Visions of future land use in Europe

Stakeholder visions for 2040

VOLANTE

VISIONS OF LAND USE TRANSITIONS IN EUROPE

This brochure presents the three visions of future land use in Europe developed during the collaborative VOLANTE project conducted within the EU Seventh Framework programme under THEME ENV.2010.2.1.1-2: Integrated resource management based on land and land-use management. The project was financed by the European Commission's Directorate-General for Research and Innovation and implemented by a consortium of 14 European partners coordinated by Alterra Wageningen UR in the Netherlands.
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Information on the VOLANTE project can be found on www.volante-project.eu. All the public project documents produced by the project between 2010 and 2014 are available for consultation and downloading on this website.

Colophon
Text: Marta Pérez-Soba ((Alterra Wageningen UR, the Netherlands), James Paterson and Marc Metzger (University of Edinburgh, UK)
Text editor: Clare McGregor
Layout: Wageningen UR, Communication Services
Photography: Botond Horvath / Shutterstock.com, Gerard Koudenburg / Shutterstock.com (cover), littleny / Shutterstock.com, Marta Pérez-Soba (stakeholders), Shutterstock
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Foreword

This brochure outlines three visions of future land use in Europe for 2040 developed in the VOLANTE (Visions of Land Use Transitions in Europe) project. The visions are based on the ideal future envisaged by sixty-nine stakeholders, all professionals representing the main land use sectors. They were developed in four highly interactive facilitated workshops held at Motzener See (Germany) and Lago Maggiore (Italy) in June and September 2012. The workshops focused on nature conservation and recreation; food, bio-energy and timber production; settlements and transport infrastructure; and energy and water.

The resulting visions are called *Best Land in Europe, Regional Connected and Local Multifunctional.* Despite differences in their underlying concepts and ultimate aims, they clearly share a common aspiration to establish multi-functional land use in Europe, with nature as the pervasive foundation for both rural and urban areas. All three visions see this land multi-functionality as a way of ensuring an optimal delivery of goods and services. They differ, however, in the scale on which they envision multiple land functions, which ranges from the whole EU territory to the local level. On the largest, continental scale, the most appropriate land is matched to the best use, with specialisation as a key principle.

At the intermediate, regional scale, the matching is between the people in the region and their resources, with energy and transport connectivity as a fundamental premise. And on the smallest, local scale, the highly diverse needs of Europeans are mainly met locally by using knowledge of local conditions to optimise the use of land and the supply of goods and services on the spot. These visions pose important challenges in terms of the policy, strategies and governance, technological developments and changes in lifestyle needed to achieve them. What set of policies and regulations would facilitate both competition and cooperation between the 'best locations' across Europe? Are the pathways to the visions a European, national or a regional responsibility? What division of responsibilities would really encourage localised thinking and decision making within a European framework? Can our needs be met regionally or locally, moving away from regional specialisation and global economies? But these visions do not only pose challenges; they also offer solutions. For example, the *Local Multifunctional* and *Regional Connected* visions may help us to overcome the current urban/rural dichotomy, although that is not necessarily the case for the European vision.

The ultimate purpose of these visions is to provide a range of plausible and coherent descriptions of positive futures, helping to narrow down the vast spectrum of possible decisions to a smaller range of relevant and sustainable land management options. These options are considered the robust pathways for multifunctional and sustainable land use, and will be outlined in the VOLANTE Roadmap of future land resource management in Europe.

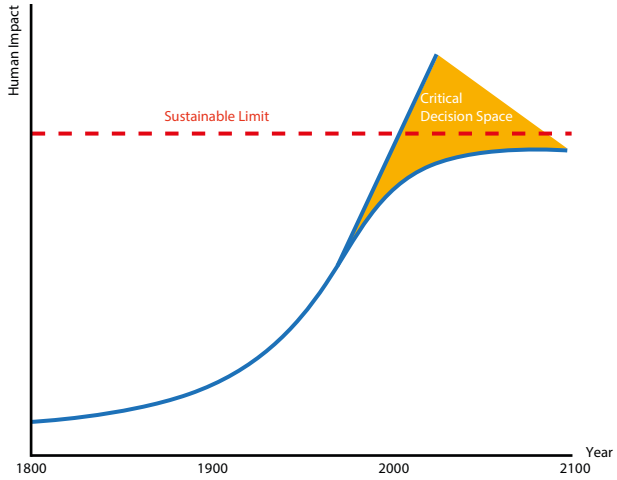
The authors would like to thank the sixty-nine stakeholders who inspired these visions for their constructive and knowledgeable contributions, and above all for sharing their dreams, and the VOLANTE visions team for their valuable inputs and professional process facilitation. All their names are mentioned on the back of this brochure as an expression of their co-authorship and our gratitude. The opinions expressed are nevertheless those of the authors, to whom any errors and omissions should be attributed.

Marta Pérez-Soba

Coordinator of the VOLANTE stakeholder visions analysis
marta.perezsoba@wur.nl

Why does Europe need a land use vision?

The world has changed rapidly in the last few decades, with profound changes in the ways we use land to support a growing, and increasingly affluent and urban population. As we head towards a global population of more than 9 billion people, we have entered a critical decision space, a window of opportunity over the next few decades within which it is still possible to avert a move beyond the planet's sustainability limit.



Conceptual representation of the critical decision space resulting from cumulative global human impacts (GLP 2005, Science Plan and Implementation Strategy).

The successful transition towards a global society that can live within the planet's boundaries is widely seen as the greatest challenge humanity has ever faced. More people will require more space and more resources, which will have to be provided by a finite land surface facing added pressures from our changing climate. Land use change is inevitable and managing this change sustainably will become a major challenge. There are inherent uncertainties in this process, and responsibility will have to be shared by governments, the private sector and individual citizens. A major first step towards achieving the future we want is to understand better what type of world we would like to live in.

Visions of the future stimulate dialogue, help build a consensus on shared priorities, and support planning by providing long-term targets. Land use is determined by the complex interface between the biophysical environment, and human activity shaped by historical and current cultural and socio-economic processes. Many groups may have contrasting interests in the land, and any change can be contentious. Understanding these different viewpoints and finding common ground will therefore have to be the first step towards managing sustainable land use change.

Local Governance

due to
climate
change

Stakeholders creating land use visions

Sixty-nine European stakeholders of different ages, nationalities and cultural backgrounds, and with expertise in different land use sectors, collaborated to create their visions of what Europe will look like in 2040. The visions were developed in four facilitated workshops that focused on: nature conservation and recreation; food, bio-energy and timber production; settlements and transport infrastructure; and energy and water.

During the two-day workshops, the stakeholders were invited to imagine the future landscapes they wished to live in and describe them as if they were living in them now. Particular attention was paid to the difficulty of imagining the future and of formulating ideas that are comprehensible and concrete enough to discuss. The design of the workshop process and tools was therefore geared to stimulating stakeholders' imaginative thinking about their desired future, and structuring their visions. With this aim in mind, interactive, computer-based instruments were developed to enhance creativity and 'out of the box' thinking, and help structure the ideas. Together, these instruments – which we called 'canvas tools' as they enabled people to fill a blank space with their vision – were intended to provide an engaging and effective method of vision building.

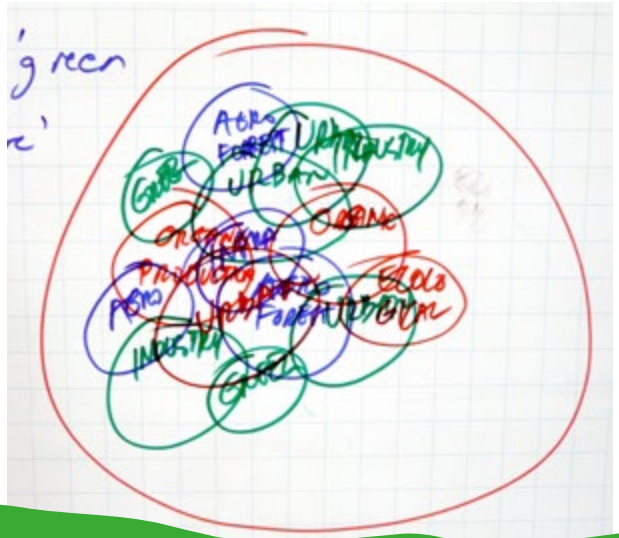
Fifteen sectoral-societal visions and their names developed in the four stakeholder workshops

Workshop	Vision name
Nature conservation and recreation	EURECO
	Natural Value Landscape (NVL)
	Ostrom 2040
	Past to the Future
Food, bioenergy and timber production	Value Land Use
	Foodscapes
	Forest for Rural Society (FORUS)
	Right place, Right amount, Right functions (3R'S)
Urban settlements and transport infrastructure	Challenging suburbia
	EUtopia
	Neural network
	Smart denscity
Energy and water	Insola 2040
	Local matters
	Open Mind, Closed Cycles

The visions were drawn up progressively over the two days, with the stakeholders working both individually and in groups. They started with individual reflections, and were

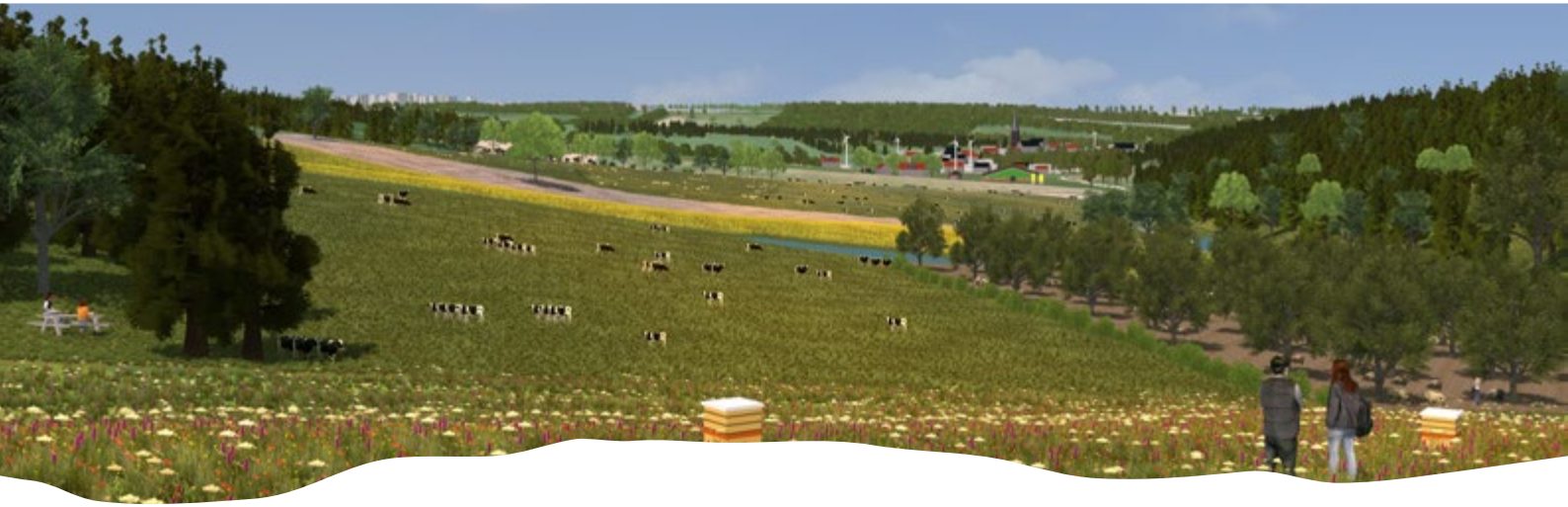
then divided into coherent groups based on the way they wanted land to be used by their sector or in relation to their field of expertise. In this intermediate phase, these groups developed fifteen sectoral visions. In the final workshop phase, they expanded the context of their visions to the whole of society, including issues such as global land impacts and lifestyle. Sharing these ideas in group discussions resulted in the creation of the fifteen societal visions listed in the table (former page).

These fifteen *rich visions* offered multifaceted future scenarios through images, graphs, indications of trends, analyses of relationships between elements, descriptions, land cover maps, and video recordings. The material was carefully structured before being analysed. The visions were then deconstructed and cross-analysed in terms of how they approached land use intensity, land use patterns and the extent of land cover, as well as the role played by several key drivers of change (economic, technological, social & behavioural and demographic). Finally, they were clustered according to their similarities. These clustered visions were presented and discussed in two workshops with a subgroup of the 69 stakeholders, resulting in the three consolidated visions described in the next section: *Best Land in Europe, Regional Connected and Local Multifunctional.* To provide an overview of the three visions and their differences, we present their key priorities in the following table.



Characterisation of the three visions

	Best Land in Europe	Regional Connected	Local Multifunctional
Main aspiration	To maximise the value of existing land by using the optimal locations in the EU.	To keep a regional coherence by exploiting most land and providing goods and services within a well-connected region.	To create local self-sufficiency by optimising the use of land and the supply of goods and services on the spot.
Urban areas	Peri-urban areas disappear, making way for other land functions around the cities, such as urban agriculture, recreation, nature.	Cities are compact, with vertical growth, and very well connected with surrounding towns or villages and nature areas in the region.	New villages emerge in former forests and on abandoned rural land.
Agriculture	The intensity of agricultural production, including biofuels, varies depending on the agro-climatic conditions. For example, in western and central Europe, production is intensive, while Alpine and Mediterranean regions see a decline in agriculture or extensification.	The overall intensity of agriculture decreases with a focus on sustainable production, including a large increase in High Nature Value farming as part of the green network.	Food is produced locally and new practices allow food to be grown everywhere (in cities, forest and nature areas). Consequently, intensity increases in some areas but may decrease in traditional agricultural regions.
Forestry	Industrial highly productive forest dominates in northern and central Europe, whilst regions that are biophysically less suitable or face climate change pressures, such as the Mediterranean, are more extensively managed.	Forest cover increases through the conversion of marginal agricultural land to productive forests supplying the local region. This includes green corridors and forests planted to mitigate carbon emissions.	Forest cover increases through the conversion of marginal land and an increase in agroforestry. Multifunctional mixed wood production is everywhere to cover local demand for all the services delivered by forests.
Nature	Some nature areas with emblematic endangered species become strict conservation areas: isolated and with no human interference. Other areas are managed for recreation.	Nature is encouraged and managed everywhere (in cities, agricultural areas and production forests) with an emphasis on green and blue infrastructure connecting different areas.	Protected areas are open to sustainable food production and forestry where it helps to meet local demand. Management is focused on increasing the number of goods and services delivered.
Green connections	Green connectivity is increased by restoring nature areas with high biodiversity value; there is a special emphasis on wetland rehabilitation.	There are big investments in green and blue corridors.	Nature is pervasive and ubiquitous (even in dense urban areas such as park systems, green rings, green facades and roofs or converted disused transport sites).
Viability in rural areas	Rural areas suffering from severe socio-economic decline do not get further policy support and are abandoned and used for nature.	Rural areas are well connected with big cities, keeping the regional coherence.	Rural viability increases as a result of the strong diversification of activities, creating new opportunities for urbanites who want to start part-time farming. New ways of living appear, such as communal farms.



Best Land in Europe

Regional Connected

Local Multifunctional

Vision *Best Land in Europe*

The aim

In this vision, optimal use of land is crucial to ensuring maximum production of food and other natural products. This means matching land across the EU to the most appropriate use.

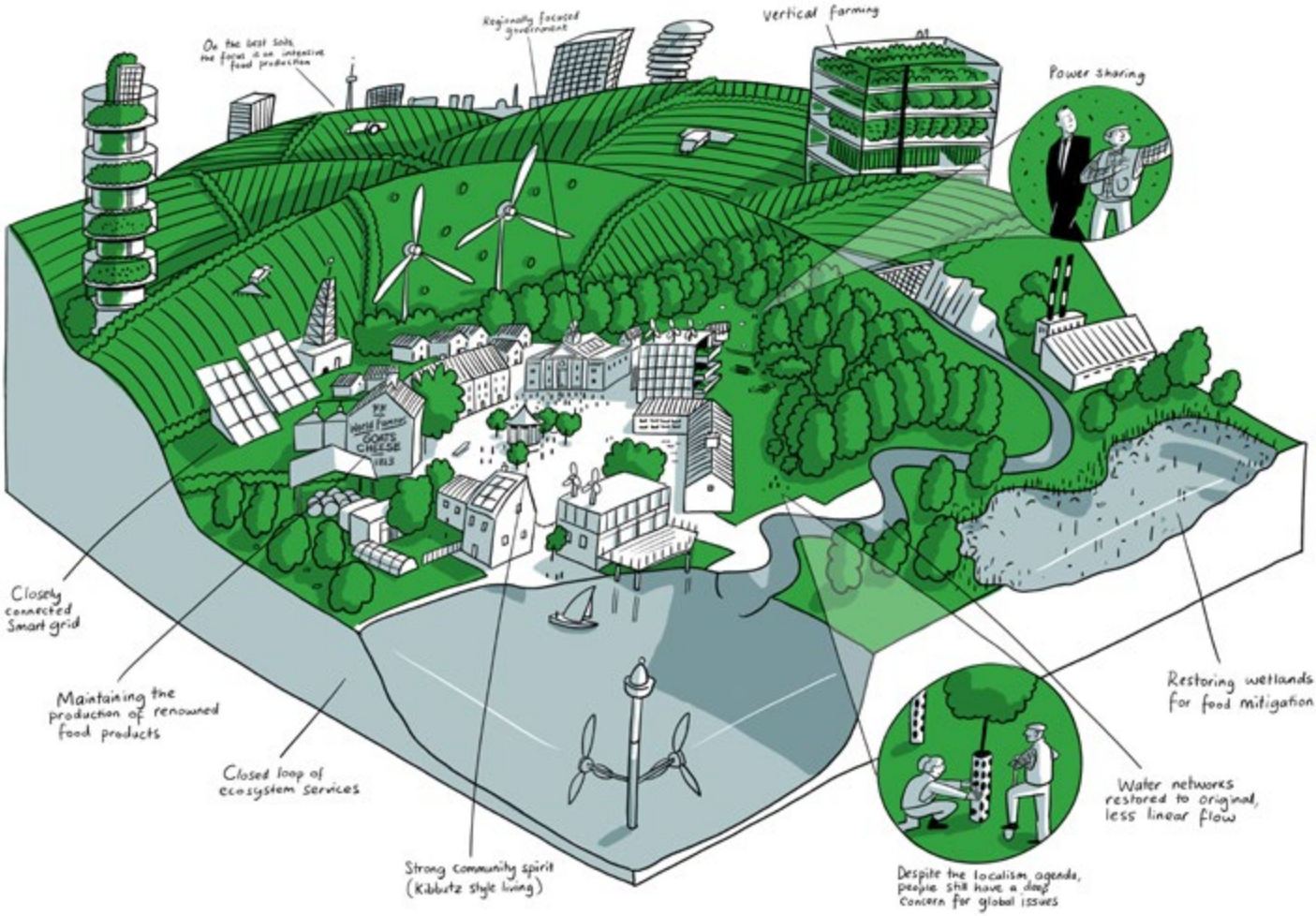
The concept

This vision is based on a fundamental premise: by 2040 there will be intense global competition for resources so we have to make land use more efficient to be able to meet society's needs. Across the EU, land provides for multiple functions, making a well-planned, well-ordered and zoned use of our space imperative. Much of Europe's land is suited to multiple uses: poorly drained fields, for example, can be used for woodland, grassland and nature reserves. On the other hand, some land is perfectly suited to just one function, such as the rich, fertile soils that are ideal for food production. Further specialisation is therefore required. The broader context is a globalised world with its intensified movement of products, money and people, resulting in an ever greater geographical mobility. Good accessibility is therefore crucial, linking distant large urban areas in such a way that local events are shaped by events many miles away, and vice versa. Equally crucial is political collaboration between and beyond the Member States.

The narrative

The vision *Best Land in Europe* takes a pragmatic approach to land use. Fundamentally, this vision challenges the notion of economic growth at any cost: what it aims at is a closed loop of ecosystem services. Energy production, environmental services (including food and timber production), and urban settlements are recognised as the priority land functions in Europe. Existing renewable energy systems such as hydro, wave and tidal power are encouraged and are closely connected to a pan-European smart grid. The production of the wide range of food products that many parts of Europe are renowned for is also important, representing as it often does a traditional best use of land and a cultural identity. Technology does not play as fundamental a role here as in the other two visions, but is still important in increasing agricultural productivity.

In order to identify and fairly distribute 'best locations' across Europe, a body of policies and regulations is established which stimulate and support both competition and cooperation. The best quality and most fertile land, for example, can be used solely for food production. Where other ecosystem services are concerned, climate change necessitates pragmatic approaches, such as a shift in forestry production from southern Europe to less drought-prone areas in the north.


On the best soils, the focus is on intensive food production
Regionally focused government
Vertical farming
Power sharing
Closely connected Smart grid
Maintaining the production of renowned food products
Closed loop of ecosystem services
Strong community spirit (Kibbutz style living)
Despite the localism agenda, people still have a deep concern for global issues
Water networks restored to original, less linear flow
Restoring wetlands for food mitigation

The overall picture is one of greater land multi-functionality at the EU-scale, which in some circumstances can help to maintain local self-sufficiency. In some areas this entails 're-designing' the land to facilitate other ecosystem services. For example, former wetlands are restored to provide for flood protection, food provision and climate change mitigation, while forests serve multiple purposes including water management on the landscape-scale. Water networks too can be 're-designed': many rivers are dechannelised to return them to their original, natural, less linear courses, with benefits for flood mitigation and biodiversity. But nature conservation is paramount and areas of high biodiversity are given greater and stricter protection. Meanwhile, the peri-urban countryside around cities is protected from urban expansion through a programme of conversion to intensive food production systems (including vertical farming).

Based on

Best Land in Europe is based on contributions from several stakeholder visions including: 3RS, FOODSCAPES, INSOLA, OSTROM, and VALUE LAND USE.

The vision in a broader policy context

There are parallels between *Best Land in Europe* and several current European policy documents. Perhaps the most striking of these relate to the energy sector. For example, the European Commission's *Energy roadmap 2050 and the Energy Vision 2030 for Denmark* have very similar aims regarding renewable energy and smart grids. In the vision, the development of the rural areas of Europe has much in common with the EU's *Reforming the CAP – Vision for Rural Europe: 2013 and beyond and it certainly matches much of Rural Poland 2025 – a vision of development*. Finally, the vision of urban re-development expressed here echoes aspects of *Eco-Metropolis - Our Vision for Copenhagen 2015*. Overall though, and unlike the other visions, the vision in *Best Land in Europe* is closest to the aspirations of many current policies at national or EU level.

Vision *Regional Connected*

The aim

In this vision, most society's needs are met regionally through a more coherent relationship between the people in a region and their resources. The premise is that economies do not need to globalise to thrive, moving away from regional specialisation.

The concept

This vision is based on a greater appreciation of the resources that are available regionally and of the value of trying to live without external inputs, with the help of technological developments. Key priorities are serving the regional population first and keeping regional coherence: this reduces the need for transportation and therefore its negative impact. However, fostering territorial cohesion on the regional scale should not be seen as an attempt to isolate communities or to re-close borders. More local autonomy does not mean introversion and isolation, but more resilience, more involvement by the population, and more democracy.

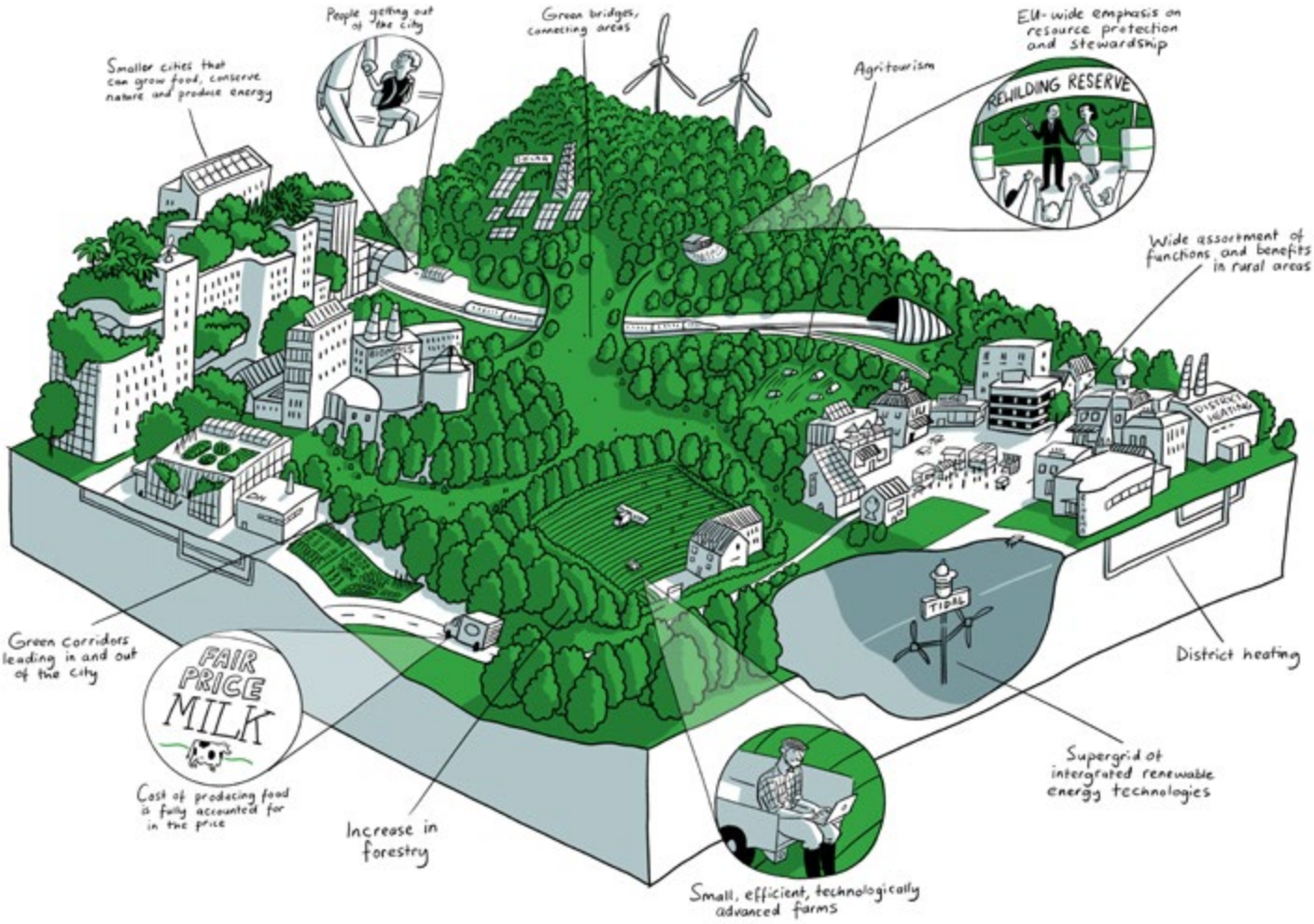
The narrative

This vision represents a perfect mix of old and new, of freedom of choice and sustainable living, and, to a lesser extent, of local and global. It seeks to maintain an environmental focus in all aspects of modern life (e.g., in food production, leisure, transport, energy) but to do so without compromising the high standard of living to which most Europeans are accustomed. Efforts to achieve these goals rely heavily on applying technological advances which fundamentally change the way we live. For example, a new, well-connected energy system (using a super-grid of integrated renewable energy technologies between regions and countries) reduces environmental impact and helps to achieve the regional self-sufficiency the vision aims at.

Technological advances radically change other sectors too, including agriculture and forestry, which benefit from more effective and efficient machinery as well as from improvements in agronomy, tree-breeding and animal husbandry. The benefits of these advances include less pollution and waste and a significant reduction in the area of land required for food production.

However, technology alone is not enough to maintain a high standard of living. A change in attitudes and behaviour is also essential in order to change consumption patterns and resource use. To reinforce such change, we emphasise resource protection and stewardship through effective EU-wide legislation. This necessitates effective policy instruments such as taxes and subsidies, working in harmony at several different governance levels.

This vision responds to decades of degradation of natural resources with a concern for biodiversity which underpins


People getting out of the city
Green bridges, connecting areas
EU-wide emphasis on resource protection and stewardship
Smaller cities that can grow food, conserve nature and produce energy
Agritourism
REWILDING RESERVE
Wide assortment of functions and benefits in rural areas
DISTRICT HEATING
TIDAL
Green corridors leading in and out of the city
FAIR PRICE MILK
Cost of producing food is fully accounted for in the price
Increase in forestry
District heating
Supergrid of intergrated renewable energy technologies
Small, efficient, technologically advanced farms

European-wide policies across all sectors. Traditional nature conservation areas are extended and connected through green and blue networks. In addition, our economic paradigm has shifted towards full accounting of resource use. The price of food, for example, reflects the true cost of producing food and is not kept artificially low with subsidies.

This vision's commitment to ensuring that land provides a wide assortment of functions and benefits underpins a healthy rural fabric in Europe. Meeting regional needs with regional resources not only cuts transport and energy transmission costs; it also supports an equitable delivery of essential goods. Another advantage of a move away from regional specialisation is that hitherto depopulated and economically depressed areas become attractive and viable places for living, working and leisure. There is fresh impetus in such areas for agri-tourism, eco-tourism, forestry, and biomass or bio-energy production.

In urban areas, the long historical trend towards growth of the large European metropolises is reversed in favour of a more dispersed network of towns and smaller cities that meet the needs of their surrounding rural areas too. This is reflected in polycentric urban patterns. Urban areas meet their food, waste and energy needs locally, which is critical to their viability. As the populations of large cities decline, a new holistic planning ethic based on regional city networks aims at reinvigorating them by providing attractive places to work and live as well as to grow food, provide habitats for nature conservation and produce energy.

Based on

Regional Connected is based on contributions from several stakeholder visions including: CHALLENGING SUBURBIA, NATURAL VALUE LAND USE, NEURAL NETWORK, OPEN MINDS, CLOSED CYCLES and PAST TO THE FUTURE.

The vision in a broader policy context

Elements of this vision are reflected in several European policy documents. For example, in the energy sector, the EU *European Strategic Energy Technology Plan stresses* the need for smart, efficient energy systems. In the environmental sector, the *EU 2020 Biodiversity Strategy* supports the enhancement of green infrastructure use, and the recently adopted *Green Infrastructure Strategy* promotes the deployment of green infrastructure in the EU in urban and rural areas. The multifunctional nature of cities has also been explored at the European level in the EU's *Cities of Tomorrow: Challenges, visions, ways forward* document as well as at a local level *(Economically Strong and Sustainable Structural Vision: Amsterdam 2040)*. The theme of sustainable transport is prominent in the EC's *Roadmap to a Single European Transport Area*, while greater connectivity is fundamental to the EU's *TEN-T Connecting Europe* vision as well as to several aspects of the *Europe 2020 Strategy.*

Vision *Local Multifunctional*

The aim

In this vision, the localisation of all land functions in a small area paves the way for a new approach to living, working and recreation facilities in Europe. This vision targets diversity, not just in nature, but in land use and in society.

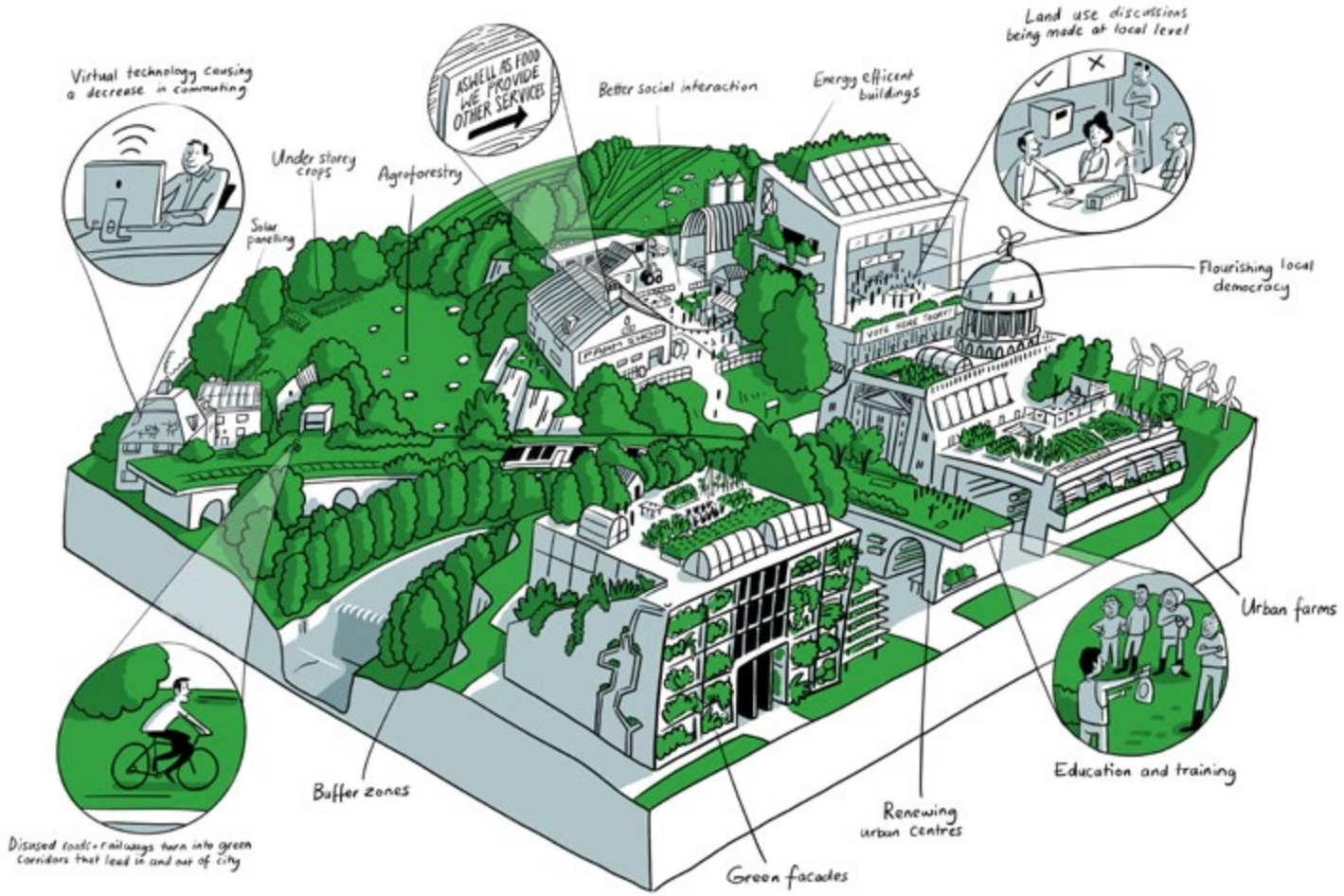
The concept

The key idea in this vision is not to create a mosaic of distinct sectoral areas (agriculture, settlement, nature conservation, etc.), but to incorporate multi-functionality in existing zones. For example, agricultural areas will have biodiversity conservation, improved water quality and ecological corridors as well as a strong green economy: this will optimise multiple ecosystem services wherever possible. A radical shift in behaviour and a switch to more 'bottom-up' politics will ensure localised thinking and decision-making is commonplace. This is a vision where locally driven agro-environmental measures produce their effects where they are really needed. Access to the latest technology, facilitating the sustainable management of our resources or ensuring that everyone has a say, is common. A major benefit of this vision is a huge reduction in 'food miles' as many of the products we need are grown or manufactured locally.

The narrative

Like the other two visions, *Local Multifunctional* adopts a diverse approach to land use, but in this instance the diversity of land functions is on the field scale rather than on the much larger regional scale. For example, instead of a mix of woods, nature reserves, farms and housing in a landscape, there is a mix in a much smaller space, resembling a permaculture approach to living. This approach seeks to draw on the ecological relationship between diversity and productivity by utilising available niche space. Only under particular circumstances are small parcels of land still be used for a single function. A critical point is that although multi-functionality is more widespread throughout Europe, there are still differences between regions. This also reflects the primacy of local knowledge, history and culture – everything that is conjured up by the French word 'terroir'. The territory of Europe remains largely rural but there is far more multi-functionality through more services of general interest, enhanced connectivity and cultural opportunities in the countryside, and more nature and agriculture in the city.

Education and training are seen as a key pillar in developing this sustainable society, but equally critical is a change from not-in-my-backyard thinking to this-is-my-backyard thinking. Governance at a central level is important but is also designed to enable local democracy to flourish. For example, an overarching Common Land-use Policy at EU-level is implemented (replacing the Common Agricultural Policy) with guidelines and a framework to support land-use decisions which draw on local expertise to ensure they are the most effective, appropriate and sustainable options at the local level.


Virtual technology causing a decrease in commuting
AS WELL AS FOOD WE PROVIDE OTHER SERVICES
Better social interaction
Energy efficient buildings
Land use discussions being made at local level
Under storey crops
Agroforestry
Solar panelling
Flourishing local democracy
Urban farms
Education and training
Renewing urban centres
Green facades
Buffer zones
Disused roads + railways turn into green corridors that lead in and out of city

There is a stronger focus on renewing urban centres as sustainable, self-sufficient places to live and work. Core ideas are meeting a significant proportion of Europe's needs by bringing the semi-natural landscape and urban food production back into the city's structure. This also means a decline in intensive agricultural areas, which are replaced with forests, grasslands and other semi-natural land uses. Urban farms proliferate, with a mix of functions. Urban nature flourishes in the form of more parks, green facades and roofs, wetlands used as water treatment plants, and new green transport routes created from disused transport infrastructure. Traditional, dense housing has a negative image but in fact it can provide several benefits, including more efficient energy use and better social interaction. So we aim at housing development that makes efficient use of space without making the mistakes of 1960s multi-occupancy dwellings. By taking into account the underlying landscape influences, resources and distribution of soils, the city can be used in a more 'densified' way. The transport sector too is radically transformed as commuter numbers drop due to the increased use of internet-based technologies. A wish for energy self-sufficiency and the localism agenda drive widespread adoption of solar panels on housing, small windmills for industry and agricultural waste biomass conversion in bioenergy systems.

The paramount concern, however, is conserving natural capital and natural processes. This vision is very much about living with nature, so there are many schemes that 'soften' the landscape for biodiversity, helping wildlife to adapt to climate change. These schemes include buffer zones, mosaics of habitats interconnected throughout the landscape, and wildlife-friendly farming.

Based on

Local Multifunctional is based on contributions from several stakeholder visions including: EURECO, EUtopia , FORUS, Local Matters and Smart DensCity

The vision in a broader policy context

The elements of *Local Multifunctional* are most apparent in recent policy documents that are themselves of a very local nature. For example, the localism agenda is a critical element in several policy documents from the UK, including the *Sustaining Dunbar Action Plan, A first Energy Descent Plan for the Lampeter Area and A Water Vision for Johnstone.* EU policies on cohesion and agriculture have recently introduced a more place-based approach, as in the *Integrated Community-led development and integrated bottom-up planning, and the Rural Development programmes.* However, and not surprisingly, the tenets of *Local Multifunctional* seem somewhat at odds with many National or EU-wide policies, although they do neatly correspond with the aims of the French *'Appellation d'origine contrôlé'* and the EU *'Protected designation of origin'.*

In general then, there are few EU policies with the specific aim of promoting a similar vision to *Local Multifunctional.* However, where conservation and biodiversity are concerned, many EU and national policies do promote similar aims to *Local Multifunctional.* This is reflected in several documents including *A Biodiversity Vision for the Alps, Making Space for Nature: A review of England's Wildlife Sites* and Ecological Networks and the UK Wildlife Trust's A living landscape.

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The VOLANTE stakeholders

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The VOLANTE visions team

Marion Bogers - Tommaso Chiamparino - Marc Gramberger - John Helming - Michael den Herder - Joske Houtkamp - Anne Jensen - Steven Libbrecht - Marjan Maes - Marc Metzger - Dave Murray-Rust - James Paterson - Marta Pérez-Soba - Peter Rakers - Inge La Rivière- Mark Rounsevell - Andrzej Tabeau - Theano S. Terkenli - Peter Verburg - Hans Verkerk - Peter Verweij - Ariane Walz - Martin Watson

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