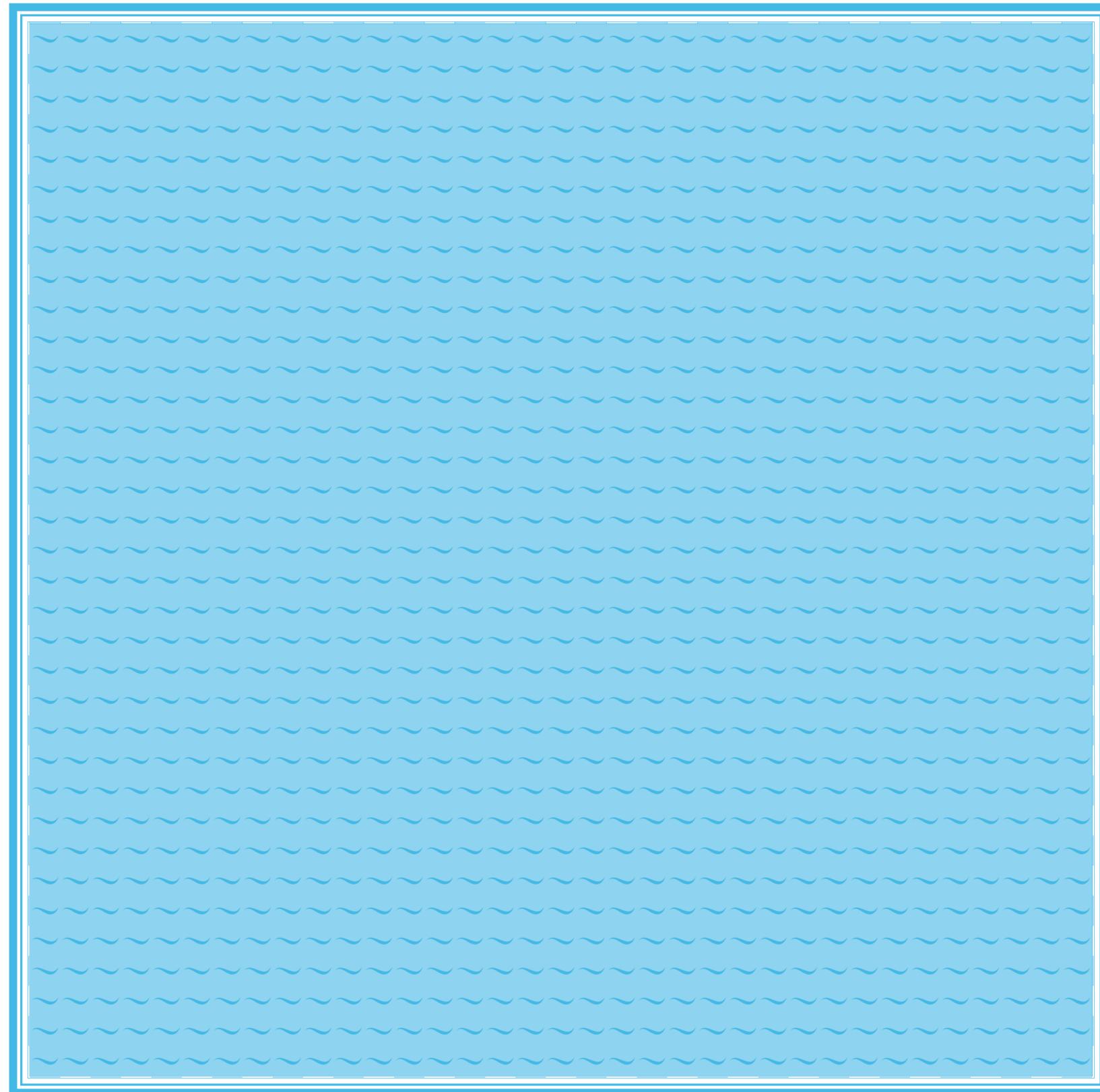


WITH THE SHARE OF RESOURCES AND COMMODITIES ALLOCATED TO YOU, HOW WOULD YOU MANAGE YOUR NEOTOPIAN PLOT?

Use the perforated pieces to design your own land on the map.

- | | | | |
|-------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|
|  | Ocean |  | Farmland |
|  | Lakes |  | Cultivation of grain and vegetable |
|  | Cold winter deserts |  | Artificially irrigated farmland |
|  | Cold, desert-like coastal areas |  | Irrigated areas are excessively saline |
|  | Subtropical deserts |  | Rural residential area |
|  | Arctic |  | Small to medium town |
|  | Antarctic |  | Small metropoli |
|  | Antarctic covered by a large ice cap |  | Big metropoli |
|  | Antarctic floating ice |  | Megacity |
|  | Nature reserve |  | Roads |
|  | Island |  | Rail network |
|  | Pasture | | |
|  | Pasture damaged ground due to overgrazing | | |
|  | Tropical rain forest | | |
|  | Subtropical rain forest | | |
|  | Temperate forest | | |
|  | Coniferous forest | | |
|  | Primary forest | | |
|  | Forested areas are FSC certified | | |
|  | Forest are lost each year | | |



NEOTOPIA – An apocalypse of justice

What would the world look like if all human beings had precisely the same resources at their disposal? In a vision of radical equitability, all of Earth's resources and commodities are shared by all of mankind. What, then, does each person own? Neotopia allocates each and every one of us a personal plot of land measuring 279.31 m x 279.31 m. Of which 70.9% is ocean and 29.1% is land. All territories are provided with the existentially required raw materials and each individual person has the right to use one 6.5-billionth - 1 divided by the earth's population - of the world's production. Neotopia gives us the freedom to utilize these resources as we see fit.

In the late 1980s, when climate change started to climb up the international environmental agenda, I flooded the Nile Delta and wiped out the Robusta coffee crop of Uganda. All this was done legally and in the name of the United Nations, but completely virtually with no harm done. The case studies were shown to innumerable government delegations and had its impact on the emerging global agreement on climate change. Only now, in 2009, with climate change becoming mainstream, things on the ground in Egypt and Uganda also started to move. Adaptation strategies are being developed and measures taken to avoid the worst.

Much more radical, but related, is Manuela Pfrunder's work called Neotopia, which is nothing less than the complete reconstruction of the world. All available land, sea, forest etc. is divided into neat island plots of exactly the size each individual is entitled to. At the next level, consumption is divided into annual or lifetime rations for everyone on earth. And suddenly, global inequalities become visible in a ridiculous or rather scary manner, and we realize that what initially looked like a game is not a game at all.

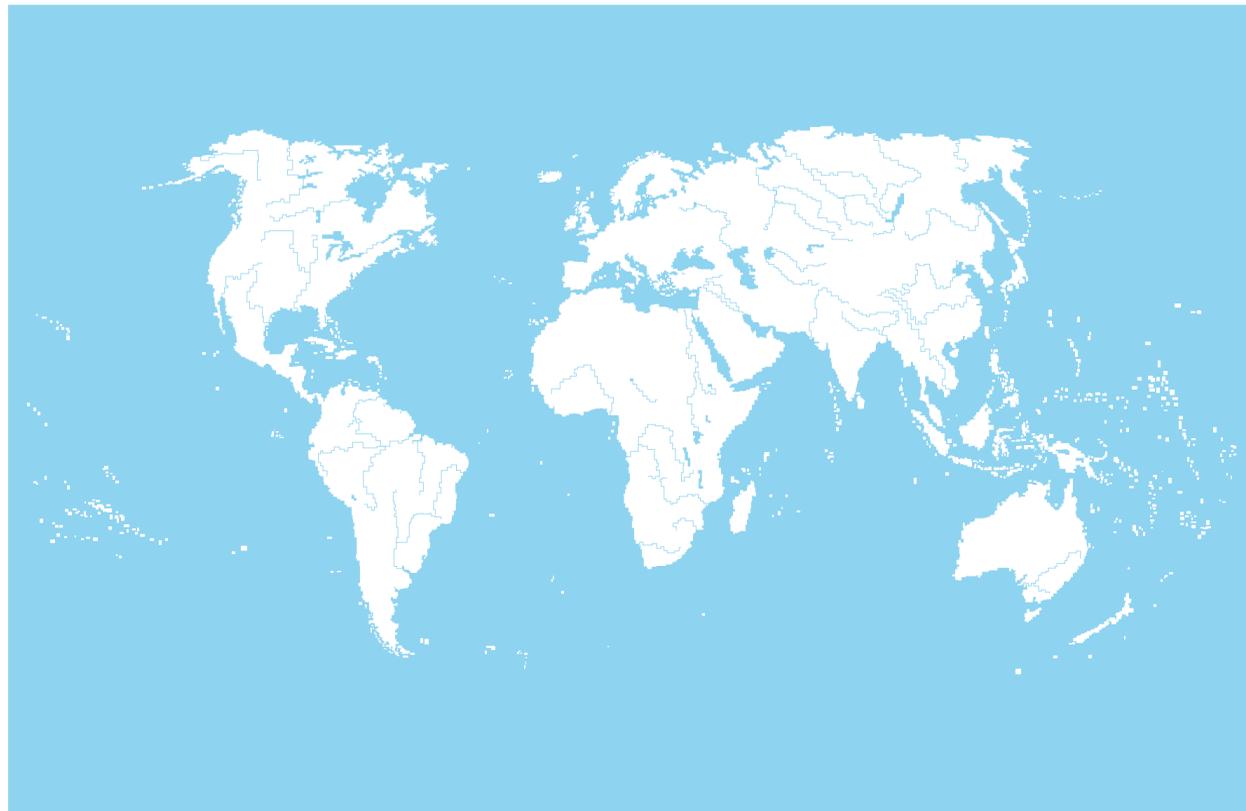
This publication integrates these two streams: the arguments of leading researchers for a more fundamental response to the multiple threats to our single planetary environment with the artistic vision of a world in which everything has been redistributed to achieve radical equity. Both argue for a new way of managing the earth and its resources – a way that provides for everyone's basic needs. The alternative? Science, they say, offers the probable answer: a return to the dark ages.

Zoïtopia is maybe too much bad news for society trying to think positively. But without 'thinking the unthinkable', and then making radical changes at the level of both global governance and individual behaviour, the future of our planet looks grim.

Yet there is hope. There are other ways to take good care of our commons. Copenhagen is only a way station in the discussion – and the action.

Contents	
2	Impressum
3	Foreword
4-7	Interview with Hans Joachim Schellnhuber
9	Interview with Dutwood J. Zaelke
14	Interview with Saleemul Haq
16-17	Interview with Sir Crispin Tickell
18	Interview with Professor Martin Parry
20-21	Interview with Dr. Tewolde Berhan Gebre Egziabher

ONE WORLD, NO FRONTIERS



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"Neotopia – Atlas of equitable distribution of the world" by Manuela Pfrunder was published in the year 2002 by Limmat Verlag Zürich.

In the year 2009 all facts have been updated as good as the different sources made it capable. Neotopia makes no claim for scientific perfection. It rather focuses on the artistic and narrative formatting of the collected data.

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Impressum

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Across the world politicians, scientists and many millions of ordinary people are making every effort to work out how to reduce emissions of greenhouse gases. We should be thankful that they are. Cutting emissions to a safe level is essential if we are to have any chance of preventing climate change from transforming the earth into somewhere far less hospitable to human life.

But emissions cuts are only the start of what we have to do. They are essential, but not in themselves sufficient. That is because a changing climate is not the only threat to life on earth. A growing human population, whose demands on natural resources are also increasing, runs multiple risks. They include damage to the natural world and the loss of many of the other species it contains; the exhaustion of water supplies, on which all our food depends; the spread of diseases; devastating levels of pollution; and the destruction of many fish stocks and other marine resources. Climate change will make all these threats harder to confront. In 2003 Martin Rees, the astrophysicist who is the United Kingdom's Astronomer Royal, wrote a book entitled *Our Final Century: Will the Human Race Survive the Twenty-first Century?* It is not an idle question.

This report suggests some of the even more radical steps we shall have to take beyond making our economies virtually independent of carbon dioxide and the other greenhouse gases. The idea for it came from a paper delivered at the international scientific congress

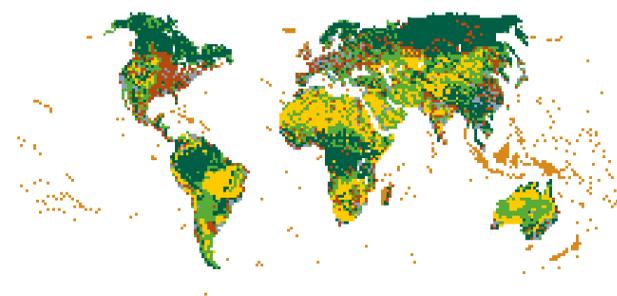
held in Copenhagen in March 2009, entitled *Climate Change: Global Risks, Challenges and Decisions*. The paper was the work of Professor Hans Joachim Schellnhuber and Dr. Veronika Huber, of the Potsdam Institute for Climate Impact Research, Germany. Their argument is simple and stark (they describe their conclusions as "thinking the unthinkable"): they believe a supra-national global commons system will be needed if the world is to limit global warming and survive the impacts of climate change. That will mean "no longer looking at national boundaries, but asking what is best for the planet."

Many scientists agree with Professor Schellnhuber and Dr. Huber that humanity faces unprecedented risks, but disagree to some extent with their suggestion for tackling our predicament. The rest of this report includes comments by several of them on the authors' arguments.

I hope you will take the time to read the report. It makes clear the gravity of the converging crises which now imperil the life most of us take for granted, and the extent of the changes we shall have to make. From a range of perspectives, it suggests how we can start to make those changes. And all of it speaks not of desperation, but of hope.

JANOS PASZTOR

Special Advisor on Climate Change
to the UN Secretary General



Neotopia – An apocalypse of justice

Genesis, continued.

1 Once upon a time, the world was divided into different land masses that were surrounded by huge bodies of water: 2 At that time, only one sun shone light on the planet. 3 Consequently, certain parts of the world were so cold that no plants could grow there. 4 In other places, it was so hot that dust lay on the ground as far as the eye could see. 5 Since the sun always illuminated only one side of the planet, it was always dark on the other side. 6 The rotation of the planet brought about the succession of days and nights. 7 At night, it was so dark that people could only work if they had artificial light.

8 That's why most people slept at night. 9 The land was so disparately fashioned that during a lifetime, it was impossible to visit all the places and landscapes on earth – there was no duplication, the terrain of each location was unique. 10 Some places were full of hills and practically impassable, others were totally flat. 11 Yet others presented obstacles like lakes and swamps or dense forests. 12 People lived in many of these different locations and had to adjust to the circumstances dictated by nature. 13 The type of available food also differed from place to place. 14 Thus, people who lived together in one location adopted a certain lifestyle and distinguished themselves significantly from other groups of

THINKING THE UNTHINKABLE

Professor Hans Joachim Schellnhuber is the founding director of the Potsdam Institute for Climate Impact Research (PIK) in Germany. He and his colleague, Veronika Huber, presented a paper, “Towards a Great Land-Use Transformation?”, at the international meeting held in the Danish capital, Copenhagen, from 10–12 March 2009, *Climate Change: Global Risks, Challenges and Decisions*. They describe their conclusions as “thinking the unthinkable”: they believe a supra-national global commons system will be needed if the world is to limit global warming and survive the impacts of climate change. Under such a scheme many countries would need to guarantee that part of their territory is earmarked for predefined purposes, such as agricultural production on fertile soils, or carbon storage and biodiversity protection in forested areas. Alex Kirby spoke to them:

Alex Kirby: The Copenhagen conference in March was about climate science. But the presentation you both made focused on land use, not climate, and on national sovereignty, not science. Why?

Hans Joachim Schellnhuber: I talked about the science of the Earth System if you like, including critical thresholds and concepts I have worked on for several years now, including tipping points. But this was in a sense only a prelude to the new idea Veronika and I tried to introduce. My talk was meant to be concerned with “What can we do now?”, “What are potential solutions to the climate predicament we are in?”. It is overwhelmingly clear now that there will be no simple solution. There is no business-as-usual version we can think of which would deliver the climate protection we need. In particular we are thinking of the two degrees (Celsius average global temperature rise) line as the global guardrail, because there is a scientific consensus that beyond that level the impacts will be almost unmanageable. If you take two degrees seri-

ously, then you have to ask: is there any policy that can hold that line? You will immediately conclude that we will have to manage the global carbon cycle in an unprecedented way. That means, in particular, we will have to use bio-sequestration, growing trees for example, and storing the carbon after taking out the energy. If you grow trees you need land, and we know from last year’s food riots there is a strong competition between various forms of land use, between food production, protection of biodiversity, and simply the need for settlements. And we will require land in the future for bio-energy as well as for bio-sequestration. So perhaps the key to the future world, a world which is not

completely exposed to unbridled global warming, may be an optimal use of land on this planet.

You say “may be”. You were a little bit more certain in your presentation, weren’t you?

I simply presented a potential solution, which is in a sense mind-boggling, because if we try to optimise land use, we first think “How much land could we set aside if we just do agriculture in a better way?” I am definitely not talking about a new green revolution – more pesticides, more fertilizers or what have you – but to use the best plots on this planet for the best crops. That would be an optimisation of food production. Yet, clearly then, we touch immediately on the question of who is in charge of the land, all the territorial questions, and then you also touch on questions of national sovereignty. Why not think about using the most fertile land and setting it aside, earmarking it just for food production? It is in a sense exactly the idea, very

popular in the North, that the Brazilians, for example, should set aside their rainforest just to be rainforest, helping to preserve biodiversity or simply the beauty of these primeval forests. So couldn’t there be something like a global deal on land use where the North earmarks large areas for food production and the South earmarks a lot of their land for biodiversity and nature protection? That was the idea, which is very simple and very logical once you start to think about it. But it is seen as completely out of the question, I think, in the North for the time being.

In Copenhagen, one of your PowerPoints drew on some work by a colleague of yours, who identified two key areas for this earmarking of land for food production – in North America and Western Europe. Now the Americans may perhaps not see things quite in the way you do. And perhaps the British, the Germans and French won’t see things your way either. You say this is one possible solution. How possible is the future without this solution?

The reason why you have Western Europe and the eastern part of the US is of course not a complete coincidence. The big industrialised countries have based their development on their comparative agricultural advantage. There you have the most fertile soils and the most benign climate. History tells us that the big nations really emerged from the fertile places for agriculture. Now, you see almost every week how countries like South Korea and China are trying to buy or to rent land in the countries of the South. It is completely counter-productive, it is precisely not optimising land use in their own domains, but really pursuing non-optimal and non-sustainable land use in other countries. That is why it is so important that we start to think very quickly about globalised and sustainable land use. We already know that the agricultural system is approaching exhaustion and collapse. So the first big benefit of our proposal clearly is a more stable basis for food production. But the second is this: if we try to solve the equation that humanity wants to protect the climate, it wants to provide enough energy for everybody and wants of course to feed the world, then this can only be done with a completely new way of dealing with biomass. A lot of bio-energy has to be produced. If we can achieve that, and we have carbon capture and sequestration, we can do the job. What is the alternative if we fail? I can think of only two al-

ternatives. Without an optimized land use scheme, one alternative is that we completely and abruptly decarbonise our planet: we renounce all types of modern civilisation and say that in order to reconcile ourselves with nature we give up cars, we don’t use heating, and so on. The second alternative would be geo-engineering – you try to dim the skies artificially, for example, by injecting sulphur dioxide into the stratosphere, and things like that. So the choice would be either a sort of de-industrialisation, or a tinkering with the planet, where we really don’t know what the impacts might be. I am trying to advocate something in between, trying to use our technical and cultural resources as best as we can. We will have industry, we will have a higher form of civilization – but let’s do it without transgressing the boundaries of nature. Without a clever scheme for using global land, I think it will be impossible. I cannot think of any other solution at present.

A proper sensible use of global land is the only way through the dilemma we face through climate change and growing population, you would say?

At least it is a necessary condition, though not a sufficient one. Of course we need an energy efficiency revolution; we need to tap renewable energies at a much more impressive pace than we do now. But I don’t think we can solve the problem without a much better global division of land use.

And that means in effect what you suggested in your paper in Copenhagen. It means global commons; it means countries setting aside part of their territories to meet global land-use needs.

It could be part actually of a global deal on the climate. If we really come to a global deal on protecting the earth against all types of human interference, then land use will be part of that deal. I mean, if you divide up the atmosphere into lots, assign them to various nations, and tell these nations not to transgress their emissions budgets, that is of course already a major interference with national sovereignty. It is only a small step to say: “Why not look at the entire system?” The entire system consists of the atmosphere, the land, the seas, and the biosphere and so on. It will be a step towards earth system management, if you like.

people who lived elsewhere. 15 Since they did not know about one another and were aware only of their own worlds, they were satisfied. 16 In the course of time, people began to travel to neighboring countries and heard that things were again different behind the next mountain or on the other shore of the body of water. 17 Since people were very curious and wanted to explore everything, a wave of migration set in. 18 They overcame great distances with cars, ships, and airplanes, and traveled to the remotest corners of the earth. 19 They remained there for a few days or weeks and then returned, only to visit other new places thereafter. 20 On their journeys, they realized that other people used objects which

they had never seen before. 21 And prepared foods in ways that were unknown to them. 22 And so each time they visited a foreign place, they took something back home with them. 23 A great jumble ensued, because everything was mixed and they no longer knew which object belonged to which place. 24 It also came to pass that when people took something home from another place, they did not always give something back. 25 Or they took so much that there wasn’t enough left over for those who lived there. 26 People became envious of what others had, and this spawned greed for power. They began to rob one another and to drive others from their own land. 27 The differences became so significant that many

people starved while others produced so much excess that great quantities of waste were created. 28 A distinction was now made between poverty and wealth, because people were aware of how others differed and strove to imitate lifestyles even if they were unattainable. 29 Initially, goods were transported by animals, then by ships, trucks, trains, and airplanes. 30 Ever new methods of transportation were invented, and ultimately, it was no longer a problem for anyone to move goods from one location to another. 31 What originally was available only to rich people became accessible to everyone and eventually, nothing was the privilege of a chosen few. 32 The struggle for predominance became ridiculous because

it was no longer possible for anyone to lay an exclusive claim to anything. 33 The gap between the classes disappeared. 34 Beaches were excavated and recreated on everyone’s land. 35 Enormous amounts of water were transported, houses and mountains moved. 36 The individual land masses were cut into pieces and distributed equally across the planet. 37 Every unique artifact was reproduced or divided into so many fractions that everyone could have a piece of it. 38 In the course of time, every part of the world looked the same. 39 Then – as the last measure – the sun was divided into six equal parts so that the same amount of light was available everywhere around the globe. 40 The last places of darkness are

You suggest that a global division of land use is likely also to mean the end of agricultural protectionism. So you are taking on, aren't you, the farmers, the growers, the agricultural industries of the developed world?

You're right, it has so many ramifications and implications when you start to think about it. It concerns hundreds of billions of euro, dollars or pounds in subsidies for unsustainable and inefficient farm practices and deals and trade in agricultural products. The overall idea of national autarky in food production is completely flawed, I think. On the one hand we idolise the globalisation of the world. At the same time we think each country should be able to feed its own people. This makes little sense in a world ruled by free-floating capital. What I simply ask is that we come to a grown-up attitude towards global agriculture. That means it has to be efficient, so you have to remove the subsidies. And it has to be effective, so you have to transcend national boundaries. Only in a fully globalised and unsubsidised world could we achieve what we need to achieve, feeding nine billion people a decent diet.

You rule out a de-industrialised world, you have grave doubts about geo-engineering. I think you are saying that your "thinking the unthinkable" about land management is the way we have to think?

We should do everything to keep our level of civilisation so of course we need energy and all other types of environmental services. I hope we will not go back to the dark ages. This is the worst-case scenario, nine billion people in a world where civilization has been reduced to a bare minimum. Unfortunately that has happened many times before, because the same type of dynamic always evolves. First we have an expansion of new technologies or practices which is accompanied by two things, rapid population growth, and over-exploitation of natural resources. Once nature or the resources strike back, and you have a decline in your production, you are stuck simultaneously with an extremely over-sized population. We have to do everything to avoid that – and this time it is happening at the global scale. We cannot move elsewhere, as people did in France in the 18th century, or in Ireland after the potato blight. There is nowhere to go: that is the problem. I want to rule out, if I have any influence, a world which is decarbonising through collapse. We should have a higher form of ci-

visalisation, at a very high level, and still decarbonise. And here again, I can only see a chance of success if a much, much better way of global land use is developed.

Has anyone done any work to say what the possibilities are of that return to the dark ages you speak of?

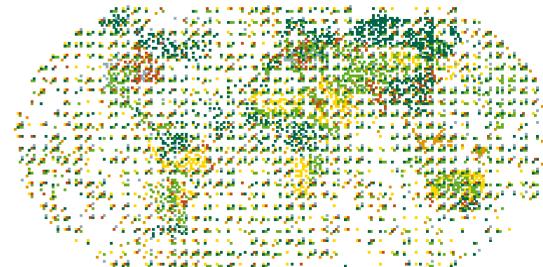
One way of going back to the dark ages would be that we continue with business-as-usual and then of course, you will not only have population going up to eight, nine or ten billion people, overexploitation of natural resources, and severe climate impacts, but involuntary decline at the same time – because we have enough fossil fuels to destroy the world, but not enough to survive that destroyed world. If we had plenty of oil for example, cheap oil, we could do almost everything with it. We could shield ourselves against sunlight, or could turn on the air conditioning everywhere, and so on. The problem is we do not have enough fossil fuels to survive the impacts of using fossil fuels. That is our dilemma. We should use the fossil fuels that are left to create a world in which we don't need them.

You are the father of a young child. If you look towards the end of the century, what do you think the chances are of avoiding those dark ages?

I am getting more and more sceptical, I have to say. In a sense, becoming the father of a child these days is a fairly irrational thing. But on the other hand, what is life all about? It is the irrationalities that really count, whether it is love, or being the father of a child, or whatever it is. Beauty? It is nothing that can be measured in a rational way. So I would turn it around. I think the chances for children born today or over the next few years of living in a sustainable world at a very high level of overall cultural supply and services – where nature in a sense has been stabilised again – are very slim. But, as I said, we can turn it around. We can say, since we have these children, we simply need to make it happen, we have no alternative. I would say the smaller the chance that such a catastrophe can be avoided, the more we have to work.

The more we have to think the unthinkable?

Precisely.



What do you hope the delegates to COP-15 in Copenhagen will do with your research?

I think they will not consider land use in the sense we have just discussed it. But the issue will come up. There have been new measurements on the sinking water level in India, for example. The Green Revolution business-as-usual type of agriculture is just not sustainable, it is absolutely clear. India will run out of water (I am not even talking about global warming, which will exacerbate the situation). Very simply, current practice is not sustainable. So land use will come up, it will strike back and will enter the negotiations. The first important step in Copenhagen, I would say, is that we need an international agreement on the two degrees Celsius target. We have a Framework Convention on Climate Change which was signed in 1992 in Rio, but we have not even defined what dangerous climate change is. It is a very sad joke. The second step is that we need an agreement that accounts for our latest research finding: we have a finite budget of CO₂ emissions left if we want to stick with the two degrees line. It comprises about 700 billion tonnes of CO₂ up till 2050, and we have to divide it somewhere and somehow among the nations of the world. I do not expect a deal will be sealed in Copenhagen, but at least it should become clear that we have to take a budgeting approach to climate protection. And then I hope Copenhagen is the first in a series of big conferences on climate protection. The worst-case scenario would be for it to be the last climate conference – because the whole system would then fail and collapse. So the best outcome of Copenhagen would be for it just to keep the door open.

And for it to get us all to start thinking the unthinkable?

Maybe we shall have to think even more unthinkable things in the future. The problem is that we shall have to have a lot of intellectual stamina to keep on thinking the unthinkable for the next decade. That is quite a challenge.

Ms. Huber, what do you hope the Copenhagen delegates will make of your work?

Veronika Huber: I can think of two things the delegates could

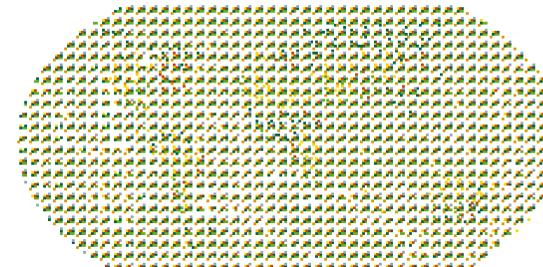
learn. The first is that our work shows how huge the challenge is that we face. There is climate change, there is population growth, the estimates of nine billion people by mid-century, and then all those other ecosystem degradations which threaten agricultural productivity. In my opinion, this could make the delegates realise that now is the time to get beyond national, maybe even personal interests, and think as a global community. And that is my second point. This way of seeing the earth means no longer looking at national boundaries, but asking what is best for the planet. That gives you the global perspective we need to tackle the challenges we face.

You are going to be around to enjoy the world for a long time. You have got a big stake in it.

That's why I work here and put all my efforts into bringing about the changes that are needed. I agree with Professor Schellnhuber. I am myself sceptical about the future I will live through. But I also agree with him that, because I am so sceptical, it makes me put more effort into bringing about the changes we need to avert the worst outcome.

Potsdam Institute for Climate Impact Research

<http://www.pik-potsdam.de/>



now underground. ⁴¹ The night no longer exists. ⁴² The transition from chaotic ownership to order was an infinitely long process of dissolution and redistribution of all desirable and undesirable substances to the effect that in the end, everyone had the same amount of everything. ⁴³ The earth has become a tranquil place. ⁴⁴ Every human being has a personal piece of property which is absolutely identical to all other pieces of property. ⁴⁵ And all the people can be absolutely certain that there is nothing left anywhere that they do not already own. ⁴⁶ Because everything that was distributable has been equitably distributed.

The earth as such has been thoroughly explored and is now a finished project. It consists of small units and each world citizen is concerned with tilling the land, continuing production, and maintaining communication so that the average standard of living can be sustained. At this juncture, the people of the world do not share the same belief or a single culture. Instead, they are multicultural in the sense that everyone believes in everything rather than focusing on one thing. They all speak a bit of each language and have equal amounts of knowledge and ignorance.

RACING TO BUY TIME FOR THE EARTH

Durwood J. Zaelke is the President and founder of the Institute for Governance and Sustainable Development (IGSD) and serves as the Director of the INECE (International Network for Environmental Compliance and Enforcement) Secretariat. **His research focuses on the resolution of trade and environmental conflicts, implementation and enforcement of international environmental laws, and growth of public interest movements in developing countries.**

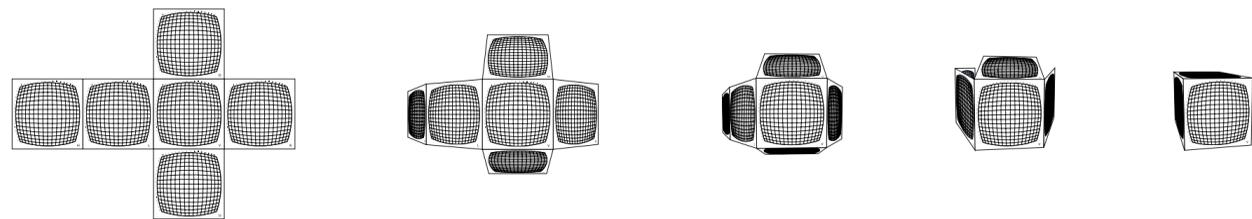
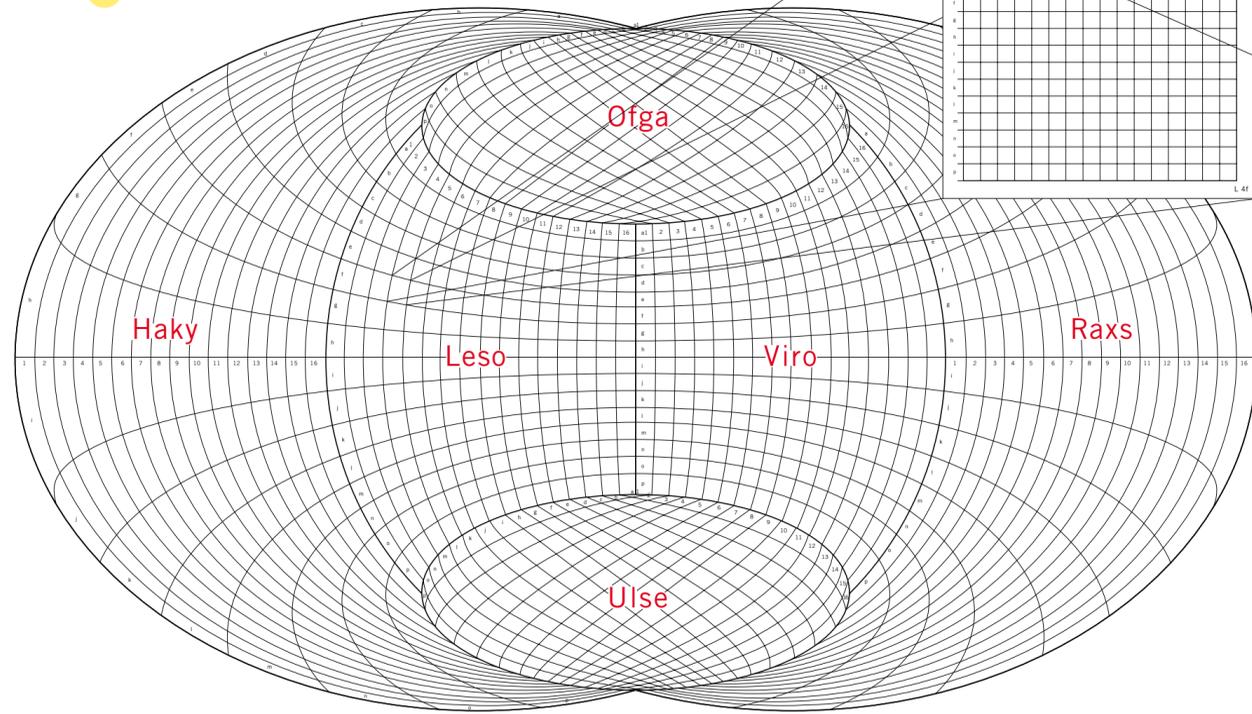
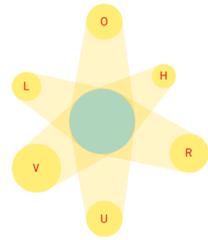
Durwood J. Zaelke: John Schellnhuber is one of the true geniuses of climate change work, and anything he says has to be taken seriously. Climate change will be solved by looking at the world as a whole: what's original here is to say we've got to go to the land-use level, which has traditionally been dealt with locally. This is a unique proposal. There's an analogy between what's being proposed here and the way we talk of managing the world's forests. We in the North have had no compunction in saying that the Amazon must be managed for the global good. What the authors are saying is that what's sauce for the goose is also sauce for the gander. So we shouldn't be surprised that they say we have to look at land governance in this way. I may be a little more optimistic than John and Veronika, because as we move to more control over land use we have other strategies that can slow down climate change and help us to move to carbon-neutral and ultimately carbon-negative societies. It is perhaps best to think of a sequence of solutions, to give us time, to provide us with mitigation in the short term, mid-term and long-term. We need to start, gain experience and the confidence that comes with experience, then strengthen and accelerate our efforts.

Scientists say that cutting carbon dioxide emissions, while it's essential, will not lead to cooling for a thousand years. But there are strategies that can help us on a fairly short timescale. One involves the use of biochar, charcoal produced from biomass with the potential to be a powerful tool in the fight against climate change. It offers an alternative to burning agricultural waste, allowing carbon that would otherwise have been emitted through combustion to be sequestered in soil for hundreds to thousands of

years. Other bio-sequestration also can play a big role in reducing our excess CO₂ emissions. This means stopping our excess deforestation and expanding our planting of new forests. There are other fast-action strategies as well that can reduce non-CO₂ climate forcings – black carbon soot, tropospheric ozone, hydrofluorocarbons, and methane – that can buy us perhaps 40 years of climate delay. Think of it as a relay race. These are strategies that do not involve carbon dioxide, so you're not fighting the fossil fuel industry, which has successfully stalled action on climate change for three decades.

But John and Veronika are more specific on what we have to do in the future. We're going to have to rethink governance. They go right to the heart of it by saying that we have to manage the land for global survival. We shouldn't think of that as something radical, but as something that's rational and sane. We need to make a start and strengthen as our confidence grows: we do have an unlimited ability to innovate, not only with technology but also with governance. We have to find a way to better harness the optimism of the human species. I think it's possible to do it. But it's going to be a close race and we're behind at the moment: the climate feedbacks are getting worse. What we need is, as the authors say, a more powerful and more dynamic system of governance at all levels, from local to national, from regional to global.

Institute for Governance and Sustainable Development
<http://www.igsd.org/>



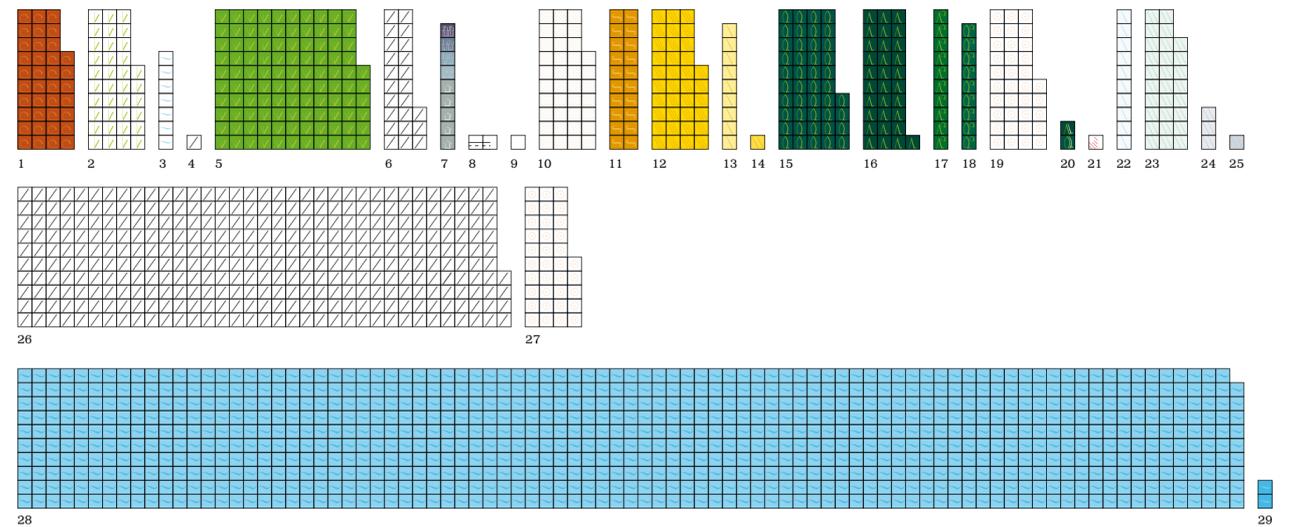
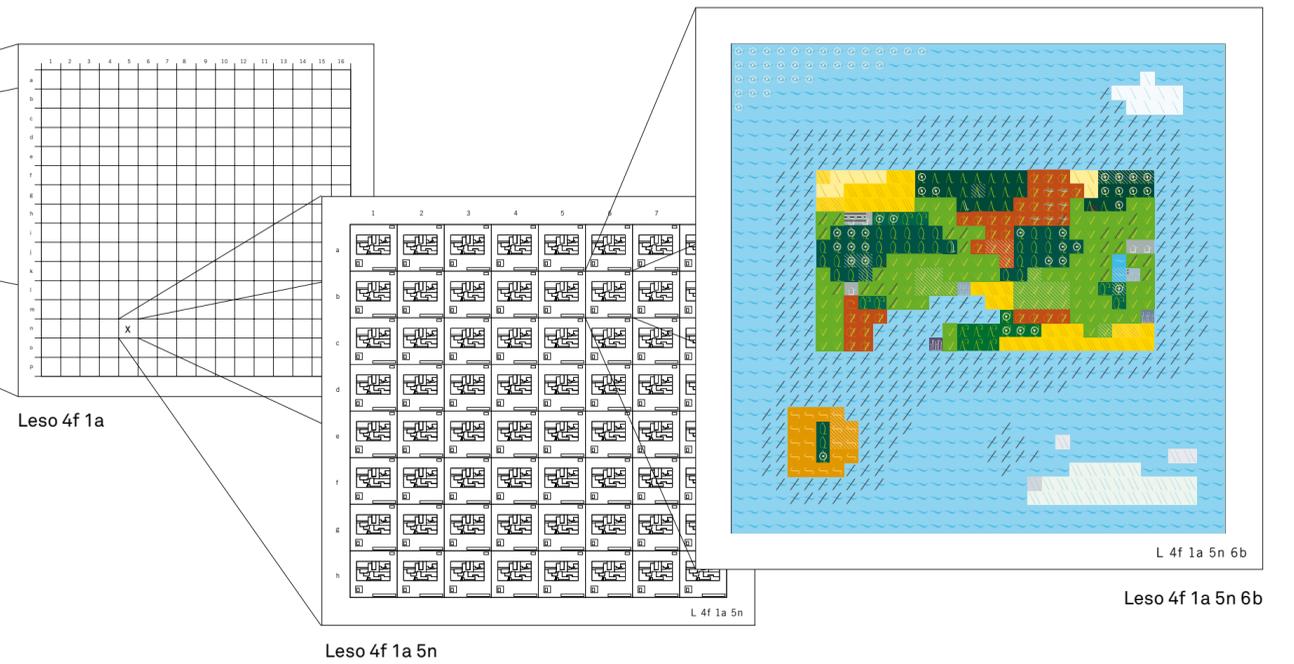
The new world is well organized. It has an orientation system that allows each individual person and thus each individual territory to be located on the basis of a code. This system makes it possible to totally network all human beings. Communication – still a fundamental need – has become more intensive because everyone can reach every other person from anywhere at any time. Since this accessibility applies to all people, no one is underprivileged or overprivileged. Loneliness as such has not become worse.

The orientation system is related to the six suns of the new solar system. It is based on a grid in which the earth becomes more and more clearly perceptible by zooming into detailed maps. Each person's code includes the name of a sun – often, only the first letter is used – which defines the first map. The numerals after the name correspond to the X axis, the letter after that to the Y axis. The first combination refers to the next map identified with this code. And so, the steps repeat themselves with the next combina-

tion of numerals and letters until the individual territory becomes visible on the last map. The North and South Poles have been abolished as orientation points. There is no up and down any longer.

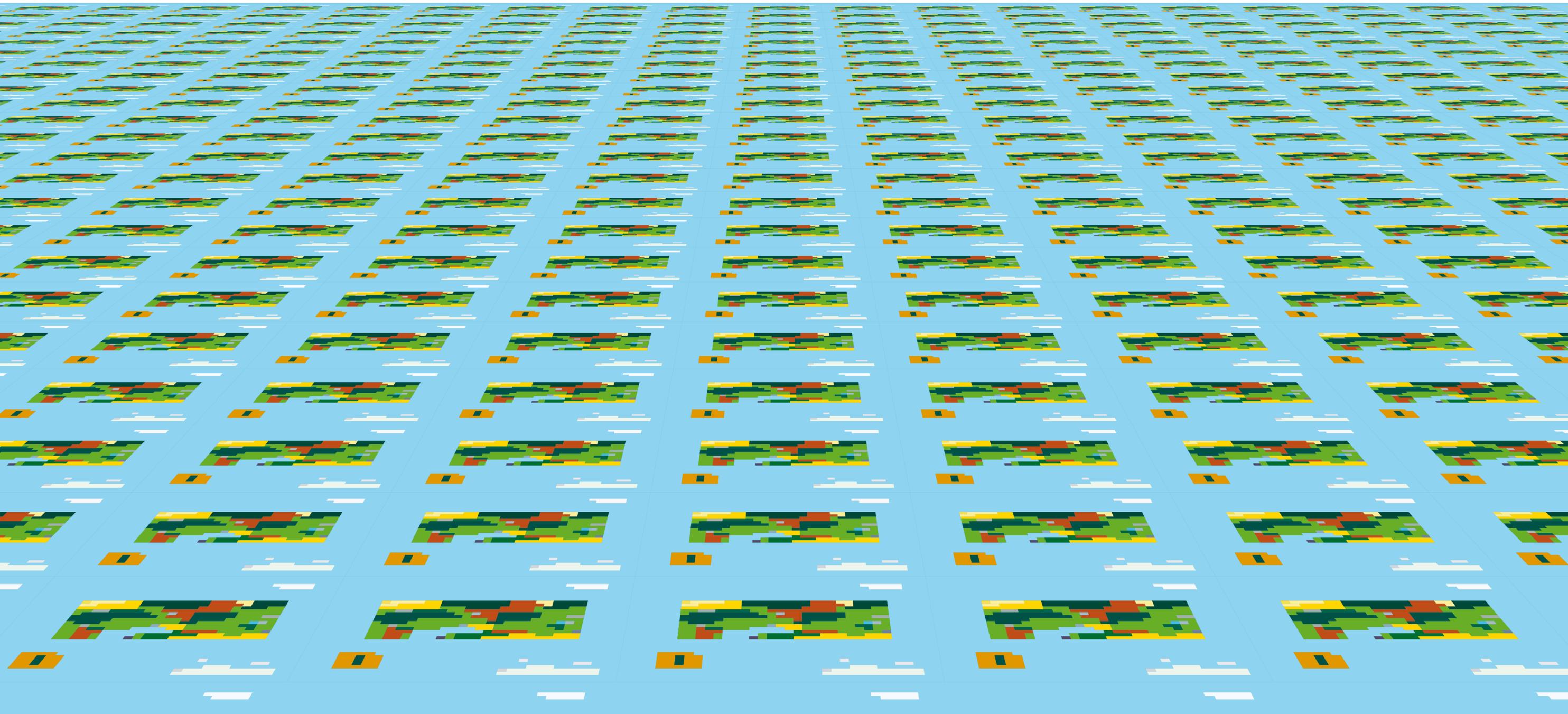
The orientation system is based on a cube. The six sides of the cube each represent one sun.

Designations of the six suns:
 H = Haky
 L = Leso
 V = Viro
 R = Raxs
 O = Ofga
 U = Ulse



1 : 3.000 scale of map
 One square corresponds to an area of 8 m x 8 m in reality.

- | | | | |
|--------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------|
| 1 48.5 m x 48.5 m farmland | 8 roads 10.54 m, with a mere 4.44 m being passable for motor vehicles | 15 53.3 m x 53.3 m tropical rain forest | 23 44.93 m x 44.93 m Antarctic region |
| 2 47.9 m x 47.9 m cultivation of grain and vegetable | 9 rail network 20.97 cm long | 16 44.66 m x 44.66 m coniferous forest | 24 14.21 m x 14.21 m floating ice of the Antarctic region |
| 3 20.6 m x 20.6 m artificially irrigated farmland | 10 49.2 m x 49.2 m nature reserve | 17 25.8 m x 25.8 m temperate forest, | 25 6.35 m x 6.35 m rocks of the Antarctic region |
| 4 8.3 m x 8.3 m irrigated areas are excessively saline | 11 island 36.11 m x 36.11 m | 18 23.32 m x 23.32 m subtropical rain forest | 26 47 m x 47 m unspoiled ocean |
| 5 83.1 m x 83.1 m pasture | 12 48.02 m x 48.02 m subtropical deserts | 19 46.65 m x 46.65 m primary forest | 27 148.64 m x 148.64 m ocean affected by fishery and shipping |
| 6 38.75 m x 38.75 m damaged ground due to overgrazing | 13 24.66 m x 24.66 m cold winter deserts | 20 12.37 m x 12.37 m FSC certified | 28 235.02 m x 235.02 m Ocean |
| 7 24.58 m x 24.58 m urban area | 14 5.14 m x 5.14 m cold, desert-like coastal areas | 21 4.46 m x 4.46 m lost forest each year | 29 12.59 m x 12.59 m lakes |



A 10-YEAR WINDOW OF OPPORTUNITY

Saleemul Haq is senior fellow and head of the Climate Change Group at the International Institute for Environment and Development (IIED) and lead author of the chapter on Adaptation and Sustainable Development in the third assessment report of the Intergovernmental Panel on Climate Change (IPCC). He is also lead author of the chapter on Adaptation and Mitigation in the IPCC's fourth assessment report.

Saleemul Haq: It's really out-of-the-box thinking ... which is perhaps unlikely. On the other hand the climate change regime is the closest thing we do have to a supranational agreement to limit national sovereignty in favour of a global commons, namely the atmosphere, and if that can be used to get other things done as well, for people to think beyond their countries and think about humanity as a whole, then it's not a bad thing.

Alex Kirby: Is it feasible, do you think? Is it practicable?

I don't think it's practicable at all. It's like many other utopian ideas – for example, we could certainly take care of poverty on the globe today if we had a more just economic system, or if we had open borders across all countries. That would take care of the problem. In fact they've been modelling results for a global economy that show that the best way to improve the situation for humanity right now is to open all borders, and that would be done within a matter of a few years' time. So that's not utopian.

You say this is not practicable. So should we just disregard it?

No, I think the logic is very clear, that if we continue the way we are then these kinds of draconian solutions may be the only ones that are left. Hopefully that will then impose more sensible short-term policies at the global level for us to ensure that these worst-case scenarios do not play out. And we can still do that if we have global action within the next few years.

Do you think what Schellnhuber and Huber are proposing here will be something we shall see on the agenda of a forthcoming conference of the parties to the UN Climate Convention?

I think the way we are headed if we fail to come to a significant agreement to reduce emissions of greenhouse gases, which is always a possibility, then within a matter of less than a decade we will have to start thinking about much more draconian measures to solve the runaway greenhouse effect, because that's what we will have to then solve, and the solutions that they're proposing, or other solutions like geo-engineering, will then have to be contemplated. At the moment they are still things that we can think about but are not necessarily things that we have to put in place now. We do have a window of opportunity of avoiding that.

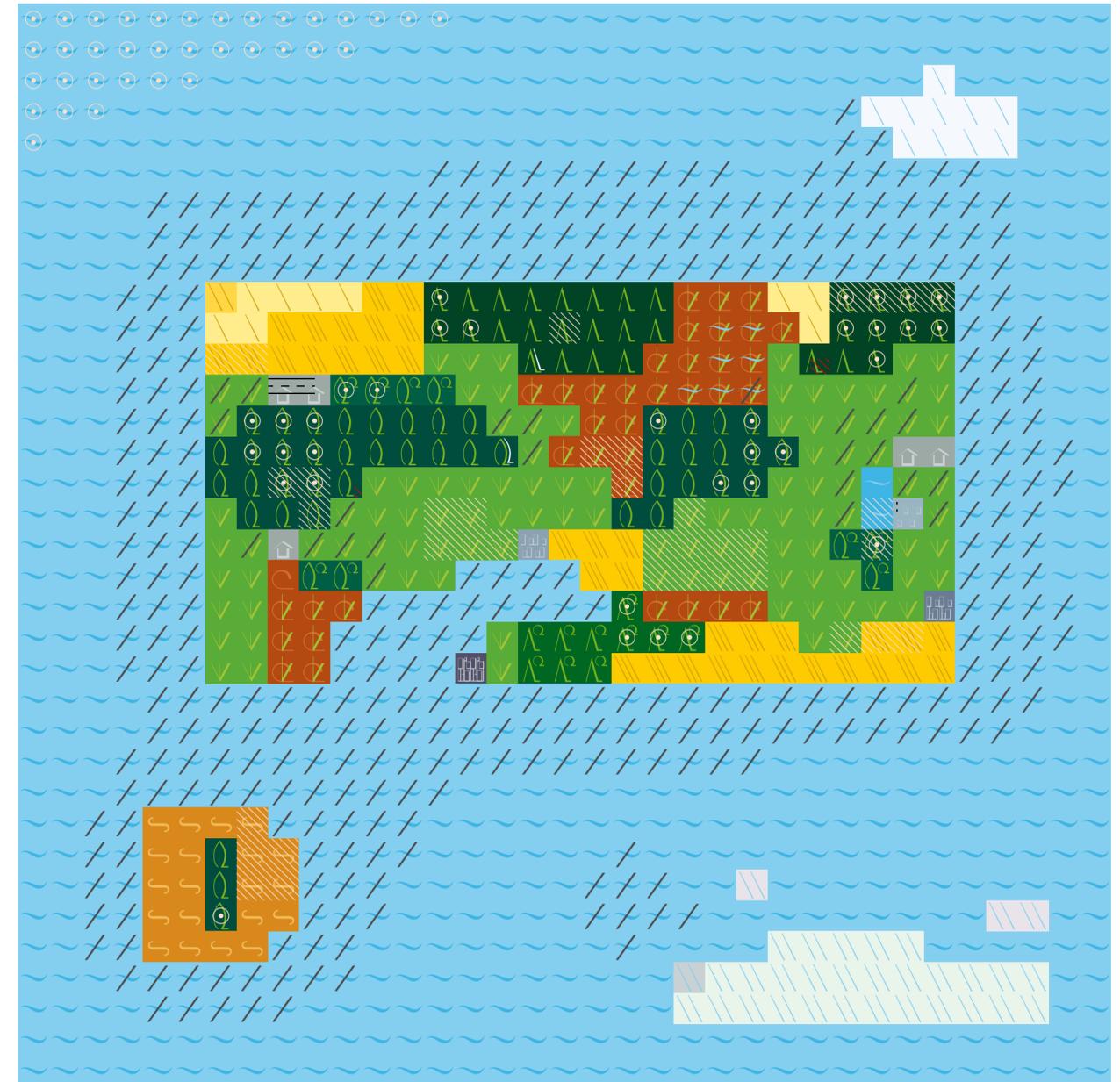
You call their proposals utopian. But when you look at the alternative, are they?

Well, I'm not so sure the alternatives are that bleak right now. I do have faith that within the next few years we can agree on a sensible pathway for reducing greenhouse gas emissions which will actually keep within the 2C maximum which is considered to be dangerous. The authors think we're not going to be able to meet that. If we are looking at a 3, 4, 5C world then we do have to think of very different solutions.

International Institute for Environment and Development
<http://www.iied.org/>

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house gases, which is always a possibility, then within a matter of less than a decade we will have to start thinking about much more draconian measures to solve the runaway greenhouse effect, because that's what we will have to then solve, and the solutions that they're proposing, or other solutions like geo-engineering, will then have to be contemplated. At the moment they are still things that we can think about but are not necessarily things that we have to put in place now. We do have a window of opportunity of avoiding that.



1 : 1.190 scale of map

WE ALL LIVE FOR 68 YEARS. IN 2001, OUR AVERAGE AGE WAS 64 YEARS, AND IN 1970 IT WAS 56 YEARS.

The world's 6,538,083,000 territories are all the same. From the moment of their birth, all human beings are entitled to their own personal territory. However, the members of the earth's population do not own this territory, they are merely entitled to inhabit it with the consent of all others. All territories are provided with the existentially required raw materials and each individual person has the right to use one 6-billionth of the world's production. Each territory has a surface area of 279.31 m x 279.31 m. Of which 70.9% is water and 29.1% is land. The dry land is in the middle of the territory on a rectangle measuring 192 m x 104 m. A small

island protrudes from the water 32 m away from the mainland. The ice masses are located at the upper and lower borders to the neighboring territories. Each territory is subdivided into different vegetation zones. Among other things, each person has one share of cold, swamp, flood, drought, beach, and alpine meadow. The weather is very variable and usually unpredictable. It differs dramatically in the various regions of the territory and because of the extremely short distances can change drastically and quickly. Since the territory is small but nonetheless has a share of everything, it has remarkable qualities.

WOMEN 'KEY TO SUSTAINABLE WORLD'

Sir Crispin Tickell, a British environmental writer and academic, was the United Kingdom's ambassador to Mexico and then its permanent representative to the UN, before becoming Warden of Green College in the University of Oxford, where he now heads the Policy Foresight Programme of the James Martin 21st Century School.

Crispin Tickell: I think sovereignty is being rethought all over the place at the moment, and it is something that is in many ways a catchphrase rather than a reality, even for the most important countries in the world. What I do think is that with all the problems of climate change, agriculture and resource depletion and the rest we need a new and powerful international organisation, and to do that I personally favour the idea of a world environment organisation, to be the partner of the World Trade Organisation, to work with it and to make certain that the environmental dimension comes into everything we do. And that means really acting as a kind of umbrella to the 200 or more existing environmental agreements, many of which overlap and many of which aren't much good anyway. So I think the idea of a world environmental organisation is much to be commended, and I think we need to take a global approach to the numerous problems, all interconnected, of the environment which face us today.

Alex Kirby: And the UN Environment Programme, it's not enough?

I admire those who do it, but it really isn't anything like enough. And when, as I hope, we reach agreements at Copenhagen or the successor conferences that will follow Copenhagen, we shall need something much tougher than anything that the Programme can do.

You said sovereignty is often a catchphrase. What do you mean by that?

Some countries value sovereignty and they think they have it, but they don't very often. I mean for example the affairs of the United Kingdom, a relatively strong player in the world economy. We don't have real sovereignty over our currency. We are at the mercy of the winds that blow. Even the United States, still the most important country in the world, which talks a lot of its sovereignty – there too, sovereignty is heavily qualified. It's limited at

every point. And for that reason I think that you need some global organisation which reflects the realities of power, which does indeed take a global view. And I know how difficult this is, but I'm sure it's one of the outcomes which will follow not just Copenhagen, but the process of which Copenhagen is a part.

So when John Schellhuber and Veronika Huber argue for a global commons system, is that in the same direction as your thinking?

I would regard the agriculture problem very differently. One of the great problems of the world at the moment is that the industrial countries have introduced industrial methods of agriculture which are doing grave damage to the environment. So you have to have a rethink of agriculture before you start allocating responsibilities to different countries. And when I say "rethink agriculture", it means we've got to go back to more sensitive agriculture which takes account of the environment. You've probably got to go back to smaller-scale agriculture instead of industrial-scale, and you've got to think of all the social consequences of putting more people on the land, not necessarily accelerating the rush to cities. There's a huge range of issues that are concerned with agriculture in which I think that the view taken so far is perhaps a little too simplistic.

Do you find a problem with the idea of the global commons, or does it apply in some areas of what we're going to have to do?

I'm not quite sure what the phrase "global commons" really means. Humans are an animal species that has been remarkably successful over the last 10,000 years and since the Industrial Revolution has done a lot to damage the environment in which they live. So the human species has global responsibilities, because everything that happens in one place can affect things that can happen in another. And so if "global commons" means we have to take a global approach towards all these things, then I favour it. But I'm not certain what it really means in terms of the future of agriculture, and above all any attempts to restrain the growth of the human population, which in many ways is the most important environmental problem of all. I think that in the longer term, not necessarily for tomorrow, but certainly over the next 50 or 100 years, there is no more important problem than the proliferation of our species. If

we were caterpillars or blackbirds or some other form of organism we would be frightened by what is happening, and the degree to which we are increasing ourselves. But in fact, because it's humans, we somehow take it as normal. It isn't normal. Since the Industrial Revolution, which started some 250 years ago, we have been exploiting the resources of the earth in an extraordinary fashion which no other species has probably done to the resources on which it depends. And as a result, as so often in history, that has led to a huge increase in the human population. That increase still continues. So you get all these things mixed up together. It is population, resource depletion, climate change, changing the character of the oceans, changing the character of the world on which we depend.

I think population increase is out of control at the moment, but we need seriously to consider what's to be done about it. People say you can't interfere, the Pope wouldn't like it, or people's ideologies forbid looking sensibly at population issues. I think that's all wrong. There are four major factors which come into play when you consider how you're going to restrain the development of the human population. The first and most important is the status of women. Where women have equal status with men, where they can be educated in the same way as men, when they have the same legal rights as men, you usually find that everything is transformed. And that is something very different, because they thereby obtain control over their own bodies. The second big factor, which relates to the first, is equal facilities for education so that girls and boys are both educated in the same kind of way or at least to the same standards. The third element is care in old age. Where people feel that they're going to be looked after in old age, they're not going to want to have grandchildren to look after them. And the last, of course, is availability of contraceptive devices, and better understanding of how the body works, because a lot of issues of countries with a greatly increasing population is that most women just don't know how the system works, why their bodies behave in the way they do. And so you really need education in a very profound sense of the word. Now if those four factors can come together you will find that population can ease off quite quickly, and there are illustrations of this actually happening. It's not prosperity that drives population increase; it is much more the combination of the factors I've mentioned. So if you take a part of India like Uttar Pradesh you see there women don't have the same status as men, and population is rapidly increasing as in parts of Africa. Take the Indian state of Kerala though, where women do have the same legal status as men, and there the population has plateaued if not actually levelled off. So we have to think about all these things together, and above all we have to recognise the over-riding importance of human population increase in looking at the problems of the 21st century.

Do you think sovereignty and the global commons are perhaps helpful for us to think about, rather than simply thinking about climate change in terms of, for example, parts per million of carbon dioxide in the atmosphere, or of permissible temperature rises?

It's one way of approaching the problem. I would prefer to break it down a bit and try to look at the issues together. It's

not so much the global commons meaning allocating bits of the globe to do different things, which I think would be immensely difficult. I can see it would be far more difficult to create a global commons than it would be to go for the more modest ambitions which I think are necessary, that is to say a world environment organisation which tries to put all these things together, works out global rules, and to the extent that it's possible establishes the responsibilities, because one of the things that's very clear at Copenhagen is that the Industrial Revolution has in fact changed the character of the earth. Who is responsible for that? It was all unwitting, but nonetheless the industrial countries have a major responsibility. And when they look at other countries who want to do the same thing, they've got to pause a bit and think: do they want those other countries to do the same thing? Do they want to go on doing the same thing themselves? So we need a really radical look at the ways in which our economies work. And I add that I think in theoretical terms we also have to get away from the old and worn-out concepts of economic growth being always a good thing, measuring the health of a country by its gross national product or gross domestic product. We need something very different, and that was recently explored in an interesting book by Joseph Stiglitz and Amartya Sen, the Report of the Commission on the Measurement of Economic Performance and Social Progress, set up by President Sarkozy of France, where they've tried to work out new measuring devices. So you want new economics, a new way of looking at energy, new ways of co-operation, new acceptance by the industrialised countries of their major responsibilities, and the need to try and feed and look after this growing population, which must in the long if not in the short term be restrained.

<http://www.crispintickell.com/>

**WE MINE 0.36 G OF GOLD,
3.1 G OF SILVER AND EXTRACT
0.03 CARATS OF DIAMONDS
EVERY YEAR.**

BUSINESS SENSE AND COMMON SENSE

Martin Parry is Visiting Professor at the Grantham Institute for Climate Change, Imperial College London. He was a co-chair of the IPCC's Working Group II on Impacts, Adaptation and Vulnerability and a lead author of all the IPCC's reports.

I think a global transformation will be needed, both of our industrial economies and of our use of the earth's land surface. But I have my doubts about such a radical political transformation as the authors are advocating. That is because our difficulty with managing commonly-held resources is a major reason why we have this climate change challenge in the first place. The atmosphere is one of the last global commons we have, and we're polluting it with greenhouse gases, because we treat them as externalities. This makes me doubtful about the prospects of extending the idea of the commons. But the approach suggested by Schellnhuber and Huber will still be useful. We need to

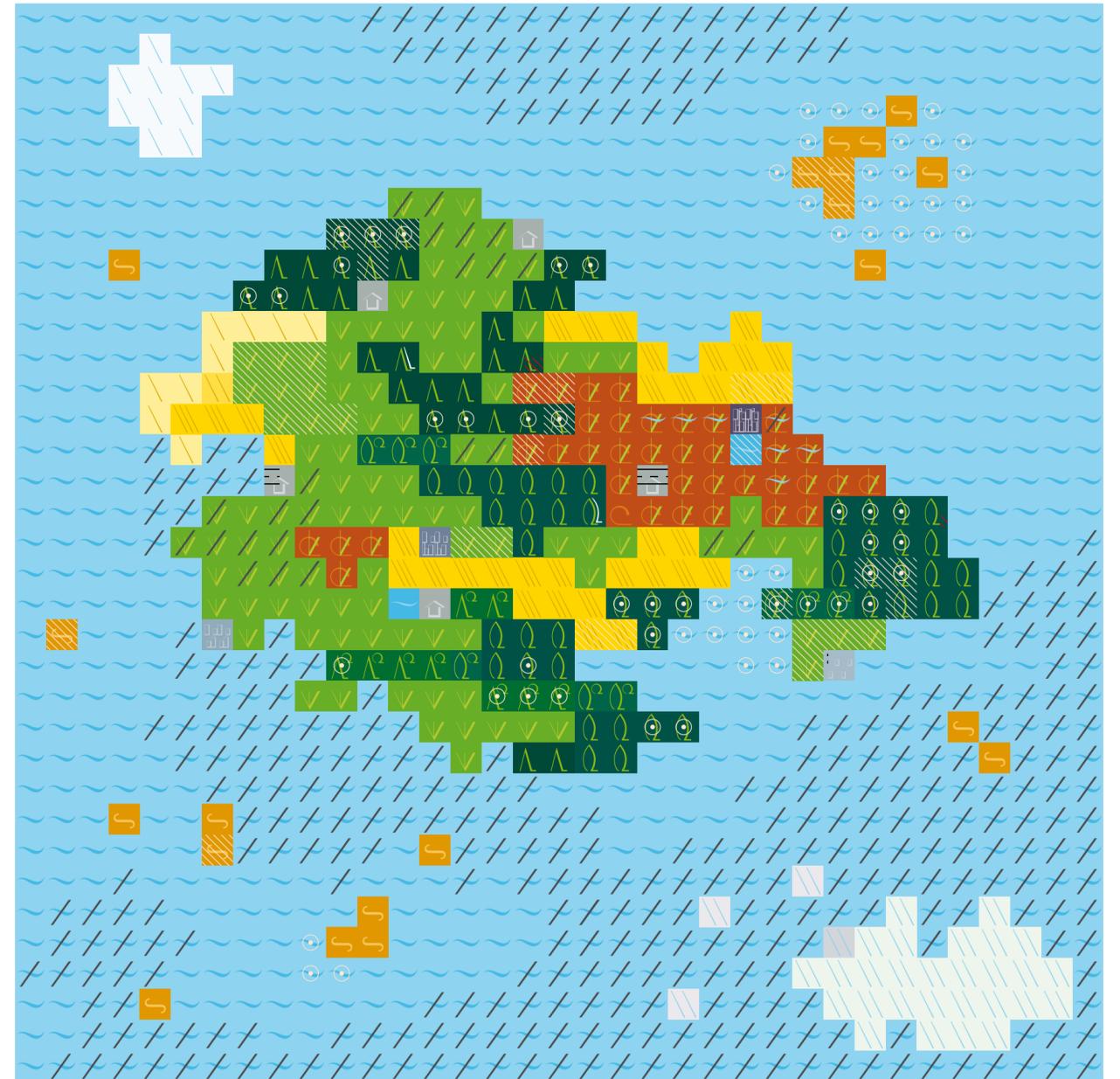
channel these transformations through a commercial and market mechanism where they will make both business sense and common

sense. To give one example, it would make good business sense if you had large areas where bio-sequestration could occur – a very big desert area, for instance, which is not currently used and could be irrigated by de-salinated water to grow eucalyptus, both to sequester carbon and to transform the desert climate. You could do that by making it commercially worthwhile, something that made business sense and was not dependent on global goodwill.

Grantham Institute for Climate Change
<http://www3.imperial.ac.uk/climatechange>

WE ARE OPTIMISTIC FOR 60 YEARS, 6 MONTHS AND 7 DAYS.

EACH YEAR WE SPEND 12 HOURS IN PRISON, OF WHICH MORE THAN 3 HOURS WE ARE IN CUSTODY.



1:1.190 scale of map

- 994 particles of plastic rubbish are floating in our share of the ocean. 896 particles sink to the ocean floor, and 298 are washed up onto the beaches.
- On our plot of land, 1.27 g of radio-active waste is placed in permanent storage each year. In the case of a leak, this would be enough to give us lung cancer.
- 3 times a year, we allow ourselves a meal at McDonald's.
- During 10 years we won't be feeling at our physical best. For 146 days we suffer from diarrhea due to insufficient latrines and water supply.
- For 36.4 years, we feed ourselves primarily from seafood, with a third of fish being caught illegally.
- Of the 21.63 kg of fish that we consume each year, 4.56 kg are frozen, 2.9 kg are preserved in other ways, 2.6 kg are canned, and 6.42 kg are processed into meal or oil.
- We drink coffee once every 60 days.
- On 47 days of the year, we suffer from hunger. On 56 days we are overweight.
- For 10 years, 4 months and 22 days of our 33 years of our urban life, we have
- to make do with a slum as our living space.
- Once a year, we go to the cinema.
- We live in a megacity for 3 years.
- During our urban life, we consume three quarters of the energy provided to us and produce four times more greenhouse gases than in rural areas.
- 60 years ago, our stay in the city was three times shorter than today. In the year 2025, it will span 41 years.

GOOD – BUT WE SHOULD BE BOLDER

Dr. Tewolde Berhan Gebre Egziabher, the general manager of the Environmental Protection Authority of Ethiopia, is his government's senior environmental official. **In 2000, he won the Right Livelihood Award (often referred to as the "Alternative Nobel Prize") "for his exemplary work to safeguard biodiversity and the traditional rights of farmers and communities to their genetic resources."**

Tewolde Berhan Gebre Egziabher: I start by quibbling with semantics. It really is not unthinkable. It is thinkable: the human species has thought of and done more drastic things than that in the past, and therefore there is nothing to stop us together doing what they're proposing. Having said that, I don't mean to say I agree with everything they're saying. To begin with, it is really not a question only of having a global commons. It also is more a question of changing our way of life. Let me be specific. The world has enough renewable energy potential, more than enough. We can switch over and stop polluting the atmosphere and we can then also really before thinking of the global commons

free trade does not enable people to travel everywhere. There is something wrong. We are not consistent. Free trade I'm not objecting to, but to me the logical conclusion to the free movement of goods that are made by humans is also the free movement of humans. It's only then that we can think of global commons. I have another objection to the proposal on global commons, that though very good is not going to solve all our problems. We have to make sure that agriculture is not destructive of the environment, and I don't think that has been given enough attention. And agriculture can be made less destructive of the environment. By that I mean it can be made less eroding of the

see one another as linked together in a fate we cannot avoid. Now in the name of free trade, goods travel everywhere. But that

THE CONSEQUENCES OF CLIMATE CHANGE COST US AN ANNUAL US DOLLARS 16.37.

- We only have access to sanitation for 38 years and 9 months.
- For the 10 years when we don't feel at our physical best, we have a 1 in 50 chance of a hospital bed.
- On every 33rd day, we have access to a delivery van or truck.
- The roads in our territory extend for a maximum of 10.54 metres.
- A mobile telephone is available to us for half of our life. 8 years ago, it would have been only a sixth of our life.
- Each person owns 62 brightly coloured lego blocks.
- As a man, we earn double a woman's wage.
- For 12 years and just under 6 months, we have to manage on less than US dollars 1.00 a day.
- Shaken by the financial crisis, we have to make up a rescue package of US dollars 497 to ease the situation on our territory's financial market.

ALMOST TWO YEARS WE LIVE AS MIGRANTS ON ANOTHER PLOT OF LAND. WE ARE REFUGEES FOR MORE THAN 50 DAYS.

- During the 14 years, 11 months and 15 days that we have had access to the Internet, we burden the data highway of the World Wide Web with a daily 150.64 MB.
- As a result of the illegal downloading of copyright-protected recordings in MP3 format, we cause damage that costs our domestic music industry US dollars 48.25 annually.
- If we sign up for a user profile on Facebook, the well-known social networking
- platform, our contact list will have 120 friends.
- In the virtual 3D Google Earth world atlas, 30 percent of the satellite photographs of our plot of land are shown in a resolution that is sufficiently high for us to recognize ourselves in them.
- We own a television on every third day, and for a sixth of those days, we have a TV with a cable connection. We listen to the radio every two and half days.
- We read a daily newspaper on 28 days

soils, which is the most obvious, and less polluting of the soil, the water and the air, which is more far-reaching. And how do we do that? We now know enough of how ecosystems work to maximise the production of the species that we want in agriculture. We know their ecological behaviour, we know the specificities of the environment where they live. Instead of simply treating the whole world as if it were uniform and then dosing it up with chemicals so as to maximise the chances for those species that we want, we can use agriculture to be suited for the specificities of the environment. Of the thousands of crop species that we depended on when we were less globalised a handful have now taken over, and the rest have been discarded more or less, and many of them are as good food as any of the handful of crops that we now have. Why don't we go back to maximising the agricultural products that we use from the environment so that they're suited to it, so that when we maximise their productivity in the specific areas we minimise at the same time the negative impacts? Therefore the simple solution of having the global commons is I'm afraid as likely to cause difficulties as the simple solution of (the agronomist Dr. Norman) Borlaug was, to say that if you give nitrogen, potassium and phosphorus in large doses to all crops and douse them with lots of water you'll feed the world. That does not work on a sustainable basis. And therefore whilst I support the intention behind the global commons idea, that we should all unite and use our earth to the best possible ends that we expect of each particular spot on it, I think it is over-simplistic as it is presented. If we are calling for a change let's push for something that is consistent with the biosphere and will therefore stand a much better chance of enabling us to continue as a component part of it.

Alex Kirby: Do you think there is some practical value in the authors' suggestion, if not in terms of applying the global commons idea but in seeing that we all sink or swim together?

Oh yes, there is. I'm only saying I wish they didn't stop there. I think they can be bolder than that. We

all collectively use the biosphere together. How? We have to modify all the existing norms. We have to modify the usually troublesome idea of the nation state. If we want a global system, we cannot on the one hand insist on the nation state as a totally independent entity, and interlinkages among those that live in specific nation states as inevitable. We must think further and go to the logical conclusion. We now have the advances needed in technology to enable us to communicate instantly among ourselves anywhere on earth. Why don't we think of a universal governance system?

That is unthinkable, perhaps?

Well, those who feel they have vested interests may think so. But then, thinking of getting rid of the feudal system must have felt really unthinkable at the time. Where is the feudal system now? I could continue with various other examples: that's enough.

Environmental Protection Authority of Ethiopia
<http://www.epa.gov.et>

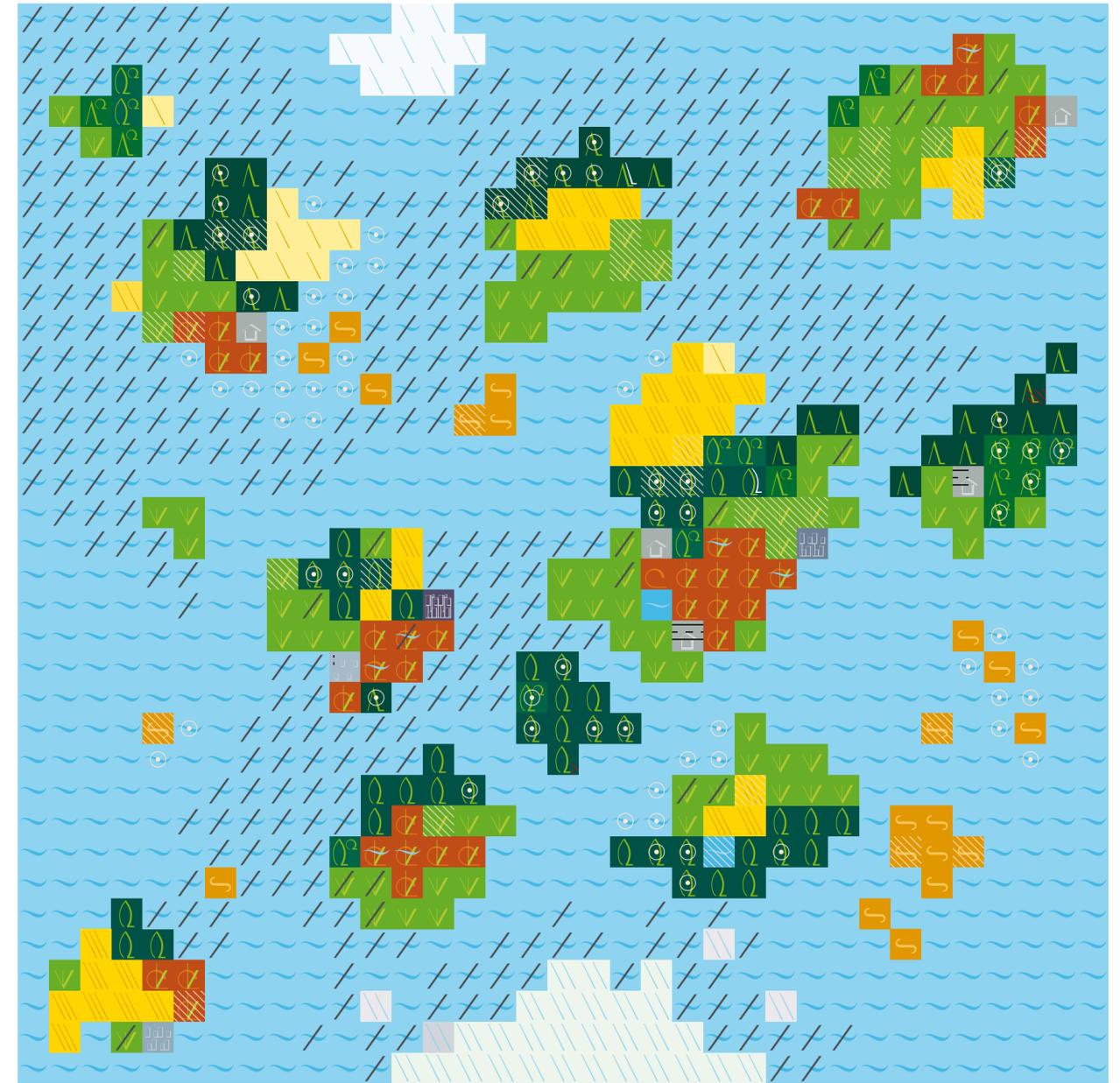
EVERY THIRD MEAL WE HAVE TO PREPARE OVER A WOOD FIRE.

- of the year, in other words, for about a month.
- For 43 years, 5 months and 2 weeks we can master reading and writing. For the rest of our life, we are illiterate.
- Global electricity production is sufficient for 43 60-watt bulbs to burn for the whole year on each plot of land.
- We possess atomic weapons that have a total power of 6 to 12 tonnes of TNT – an explosive force that is sufficient to cause heavy damage to steel structures

within a 100 metre radius and burst our eardrums no matter how far away from the point of detonation we are on our plot of land.

- During the week, we smoke two cigarettes per day, and three and a half at weekends.

IN NEAR-EARTH SPACE, THERE ARE 0.917 G OF SPACE JUNK FLOATING ABOUT ABOVE OUR PLOT OF LAND. IF THIS WAS MASSED TOGETHER AS A SMALL GRANULE TO BURN UP IN THE EARTH'S ATMOSPHERE, IT WOULD HAVE THE SAME BRIGHTNESS AS VENUS.



1:1,190 scale of map

WITH THE SHARE OF RESOURCES AND COMMODITIES ALLOCATED TO YOU, HOW WOULD YOU MANAGE YOUR NEOTOPIAN PLOT?

Everything has been distributed: all natural and man-made resources. Now, we can see what we possess: some lego blocks, a lot of hunger, a smidgen of coffee, and a newspaper once in a while. "Neotopia" is over, and thus we have arrived at the beginning. Because now, after the tangible things, distribution would continue with the immaterial ones: beauty, talent, ignorance, character, friendliness, and love. But what would prevail in this next world if we were to take the concept of just distribution a step further? Would there be more good or more evil in each and every one of us?

1:2,380 scale of map