have to return to valuing and respecting nature!



Sanitation must take priority in our urban planning and governance.



What an eyesore!



If it didn't smell so awful, I'd love to take walks here.

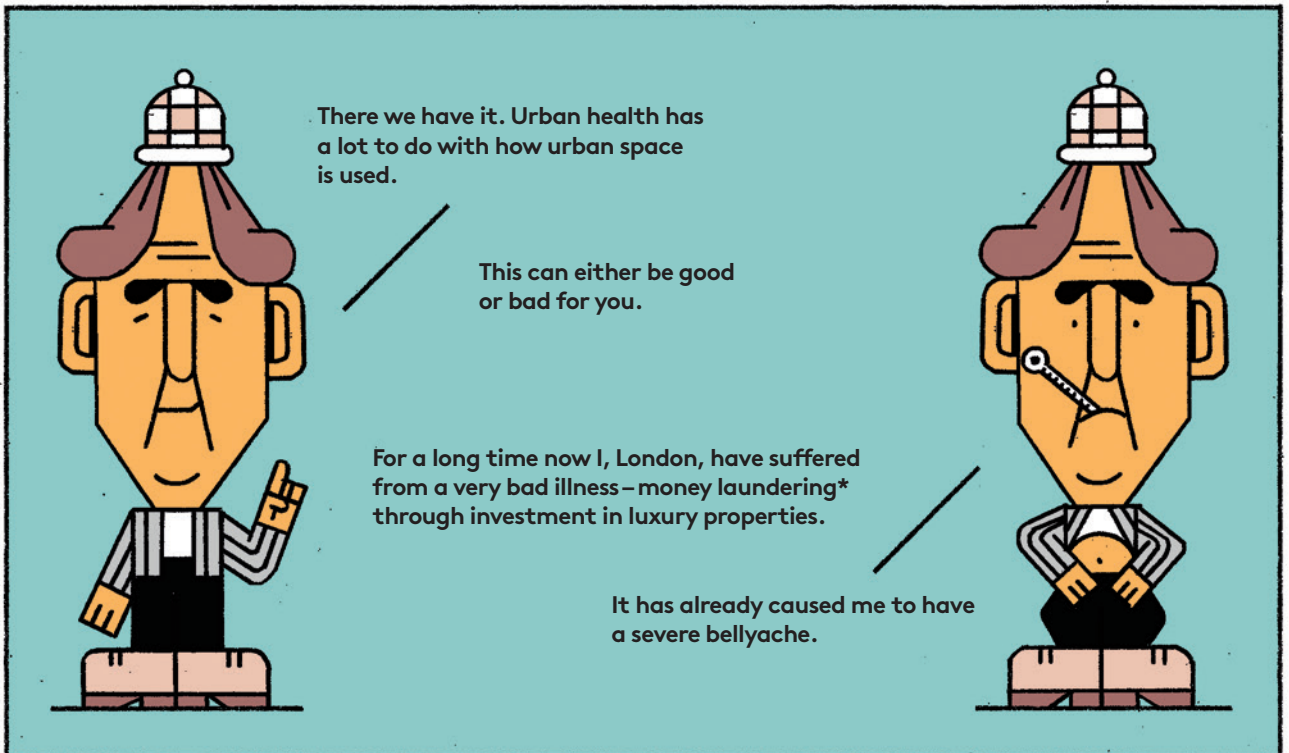


**THIS WILL NOT DO!!
TOGETHER WE CAN CHANGE IT!**

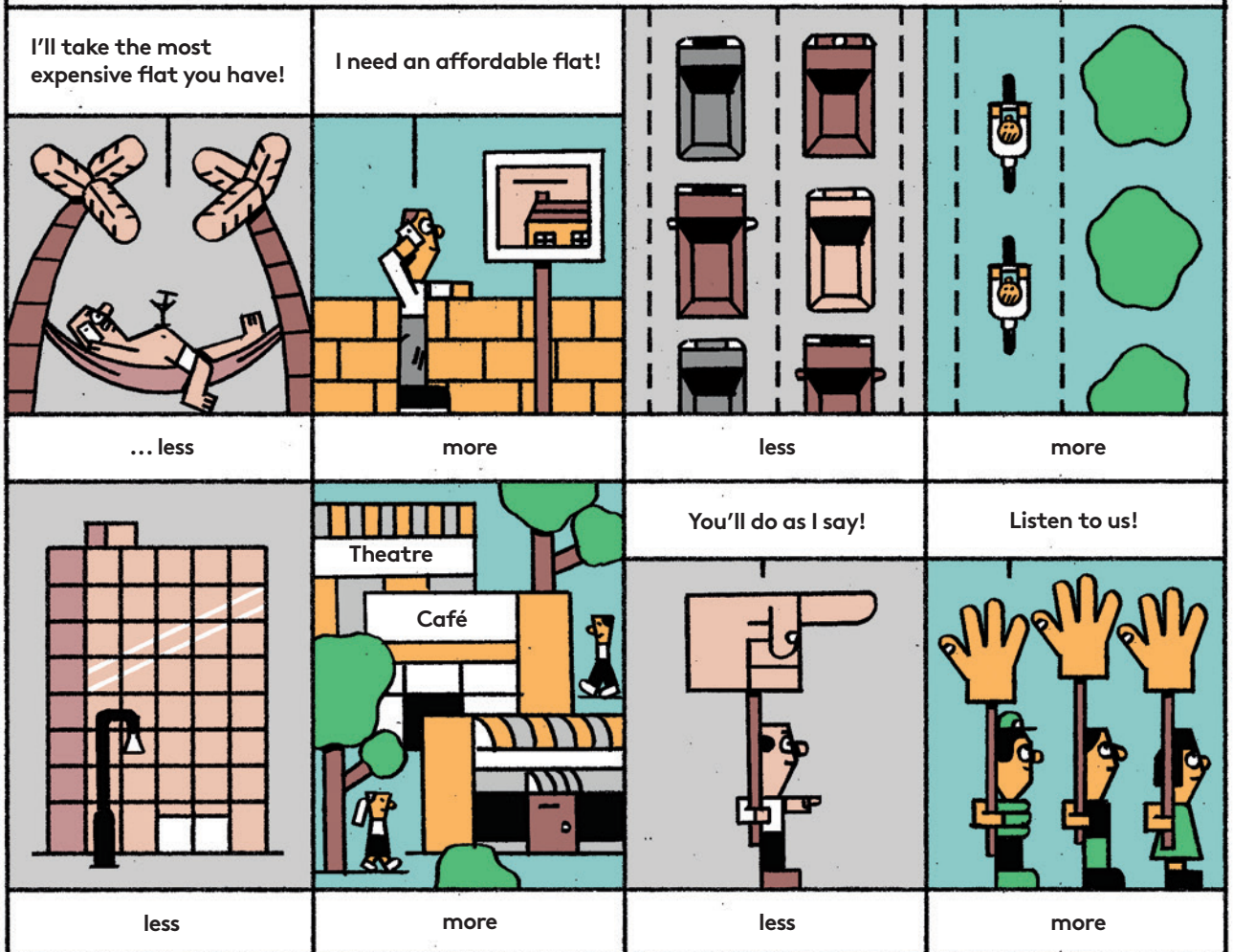


... and transformed the shore into a location for everyone to enjoy.



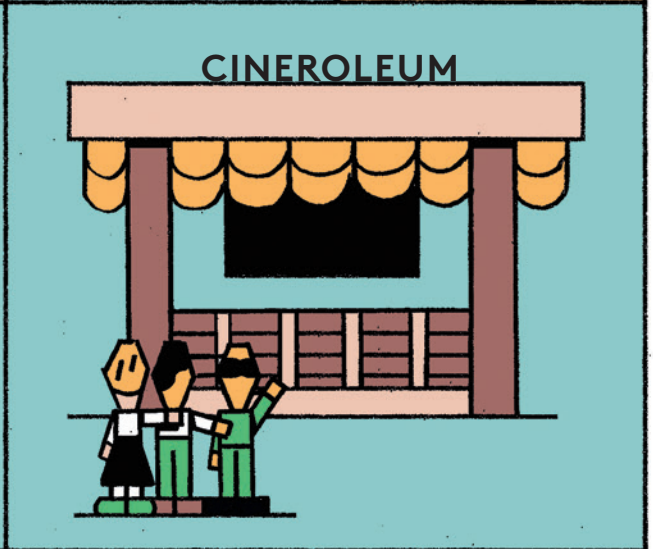
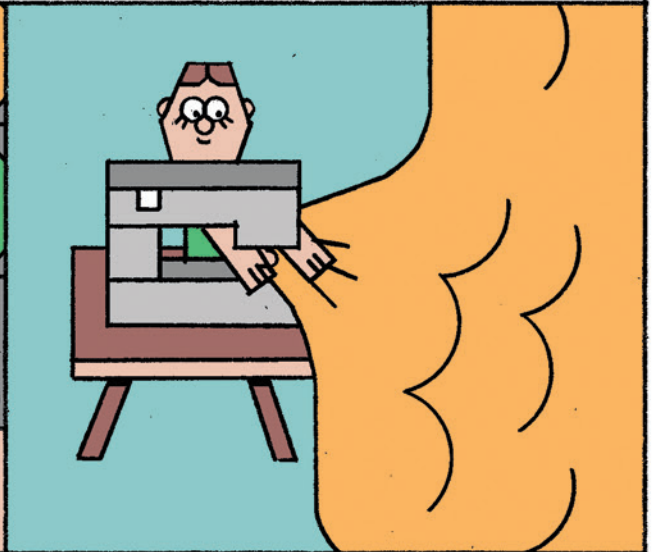
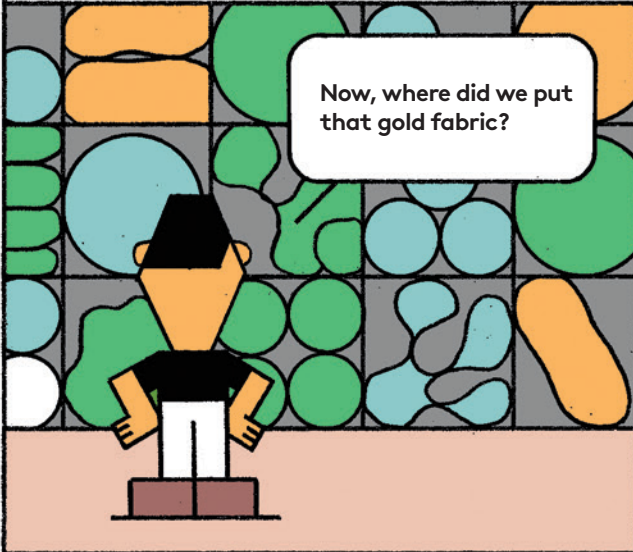


As I said before, urban land use must be oriented toward the common good. We need ...

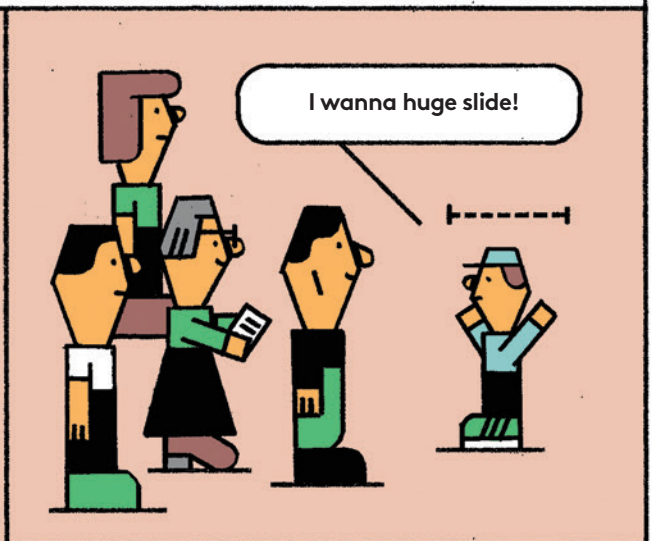


* Money laundering conceals the origin of illegally acquired assets.

Assemble—a collective of young artists, architects and designers—shows us how it's done. They're helping give new life to long-abandoned and neglected locations.



First they speak with the local residents, then with the public authorities.



They make a lot from nothing ...

This could make a beautiful hall!

And this could be a wonderful community garden.

... and involve everyone in the process: local residents, designers, students, children, artists ... you name it!

We can reuse these old bricks.

Lalalalaaaa ...

They even take care of the financing, e.g. by selling furniture made in their local community workshop.

We can sell these tiles online.

Initiatives like these are strong medicine for my bellyache!

FURNITURE WORKSHOP

These sure are super examples!!

That's how we achieve transformation.

We simply have to know more about the people who live around us and what they need, think and feel.

Like I said: Get out of your comfort zone.

We've got to hurry; we're running out of time. We have to lay the foundations in just a few years.

Yes. Enough with all the concrete and these outdated resources.

Let's do it!



TRANSFORMATION

Coffee & Global Changes

We need a global discussion on urbanization.

Urbanization must become a top priority of global politics.

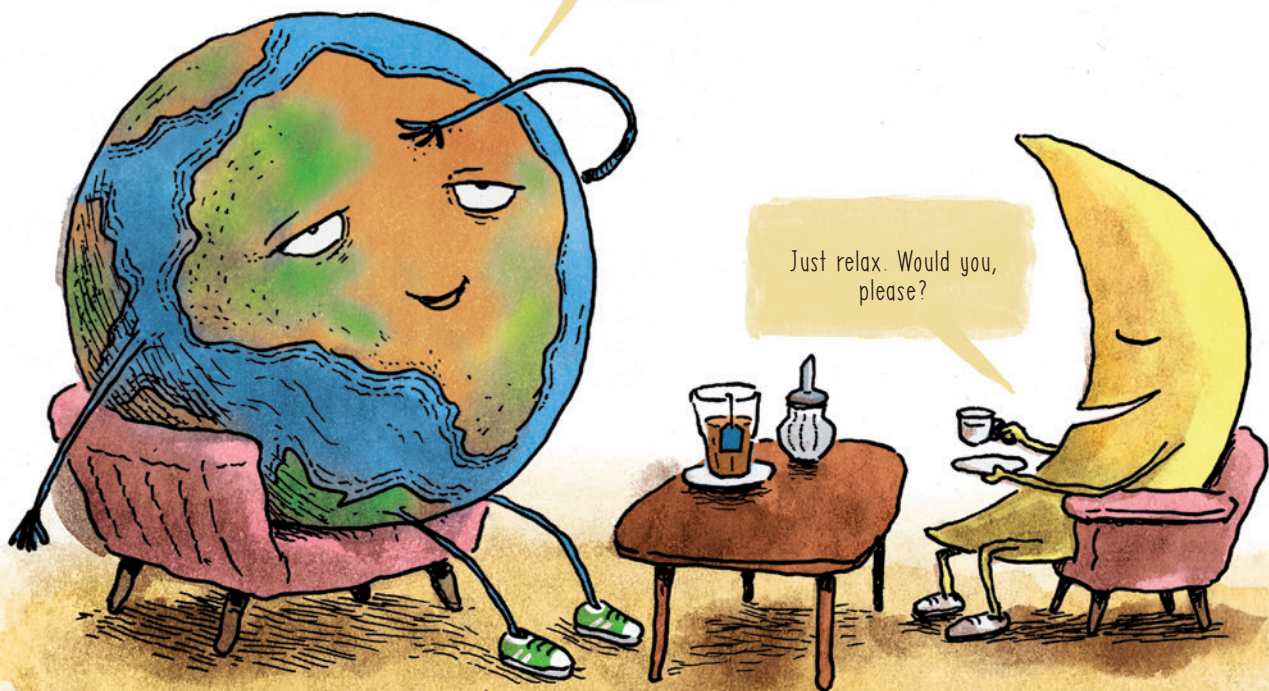
Along with energy and the climate!!



A while later - around the middle of the 21st century

Phew! That was a close one!

Just relax. Would you, please?



Publisher and author

The German Advisory Council on Global Change

The German Federal Government set up the German Advisory Council on Global Change (WBGU) as an independent, scientific advisory body in 1992 in the run-up to the Rio Earth Summit. Its main responsibilities are to analyse and report on global environmental and development problems, issue early warnings of new problem areas, prepare recommendations for action and research, and raise public awareness of global change issues. The WBGU is reappointed every four years.

The nine members of the WBGU are university professors or directors of major research institutes. They meet for two days once a month to consider ways of moving towards global sustainable development. For example, they give recommendations on issues such as how to move forward with the global energy-system transformation, how best to protect biodiversity, and how to achieve food security in a world with soon 9 billion people without destroying the environment.

In addition to the council members, the WBGU team also includes nine personal research assistants to the council members and a secretariat with extensive experience and excellent scientific expertise in the preparation and dissemination of reports. Once a report is finished, it is presented to the German Federal Government – usually to one or several federal ministers; it is then published on the internet as well as in printed form in both German and English.

The WBGU chooses the subjects of its reports itself. In 2016 it published a flagship report titled *Humanity on the move – Unlocking the transformative power of cities*. This report provided the basis for this comic.

Council members: Frauke Kraas, Claus Leggewie, Peter Lemke, Ellen Matthies, Dirk Messner (chair), Nebojsa Nakicenovic, Hans Joachim Schellnhuber (chair), Sabine Schlacke, Uwe Schneidewind.

Scientific staff: secretariat: Inge Paulini, Carsten Loose, Benno Pilardeaux, Teresa Schlüter, Astrid Schulz, Anna Schwachula, Gesa Schöneberg, Benjamin Stephan.

Research assistants to the council members: Clara Brandi, Sebastian Busch, Frederic Hanusch, Melanie Jaeger-Erben, Miriam Köster, Mareike Kroll, Johannes Sutter, Kira Vinke, Matthias Waner.

Technical support: Anja Böhmer, Mario Rinn, Martina Schneider-Kremer.

Concept and script

Alexandra Hamann

is a media designer who has directed an agency specializing in educational media and science communication since 2001. She is an editor and author of non-fiction comic books, such as *The Great Transformation: Climate – Can we beat the heat?* (based on the 2011 WBGU report *World in Transition - A Social Contract for Sustainability*), the comic anthology *Anthropocene – 30 milestones in a new age on Earth* (Deutsches Museum, 2014) and *Eating Anthropocene. Curd Rice, Bienenstich and a Pinch of Phosphorus. Around the World in Ten Dishes* (Springer-Verlag Heidelberg, 2016). Alexandra Hamann was responsible for the concept, storyboard and realisation of this comic.

www.mintwissen.de

Artists

Aike Arndt

was born in Neuss, Germany, and studied illustration at the Münster School of Design. Since receiving his degree in 2007, he has worked as a freelance illustrator, animator and snapshot sketch artist in Berlin. His two comics, *Die Zeit und Gott* and *Das Nichts und Gott*, were published by Zwerchfell Verlag. He also regularly publishes comics in the German-French comic anthology *Béton*.

<http://www.aikearndt.de>

Elyon's aka Joëlle E.M.

was born in Bafoussam, Cameroon. She studied at the Saint-Luc Liège École Supérieure des Arts in Belgium, where she received a degree in modern literature and graphic arts. Elyon's is the author of *The Diary of Ebene Duta*, her first comic book. With the help of an extraordinary crowdfunding campaign, it was financed by individuals from 40 different countries. At the end of 2015 she published the second part of *The Diary of Ebene Duta*. Elyon's became an internationally known artist as a result of a reading tour she undertook spanning numerous countries. She also illustrated the 'Uganda' chapter of the science comic *Eating Anthropocene. Curd Rice, Bienenstich and a Pinch of Phosphorus. Around the World in Ten Dishes* (Springer-Verlag Heidelberg, 2016).

www.facebook.com/EbeneDuta; www.instagram.com/elyon.s

Maki Shimizu

was born in Tokyo, Japan. She studied fine art in Japan, majoring in printing techniques, before going on to complete a degree in graphic design at the Bielefeld University of Applied Sciences. Since 2006 she has worked as an artist and illustrator in Berlin, and since 2013 as a lecturer at BTK University of Art & Design in Berlin. Maki Shimizu has shown her work at numerous international exhibitions and has published books of art, comics, essays, a poetry collection and children's books. Her oeuvre includes the work *ADAGIO N°2 – Im dunkelsten Winter aller Zeiten* (ADAGIO N°2 – In the darkest winter of all time, 2014), the second part of the ADAGIO series she began in 2011. In 2014 she published *YUKI – Portraits of Our Friends*, a book using woodcuts to examine the theme of portraiture.

www.makishimizu.com

Archana Sreenivasan

is an illustrator based in Bangalore, India. Her illustrations have been published in magazines, children's books, book covers and comics. She studied animation film design at the National Institute of Design, Ahmedabad (India), and participated in a summer residency at the School of Visual Arts, New York, where she studied Illustration. More recently she contributed to the comic anthology *The Elephant in the Room*, in collaboration with the comics collective *Spring*. 2016 she was sponsored by the Goethe Institute to participate in the Comic Artist Seminar and the 17th International Comic-Salon in Erlangen, Germany.

www.archanasreenivasan.com

Jay Daniel Wright

was born in Nottingham, England, and now works as an artist and illustrator in Berlin. He works for magazines and newspapers such as The New York Times, Die Zeit and The New Yorker. He has also published books with Walker Books London, Thames and Hudson and Dorling Kindersley. Jay Daniel Wright has always been interested in telling stories. His personal work, often autobiographical, serves as a record and commentary of his own personal journey.

www.jaydanielwright.com



The momentum of urbanization and its impacts are so massive that cities, urban societies, governments and international organizations must face up to this trend. A policy of 'business as usual' would jeopardize humankind's life-support systems. Only if cities and urban societies are sufficiently empowered can they make use of the opportunities for sustainability and successfully follow the urban transformation pathways. The success or failure of the Great Transformation will be decided in the cities.

www.wbgu.de/theurbanplanet

WBGU