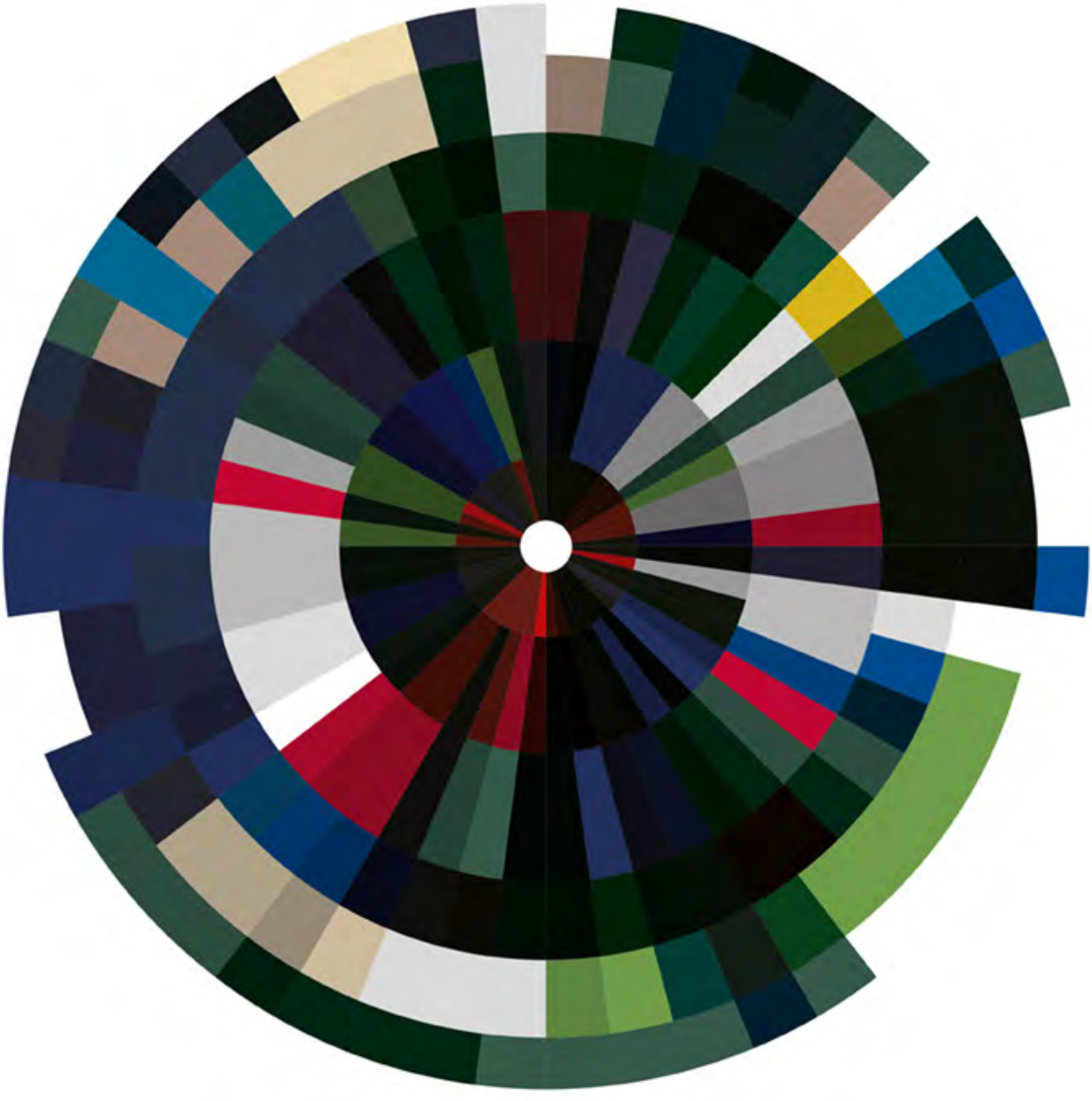


Blind Spot

metropolitan landscape in the global battle for talent

Blinde Vlek

De kwaliteit van landschap en leefomgeving is een blinde vlek in veel strategieën voor het vestigingsklimaat. De meest verklarende economische succesfactoren, zoals belastingklimaat, (kennis) infrastructuur, veiligheid en onderwijs liggen in westerse landen al grotendeels vast, zodat deze factoren minder ingezet kunnen worden in de concurrentiestrijd tussen steden. De zogenaamd 'zachte' factoren gaan dus een steeds belangrijkere rol spelen op de beleidsagenda's. Landschap is daarmee een logisch vertrekpunt voor ruimtelijke plannen, (economisch) té belangrijk om als compensatie of restvulling te worden behandeld.

In metropoolregio's wereldwijd is een revolutie gaande. Sinds kort is in Madrid de rivier de Manzanares met alle daaraan grenzende buitenruimtes, zoals de paleistuinen, weer onderdeel van het publieke domein door het ondergronds brengen van een groot deel van de Madrileense ringweg M30. Deze evidente toevoeging aan het vestigingsklimaat was alleen mogelijk door de uitzonderlijke beslissing van burgemeester Alberto Ruiz Gallardón. In het onleefbaar wordende Londen besloot 'Red Ken' Livingstone de congestiebelasting in te voeren. Niet alleen ging zijn rechtse opvolger Boris Johnson daarmee door, hij voegde daar in 2011 ook nog eens het All London Green Grid aan toe en in 2015 de fietssnelwegen, ter verbetering van mobiliteit en leefomgeving. Deze en andere bestuurders illustreren de paradigmawisseling van louter investeren in gebouwde infrastructuur naar werken aan natuur, landschap en erfgoed als middel voor het aantrekken van hoogopgeleide kenniswerkers en kennisintensieve bedrijven. In de industriële stad werden natuurgebieden en erfgoed nog gezien als beperking van economische ontwikkelingen, in de 'lerende economie' zijn ze juist een voorwaarde voor succes. Of je het vanuit cultuurhistorisch, sociaal, ecologisch of economisch perspectief bekijkt – rechts of links in het politieke spectrum, investeren in het metropolitane landschap ligt voor de hand.

Het metropolitane landschap is niet los te zien van economische ontwikkelingen. Tijdens de industrialisering bepaalde ruimte voor groei van het aantal woningen, productielocaties en logistiek grotendeels het succes van steden. Nu we omschakelen naar een kennisintensieve economie, is de kwaliteit, identiteit en gebruikswaarde van het metropolitane landschap een cruciale factor in het voortbrengen, aantrekken en vasthouden van talent en daarmee voor het economisch presteren van steden. Een stad wint met alleen een goed landschap en hoge leefkwaliteit de strijd niet, maar kan de strijd er wel mee verliezen. Een voorbeeld hiervan is Beijing, waar hoogopgeleiden in rap tempo vertrekken vanwege de congestie en het gebrek aan groen, factoren die ook nog eens bijdragen aan de sterke luchtvervuiling.

De publicatie *Blind Spot* geeft inzicht in hoe de kwaliteit van het landschap bij kan dragen aan economisch succes van metropolitane regio's, door resultaten uit bestaand kwantitatief onderzoek te combineren met een analyse van 10 internationale cases. Het doel van de publicatie is om bestuurders en beleidsmakers inspiratie te geven én directe aanknopingspunten voor regio's in Nederland, die op alle fronten hun positie willen versterken en zonder twijfel een belang hebben in de strijd om talent. Het is hierbij goed om te beseffen dat een hoogwaardig metropolitaan landschap in eerste instantie welzijn, leefkwaliteit, en gezondheid van de bestaande bewoners en bedrijven bevordert. Met die kwaliteit kan een regio vervolgens ook nieuw talent aantrekken.

KWALITEIT VAN LEVEN EN DE METROPOLITANE REGIO

De toekomstige economische groei en innovatie spelen zich vooral af in de metropolitane regio's. In het metropolitane landschap komen ecologische, economische en belevingswaarden samen en dat leidt tot conflicterende ruimteclaims. Niet zelden is dit landschap geanonimiseerd, door verstedelijking en infrastructuur versnipperd en verschraald geraakt en daarmee nauwelijks nog van betekenis voor de stedeling. Tegelijkertijd zijn er springlevende landschappen die herkend, erkend en verdedigd worden door bewoners en bedrijven. Socio-economisch en geografisch is al veel bekend over metropoolvorming. Vanuit (landschap) architectuur, stedenbouw, ecologie en sociale geografie bestaat nog geen passend begrippenkader voor het samenhangend geheel van interacties, stapeling van functies en culture betekenissen van het metropolitane landschap, dat per definitie een verweving is van stedelijke en landelijke kwaliteiten. West8 beschreef in het Polderboek (2005) de kwaliteit van de uiteengelegde Nederlandse metropool als volgt:

"Het op de zeebodem gemaakte landschap is de ziel van de Nederlandse cultuur. In dit landschap met zijn polders en waterstadjes heeft zich een unieke metropool ontwikkeld: de Randstad. In afwezigheid van een efficiënte planningsstrategie verliest deze metropool haar vitaliteit en door onverklaarbare zelfhaat haar magische lege centrum met horizon en lage wolkenlucht. Zonder het weidse polderland zullen de bewoners mentaal verweesd raken, impotent zijn als Zwitsers zonder bergen en eenzaam als Italianen zonder eten."

Landschap wordt in het huidige onderzoek op brede wijze geïnterpreteerd conform de *European Landscape Convention* (2004), nadrukkelijk als de totale metropolitane leefomgeving die ook bestaat uit erfgoed, brownfields en infrastructuur, zonder harde scheiding tussen stad en land.

Ontwikkelde economieën hebben zich in de afgelopen decennia doorontwikkeld tot kenniseconomieën. Metropolitane regio's beconcurreren elkaar mondiaal in de jacht op innovatieve en snelgroeiende kennisintensieve bedrijvigheid. De bedrijvigheid die metropolitane regio's aan zich willen binden, leunt sterk op de beschikbaarheid van hoog opgeleid personeel. De afhankelijkheid van gekwalificeerd personeel is zo groot dat kennisintensieve bedrijven hun vestigingskeuze laten afhangen van de aanwezigheid van opgeleid personeel, stellen geografen als Richard Florida (2000, 2005, 2007) en zelfs bedrijfsanalisten bij Moody's (2014). En dit hoog opgeleide personeel kiest haar woonplaats mede op basis van de kwaliteit van leven, blijkt uit vestigingsplaatsonderzoek en city rankings wereldwijd. Aanwezigheid en de gebruiksmogelijkheden van een attractief landschap spelen een duidelijke rol in die woonplaatskeuze.

Nederland is een goed presterende kenniseconomie, stelt het recente WRR rapport *Naar een Lerende Economie* (2013), maar het is allerminst zeker of we die positie in de toekomst vast kunnen houden als we de condities niet blijven verbeteren, net als snel groeiende kenniseconomieën in Azië en Noord-Amerika. Het rapport bevestigt dat de financiële kaarten voor Nederland zijn uitgespeeld, omdat deze op Europese schaal gelijkgeschakeld zijn. *Paying Taxes 2016*, opgesteld door PwC en de Wereldbank, stelt zelfs dat het vestigingsklimaat van Nederland, wat de financiële kant betreft, momenteel achteruitgaat ten opzichte van omringende landen. Ook daarom wordt investeren in de kwaliteit van kennisinstituten, -netwerken en in een hoogwaardig metropolitaan landschap cruciaal.

BESTAAND ONDERZOEK

De relatie tussen de kwaliteit van het landschap en economie is geen nieuw onderwerp in zowel kwalitatief (verhalend) als kwantitatief (rekenend) onderzoek. De recente aandacht voor het meten van menselijke ervaringen in hun leefomgeving, bijvoorbeeld in het project Mapiness en het opstellen van city rankings door bijvoorbeeld Mercer en Monocle, ondersteunt het idee dat ruimtelijke kwaliteit en cultuur(historie) in toenemende mate van belang zijn voor het functioneren van onze kenniseconomie. Over de Nederlandse situatie schreef Joks Janssen in 2012: "Investeren in cultuurhistorie en landschap kan zowel direct als indirect een 'verrijkend' effect hebben op het vestigings- en leefklimaat. […] Echter, vooralsnog blijven inspanningen op dit vlak beperkt tot (binnen)stedelijke projecten. Daardoor is sprake van een onderbenutting van het cultuurhistorische potentieel van het ommeland […] voor de nieuwe, stedelijke economie." Eerder onderzoek door Marco Vermeulen en gemeente Eindhoven naar de Brainport regio (Het Geniale Landschap, 2005) wijst ook in deze richting en richt zich daarbij vooral op het uitwerken van ideeën voor ontwikkeling van het Brabantse landschap. Vaak ontbreekt volgens Janssen echter de regionale samenwerking en (Rijks)bescherming van waardevolle landschappen om dit soort strategieën ten uitvoer te brengen. Ook in de recente *Vitaliteitsbenchmark Centrumgebieden* (Goudappel-Coffeng, 2015), wordt ruimtelijke kwaliteit als een van de vier factoren beschouwd – de belevingsfactor – voor vitaliteit van Nederlandse steden.

Met de kwantitatieve benaderingen worden vaak facetten van de relatie tussen landschapselementen en vestigingsplaatskeuze of economische indicatoren onderzocht. Voorbeelden zijn de maatschappelijke kosten-batenanalyses (MKBA) of berekeningen van ecosysteemdiensten, zoals de effecten op gezondheid en arbeidsmarkt die de aanleg van een bos oplevert in de Amsterdamse wijk Bos en Lommer (KPMG, TEEB Nederland en Economische Zaken, 2012). Ook kwantitatief onderzoek naar landschapswaardering en happiness economics geven gerichte en onderbouwde inzichten, maar verklaren tegelijkertijd slechts delen van de relatie tussen landschap en gebruiker. Kwalitatieve studies zijn beter in staat de complexe verbanden te beschrijven, maar missen veelal de overtuigingskracht door het ontbreken van 'harde' bewijslast. Beide vormen van onderzoek hebben daarom onderdelen van de bewijslast geleverd voor de stelling 'landschap draagt bij aan het economisch presteren van een metropoolregio'.

Onze conclusie na het afbakenen van de begrippen en de analyse van kwantitatieve studies en internationale voorbeelden is dat een hoogwaardig vitaal landschap een voorwaarde is om hoogopgeleiden aan te trekken en vast te houden. De redenering hierbij is als volgt:

1. Metropolitane regio's schakelen om naar kenniseconomieën en concurreren wereldwijd met elkaar in het aantrekken van kennisintensieve bedrijvigheid (waaronder ook nieuwe maakindustrie);
2. Kennisintensieve bedrijven volgen het vestigingsgedrag van hoogopgeleide werknemers, terwijl deze hun vestigingskeuze onder meer laten afhangen van de kwaliteit van leven in regio's;
3. Voor het ontwikkelen en behouden van talent is bovendien een democratische publieke ruimte nodig, die sociale contacten en participatie ondersteunt en daarnaast segregatie tegengaat;
4. De aanwezigheid en beleefbaarheid van een divers en gewaardeerd landschap verhoogt de kwaliteit van leven in een regio. Veel metropolen zetten momenteel in op het verbeteren van die kwaliteit.

Dit betekent dat investeren in behoud, ontsluiting en ontwikkeling van het landschap een basisconditie vormt voor een succesvolle kenniseconomie en behoud van de internationale concurrentiepositie. Maar welke ruimtelijke instrumenten hebben we tot onze beschikking voor behoud en ontwikkeling van het landschap? En zetten we landschappelijke netwerken voldoende in ter ondersteuning van kennis- en mobiliteitsnetwerken? Tien verschillende metropolitane regio's bieden lessen en inspiratie.

VOORBEELDEN UIT 10 METROPOLITANE REGIO'S

De Nederlandse Deltametropool is in dit onderzoek vergeleken met 9 andere regio's van ca. 10 miljoen inwoners wereldwijd: de metropoolregio's van Rhein-Ruhr, Londen, Toronto, Rio de Janeiro, San Francisco, Parijs, Johannesburg, Milaan en Taipei. In de publicatie worden de cases geïllustreerd met historische en actuele beelden, kaartmateriaal van grondgebruik, landschapsbescherming en kennisintensieve clusters, en vergelijkende facts & figures. Bij het verbeteren van de kwaliteit van de leefomgeving worstelen deze metropolen vaak met dezelfde opgaven en oplossingsrichtingen, zoals:

1. Het realiseren van goede fysieke verbindingen tussen stad en land door middel van een aantrekkelijk en uitgebreid fiets- en wandelnetwerk, dat tevens cultureel erfgoed ontsluit en aanzet tot bewegen en minder autogebruik. Fysieke verbindingen zijn een voorwaarde voor de mentale verankering van het landschap in het hoofd van de stedeling;
2. Investeren in een groen-blauw raamwerk in en rond de steden, waarmee verschillende beleidsdoelen worden gerealiseerd (anticiperen op hogere waterveiligheid, verbeteren van de luchtkwaliteit en vermindering van CO_2 uitstoot, instandhouding en herbestemming van cultureel erfgoed, inpassen van toenemend stedelijk toerisme en de regionale recreatiebehoefte, en faciliteren van een toenemende behoefte aan lokaal biologisch geproduceerd voedsel). Investeringen in het landschap worden steeds vaker gedaan door een mix van publieke en private partijen;
3. Inrichten of verbeteren van regionale governance structuren, om te anticiperen op de ruimtelijke en sociaaleconomische uitdagingen van het groeiende metropolitane complex. Ontwikkeling en bescherming van het landschap behoort vaak tot de kerntaken van die regionale samenwerking, naast het bevorderen van de (kennis)economie. In alle onderzochte metropolen staat de sociale gelijkheid hoog op de regionale beleidsagenda, want een aantrekkelijke stad is een diverse stad. Toegang tot het landschap en de stedelijke arbeids- en woningmarkt is zowel een urgent probleem in het Johannesburg van na de apartheid als in de oververhitte vastgoedmarkt van San Francisco.

Bovenstaande opgaven worden aangepakt met verschillende ruimtelijke strategieën evenals interessante concrete initiatieven. De greenbelts en 'groene longen' van Londen, Toronto en Parijs zijn als planologische instrumenten al bekend sinds de industrialisering, maar zijn – soms in nieuwe vorm – nog steeds zeer relevant voor het behouden van landbouwgronden en natuur nabij de metropolitane centra. De realisatie van 700km Route der Industriekultur in het Ruhrgebied vormt een dragend langzaamverkeernetwerk dat landschappen en werelderfgoed ontsluit. En in San Francisco wordt door de overheid in samenwerking met het bedrijfsleven van Silicon Valley zwaar geïnvesteerd in de aankoop en ontwikkeling van bos en oude boomgaarden, waardoor 's werelds slimste regio ook één van de groenste metropolen is en blijft. Milaan herontdekt zichzelf als epicentrum van de Italiaanse eetcultuur en verbindt zich opnieuw met het agrarisch cultuurlandschap, waardoor tevens sprawl wordt tegengegaan. Voor ieder van de metropoolregio's begint het succesvol bouwen aan het landschap met het benoemen, erkennen en delen van de eigen specifieke ruimtelijk kwaliteit en intrinsieke waarde daarvan voor de stedeling.

SLEUTELS TOT SUCCES

De ontwikkeling van het metropolitane landschap en de economie hangen nauw samen. Consumeer het landschap niet eenmalig, maar zet het in binnen de mondiale strijd om talent. Een divers en gewaardeerd landschap verhoogt de kwaliteit van leven en draagt zo bij aan een solide basis voor economisch succes van regio's in een kenniseconomie. Hieraan kan na deze en voorgaande studies geen twijfel meer bestaan. Maar wat kunnen we hier in hoofdlijnen aan doen? Neem de kwaliteit van het landschap onbevreesd als vertrekpunt bij ruimtelijke opgaven. Ruimtelijke opgaven in de Deltametropool zijn vaak meervoudige opgaven. Tot dusver is het landschap vaak iets wat bij hoogstedelijke ontwikkeling 'gecompenseerd' of 'ingepast' moet worden. Binnen de context van de strijd om talent en een lerende economie begint de invulling van die meervoudige opgaven bij het radicaal verbeteren van de kwaliteit van het landschap als gezonde leefomgeving. Drie ingrediënten zijn daarbij onmisbaar: goed publiek en privaat leiderschap, een passende governance-structuur op regionale schaal en projecten die het landschap helpen ontwikkelen, behouden en ontsluiten.

De publicatie biedt onderbouwing, inspiratie en concrete voorbeelden bij elk van die drie ingrediënten. *Hoofdstuk 1 – The Big Leap* illustreert met voorbeelden hoe goed leiderschap een voorwaarde is voor het koppelen van landschap en kenniseconomie. Van verschillende metropolen wereldwijd komen voorbeelden aan bod van cruciale beslissingen van burgemeesters en andere bestuurders.
In *hoofdstuk 2 – Knowledge Habitat* worden de begrippen metropolitaan landschap, kenniseconomie en quality of life verder uitgewerkt. Met behulp van bestaand onderzoek wordt de relatie van gebruiker en landschap kwantitatief en kwalitatief bekeken.
In *hoofdstuk 3 – Lessons from International Cases* worden lessen getrokken uit regio's van 10 miljoen inwoners die qua welvaartsniveau vergelijkbaar zijn met de Nederlandse Deltametropool. Onze uiteengelegde landbouw-, fiets- en watermetropool kan zich op meerdere niveaus aan deze voorbeelden spiegelen en de ervaringen benutten in zowel politiek, beleid en concrete opgaven.

Natural areas and heritage have long been regarded as threats to the economic development of the industrial city, or as means to compensate for its impact. In the knowledge economy, however these elements may be key factors for success, especially if we make them accessible, develop them at a high quality and guarantee their protection.

Rio de Janeiro
PHOTOGRAPHY: FLICKR @ FRANK KEHREN

DO WE GET THE MOST OUT OF IT?

PHOTOGRAPHY FLICKR @DEFENSE LINE AMSTERDAM

Although the Dutch Deltametropolis has a rich man-made landscape, formed by centuries of agriculture and trade in the estuary of the river Rhine, the region doesn't take full advantage of its landscapes in the global battle for talent. The metropolitan landscape has the potential to offer a high quality of life to residents, needed for a competitive knowledge economy. At the same time, more intensive use and development of the landscape might be an important step in its financing and preservation.

LIGHTHOUSE ISLAND, DEFENSE LINE OF AMSTERDAM
The Netherlands

MICHAEL HOUGH, LANDSCAPE ARCHITECT IN TORONTO, 1990 (IN HIS BOOK *OUT OF PLACE*)

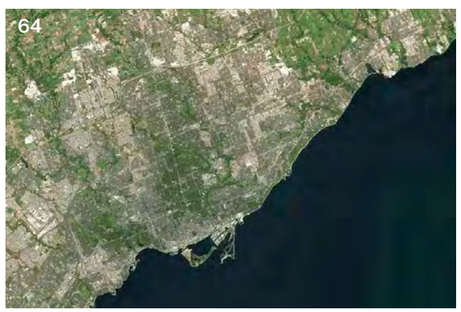
"CHANGING TIMES CREATE CHANGING LANDSCAPES"

PHOTOGRAPHY: FLICKR/SEAN MARSHALL

The ravines of Toronto have always been a key element in its development. The availability of waterpower and transport made the ravines ideal locations for the first industries in the city. In the age of the automobile, Toronto's ravines accommodated the arterial infrastructures that connected the city to the rapidly growing region around Lake Ontario. Today, the ravines provide the storm water capacity needed to deal with climate change and add to the quality of life of many Torontonians.

HIGHLAND CREEK
Toronto, Canada

CONTENTS



São Paulo, South America's largest metropolis, shows how city rankings are incapable of describing the quality of life of the metropolitan landscape in all its diversity. São Paulo has top-of-the-bill parks, residential areas, cultural facilities and a famous cycling plan, started by the current Mayor Haddad. At the same time, life expectancy is threatened by air pollution and the quality of life is compromised by congestion and insufficient public transport.

PHOTOGRAPHY (INSIDE OUT): FLICKR © PETER PORTO, GUSTAVO GOMES, MERTEN NEFS, FRANCISCO ANZOLA

The quality of metropolitan landscapes is a blind spot for many regional economic strategies

The most obvious factors, such as tax regime, (knowledge) infrastructure, safety and education, which attract highly skilled workers that in turn boost metropolitan economies, are already sufficiently developed in western countries. This makes competition based on these elements a moot point. The so-called 'soft' factors, like landscape, heritage and quality of life, are gaining importance on the policy agenda. They are no longer considered 'nice to have', but necessary preconditions for the further growth of the knowledge economy within metropolitan regions.

A global metropolitan revolution is unfolding. In Madrid, the royal palace gardens are visible and accessible again thanks to a deliberate decision by Mayor Alberto Ruíz Gallardón to add to his city's attractiveness, by bringing a key section of the ring road underground and covering it with a park. While London was struggling with its livability, 'Red Ken' Livingstone decided to introduce the 'congestion charge', a license plate toll system to enter central London. Not only did his right-wing successor Boris Johnson continue this policy, he also created the 'All London Green Grid' in 2011 and introduced cycling super highways in 2015. The decisions being made by those in charge of metropolitan regions illustrate the current change in paradigm regarding the attracting of highly skilled workers and innovative companies: from profit-driven, built infrastructure investments to enhanced metropolitan landscapes and cultural heritage. Despite political color or the perspective from which it is viewed, be it cultural, wellbeing, ecological or economical, investing in quality of metropolitan landscapes is becoming a logical and popular choice.

The metropolitan landscape is closely linked to economic development. During the period of industrialization, available space for housing, production locations and logistics largely determined the growth of cities. In the current transition towards a knowledge-intensive economy, the quality, identity and accessibility of the metropolitan landscape is a crucial factor in attracting talent and keeping it in the region. Therefore metropolitan landscapes contribute to the long-term economic success of cities. While landscape and quality of life are not the winning or only factors in the global competition between metropolitan regions, they can very well serve as factors for losing this race. For example, in Beijing, highly educated workers are leaving the city in high numbers due to the congestion and the lack of green areas, which heavily contribute to the detrimental air pollution.

This publication aims to illustrate how the quality of a metropolitan landscape contributes to the economic success of the region by analyzing and drawing comparison from ten international case studies. It has two ambitions: first, to share examples of how this relationship is addressed in metropolitan regions from around the globe in the hope of inspiring policy makers worldwide, and second, to provide concrete tools for metropolitan regions in the Netherlands, which currently strive to strengthen their position in the battle for talent.

In this research, we take the widest possible definition of the metropolitan landscape. This definition is not limited to green rural areas, but includes a composite of urban areas, places of heritage, water, (slow) infrastructure and brownfields (European Landscape Convention, 2004). We consider a successful knowledge economy as defined by more than just economic and physical growth. For example, many metropolises have successfully attracted talent and capital over the last decades, while at the same time becoming unaffordable for middle and lower income groups. Ultimately the decline of cultural diversity and tolerance – qualities highly valued by Richard Florida's 'creative class' and key qualities of his home city Toronto – may hamper the competitiveness of those cities. Recently Saskia Sassen criticized large-scale buying of real estate by foreign investors in cities like London for a similar reason: "… we will lose this type of [diverse cultural] making that has given our cities their cosmopolitanism." If anything can inspire and bind social groups together, it is a well-developed, all-around outstanding metropolitan landscape. The second half of this publication shares excellent examples of this from ten metropolitan regions.

The metropolitan landscape reveals history and creates identity, especially when it is used and coproduced by citizens. Green space systems and reuse of historical buildings enhance social coherence and participation.

The Evergreen Brick Works, a community park for recreation, culture and urban agriculture in Toronto, organized in an old brick quarry in the city's greenbelt, is a good example of this instrument.

EVERGREEN BRICKWORKS
Toronto, Canada

What values does the metropolitan landscape provide in the global battle for talent?

Our hypotheses are:

Developed countries, including the BRICS, have experienced strong urbanization and the forming of new metropolitan landscapes, especially since the 1980s. These countries are turning into knowledge-based economies, in which human capital will be a crucial element. Therefore, we consider them forthcoming players in the global battle for talent.

The landscape is no longer used for only strategic purposes or as a resource for production and urban expansion. As a provider of a healthy and attractive living environment, the metropolitan landscape will be one of the greatest assets in the global battle for talent, not only to attract highly skilled workers, but also to keep them. Metropolitan landscapes are moreover, a source of corporate and institutional identity that is important for the competitiveness of companies and regions.

The development and protection of metropolitan landscapes may be a better investment in the knowledge economy than the (already heavily present) increasing of infrastructure or favorable tax incentives (internationally criticized). The metropolitan landscape has the potential to serve as a backbone for economic strategies. Vice versa, the emerging knowledge economy might be an incentive to counter the current trend of disintegration and fragmentation of such landscapes worldwide.

This publication is aimed at politicians, policy makers and planners. We have gathered evidence and illustrations on different levels in the following sections.

Part 1 – The Big Leap

This section gives a brief overview of iconic decisions and statements made by mayors and other politicians in charge of metropolitan areas. Which decisions – especially those that lead to tangible results – are inspirational for decision makers in these areas?

Part 2 – Knowledge Habitats

This section discusses in depth how the living environment is linked to economic success and the valuation methods for the metropolitan landscape, which could help further operationalize this relationship. What evidence is there to support the impact of landscape and heritage on the economic success of a region and its attractiveness for highly skilled workers? Which landscape factors are crucial in this relationship?

Part 3 – Lessons from International Cases

This section combines the best practices of ten regions of ten million inhabitants around the world: Rhein-Ruhr, Germany; London, United Kingdom; Toronto, Canada; Rio de Janeiro, Brazil; San Francisco Bay Area, USA; Paris, France; Johannesburg, South Africa; Milan, Italy; Taipei, Taiwan and finally, Deltametropolis, the Netherlands. What can we learn by taking a cross section through these metropolises and which specific policy instruments and projects from each region are exemplary?

Johannesburg demonstrates how the identity of a metropolitan landscape is influenced by 'foreign' elements. More than the colonial architecture, the suburbs of 'Joburg' are famous for the colorful imported Jacarandá trees. The center and upcoming neighborhoods are known as a cultural melting pot, including manifestations of musicians and visual artists from many countries. Artificial hills of mine dust following many decades of mining have transformed the landscape of Johannesburg. The painted cooling towers of the former power station in Soweto link the local community to a globalized event, the 2010 World Cup.

PHOTOGRAPHY (INSIDE OUT): FLICKR © MARTTE SWART, WIKIPEDIA © MICHAEL LORNE

Interviewees

TESTING THE HYPOTHESES
It was impossible to discover the crucial trends of landscape development and knowledge economy in the international cases without talking to people from the area. Policy documents are endless and give us only an idea of what a metropolis wants for its future – often the same things, obviously. How policies are translated into concrete actions and projects can sometimes be learned from the newspapers, but especially by talking to policy makers and practitioners. Perhaps the most important aspect of all the interviews, mostly performed via a Skype connection, is that we were able to discuss our hypotheses and ideas regarding the contribution of the metropolitan landscape to the knowledge economy. These discussions have sharpened and enriched the research a great deal.

Jane Wolff
Associate Professor of Landscape Architecture

Daniels Faculty of Architecture, Landscape, and Design of the University of Toronto
Canada

Interview:
15 July 2015

Paul Lecroart
Senior Urban Planner

Institut d'Aménagement et d'Urbanism de la Région Île de France, Paris
France

Interview:
5 November 2015

Yung-Ching Tang
Researcher

Department of Economic Development, Taipei City Government, Taipei
Taiwan

Interview:
10 June 2015

Carolyn Woodland
Senior Director of Planning, Greenspace and Communications

Toronto and Region Conservation Authority
Canada

Interview:
4 November 2015

Kerry Bobbins
Environmental Policy Researcher

Gauteng City Region Observatory, Johannesburg
South Africa

Interview:
25 October 2015

Chien Szu-Min
Associate Research Fellow

Research Division III of Taiwan Institute of Economic Research, Taipei
Taiwan

Interview:
10 June 2015

Reimer Molitor
Executive Director

Region Köln-Bonn, Köln
Germany

Interview:
31 August 2015

Guilherme Lassance
Professor of Urban Planning

Faculty of Architecture and Urbanism, Federal University of Rio de Janeiro
Brazil

Interview:
8 July 2015

Stephen Narsoo
Coordinator of the Joburg 2040 Strategy

Independent Consultant, Johannesburg
South Africa

Interview:
15 September 2015

Sherman Wu
Deputy Engineer

Urban Development Department, Taipei City Hall, Taipei
Taiwan

Interview:
10 June 2015

Michael Schwarze-Rodrian
Department Director

European and Regional Networks Ruhr, Essen
Germany

Interview:
22 October 2015

Wagner Rufino
Phd Candidate Regional Planning

Faculty of Architecture and Urbanism, Federal University of Rio de Janeiro
Brazil

Interview:
15 June 2015

Guy Trangoš
Urban and Environmental Policy Researcher

Gauteng City Region Observatory, Johannesburg
South Africa

Interview:
25 October 2015

Wei-Ju Huang (Astor)
Assistant Professor

National Cheng Kung University, Taipei
Taiwan

Interview:
10 June 2015

Max Nathan
Researcher

University of Birmingham and the London School of Economics
United Kingdom

Interview:
10 June 2015

Annie Burke
Deputy Director

Bay Area Open Space Council, San Francisco
United States

Interview:
2 September 2015

Luisa Pedrazzini
Director of Landscape Structure

Department of Environment, Energy and Sustainable Development of the Lombardy Region, Milan, Italy

Interview:
30 September 2015

Adriaan Geuze
Professor of Metropolitan Landscape Architecture

Wageningen University
The Netherlands
(Part of the research team)

Jonathan Manns
Director

Colliers International, London
United Kingdom

Interview:
1 June 2015

Tracey Grose
Vice President

Economic Institute, Bay Area Council, San Francisco
United States

Interview:
20 July 2015

Shih – Ming, You
Deputy Commissioner

Department of Finance, Taipei City Government
Taiwan

Interview:
10 June 2015

Paul Gerretsen
Agent

Deltametropolis Association, Rotterdam
The Netherlands
(Part of the research team)

LANDSCAPE IS CORPORATE IDENTITY

The Adobe Creek in Palo Alto, California, was the inspiration of Charles Geschke and John Warnock for when they started their software company Adobe Systems in December 1982. Made from earth and organic material, 'adobe' was one of the earliest known building materials in the region. Based in the San Francisco Bay Area (San Jose) with over 13,000 employees worldwide, the company positions itself as a sustainable enterprise. It is among the larger contributors and supporters of the Peninsula Open Space Trust (POST), which buys and maintains land to protect the famous redwood forests and creeks in the region. This way, Adobe guarantees the quality of life for its employees in the future, as well as the preservation of the creek that gave the company its name. One of Adobe's inventions, the PDF, has been used over 50 billion times worldwide. The company claims that a digitally signed PDF has a 91% lower ecological footprint than the same document would on paper.

PHOTOGRAPHY FLICKR.COM

ADOBE CREEK
Palo Alto, California

PHOTOGRAPHY (INSIDE OUT):
FLICKR © EMBARQ BRASIL: RICARDO CASSIANO | WWW.RIO.RJ.GOV.BR

Few metropolises identify so strongly with their landscape as does Rio de Janeiro. The mountains by the sea, the Christ the Redeemer statue, the vegetation and wildlife – all of these elements are frequently found in the corporate and institutional logos in Rio de Janeiro. The Sugarloaf Hill (Pão d'Açucar in Portuguese) is not only a symbol for Rio, but also the logo of the largest supermarket chain in Brazil.

PART 1

The Big Leap

There is no level playing field in the global battle for talent between metropolitan regions. Policy makers cannot simply follow a certain set of rules and achieve the same successes as in other regions. On the contrary, each place has its own potentials, assets and challenges. In many cases, political courage and leadership turns out to be critical to the recognition and use of such potentials and assets, or in the turning of a disadvantage into a positive opportunity (see industrial heritage and brownfields of the Rhein-Ruhr region).

On the following pages, we quote visionary politicians and other metropolitan decision makers, regarding strategic landscape decisions in the context of the battle for talent.

London's Green Grid

Boris Johnson
Mayor of London
(*Green infrastructure and open environments: the all london green grid*, 1 March 2012)

"The best way of valuing and managing green infrastructure is to see it as a network spreading across the face of the capital. We have to look on the green grid as an asset, valued for the whole range of social, health, environmental, economic and educational benefits it brings to London. It needs the same kind of protection, investment and innovation in design and management as other more familiar types of infrastructure. As a network, it can provide links and connections between places, encouraging walking and cycling, highlighting landscape and heritage and supporting the local economy. By providing informal places for people to visit and interact, it can bring Londoners together and lend something of the village to the metropolis."

Listening to People

Ed Lee
Mayor of San Francisco
(*Public debate on modern urban planning*, 22 October 2014)

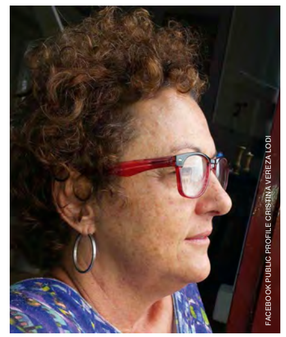
"I want a city that responds to people's expectations, whether it is transportation, schools or entertainment. All of these combined keep the talent of companies here in the city. I listen very carefully. And I truly believe that if the talent of these companies desires to be in the city, my job is to meet their challenges. The talent that is coming out of universities wants to be part of a successful urban setting."

The Green Strategy

Jennifer Keesmaat
Chief Planner of Toronto
(*Interview TVO*, 23 February 2015)

"I think it is really important to continue to reinforce the green belt as the critical part of not only our ecology but also the economy of our region. […] No exceptions! Keep these lines firm! Green belts around the world have been successful when they had integrity. If we continue to provide certainty with respect to our land economics in the region it is critical to continue to inforce and reinforce the green belt and the hard line of the green belt as being an important policy direction for the province. […] This is about access to food on the long term, it is also about shortening our commute times and avoiding sprawl that will be detrimental to the region. But it's also about livability and quality of life."

Monument to Quality of Life



Maria Cristina Vereza Lodi
Head of the Rio World Heritage Committee
(*Unesco world heritage site management plan*, 2014)

"The [Unesco World Heritage] site listed in the City of Rio de Janeiro is a unique example where the relationship between people, city and nature remains balanced and acknowledged as a monument to quality of life and to the joy of living in a metropolis. This tropical landscape, built deliberately and determinedly within an exuberant nature, was constituted through singular historic and cultural processes of shared human values, from the Portuguese colonization to the present day, resulting in an exceptional ensemble of public areas, historical gardens, parks and natural monuments, whose scientific significance, formal qualities as much as symbolic cultural associations grant the city's outstanding universal value, worthy of being shared by all humanity. The landscape of the city of Rio de Janeiro is its most valuable asset, responsible for its renown as a world icon and for its insertion in the country's touristic economy, generating employment and income."

Industrial Beauty

Johannes Rau

President of Germany from 1999 to 2004
(*30th anniversary of the German National Committee for Monument Protection*, 12 August 2003)

"Monuments and entire complexes, historic city centers and reused buildings from the industrial past contribute to urbanity and quality of life in our cities. At a time of flexibility, which threatens to make many people footloose, heritage creates a home, unity and identity. Monuments open your eyes to heritage and the unique aspects of our culture."

Where is the Gold?

David Makhura

Premier of Gauteng
(*Interview YouTube*, 1 October 2015)

"West Rand used to be the mining hub of Gauteng, the city of gold. But mining has significantly declined as a key driver of the economy, so we are looking now at tourism. The Maropeng [Cradle of Humankind] site, as a world heritage site, is the new gold for us. We would like to invest in the infrastructure there. Every visitor to South-Africa must say: 'I need to go to Maropeng to see where we all come from.' […] We are also engaging the mining sector to look for opportunities in new industries. We want to use this land for the renewable energy industries. On part of the land we may not be able to build houses but we can put up solar farms. So that's what we are looking for: renewable energy, tourism and new economic nodes."

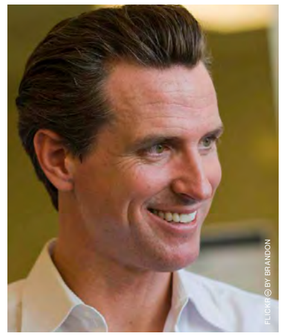
Central Park

Ahmed Aboutaleb

Mayor of Rotterdam
(*NPO2, Dutch Television*, 26 August 2015)

"The green area in between Rotterdam and The Hague, Midden-Delfland, should have the status of a metropolitan park, just like Central Park in New York. This means it cannot be built up with houses and industrial sites. Instead it should remain open for the city dwellers to enjoy."

Livable City



Gavin Newsom

Mayor of San Francisco
(*The Clean and Green City Summit*, 28 June 2005)

"We have an exciting new set of programs under the Livable City Initiative. We are bringing more public and private resources to city streetscapes and medians. We are working on new legislation to promote best practices in greening and sustainable urban design through the Better Streets Policy, the Sidewalk Landscaping Permits, and others. […] We are also working to improve the quality of the city's architecture and urban design, as well as to address maintenance issues. There is still much to be done. However, we will use what we learned at the Summit to help us realign our resources toward making San Francisco a World Class City."

Unusual Geography

Lin Chung-Ch.

Director of Urban Regeneration Office,
Taipei City (until 2015), 2014

"Taipei is a small and compact metropolis where people enjoy a wide range of exciting urban lifestyles and safe, convenient services. Taipei is a rich and diverse city – with an unusual geography – mountains, river and sea are nearby and with biological habitats covering tropical, subtropical, temperate and colder climates. Taipei is home to the R&D headquarters of several multinationals and at the same time its streets and alleys are filled with all kinds of independent micro start-ups. Taipei has shown the world its capacity to curate and mobilize large scale events like the 2009 Summer Deaf Olympics and the 2010 Taipei International Flora Exposition. Coming up in 2016 is World Design Capital and in 2017 the Universiade. These will test whether Taipei, in addition to organizing international mega events, can also use these to facilitate positive urban transformation and evolution."

What Paris Expects

Anne Hidalgo

Mayor of Paris (2015)
(*Paris-Saclay Campus press kit*, 24 September 2010)

"Along the quays, boats will be moored, offering a floating market of regional organic products, a tavern, a co-working space ... On the banks we install light and detachable equipment, refreshment stands, games for children, petanque courts, small city stages - used 24/7 - for sports, playing basketball ... But also street furniture to sit and watch the scenery, all quite simple. That's what the Parisians expect."

Dynamic Heritage

Bill Mauro

Minister of Natural Resources and
Forestry of Ontario since 2003

"We are working to protect Ontario's rich biodiversity for future generations while we continue to promote economic opportunities and outdoor recreation. We will provide leadership and delivery in the management and protection of natural heritage in Ontario. This includes identifying significant natural heritage features and landscapes and determining effective ways to protect them, including the establishment of provincial parks and conservation reserves; policy to influence the development of municipal official plans and bylaws; identification and confirmation of areas of natural and scientific interest; planning and management of natural heritage systems; providing sustainable outdoor recreation opportunities and education on natural heritage; delivery of the Ontario Parks program, including provincial parks operations and providing tourism opportunities and research."

After the Expo

Giuliano Pisapia

Mayor of Milan, 2015

"We look positively on the interest after the Expo 2015: 54% of the land will remain green, the future will be decided among local and national institutions."

WHAT WILL HAPPEN TO ‘WORK’ IN THE KNOWLEDGE ECONOMY?

R&D on audio at Philips Research in Eindhoven, ca. 1985

PHILIPS NATLAB
(Eindhoven, NL)

According to Oxford University, 47% of US jobs are at risk of being replaced by computers and robots in the next two decades. Especially low wage and lowly educated work in transportation, administration, production and even services. Information-intensive work is increasingly out-sourced to cheap labor countries. Generalist work requiring social intelligence, such as management, finance, education, healthcare, arts and media, is not likely to be automated. Creative and social skills will be most necessary.

The future of employment: How susceptible are jobs to computerization
(Frey and Osborne, 2013)

CATHEDRALS OF INDUSTRY

“The Ruhr has experienced the same structural difficulties faced by similar “rust belt” regions elsewhere, but it has risen to the challenge of reusing its redundant industrial sites in a very different way. Instead of bulldozing them, many have been preserved in acknowledgement of the historical significance and tourist potential of these so-called ‘cathedrals of industry’. Today, a 400km road route and a well-signposted 700km cycle trail form the Route der Industriekultur, linking former steelworks, coal mines and slagheaps to offer a fascinating insight into the technology of heavy industry, with a healthy injection of contemporary culture.”

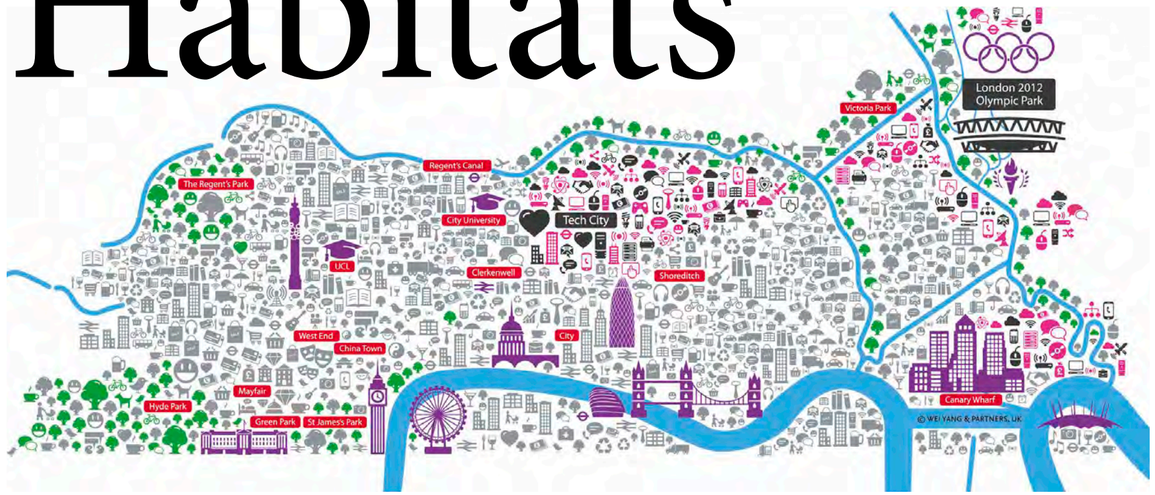
THE ROUGH GUIDE, 2015

PHOTOGRAPHY (INSIDE OUT):
FLICKR © MICHAEL ZOETNET, BILL STILWELL

Contrary to Rio de Janeiro, the metropolitan identity of Rhein-Ruhr lies not in its natural beauty, but rather in the spirit of collaboration, diversity and innovation. Corporate and institutional logos reflect this spirit and the polycentric nature of Rhein-Ruhr, featuring networks, patchworks, clusters, grids and arrays. The city-logo of Köln makes explicit reference to the river Rhine and the Dom.

PART 2

Knowledge Habitats



East London Tech City WEI YANG & PARTNERS

Flora Expo, Taipei
BIO-ARCHITECTURE FORMOSANA | WWW.BIOARCH.COM.TW

1. THE ROLE OF THE METROPOLITAN LANDSCAPE IN THE DEVELOPMENT OF A KNOWLEDGE ECONOMY

What role does the landscape of a metropolitan region play in the increasing of economic competitiveness of the area as a whole? Before delving further into this relationship, we first offer an explanation for both terms.

METROPOLITAN LANDSCAPE

The metropolitan landscape is a place where ecological, economic, cultural, historic and aesthetic values overlap and provoke conflicts. Here, economic growth and innovation are concentrated. In order to understand their relationship to the metropolitan landscape as a whole however, a more holistic definition is needed. Geographers and sociologists have developed a broad terminology to describe the types of 'cities' found within the metropolis, including the executive city or financial district, tech city or valley, downtown or cultural district, Zwischenstad, edge city and post-suburbia, as well as the new 'metropolitan society' with its information age, network society, space of flows, global city, global center and periphery, global labor force, competition among cities and the decline of the nation state (Castells, Harvey, Sassen, Davis, Soja, Sieverts). Yet a single, clear definition for the metropolitan landscape that addresses all of its inherent qualities has yet to be given. This 'gap' has led to an association of the metropolitan landscape with complexity, fuzziness, fragmentation and multi-functionality (Harms, Smeets, Van der Valk et al, 2004).

Castells offers a somewhat more holistic definition that begins to leave the notion of fragmentation behind: "The metropolitan region is not just a spatial form of unprecedented size in terms of concentration of population and activities, it is a new form because it includes in the same spatial unit urbanized areas and agricultural land, open space and highly dense residential areas: there are multiple cities in a discontinuous countryside. It is a multi-centered metropolis that does not correspond to the traditional separation between central cities and their suburbs" (Castells, 2010). Although Castells dismisses the notion of fragmentation and highlights its continuity, this definition still fails to recognize the more subjective qualities that the metropolitan landscape provides to those who live and work there and might explain the presence of wealth, talent and heritage.

There are some exceptions that begin to describe the qualities and meanings associated with the metropolitan landscape. In their book *Metropolitan Landscape Architecture* Steenbergen and Reh (2011) explain "the modern city is not separated from its environment but rather forms an expanding network, embedded in a field of mostly urban forces. This force field canceled the separation of urban and non-urban, creating an important condition for the modern metropolis and the metropolitan landscape. Not only does the growing city in fact devour the surrounding landscape; in a more profound way the whole cultural landscape and nature become in their functioning submitted to the urban force field and the organization of the urban system."

West8 (2010) offer a definition of metropolitan landscapes from a Dutch perspective: "Different from Paris or London, the urbanized Netherlands forms a unique spread-out metropolis. This Dutch Metropolis […] is socio-economically speaking very vital and promising. For the quality of life of this metropolis the intertwining of the Dutch landscape is crucial. Not only from the perspective of agriculture and food production; natural and cultural history, but especially also as an anchor for the urban dweller. […] How can its quality be enhanced and experienced?" So there's an explanation, but also a warning: "Is the 'messing up' of the landscape a natural phenomenon that one can only accept, or can planning create anchor points against further demise and fragmentation?"

Generally speaking, both researchers and planners have some catching-up to do in regards to describing the qualities and meaning of landscapes as metropolitan landscapes. Acknowledging the prematurity of this concept, we build from a definition laid out at the European Landscape Convention (Florence, 2004) that provides a wide definition of this phenomenon: "Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" and covers the domains of "natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as everyday or degraded landscapes." Our definition therefore focuses on large landscape structures, networks and units that can be reached from the metropolitan centers within an hour and a half. This is most equivalent to the commonly used 'regional scale'. This composite spatial system includes water bodies and waterfronts, infrastructure, and urban, suburban and rural areas, hereby dissolving the urban-rural dichotomy. In addition to this, we pay special attention to non-physical characteristics of the landscape, such as culture and heritage. This definition allows us to address the metropolis as a whole, appreciating both its physical variety and continuity, as well as less objective qualities that define the living environment.

KNOWLEDGE ECONOMY

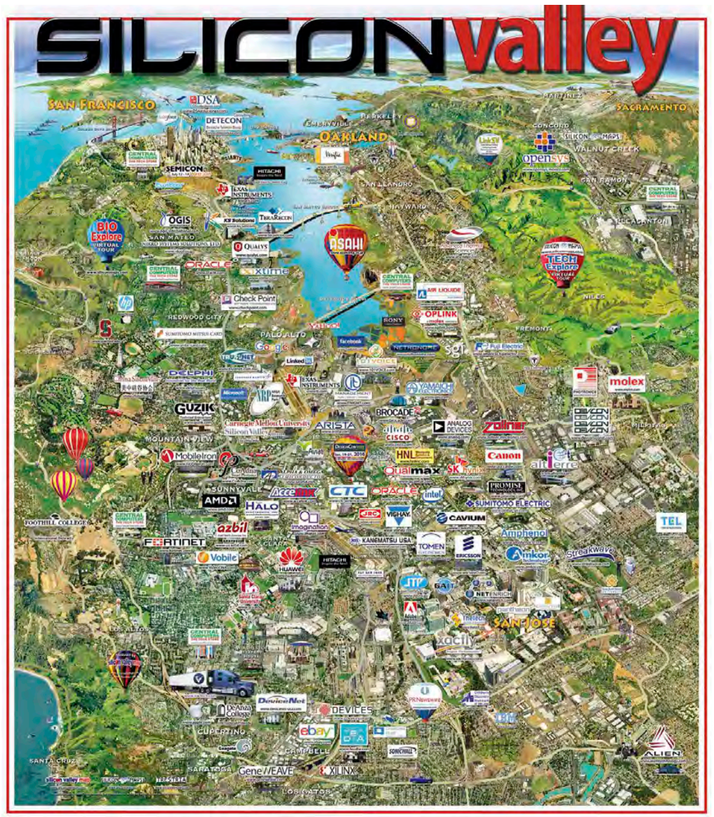
In the global competition between metropolitan regions, attracting innovative and fast-growing businesses is increasingly essential. Financial instruments such as venture capital, tax incentives, public-private partnerships, and workforce training have proved effective in the past. In some cases, such as London and New York, profit-driven policies aimed at attracting only wealthy citizens led to unaffordable prices and gentrification. However, in light of the upcoming knowledge economy, it might be more prudent to attract talent, rather than wealth. The reliance of knowledge-intensive companies upon the availability of highly skilled workers is becoming increasingly important. In the United States, for example, this necessity is even more important than access to customers and suppliers (Morris, 2014). In fact, according to geographer Richard Florida (2002, 2008) these companies have no choice but to follow the talented workforce, which most often chooses to locate to urban areas where the highest quality of life can be found. The result is an increased awareness for creating the best 'habitat' for knowledge workers among current business developments and spatial policies.

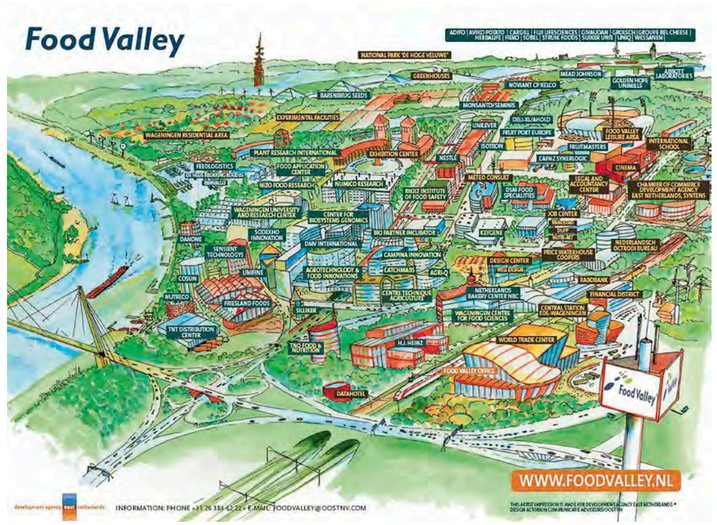
We therefore recognize a significant correlation between the qualities and features of the metropolitan landscape and the knowledge economy. We see this relationship fulfilled in the attractiveness of a metropolitan landscape and the effects of this quality to draw in knowledge-intensive sectors and workers. We do not focus on competition between sub-regions of the same metropolis; in the global battle for talent it is rather a question of how sub-regions can work together and complement each other. We consider research and development (R&D), science and technology (including industrial design, innovation and new forms of manufacturing) as knowledge-intensive sectors. We recognize that the notion of work itself is also changing, driven by technology and economic forces. Frey and Osborne (2013) expect 47% of jobs in the United States will be replaced by machines over the next two decades, especially those jobs which are now occupied by lower educated and therefore lower wage earning persons. They write: "While nineteenth century manufacturing technologies largely substituted for skilled labor through the simplification of tasks, the Computer Revolution of the twentieth century caused a hollowing-out of middle-income jobs. […] Our findings imply that as technology races ahead, low-skill workers will reallocate to tasks that are non-susceptible to computerization – i.e., tasks requiring creative and social intelligence." Even though concrete implications of this for the metropolitan landscape are at this moment not directly measurable, we can strongly assume that spaces for meeting, interaction and recreation, as well as social equality, will be of the essence in the future of the metropolitan region. In the light of these developments, it remains questionable whether the knowledge economies can keep up the rate of innovation and growth the way the industrial economy did, according to Robert Gordon in his recent book *The Rise & Fall of American Growth* (2016).

As mentioned in the introduction, there is a tension between attracting a highly skilled workforce and the wellbeing of other social groups. We make the assumption that all social groups benefit from the landscape qualities that are aimed at attracting the highly skilled. In fact, studies in the United States (Deller et al, 2008) show that investments in accessibility to recreational amenities are associated with economic growth, while investments in high-end facilities such as golf courses, tennis courts and recreational houses do not have this effect.

QUALITY OF LIFE

"Quality of life, though not always the first consideration in deciding where to start a business, can be the 'X factor' that differentiates two competitive metro areas" (Dan White, Moody's Analytics, Q2 2014). Based on this fact, it is no surprise that happiness economics and quality of life assessments are upcoming fields in research. Related to this is the question of when location choices are made. Quality of life seems to have a large effect on startups: 80% of the founders already live in the same city for years and start their business nearby 'in their basement' (Morris, 2013). After the startup phase, few companies move to another region.





The various 'tech valleys' around the world demonstrate the connection of innovation and the metropolitan landscape where it thrives. Dutch universities and technology campuses aspire to become places like the famous North-American valleys: Delft University of Technology (MIT by the River Schie), Vrije Universiteit Amsterdam (Harvard at the River Amstel), Wageningen University (Food Valley).

What exactly do we mean by quality of life? Clearly, quality of life has both objective and subjective dimensions – both quality generated by the physical living conditions and perceived quality (Lawton, 1991; Nefs et al, 2013). Affordable housing prices and availability of transport options, as well as public space design are objective qualities. Dan White includes crime rates, educational attainment and poverty, and access to recreation. The relationship between economy and quality of life also works both ways. For instance, the rise of the creative class is seen as one of four global trends that foster the integration of heritage in urban management (Corten et al, 2014). It is good to keep this reciprocity in mind. With regard to quality of life in general, White affirms that it "can be both a cause and an effect of higher business formation rates and economic development" (Dan White, Moody's Analytics, Q2 2014).

Recently, urban heritage has already been connected to highly skilled workers, for example by Corten's book *Heritage as an Asset for Inner-city Development – An Urban Manager's Guide Book* (2014). He writes: "Heritage plays an increasing role in the evolution of the present city. It is an important factor for new city-dwellers, emergent businesses and creative industry to settle." Paul Meurs continues in the same publication: "After the 1970s […] the seeds were sown for the subsequent economic success of historical cities in regard to tourism, entertainment and the development of high-quality living conditions. […] Ambience, character and identity are the success factors of our urban areas, with an attractive historical inner city making a considerable contribution to a vital living environment for residents, the business community and visitors." It can be argued that similar benefits are provided by (cultural) landscapes of strong character.

The idea of having a productive landscape that can be enjoyed at the same time is not new. Rural estates, such as those in The Netherlands in the 17th century, were responsible for feeding part of the urban population while offering culture and leisure to the elite. The quality of life of these rural estates, closely linked to urban life, may serve as an inspiration for future development of the metropolitan landscape. It is the starting point of an ongoing research by Professor Adriaan Geuze at Wageningen University, called Dutch Utopias. Nowadays, many parts of the countryside near the urban centers are more productive than ever, yet not always an attractive place for leisure.

2. SUPPORT FROM EMPIRICAL STUDIES

The specific relationship between landscape quality and the attracting of highly skilled workers has yet to be empirically studied.

There does however exist a large body of knowledge that – when taken together – gives strong reason for viewing the landscape as a key factor to economic growth. For instance, Janssen (2011) states that business follow where highly educated workers live, and not the other way around. Florida (2008) expects that mega regions like the Dutch Deltametropolis will become economic hotspots, more so than countries or cities. In that case, a high quality living environment complete with cultural heritage, recreational opportunities and attractive residential areas will be key elements in attracting the increasingly mobile knowledge worker.

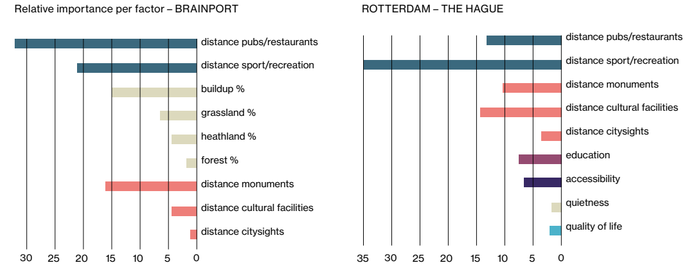
Two existing studies, by Marlet and Poort (2005) and Deller at al. (2008), provide empirical support for our central hypothesis. The first states that the proximity of nature is one of the factors that explain in which municipalities the creative class grows. The second quantified the relation between economic growth and the presence of amenities in U.S. counties. Their results provide strong evidence that the most robust growth in the 1990s occurred in counties that were endowed with high levels of amenities, in particular recreational landscape sites that were easily accessible.

Like many countries, the Netherlands is currently shifting towards a knowledge-intensive economy with an increase in the number of highly educated persons. From an international perspective, the Netherlands is among the world's most competitive knowledge economies (World Bank, 2012). Moreover, the scientific research created by Dutch scientists and universities is similarly highly ranked. Fortunately, the Dutch government has the ambition to increase the current prominent position of the research sector (Regeerakkoord, 2013). The creative sector, which generates many knowledge-intensive jobs as well, began to witness an increase in the pre-recession period. Its size, relative to the rest of the Dutch economy, is comparably large when seen from an international perspective (Florida, 2007). The observation made by the Netherlands Scientific Council for Government Policy (WRR) that the presence of human capital makes the difference in economic growth between regions and nations (WRR, 2013) is of great importance. In correspondence to this, the latest Dutch coalition agreement mentions that research and innovation are key factors for future welfare (Regeerakkoord, 2013). On the basis of these observations, we make the assumption that highly skilled, creative workers will be of increasing importance in the post-recession economy and that attracting and keeping such a workforce will be a key factor for future economic growth.

We have yet to find studies that explicitly quantify the correlation between the potentials of the metropolitan landscapes and highly skilled workers, or changes in either, for the Dutch situation. However, various studies provide circumstantial evidence, indicating for example

Location factors for knowledge-intensive companies

Brainport Region vs Rotterdam – The Hague Metropolitan Region (NL)
Prediction of highly skilled company locations



SOURCE: ***ATTRACTING THE ATTRACTIVE*** (2015), A RESEARCH BY MASTER STUDENTS OF GEOGRAPHIC INFORMATION TECHNOLOGY AT WAGENINGEN UNIVERSITY, COORDINATED BY AREND LIGTENBERG (WAGENINGEN UNIVERSITY) AND MERTEN NEFS (DELTAMETROPOLIS ASSOCIATION).

that highly educated, creative workers seem to prefer being in the metropolitan landscape, while businesses settle in regions where highly educated, creative workers wish to be. One of the supporting studies comes from Janssen (2011), who states that highly educated people tend to value nature and culture more than the average person. Case studies performed by the LEI also show that visitors to various agricultural landscapes in the Netherlands are relatively highly educated. Another example is a regional case study on Dutch peat meadow areas, showing that many highly educated people appreciate such landscapes (CPB, 2014). Furthermore, it appears that highly educated workers prefer to live in the center of the metropolitan landscape and travel through the landscape to their place of work more than lower educated workers in the Netherlands (Ibid).

Economic geographer Pieter Tordoir (2015) recently stated that in the battle for talent, three types of environment are important: (1) inner-city interaction environments with a high mix of functions, (2) green suburban living environments and (3) high quality recreational landscapes, also suitable for 'cottage industries', often associated with innovation and startups. He observes a "brain drain" from the Rotterdam–The Hague area in the south of the Deltametropolis, towards the north (Amsterdam and Utrecht), partly due to the lack of these type of environments in the south. Recent studies on the location of highly skilled workers and landscape appreciation in the Netherlands make similar assertions (Teulings, 2014; Alterra, 2015). Furthermore, there seems to be a similar occurrence in areas that witnessed heavy urbanization over the last decades, whereby certain landscapes are destroyed (see the Rotterdam–The Hague area).

In order to make sound long-term decisions, an assessment of both the value and identity of the metropolitan landscape are needed. The current debate on this topic is divided between quantitative discourses, including ecosystem services and happiness economics (among other methods), and a qualitative discourse based on identity, history and user experience. Both are necessary to fully understanding what metropolitan landscapes deliver, how we give them meaning, and which decisions are required. In the next chapter we will discuss a few of these landscape assessment methods.

3. QUANTIFICATION OF LANDSCAPE VALUES

Several methods have been developed to quantify the value of landscapes, all with different perspectives and objectives.

The rise of geographic information systems (GIS), spatial economics and environmental psychology since the 1970s, in combination with growing scarcity of natural areas over that same period, have contributed significantly to the development of landscape valuation methods.

LANDSCAPE OR ECOSYSTEM SERVICES

The ecosystem services approach provides a comprehensive quantification of the qualities landscapes offer to inhabitants in a region. This ranges from clean drinking water and fresh air to recreational opportunities, energy and food. Each of these commodities can be quantified in its own terms, for example kilograms of absorbed CO_2, kilometers of cycle paths and gigajoules of energy. Is it possible to regard an attractive living environment as a landscape service as well? Let's assume that we can. In this case, the landscape adds to a high quality of life that not only caters to the current inhabitants, but is also able to attract others. It is reasonable to assume that this wouldn't be beneficial to all inhabitants, but would serve the region as a whole through increased tax revenues, investments, prestige and higher quality facilities. While the monetary and demographic effects could be quantified quite simply, subjective factors such as prestige and quality of facilities prove more difficult. The landscape service – to attract highly skilled workers and innovative companies – would in most cases come with spatial limitations: a growing region known for its coastline will at some point suffer from crowded beaches and gridlocks near the coast, making the region less attractive. New metropolitan landscape developments, however, could continue to offer additional attractiveness.

Landgoed Honselaarsdijk, circa 1683 (demolished 1814)
ARTISTS: A. BEGA AND ABRAHAM BLOOTELING

"It is a remarkable indication of euphoria. The qualities of the free time spent at the estates at the countryside combined in Dutch and in German language the words for 'garden' and for 'desire' into one word: 'Lusthof'."

ADRIAAN GEUZE, DUTCH LANDSCAPE ARCHITECT, 2015

DUTCH RENAISSANCE ESTATES

The TEEB method provides an opportunity to bring this topic a step further. Many governments, including the Dutch national government, already use this method. An example is the recent study in which the effects of adding green areas are calculated, in terms of labor potential and wellbeing of the population in a district in the west of Amsterdam (KPMG, TEEB-NL and the ministry of Economic Affairs, 2012). A disadvantage of methods such as TEEB is that they require a closed-off 'laboratory' case and therefore don't work flexibly at several scales at once (district, city, region).

SPATIAL CORRELATION

Another way to show the link between landscapes and knowledge-intensive companies is to explore spatial correlations. As part of this research, we asked a team of master students at Wageningen University (*Attracting the Attractive*, 2015) to use GIS to explore and visualize such correlations in two Dutch regions, Brainport Eindhoven and the Metropolitan region of Rotterdam–The Hague (MRDH). They mapped several landscape elements and urban features, including distances to pubs/restaurants, sports facilities, monuments and cultural facilities, as well as accessibility, quietness (absence of noise), education facilities, availability of built-up area, and different agricultural and natural areas such as forest, grassland and water. Besides this they mapped locations of knowledge-intensive firms and took into account a Dutch quality of life index and status score (scoring attractive neighborhoods). While the living locations of highly skilled workers would have served as valuable information in this study, it was not possible due to privacy policies and availability of micro data. The companies were divided into freelancers, small/medium size companies and large companies. In doing so, the relative importance of each of the landscape factors could be shown in an effort to explain company locations.

In both locations, urban amenities correlated strongly with knowledge-intensive firms, especially the smaller ones. It appeared that culture and heritage also strongly correlated, whereas quietness and the quality of life index did not help to explain location choice. The larger the company, the more important the influence of accessibility and education, and the less important amenities, culture and heritage. The found relations strongly depend on the character of each case. Nature plays an important role in the Brainport Eindhoven region, because of its large presence and impact on the spatial division of the area, while the highly urbanized MRDH features limited natural areas. Education and status score were revealed as significant factors to explain the location of knowledge-intensive firms in the MRDH. The results of this exercise suggest that innovative companies seek to be very near cultural/historical urban areas with outstanding service levels and at a reasonable distance of green recreational landscapes. For future research, it would be interesting to focus on specific target groups, for example the wealthy maritime entrepreneurs that used to gather in the classy Rotterdam neighborhoods Kralingen and Hillegersberg but fled to the green surroundings of The Hague and Wassenaar.

LANDSCAPE APPRECIATION MAPPING

Landscapes can also be valued in terms of their scenic beauty, or appreciation by the public. The GIS-based Landscape Appreciation Model (GLAM) by Roos-Klein Lankhorst, De Vries, and Buijs (2005) makes use of this notion to facilitate Dutch policies aimed at "a beautiful country to live and work in" (Ministry of Agriculture and Nature, 2000). The model consists of three positive landscape indicators: (1) naturalness, (2) relief, and (3) historical distinctiveness, as well as three negative ones: (1) skyline (2) disturbance, and (3) urbanity and noise level. The resulting map of the Netherlands represents landscape attractiveness in 250x250m cells. It was further supplemented by a questionnaire that reached 3,000 respondents. Landscape appreciation mapping could contribute to the valuation of metropolitan landscapes. This instrument performs best at the regional scale. Furthermore, it is a cost-efficient way to predict and monitor landscape attractiveness because it makes use of open access datasets. "Expert judgment would cost less, but would also be less likely to generate valid results. […] predictive models such as GLAM may contribute to what in the policy arena is called democratizing landscape." Even still, the GLAM model is based on a strict division between city and countryside, excluding urban areas from the model and considering urbanity as a negative factor. In doing so, the potential positive qualities of urban waterfronts, parks and monuments are ignored. Furthermore, the functionality and accessibility of the landscape are not taken into account. The Environmental Assessment Agency recently developed a next version of this model with Alterra, which includes urban areas and focuses specifically on recreational use (GLAM 2.1, Review landscape appreciation model, PBL, 2015). It reveals what people value less in the Dutch landscape: glasshouses and airports near the urban cores and relatively new and monotone polder areas in the center and northeast of the country.

Another method of landscape value mapping is to translate survey results of specific target groups (farmers, recreational users, inhabitants, NGO's) into value maps of a specific region in order to raise a discussion about consensus and conflicts in landscape development, such as with the project 'DialogueMaps' (Deltametropolis Association, dialoguemaps.nl, 2015). To use such a tool in order to map the relationship between attractiveness of a metropolitan area and highly skilled workers would require a review of the criteria and possibly, new data. Moreover, it uses Dutch opinions of landscape as a basis, which may not match the opinions of highly skilled workers moving to the Netherlands.

HAPPINESS ECONOMICS

Should we attempt to measure something as abstract and subjective as happiness? Yes, says Mappiness researcher George McKerron from the London School of Economics (2011), "otherwise happiness will never play a part in the many numerical decision-making processes."

Until recently, happiness was largely the domain of ethical discourses, such as the Utilitarianism promoted by Jeremy Bentham and John Stuart Mill. "It is the greatest happiness of the greatest number that is the measure of right and wrong" (Bentham, 1776). From the 1970s it became clear that more wealth does not lead to greater happiness in already quite wealthy western societies (this is known as the Easterlin paradox). Inspired by this, a new topic arose in the area of economics in the 1990s, which concerned not only wealth, but also welfare, expressed as happiness, life satisfaction or subjective well-being (Stutzer & Frey, 2012). The measuring of happiness naturally requires new methods. While interesting, comparing happiness across countries is, due to cultural differences, not very enlightening. The Netherlands are usually somewhere high up the list (Satisfaction with Life Index, 2011), but it is difficult to estimate the impact on economic success. Venezuela is likewise among the happiest nations, but is more well known for its oil-dependent economy with limited intellectual freedom and less for its thriving knowledge economy. The most interesting results are found when comparing people within regions and observing the happiness of the same sample of the population over time (Stutzer & Frey, 2012).

From the perspective of an attractive region, socio-economic factors are important, such as relative income (do I earn less than the neighbors?), unemployment and the possibility to maintain personal contacts (Graham, 2005; Oswald, 1997; Frey & Stutzer, 2002). The influence of environmental factors is more difficult to measure, but the Life Satisfaction Approach (LSA) offers a concrete tool (Frey, 2010). Noise near an airport, for example, can be related to the perceived life satisfaction of the inhabitants (Van Praag & Baarsma, 2005). By comparing this marginal utility with the marginal utility of income generated by the airport, a trade-off between income and public good becomes possible, turning LSA into a political instrument. Frey and Stutzer (2012) claim it would be a mistake, however, to optimize such instruments as decision-making tools, like 'a benevolent dictator'. "[…] the quality of the political process is key to people's happiness. The sovereignty of individuals should not be reduced to their self-reports of wellbeing. Accordingly, the results gained from happiness research should be taken as inputs into the democratic political process."

New mobile technologies, such as the Mappiness App, may provide valuable insights in the influence of landscapes and other environmental matters on happiness. Thousands of users provide data regarding their happiness at a given moment and over time in many locations (mappiness.org.uk). By compensating for the weather, day of the week and the average happiness of each participant, it becomes clearer which places contribute to a person's happiness. Another example is the Dutch Hotspot Monitor (hotspotmonitor.nl) that collects favorite places of online participants. Despite the fast progress in this field, a clear connection linking specific landscape characteristics to happiness of highly skilled professionals remains to be determined.

LANDSCAPE AND HERITAGE PREMIUM ON REAL ESTATE VALUE AND INVESTMENT

Can the attractiveness of landscapes be measured by looking at housing prices in the vicinity? Dutch reports "Stad en Land" (CPB, 2010) and "De Prijs van de Plek" (PBL, 2006) relate real estate prices to several variables, including the environment. A correlation exists between high prices and the proximity of cultural institutions and nature areas, a relationship which real estate brokers have made use of for quite some time already.

The London School of Economics performed a study consisting of one million transactions between 1995 and 2010 and found that "houses in [urban heritage] conservation areas sell for a premium of 23% on average. A premium of around 9% exists even after adjusting for

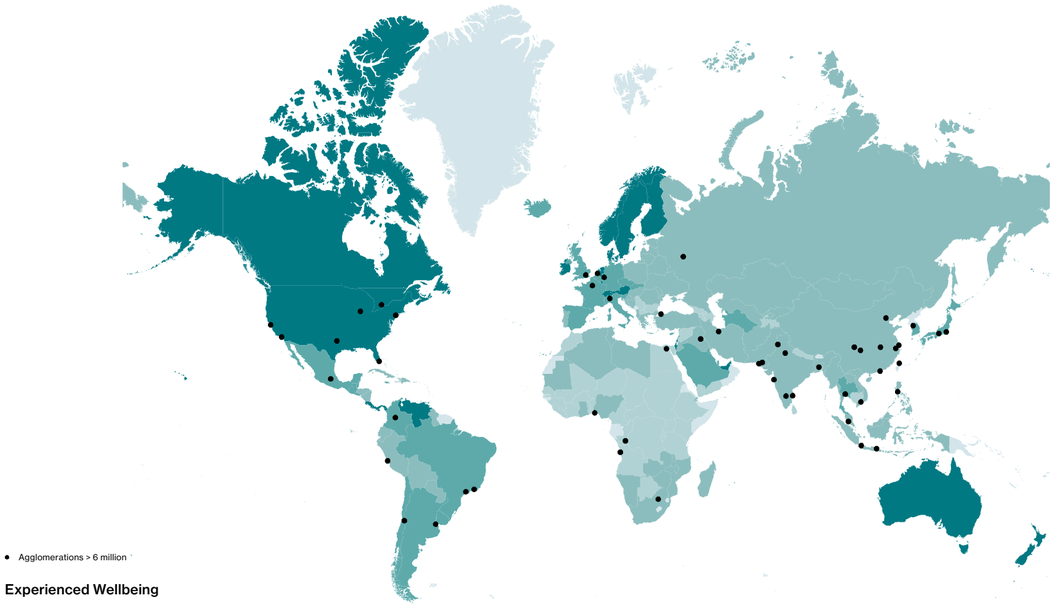


DIAGRAM: DELTAMETROPOLIS ASSOCIATION, 2016

DATA SOURCES: HAPPY PLANET INDEX (WELLBEING), 2012; UN HABITAT WORLD CITIES, 2015

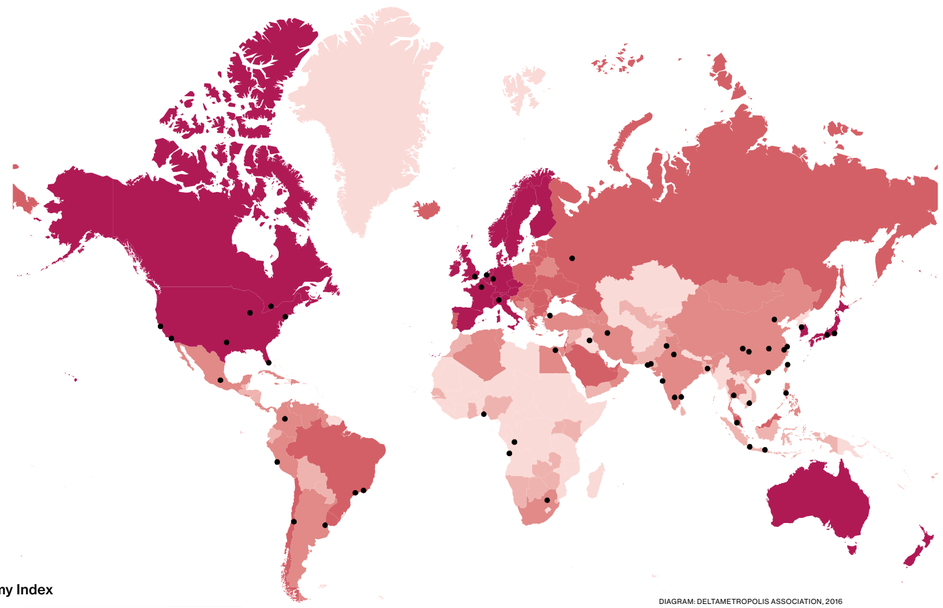
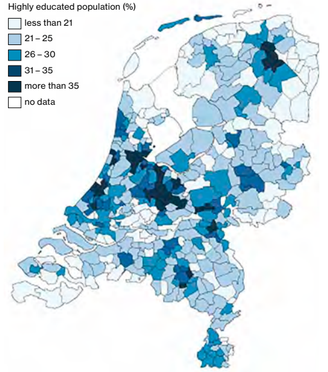


DIAGRAM: DELTAMETROPOLIS ASSOCIATION, 2016

DATA SOURCES: KNOWLEDGE ECONOMY INDEX (THE WORLD BANK), 2012; UN HABITAT WORLD CITIES, 2015



At first glance, these maps support the thesis that highly skilled workers prefer to live in urban areas and that landscape appreciation is more problematic in and around these urban areas. Appreciation around Amsterdam is higher than around Rotterdam and The Hague, which may contribute to the current brain drain.

LEFT: HIGHLY EDUCATED POPULATION (%) (SOURCE: CBS, 2015)

RIGHT: LANDSCAPE APPRECIATION MAP OF THE NETHERLANDS (SOURCE: ALTERRA, 2005)

other factors that affect house prices such as location and type of property. On average, property prices inside conservation areas have grown at a rate that exceeds comparable properties elsewhere by 0.2% a year" (Ahlfeldt et al, 2012). An American study showed that in crisis situations, housing prices in historical districts prove more robust when compared to other areas. Across a sample of three different states, the number of foreclosures in historical areas was half the number in other areas (Corten, 2014). In 2010 the Inter-American Development Bank showed evidence that in ten World Heritage Cities with heritage-based city-center revitalization programs, property prices increased, along with middle-class residents and business. In the Netherlands, Gerard Marlet recently stated in "The Municipality Atlas 2015" that historic cities have considerably higher property prices and attract young and highly skilled people. Half a century ago, Jane Jacobs already knew that "the old economy wants new buildings, the new economy wants old ones." While evidence that availability of nature, recreational options and historical landscapes have the same effects as historical monuments is yet to be given, but several studies suggest that positive correlations can be found (Rouwendal, 2016).

Quality of life also serves to attract multinational companies, which use foreign direct investment (FDI) to gain access to foreign markets and obtain new knowledge and technology. Cities compete globally for FDI by improving factors related to their choice for location. Wall and Stavropoulos (2014) find that Unesco World Heritage Cities attract significantly more FDI than other cities. *Heritage as an asset for inner-city development* (2014) mentions the example of Recife, Brazil, with a metropolitan region of almost four million inhabitants, where heritage strategies aim to attract creative industries and educational institutions. With this reasoning, high quality urban environments are key to attracting the creative class, which in turn draws knowledge-intensive industries. A similar connection may exist between attractive metropolitan landscapes and FDI.

A well-known model in which monetary effects are evaluated is (Social) Cost-Benefit Analysis. In a (S)CBA, the effects of a certain investment are monetized and compared. The construction of a highway, for example, benefits the accessibility and economic output of the region, but at the same time, decreases property prices in the vicinity. CBAs are not limited to goods and services that are traded on markets. However, including nonmarket effects requires specific – and often time consuming – valuation techniques and know-how. The great advantage of another integrated evaluation tool, the Multi Criteria Analysis (MCA), is that it may include nonmarket effects, such as biodiversity and cultural values, without having to apply monetary valuation techniques. The MCA is less standardized by guidelines, and therefore allows more freedom for including effects, as well as measuring and weighing them (Bos, 2008).

CITY RANKINGS

Many researchers agree that the city rankings found in magazines or on consultancy websites, are not a suitable way for judging the attractiveness of a metropolitan region. They are highly subjective, lack transparency and are often culturally biased. Even still, together these rankings provide an overview of indicators that are considered relevant. Jones Lang LaSalle (2013) published a report comparing 150 benchmarks and indexes for cities. Of those 150 rankings, 29 specifically concerned the theme of quality of life, 18 were focused on the knowledge economy, human capital and technology, 14 concerned environment and sustainability and eight took into account culture and diversity.

The strength of these rankings lies in their combination of many different indicators into one clear and comparable number. This quality is however at the same time a weakness; specific information of each factor is lost in the process and the weight of each is not revealed in the result. As an illustration, the Ibirapuera Park in São Paulo was recently considered one of the top 10 parks in the world (The Guardian, 2015). Meanwhile, air pollution in that metropolis kills more people yearly than traffic, HIV and breast cancer combined. In a quality of life ranking these aspects could cancel one another, unless assumptions on the weight are made: that pollution is more important than access to a good park. In either case, specific information is lost and the ranking becomes arbitrary. For this reason, we do not use rankings in this research. Moreover, our question is concerned with how cities become (more) attractive and not with determining which is the most attractive. Lastly, the development of metropolitan landscapes is a complex, multidisciplinary and long-term undertaking, which we believe cannot be accomplished by merely checking items in a list.

4. QUALIFICATION OF LANDSCAPE IDENTITY

While many expats would most likely take a look at the Monocle or Mercer quality of life index before moving to a new country, we suspect that the identity of a region that is constructed in movies, books, stories and social media also has an effect on their choice.

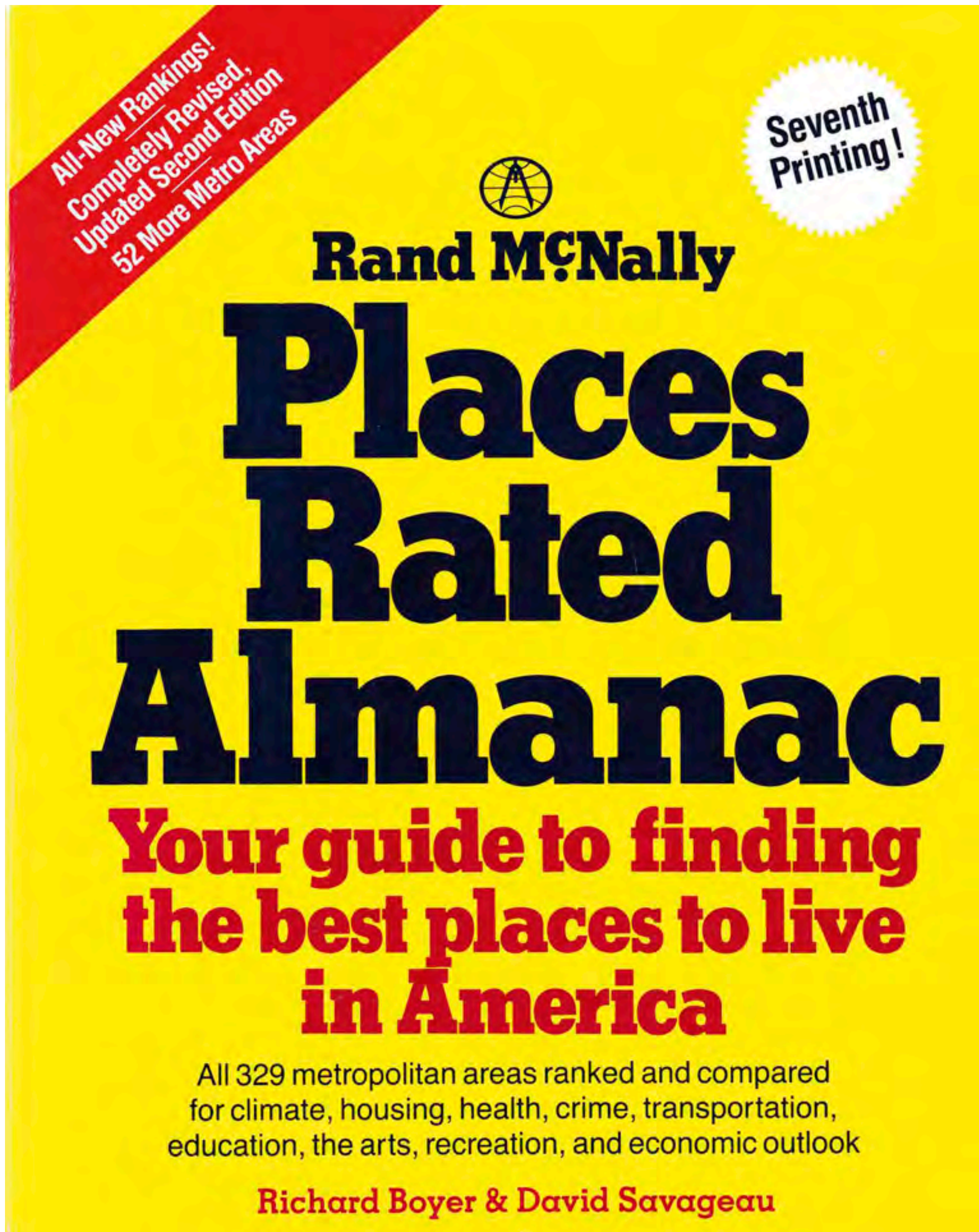
It would be foolish to study metropolitan landscapes without considering its inhabitants, users and creators. While there are many methods that construct a quantified view on metropolitan landscapes, the subjective and personal perspective of both inhabitants and visitors is an equally critical part in determining its evaluation. In this chapter, we explore the subjective perspective of landscape through two narratives: the expert view and the public opinion.

THE EXPERT VIEW

Expert views of the metropolitan landscape may vary per country. In the Dutch context, two central and complementary discourses can be distinguished: (1) a visionary design narrative discourse and (2) a academically fed historical analysis and identity discourse. The first discourse concerns the community of (landscape and urban) planners that continues to construct the history of regions by analyzing the natural and human landscape development. These analyses often serve as argumentation for new development proposals, landscape projects and urban interventions. Sometimes they serve to influence political agendas. An example of the latter is the research on the metropolitan landscape by West8 (EL&I & I&M, 2010; IABR 2012), which proposes a more integrated view on the Dutch cities and landscapes, taking into account not only functional layers but also the narrative layers which connect the landscape to the city dweller; mentally through poetry, paintings and stories, and physically by interconnections between urban and green areas through waterways, cycling routes and historical routes.

The second discourse focuses more on understanding how the current landscape emerged and which factors were important. Universities and research institutes play an important part in mapping and analyzing the development of metropolises, from a morphological, socio-economic, hydrological, ecological or cultural point of view. Many studies describe economic development of a city in relation to the landscape: from trading hub in an agricultural region to expanding center of industrial production to service hub in the global network. Although they normally do not include a concrete strategy for the future, these studies provide a valuable backcloth for new developments and interventions. Historian Simon Schama reminds us in his book *Landscape and Memory* (1995) that our landscapes and concepts of landscape are closely linked to historic events and myths. Even the wildest nature reserves are cultural constructions that we project on those areas, and are therefore different in each period of history.

Institutions like the Cultural Heritage Agency of the Netherlands have developed key positions in knowledge generation and sharing of landscape geodata and analysis



of historic data. Currently, the Agency develops projects and research with other stakeholders to influence political agendas regarding landscape and heritage. An expample of this is "Land with significance" (Land van Betekenis, RCE 2015), a manifest for the rediscovery of historical layers in the planning debate. Traces of the Dutch landscape 'DNA', formed over centuries, may prove to be valuable guidelines for contempory challenges of urbanization, food production, health and public administration. Another example is the usage of a tool called 'landscape biography', in the project Competitiveness and Regional Identity (RCE, ongoing), which states that in the Twente Region, infrastructure and urban agglomeration alone cannot explain the existence of the innovative economy in that location. Their landscape biography teaches us that the current strong regional identity, formed during the period of florishing textile industry, forms a basis for the technology sector and may attract new companies. The same method is used in the Parkstad Limburg. Identity is a leading theme in the current IBA program in the region. The Agency contributes to a landscape biography. This biography revealed that, contrary to the region's strong association with its mining past, the landscape hosts many other historic remains that serve as valuable inspiration for the current challenges such as population decline and attracting new companies.

The publication *Atlas of the Dutch Urban Landscape* (Rutte & Abrahamse, 2015) illustrates the influence of landscape and heritage in the development of the largest Dutch cities. Cities such as Eindhoven and Amsterdam explicitly use their legacies in technology and trade to streamline city martketing for the attraction of new companies. Heritage and identity, as qualities of the metropolitan landscape, seem to be important factors for economic competitiveness. In this publication, we shall see how corporate identity and institutional logos have been inspired by landscapes.

THE PUBLIC OPINION

Movies, television, and social media increasingly influence common understandings of the metropolitan landscape. Tourists now follow hints on Google Maps, Instagram, 4-Square, Facebook, LinkedIn and Flickr, before picking up a printed travel guide. Tourist 'hotspots' and other points of interest are easily found with the use of Google Earth, where one can view clusters of photographs on the map. These media platforms allow users to generate and share content with geographic coordinates. Besides location, the user feedback data provided by mobile applications give insight into how people appreciate certain places and landscapes. Applications that suggest cycling routes, or where to walk your dog, form a complex data cloud. Their value as a collective narrative of the public opinion and as a window into the preferences of urban inhabitant should not be underestimated. Online collaborations and big data mining have the potential to make such preferences visible. Furthermore, narratives created by artists (e.g. land art), painters and writers can also be understood as part of the public opinion.

Even still, people do not experience landscape qualities completely through the experiences and opinions of others. Use and accessibility are crucial factors in the experience of a metropolitan landscape. "We all have the experience of arriving by plane at Schiphol airport and enjoying the typical Dutch landscape from above. Next thing you're in a car or train and the experience becomes fragmented and scattered. This feeds judgment and bias regarding landscapes." (Harry Boeschoten, Staatsbosbeheer, 2015)

CONCLUSIONS

From the overview of existing research regarding the quality of landscapes and attraction of highly skilled workers, we draw the following conclusions:

1. The terms 'metropolitan landscape' and 'knowledge economy' require further development. This is particularly important for their inclusion in the public debate and when raising questions related to their interconnection. Existing literature on landscape fails to describe the diversity and the quality of the metropolitan landscape, as it continues to fall back on the obsolete distinction between urban and rural areas. The discourse regarding the knowledge economy is largely focused on growth and attracting highly skilled workers. Slowly, regions become aware that social and cultural diversity (cosmopolitan atmosphere) is also a success factor in this new and creative economy.
2. There is enough circumstantial evidence that supports the notion that an attractive metropolitan landscape provides the quality of life that highly skilled workers seek, who in their slip stream bring innovative companies to the region. Highly skilled workers also appreciate and travel more through the metropolitan landscape than other groups. It is however a cyclical process, wherein investments in the landscape can attract talent and the presence of talent and innovative companies in turn creates possibilities for taking care of the landscape.
3. Knowledge regarding the development and quality of landscapes is crucial as a basic condition for a region's economic development. We have discussed several quantitative and narrative instruments to value and describe landscapes, and their suitability for our research topic: the role metropolitan landscapes and heritage plays in attracting highly skilled workers and innovative companies. In general, the quantitative instruments tend to give detailed answers to specific questions, resulting in tangible numbers. Still these methods require a suitable framing of the problem and context. Qualitative methods of narration on the other hand offer a broad perspective and provide insight into the historical and future legacies of metropolitan landscapes. However, here, the inherent subjectivity, even in the expert opinion, may encounter skepticism from politicians who are used to supporting their choices with numerical arguments. A broad spectrum of quantitative and qualitative landscape valuations and descriptions will thus remain necessary.

RURAL METROPOLIS
The rich history and architecture of Milan is closely connected to its fertile countryside, the plains of the Po River that have generated excellent agricultural produce for centuries. In post-industrial times, Milan draws from this rural past to shape its identity as metropolitan region. Several policies, projects and events, such as the Expo 2015, position Milan as 'Metropoli Rurale', emphasizing agricultural traditions, the slow-food movement, regional gastronomy and the proximity to the countryside and the mountains.

PHOTOGRAPHY (INSIDE OUT):
WIKIMEDIA © BY LUCA VOLPI, FLICKR © BY FABCOM, FLICKR © JOHN PICKEN

The heart of the most well-known high-tech region in the world, the San Francisco Bay Area, is …… water! The wildlife refuge lagoon, its shores, wetlands and creeks are actively protected and maintained by all government levels and the business community of Silicon Valley. Knowledge workers in the Bay Area are able to enjoy it from a boat, from a train or a car, or from the office window in some cases.

PHOTOGRAPHY (INSIDE OUT): WIKIMEDIA MXJANIER, MERTEN NEFS, FLICKR ©FEN LABALME

PART 3

Lessons from international cases

In this publication we draw from existing approaches and studies to inspire the Dutch Deltametropolis how it can best use its metropolitan landscapes as an asset for attracting knowledge-intensive companies and highly skilled workers in the global battle for talent. The following section will add examples from current international practice.

As outlined in the previous sections, it is important to remember that metropolitan regions are not merely in competition with one another, trying to obtain the best companies and most talented people from other parts of the world. They are a part of a larger trend, concerned with making the global network of metropolises attractive places to learn, to innovate, to work and to live. Metropolitan landscapes serve not only as a physical, attracting factor, but are breeding grounds for knowledge intensive economies and talent. In this race, every region can (and should) learn from successful examples abroad.

This section draws lessons through a comparison of ten regions, each averaging ten million inhabitants. The size of ten million is chosen based on its suitability for comparison with the population of the Deltametropolis. Regions featuring similar living standards for highly skilled workers and which provide the greatest diversity in regards to landscape types and geography were chosen. Availability of data was also taken into account while choosing the cases. Five of the regions are located in Europe, two in North America, one in South America, one in Africa and one in Asia. The metropolitan areas are geographically determined by including a peri-urban or rural zone around the main agglomeration. When possible, we make use of existing administrative or topographic boundaries.

For each case, the urban economy is discussed in relation to the landscape in three development stages: the founding, industrialization/emerging metropolis and the current transition towards a knowledge economy. Aspects of all stages are still visible in the current metropolitan landscape. To discuss the current attitude in regard to landscape development and conservation, as well as its relation with quality of life and knowledge-intensive companies, the most relevant policies and landscape initiatives are listed in each area. They are illustrated through maps and images (see Research Method).

For our hypothesis that the metropolitan landscape, as a provider of quality of life, is a major assett in the knowledge economy, we have found sufficient evidence in the ten cases as well as in literature. We have found much less evidence, however, that regions around the world actively develop their metropolitan landscapes today, to attract highly skilled workers. It seems that on the one hand this link is not yet made in landscape policy and decision making. On the other hand, regions that do invest explicitly in their metropolitan landscape to enhance quality of life, hesitate to focus this instrument on highly skilled workers, since they feel a responsibility to cater to the whole population and – understandably – the less wealthy citizens in particular. The effect that the landscape has on the attraction of highly skilled workers is stated as a by-product in such policies.

THE RELATION OF LANDSCAPE AND ECONOMIC DEVELOPMENT OVER TIME

We introduce each metropolitan region with a historic image and a map or drawing that illustrates the relationship between landscape and the economic development of the city. Rhein-Ruhr was, and still is, impossible to imagine without the shipping and trade along the river Rhine. The industrialization of Toronto would not have been possible in this way without the ravines and waterfront. The idyllic landscape and boulevards of Rio de Janeiro are closely linked to the presence of the Portuguese court. And the green hills and valleys of Taiwan are still, just as they were 500 years ago, the main icon of Taipei. Historic maps often show the strategic relation of a city to its surrounding landscape, whether it be a coastline or estuary, a valley or trade route, natural resources and barriers. Present-day cartography does not illustrate the link between the key economic activities and the metropolitan landscape. However, landscape elements are still found today in the branding image of these areas. Institutional and corporate logos, together with other visual representations, draw explicitly from the heritage and natural elements present in the metropolitan landscape (i.e. the tech-valleys and logos earlier in this publication).

The relationship between landscape and economy is discussed in three time periods per each case study. First the 'Founding Story' reveals how, why and where the initial settlements were founded, outlining the specific role the landscape played in determining the location of each case. For example, many cities were founded near landscape elements such as waterways because of their benefit as trading hubs within an otherwise agricultural or natural landscape. Second, the 'Emerging Metropolitan Landscape' explains how the city grew into a metropolitan region and which (industrial) economic processes underlined their development. Here, landscape generally functioned as a resource for production (materials, fuels) and urban expansion (industrial and logistic complexes, residential areas). The third, 'Knowledge Habitat', concerns the transformation or adaptation of this metropolitan landscape for the accommodation and attracting of highly skilled workers and companies. The landscape at this stage is considered a cultural asset and provider of living quality and services.

Milano. Georg Braun; Frans Hogenberg: *Civitates Orbis Terrarum*, 1572 (edition of 1593) Herzogin-Anna-Amalia-Bibliothek, Weimar

Toronto plan, 1943

1. Knowledge Economy map
2. Metropolitan Landscape map
3. Protected Landscapes map
London UK, see page 57

GRAPHIC REPRESENTATIONS

The most prominent elements in the metropolitan landscape that can be reached within a time span of 1.5 hours from the region's main population centers are drawn up in a diagram, visualizing the metropolitan landscape 'DNA' of each case study and furthering the ability to compare. All of the case studies in this research, even those which are polycentric, revolve around a central landscape element. In some cases, like in Paris, this landscape element is a historic core, while in the San Francisco Bay Area it is water and in the Deltametropolis it is agricultural land. The metropolitan landscape diagrams combine three of the main economic city models of the 20th century: the Concentric Zone model (Burgess), the Radial Sector model (Hoyt) and the Multiple Nuclei model (Harris and Ullman).

Three maps were drawn per case study: Knowledge Economy, Metropolitan Landscape and Protected Landscapes. Besides these maps, supplementary data and figures related to these three themes were gathered.

1. The Knowledge Economy maps show, first and foremost, the main 'resource' of human capital. The distribution of inhabitants is shown in dots (500 people for one dot) and reveals, in most cases, a strong relation with the physical topography. The main knowledge, innovation and business clusters are added to this map, including airports, main office locations, science parks and university campuses.
2. The Metropolitan Landscape maps is meant to represent the physical situation of the metropolitan landscape. According to our holistic view on the metropolitan landscape (see Introduction and Knowledge Habitat), we avoid making a strong distinction between urban and non-urban areas. All the different elements of the metropolitan landscape are shown in a single color pallet representing 'slow' and 'fast' parts of the landscape, by respective colors ranging from 'cold' blue to 'hot' red.
3. The Protected Landscapes maps show the parts of the metropolitan landscape that are protected under international, national, regional or local laws. These range from environmental protection laws to spatial planning directives, such as green belt policies. The locations of protected monuments, archaeological sites and Unesco World Heritage sites are also featured when existent.

REVIEW OF POLICIES AND INITIATIVES REGARDING THE METROPOLITAN LANDSCAPE

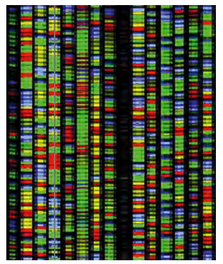
We have interviewed policy makers, planners and experts in each of the ten regions, with an average of two interviews per case. These interviews provided the focus and a large part of the content mentioned above. Based on the interviews and desk research, the most important spatial and environmental policies related to the regional scale were analyzed for each case. In some cases, specific metropolitan strategies and policies were already in existence, while in other cases the regional scale was covered by a combination of national, state or local policies.

For each case we highlight a couple of metropolitan landscape initiatives, which illustrate how different stakeholders value and adapt the landscape, make it accessible, and finance and maintain valuable areas. Furthermore, a compilation of institutional and corporate logos was made for some of the cases, in order to show how elements and qualities of the landscape serve to strengthen and define corporate and institutional identities. For each case, travel guides (Lonely Planet or Rough Guide) were also analyzed in order to provide supplementary information. We collected the top ten touristic sites mentioned in those guides and added five new attractive sites for the highly skilled worker on the basis of our results. The information mentioned above is organized per case at the end of this publication, in the form of an atlas of ten regions.

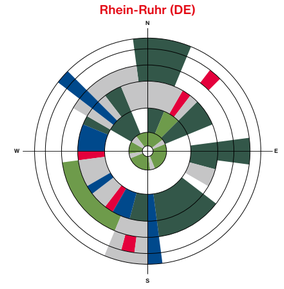
Parco Agricolo Sud, Milan.
PHOTOGRAPHY: MERTEN NEFS

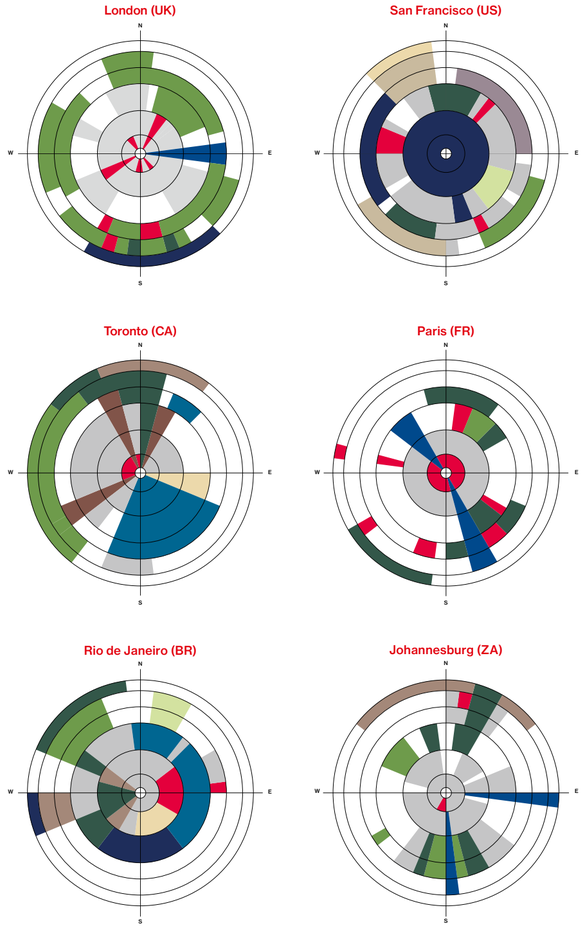
SEQUENCING THE METROPOLITAN LANDSCAPE DNA

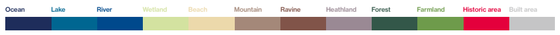
These diagrams draw up the most prominent elements in the metropolitan landscape that can be reached within a time span of 1.5 hours from the region's main population centers. All of the case studies in this research, even those that are polycentric, revolve around a central landscape element. In some cases, like in Paris, this landscape element is a historic core, while in the San Francisco Bay Area it is water and in the Deltametropolis it is agricultural land. The metropolitan landscape diagrams combine three of the main economic city models of the 20th century: the Concentric Zone model (Burgess), the Radial Sector model (Hoyt) and the Multiple Nuclei model (Harris and Ullman).



DNA sequencing







COMPARISON

A great deal can be learned by comparing the ten cases.

A closer look at the metropolitan landscape diagrams, the land use maps and statistics reveals that the metropolitan landscapes in this study are quite diverse in form, but can be generally divided into (1) compact metropolises squeezed between protected hilly nature reserves and water bodies; (2) metropolises with a dominant historic center beside an important river that gradually decrease in density towards the periphery, until they reach green belt protection zones; (3) polycentric rural metropolises embedded in an agricultural, industrial and suburban context, tied together and, at the same time, fragmented by dense infrastructure networks. Combinations of the three types are possible. Similarly, landscape protection and development paradigms have three basic shapes, that may be combined: (1) Green belts and central urban (heritage) protection zones; (2) radial wedges, often along rivers; (3) patchworks and networks, often referred to as green grid, green space system, landscape/green infrastructure or ecological structure.

All ten regions are clearly economically successful regions, otherwise they would not have appeared in this list. However, some are more successful than the others on the global stage (London, San Francisco), while others remain key players on their continent (Rio de Janeiro, Gauteng). The BRIC metropolises Rio de Janeiro and Gauteng both suffer from the strongest segregation effects and low GDP, but are incomparable between eachother in terms of the quality of their landscapes and related strategies. The wealthiest metropolises (GDP/capita > €45.000) generally score high in the Shanghai ranking as well. They either have very strong policies regarding landscape protection belts, heritage and branding, or very strong metropolitan projects including waterfront regenerations, Olympic legacy plans or improvement of cycling networks.

Landscape elements and diversity vary strongly among the cases, which means that there is not a single 'essential' landscape type for economic success. The main type of metropolitan landscape does seem to matter for the policies they develop. Rural polycentric metropolises, for instance, have more decentralized policies, sometimes with little national control, but at the same time a lot of local initiatives regarding landscape use, food and urban farming strategies. Metropolises located in natural forest areas with waterfronts (Rio de Janeiro, San Francisco, Toronto and Taipei) tend to focus more on conservation. Metropolises oriented on a large river axis, such as London, Paris and Rhein-Ruhr, are focused less on large scale conservation, but rather on developing new green grid systems.

Most regions do not have explicit policies to attract highly skilled workers. They do have however policies to improve landscape and quality of life for the existing population. As an implicit byproduct, this quality of life and attractive metropolitan landscape can also attract highly skilled workers. Presence of highly skilled workers and attractive metropolitan landscape have a cyclical, causal relationship: landscapes attract workers and the presence of highly skilled workers in turn acts as an incentive for the development, protection and enhancement of metropolitan landscapes. This cycle can be clearly seen in San Francisco and London, for example, where governments are constantly pushed to address increasing demands regarding the quality of the living environment and accessibility of the metropolitan landscape. In the same regions, as well as in the Deltametropolis, privately funded Land Trusts actively buy land to exercise influence and contribute to conservation plans and policies (Natuurmonumenten).

Many metropolitan plans recognize the positive effect of attractive landscape on the economy and quality of life. It is easily incorporated into the identity of a metropolis. The different conservation strategies illustrate the recognized importance of this asset. The metropolitan landscape before WWII was primarily a resource in the industrial economy. In postindustrial times, it has become an asset, and in some cases, also an investment priority (Toronto). The example of Taipei Design Capital 2016 shows how cities that have long invested in economic development are now shifting their attention to landscape protection but also towards the promotion of a "metropolitan image" through their metropolitan landscape.

In some cases, like San Francisco, Rhein-Ruhr and Toronto, private companies are co-financers of landscape developments and preservation. Legislation, tax and more 'moral' incentives are often part of this participation. In Rio de Janeiro, Paris and the Deltametropolis, however, the economic development of the region could be seen as a free rider of (public) landscape conservation and development initiatives. The attractiveness of the region is then seen as a positive side effect of the available landscape, not as a landscape service that can be tailored specifically for this purpose, requiring care and investment. Ironically, corporate investment in landscape and quality of life seems to have been stronger during the period of industrialization. Dutch electronics conglomerate Philips, for example, invested in green residential areas, forest conservation (by-product of the company's land reservation) and recreational facilities for its employees in the city of Eindhoven. The industrial heritage from this period that the company left behind in the 1990's are now crucial assets in the knowledge economy of the Brainport region. A revival of this type of thinking is necessary regarding today's multinationals that thrive in the metropolitan landscape.

Many metropolitan regions, as they grow, create or include new centralities and landscape elements. From our study these included Markham near Toronto, Barra da Tijuca in Rio de Janeiro and the Parisian developments Paris-Saclay and 'Le Triangle de Gonesse'. These metropolitan regions however struggle to create a coherent identity and equal spatial quality of these new centralities and landscapes.

As there is no comparable data on the effect of the metropolitan landscape policies around the world, it is difficult to draw hard conclusions on what works and what doesn't, especially in light of the fact that solutions cannot simply be transplanted from one geographical and social context to another. There are, however, aspects that clearly influence success in several cases. For instance, to obtain high quality landscapes and economic success, it's not necessary to 'check all the boxes'. Sometimes it is sufficient for a metropolis to have a well-organized planning system, which allows local projects to fit into larger regional ambitions (London, Taipei); or to have excellent metropolitan projects, that structure regional development (Paris, Milan). In several cases, broad multidisciplinary and integrated projects address different challenges and, at the same time, provide a framework for the improvement of metropolitan landscape quality. For example, the solution for the watershed challenge and the industries that separated the city from the lake in Toronto has made the attractive redevelopment of the ravine system and waterfronts possible. In the Rhine-Ruhr region, cleaning the Emscher River and brownfields paved the way for one of Europe's largest landscape parks and the eventual designation of the city of Essen and its postindustrial surroundings as Capital of Culture in 2010. The combination of visionary (political) leadership combined with local support and initiatives pays off, in Taipei, as in Rhein-Ruhr and San Francisco. Lastly, a strong regional landscape identity like in Rio de Janeiro, in combination with a Unesco world heritage status, serves as a very attractive and great asset on the global stage.

While studying the case of Toronto, we came across the book *Out of Place* by Toronto landscape architect Michael Hough, in which he attempts to discover which landscape qualities generate regional identity. To him, the dramatic and picturesque quality of the pre-modern landscape comes primarily from 'hard work', social cost and necessity – to adapt to the climate and the soil, under socio-political and technical limitations. Industrialization and rapid growth made the slow 'vernacular' landscape development impossible. Now that the population of many western metropolises has stabilized and a new economic era has commenced, the regional identity might be a leading principle in the development of the metropolitan landscape. "Changing times create changing landscapes" (Hough, 1990). Based on this notion, we believe that new crafts and knowledge-based skills, as well as the future of metropolitan agriculture will surely bring about changes in the landscape. Moreover, the specific way in which each metropolis deals with energy transition and climate change will lead to unique innovations in the landscape, just as occurred with the polders in the Deltametropolis over the last centuries.

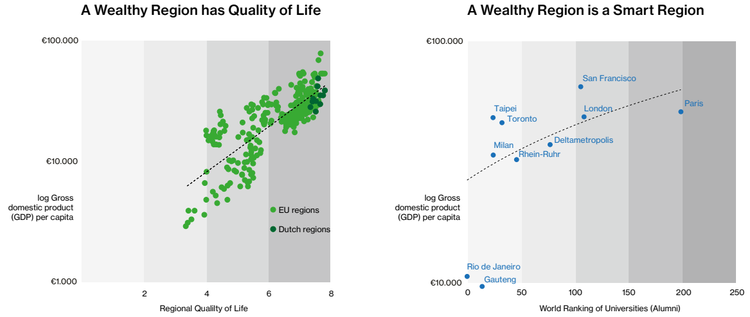
THREE WAYS TO WORK ON AN ATTRACTIVE METROPOLITAN LANDSCAPE

Although all ten regions are currently transitioning towards a more knowledge-based economy and aim to provide an attractive living environment, they have many other challenges at hand that also concern the planning of the metropolitan landscape, such as climate change, water management, demographic growth, physical fragmentation of landscapes and heritage, socioeconomic segregation, agricultural and energy transitions. In fact, in terms of political urgency and investments, these other challenges generally come first. It is therefore key to create attractive metropolitan landscapes during such instances and investments, or at the very least, avoid their compromising.

If we consider the metropolitan landscape to be the 'habitat' of the knowledge worker, a parallel can be drawn with the ecological concept of the food and habitat pyramids. In these pyramids, highly skilled workers are like otters: while in the food pyramid they represent the smallest group, in the habitat pyramid they have the largest action radius and are the pickiest in terms of their location choice. In other words, the quality of life needed to 'breed', keep and attract people in a knowledge economy, increases with their skills (also see Knowledge Habitat).

Through our comparison of how each of the ten cases addresses their respective metropolitan landscapes, we identify three different 'layers', somewhat similar to another famous pyramid, from Maslow. First, the metropolitan landscape provides basic resources, supporting services that guarantee a reasonable quality of life. Examples of such metropolitan landscape services are clean air and drinking water and storm water capacity. A second layer adds attractive features and accessibility to the metropolitan landscape, which make the landscape richer in experiences, recreational options and more accessible. The quality of this layer highly depends on public and private investments in the metropolitan landscape infrastructure, as well as the conservation of available resources such as heritage elements, water bodies, and forests. The third and top layer concerns a unique metropolitan landscape identity that contributes to the regional and corporate strength in the global competition. Besides investments, available heritage and special landscape features, the formation of a strong metropolitan landscape identity depends highly on the commitment and marketing strategies of stakeholders in the region. Developing metropolises are still working to improve the basic service level, while developed metropolises face challenges in the maintenance of the basic service level brought about by climate change. In all metropolises, social segregation poses a threat to the equal accessibility of landscape qualities in the middle layer.

Most of the studied regions work on the building of this 'pyramid' in the following manners: (1) Regional

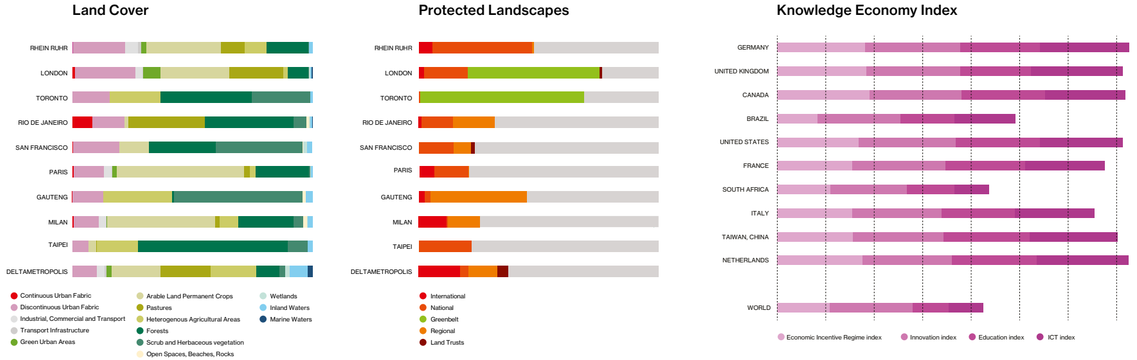


Regional Quality of life indicators: Governance, education, health, recreation, natural environment, public services, purchasing power and employment, housing and social environment

SOURCE DATA: REGIONAL QUALITY OF LIVING IN EUROPE (NUTS2 REGIONS), AN ARTICLE BY PIET LAGAS, FRANK VAN DONGEN, FRANK VAN RIJN AND HANS VISSER IN REGION VOLUME 2, 2015

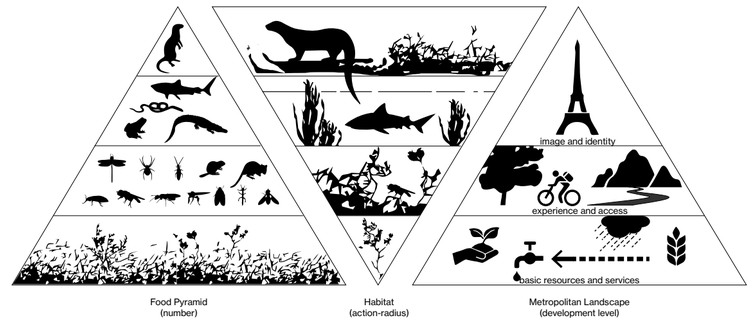
Sum of Alumni scores of the Universities in each study region

SOURCE DATA: SHANGHAI WORLD RANKING OF UNIVERSITIES, 2015; OECD, 2012; EUROSTAT, 2012; STATISTICS CANADA, 2011; IBGE 2014; TAIWAN GOVERNMENT, 2012; STATISTICS SOUTH AFRICA, 2011; US CENSUS BUREAU, 2015; LONDON CENSUS, 2011



DIAGRAMS: DELTAMETROPOLIS ASSOCIATION, 2016

SOURCE DATA: KNOWLEDGE ECONOMY INDEX SCORE OF THE COUNTRIES CONTAINING THE STUDY REGIONS (THE WORLD BANK, 2012)



Food pyramid and habitat / Maslow pyramid

DIAGRAM: DELTAMETROPOLIS ASSOCIATION, 2016

governance structures for landscape development and heritage, including top-down, bottom-up and approaches somewhere in between; (2) implementation of metropolitan planning instruments, including both restrictive ones, like green belts, as well as incentivizing ones like large development projects; (3) implementation and marketing of sustainable transport networks (metro, bus rapid transit, bicycle highways) as well as extensive recreational cycling and hiking trails. In the following paragraph we discuss best practices regarding these three instruments.

REGIONAL GOVERNANCE

Many metropolises compete in the global battle for talent as a single entity, while their administrations are a rather complex mix of municipal, provincial and national entities. Furthermore, many landscape development issues require a regional perspective, while a metropolitan authority that acts on the regional scale is rarely present. For these metropolises the question is therefore how their regional governance structure is organized, given the specific spatial and economic challenges and the existing governmental and non-governmental institutions.

There is no prevailing regional governance model for neither economic nor landscape development. The European cases have the benefit of European environmental protection policies, such as Natura 2000, giving lower government levels the responsibility of implementation. European heritage policy on the other hand is largely left to the individual member states. Besides the international ones, national or provincial governments decide the designation of many protection areas. Since the approved Unesco area, the landscape and heritage of Rio de Janeiro is protected on all possible levels: (inter)national, state and local, which makes it a clear priority, although this does not ensure long-term funding. The government of Taiwan takes a leading role in determining the large-scale developments and landscape conservation policies in and around Taipei, but increasingly leaves room for local initiatives. In the UK, the national government facilitates green belt policies (i.e. London), without having a mandatory role, while the Greater London Authority determines large part of the urban landscape and heritage policies, in close collaboration with the different boroughs. In federations such as the United States and Germany, regional associations are formed to manage the economic and landscape development of the metropolis. In the state of California, nine counties, over 60 cities and several cooperating members have joined the ABAG platform of the Bay Area. This occurs in parallel to other associations such as the Greenbelt Alliance and Open Space Council, which also take a role in attracting companies and other private stakeholders. This way, the planning of and investing in the metropolitan landscape become a public-private participatory event. In the state North Rhine-Westphalia, there is no metropolitan authority for the Rhein-Ruhr agglomeration. Instead, two regions – Köln-Bonn and Ruhr – work closely together with the city of Düsseldorf, coaching and stimulating municipalities and private actors in the regional development issues. The political decision for the long-term development of the Emscher Landscape Park was a crucial choice made by state politicians Johannes Rau and Christoph Zöpel (North Rhine – Westphalia) in 1988.

Despite the successes, the gap between the metropolitan scale and the different governance mandates often creates barriers (or obstructs opportunities) in the development of the metropolitan landscape as an asset for the knowledge economy. Fragmented governance disables strategic planning. In contrast to London, Paris, Toronto and Taipei, the Dutch Deltametropolis does not have an elected mayor, but rather about 200 appointed mayors. It is difficult to organize strong leadership and political mandate for metropolitan landscape development from within such a constellation. The subsequent publication Metropolitan Landscapes (2016) following a recent conference in Brussels suggests the appointment of a 'curator' or 'curators' to bridge the gap between state decision makers and local associations and people. This would connect large scale planning decisions to the heart of local communities, who experience the metropolitan landscape services daily.

REGIONAL PLANNING INSTRUMENTS

Planning instruments on the regional scale can be either restrictive or incentivizing. Combinations of both types in one metropolitan area are common, though not often at the same site. Examples of the first include zones where building is restricted or prohibited all together, such as green belts, for the protection of open space for agricultural use, recreational purpose, or natural protection. Even though restrictive planning instruments worldwide have been successful in containing urban expansion and conserving agricultural land near metropolitan centers, they are often one-dimensional. These instruments fail to form a dynamic and multi-purpose element in the daily urban system and lack the posibilities for the development of relevant recreation options for city dwellers, as for example in London. In Toronto, recreational trail projects are being developed to improve a similar situation. Other regions may have less planning tools in the form of belts and zones, but rather protect their landscape as a system of hundreds of heritage sites, such as in Lombardy, where the specific architecture of farm houses and churches gives identity to the entire rural area. Lombardy has the ambition to turn part of the rural area into a green belt.

The development of robust metropolitan open space networks, often referred to as 'green infrastructure', green grid, open space system, and ecological network, is currently high on many metropolitan agendas, for example in Toronto, Rhein-Ruhr and London. Non-development zones within the urban tissue are essential to safeguard open spaces with recreational, ecological and (slow) transport functions. These open spaces contribute to social cohesion, as demonstrated in San Francisco, Toronto, Taipei, Paris and Rio de Janeiro. These metropolitan open space networks are usually a combination of restrictive (building) policy and incentives, such as public investment. For many innovative sectors, and surely the creative sector, the built-up urban landscape with its historical elements and even decay, is just as important as the green parts of the metropolitan landscape. The increased importance of such dynamic areas serves as a driving force behind the attractiveness of London, Johannesburg and parts of the Deltametropolis, following the well-known adagio of Jane Jacobs: "New ideas must use old buildings."

A common instrument used to increase the quality of the metropolitan landscape is through funding and planning large-scale flagship projects or development programs that combine several smaller projects, such as the London High Street Project (Mayor of London, 2012). These projects and programs often have a holistic approach, integrating landscape development with, for example, inner city port redevelopment and flood risk management (Rio de Janeiro, Toronto), or the reuse of historical buildings and industrial heritage (Taipei Railway Workshop and Tobacco Factory, London Southbank, Rhein-Ruhr Zollverein, Gauteng Power Plant, Toronto Evergreen Brickworks quarry). The identity and image provided by the landscape (above all the heritage aspects) is often the initial catalyst behind these large developments, while the eventual revenues of the project in turn contribute to its restoration and conservation. These projects, which are often largely funded by local governments, are concrete enough to attract private investments, public participation and volunteers. It should be said, however, that important tasks like cleaning the brownfields in Rhein-Ruhr, especially when they are not located in a prime building location, are only made possible with heavy public spending.

Special forms of metropolitan landscape development projects include campus developments, the IBA (International Building Exhibition), the Olympic village and other international event sites such as the Dutch quinquennial horticulture exhibition, the Floriade. While these development projects each have their specific needs and context, they all feature the large national and state investments in certain areas of the metropolis in a relatively short time (less than seven years). Another common trend is that these developments are not seen as isolated sites, but rather as additions to the metropolitan network of activities and connections. The London Olympics legacy plan, for instance, deliberately uses the physical structures of the games for the development of East London, whereas Rio de Janeiro hopes to use the Olympics to enhance its new town Barra da Tijuca. Unfortunately, the structures of the Soccer World Cup in Johannesburg and other locations in South Africa have not witnessed such legacy plans.

SUSTAINABLE TRANSPORT NETWORKS

An attractive metropolitan landscape is an accessible landscape, both in transport and monetary terms. Congestion and new transport modes such as the e-bike urge metropolises to enhance and restructure their 'slow traffic' networks, consisting of cycling and walking trails, bicycle parking and renting facilities. The Deltametropolis has an outstanding bicycle network, which has been under development for over half a century. However, other metropolises are determined to become as least as cycling-friendly as well (copenhagenize.eu). Toronto, Taipei and San Francisco are currently implementing hundreds of kilometers of trails that connect the urbanized parts of the metropolis to the waterfronts and forests. Rhein-Ruhr is developing a high speed cycling network that links together several Unesco world heritage sites – the 'cathedrals of industry', while providing a sustainable alternative to the automobile. As we speak, London is developing cycling superhighway CS1 and Rio de Janeiro is completing its Plano Cicloviário, a bicycle rental system similar to its successful predecessor, Vélib' in Paris.

Adjustments to the transit network also help to decrease congestion and increase accessibility of important activities and landscapes to larger shares of the population. Examples of recent transit projects are Crossrail (a fast east-west rail connection in London) and Corridors of Freedom (a bus rapid transit project in Johannesburg).

These new networks, besides improving connectivity and health (through exercise and air-quality), also aim to increase the quality of public space throughout the metropolis. The transformation of existing heavy infrastructure is present in many case studies: the covering of the inner city highway in Madrid, the demolishing of the elevated highway in Rio de Janeiro and the redevelopment of the Seine riverbanks in Paris, the revitalization of heritage routes such as El Camino Real in San Francisco and the London High-street project. Although local governments and stakeholders typically implement these 'slow traffic' networks, the most internationally renowned examples are usually the result of regional collaboration and funding. The excellent marketing of some of the networks makes them attractive to tourists, something the Netherlands could make better use of.

ELEMENTS FOR A LANDSCAPE AGENDA FOR THE DELTAMETROPOLIS

ISSUE #1
SCALE AND COLLABORATION

There is no doubt that the Deltametropolis is becoming a 'learning' knowledge-intensive economy, and that the development of the metropolitan landscape increasingly provides suitable conditions for this transition. Regarding regional governance, several questions could be raised from the above analysis. For example, on which level should the Netherlands engage in the global competition? Despite several national trade missions, even involving the royal family, there is little emphasis on the ability of the Dutch Deltametropolis to attract highly skilled workers and companies. Instead, sub-regions of the Deltametropolis (Metropolitan Region of Amsterdam, Rotterdam-The Hague and Brainport for example) each create their own image and strategy for the global market and even tend to function as competitors on the national level, not as complementary regions within the Deltametropolis. Similarly, Rhein-Ruhr functions rather as two economic entities, but in regards to topics such as knowledge infrastructure and attractive metropolitan landscapes, they work closely together. Dutch regions could develop a similar style of cooperation. Lombardy has clearly suffered from the fragmented spatial planning in the past, with resulting sprawl and conflicts in the peri-urban areas around Milan, something that has definitely happened in the Deltametropolis as well, for example in the province Zuid-Holland. On the contrary, Oakland (a municipality that was in decline just a decade ago) and Berkeley made a conscious choice to be seen as part of the San Francisco Bay Area. In doing so, they benefit from both the global image of San Francisco and the integration of (green) infrastructures and policies. Historically, the Dutch low lands had a similar unified image abroad. The diversity of the Dutch regional cultures and landscapes is now often mentioned as a quality. The question is, however, if this quality is sufficiently recognized by the innovative companies and highly skilled workers; and whether Dutch regions might benefit from the qualities of the others in the battle for talent. The lakes of Friesland, in this way, also actively contribute to the attractiveness of Amsterdam and Utrecht. Perhaps a shared (national) vision, led by the mayors of the major urban centers, combined with regional realization strategies, is an attractive model for the Dutch sub-regions of the Deltametropolis. Cooperative platforms for development and protection of the metropolitan landscape that also involve private stakeholders and investors, like in San Francisco, may serve as inspiration.

Furthermore, there is not one global market for highly skilled work. Each metropolis attracts certain niches of workers and companies, and it would therefore be pointless for the Deltametropolis to try to compete with London as a global financial center, for example. Determining which niche the Deltametropolis could tap into is an important next step in its further development. We will study possible niches in the next phase of this project.

It is interesting to compare regions in the periphery of the Deltametropolis that suffer from a 'brain drain' and shrinking population, such as the region Parkstad Limburg, to the (also shrinking) Ruhr Region. Where both IBA's (international building exhibition) aim to regenerate a former mining area, the scope and investments of the IBA Parkstad have been incomparable to the IBA Emscher Landschaftspark. The first systematically excludes the large (and economically viable) urban centers in the direct vicinity, such as Maastricht and Liège, from its regeneration strategy. The latter actively positioned itself as a metropolitan landscape strategy, for the benefit of the larger agglomeration including the Ruhr cities Duisburg, Essen and Dortmund, Düsseldorf and also the Rhine region. Recently, however, IBA Parkstad has started to share information with the nearby cities Aachen and Heerlen.

ISSUE #2
PLANNING INSTRUMENTS

Until recently, The Deltametropolis had a national policy for Buffer Zones and National Landscapes, somewhat similar to green belts but more diffuse. Although the National Landscapes could not prevent sprawl, the buffer zones have left many important areas free from urbanization, for example Midden-Delfland in between Rotterdam and Delft. With the recent decentralization of landscape policies, the Main Ecological Structure of the Netherlands has become the responsibility of the provinces. These Dutch spatial instruments did not mention recreation and accessibility as the main goal. Recently established metropolitan regions of Amsterdam and Rotterdam–The Hague are currently developing landscape strategies, which focus more on the landscape users. The national government is, however, conceptualizing a new generation of national parks.

The Deltametropolis is comparable to several of the studied areas on several fronts, but in regards to spatial structure, it is most similar to the polycentric and rural metropolises of Milan and Rhein-Ruhr. With these metropolises, we share the qualities of smaller historic cores embedded in a diverse agricultural and industrial landscape that is always in close reach. We also share the peri-urban character and fragmentation of the metropolitan landscape by bundled infrastructures and sprawl, so-called hybrid landscapes (Tisma et al., 2012; Atelier Zuidvleugel, 2007). Planning instruments in these regions, such as the Netzwerk der Kulturlandschaften (Köln-Bonn), the postindustrial landscape park (Ruhr) and the Parco Agricolo (Milan), could serve as inspiration for the Deltametropolis to find new metropolitan landscape planning instruments.

Based on the circumstantial evidence regarding the economic value of attractive metropolitan landscapes (see Knowledge Habitat), its development should be understood as a constant factor in all spatial investments and transformations, no matter if it concerns a national initiative, provincial, metropolitan or local project. Typical large investment programs such as the Delta Program (2015) or the Energy Transition, are fine opportunities to invest in attractive metropolitan landscapes. Currently, these strategies do not include incentives in this direction and therefore have the potential to fragment and deteriorate the metropolitan landscape, especially if they remain strictly within their own sectors.

'Knowledge habitats', or places that facilitate and enhance the knowledge economy, are not limited to a university campus or innovation park. The variety of living environments, recreational options and other quality of life indicators in the whole metropolitan landscape add to the overall attractiveness. However, campus developments such as science parks and university extensions could be interesting catalysts for a more integrated metropolitan landscape that attracts highly skilled workers (Christiaanse, 2007). For an example in the Dutch context see Marco Vermeulen's exploration of spatial configurations for knowledge campuses in the polycentric Eindhoven Brainport region (2007).

ISSUE #3
NETWORKS FOR CYCLING AND BOATING

The Dutch cycling routes are world famous. Over the last decade, Dutch municipalities and designers have implemented safe and attractive 'shared space' solutions in streets, where automobiles are required to respect bikes. The nation-wide long distance cycling routes (nederlandfietsland.nl/lf-routes) form a popular recreational network. Still, there is room for improvements. In Amsterdam, a city celebrated for its cycling infrastructure, cyclists face heavy rush hours and parking problems. Moreover, on the regional scale, cycling routes are often not well connected, suffer from obstacles, discontinuities at municipal borders and the signage is not always up to date. Despite the head start in cycling infrastructure, or rather because of it, the Netherlands is not among the first countries to implement integrated high-speed cycling (e-bike) networks. It is not a coincidence that National Policy Advisor City and Infrastructure Rients Dijkstra ordered the report on The Netherlands as a 'Cycling Country' (Artgineering, 2014) to put this topic once again on the policy agenda. The report provides several good reasons for why the highly urbanized parts of the country (the Deltametropolis) should invest more in cycling infrastructure through the construction of new paths and the upgrading of the existing network.

Investing in cycling contributes to a coherent and sustainable mobility system. A large portion of cars filling up ring roads is local traffic. If these drivers chose to cycle, high costs to increase peak hour capacity would not be necessary. The bicycle is a catalyst for livable, safe and healthy cities: an important condition for inhabitants and companies, as we have seen. Electric bikes also provide accessibility to the region surrounding the urban centers. Most importantly, cycling strengthens the spatial-economic structure of cities and thereby, the competitiveness of the region. The bicycle is a great export product and symbol for Dutch identity as well (Artgineering, 2014). And bike-friendly cities score higher on quality of life rankings (Copenhagenize, 2013; Mercer, 2012).

Similar qualities can be attributed to the recreational water infrastructure in the Deltametropolis. Especially when the Friesian Lakes and the delta of Zeeland are taken into account, there is an extensive network for sailing and other water sports available in less than two hours travel time from all parts of the Deltametropolis. The infrastructure for these activities is often several decades old and could use some upgrading. Special attention is needed in order to improve the links between river and lake systems. Over time, locks and barrages that separate water levels and sub levels have fragmented the navigable waters. When possible, for instance during water engineering works, these obstacles should be optimized for traffic or removed. In the case of separated water systems, making extra locks and links may improve the quality of the network (see Metropolitaan Landschap, West8, 2010). Urban and regional passenger transportation over water, such as fast ferries, can be an attractive alternative to road and rail transport, but these initiatives generally need public funding to provide a viable service.

The Deltametropolis has a rather dense railway network. However, there remain several opportunities to turn stations into 'portals' to the landscape (Deltametropolis Association & Province Noord-Holland, 2013; Deltametropolis Association, 2015). Integration of transit with cycling and hiking could be explored further as well. Many typical parts of the landscape of the Deltametropolis, including the coast, riverfronts, World Heritage sites and the polder landscape are lacking in their accessibility via public transport. Easy access to walking trails is also an incentive to healthy lifestyle and frequent excercise.

NEXT STEPS

The Dutch Deltametropolis has a strong reputation and vocation as a rural cycling metropolis. Its landscape features a great variety of historical and modern elements in a rather small area, ranging from intimate historic centers to wide views of the polder grids, wetlands and navigable water bodies. In this metropolis, human and natural capital, as well as cultural heritage, such as the Dutch Waterlines, are becoming increasingly linked in the context of the emerging knowledge economy, similar to other highly skilled regions in the world. How this will specifically take shape in the Dutch context, however, is the question for the coming years.

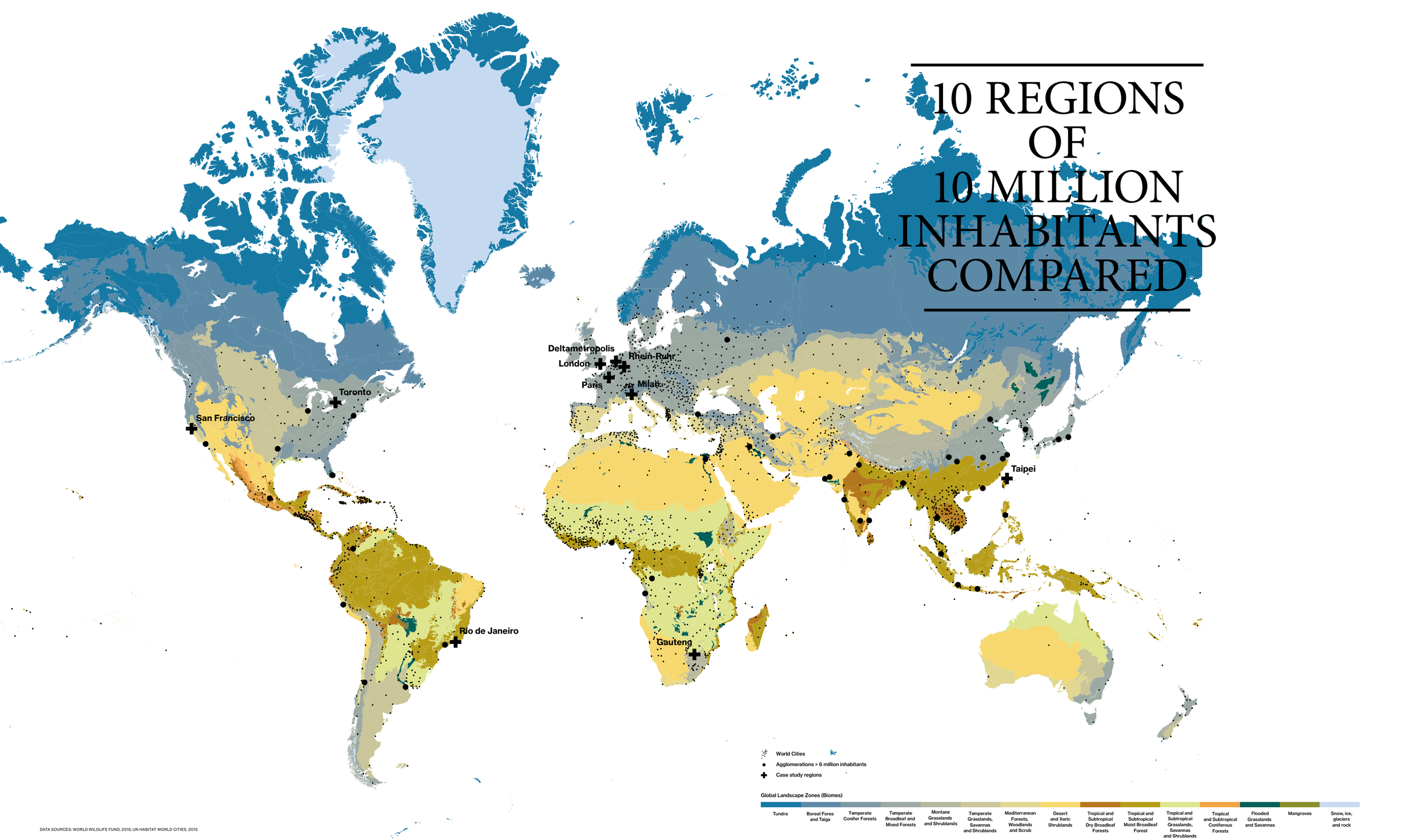
The organizations behind this research - Wageningen University, LEI, Cultural Heritage Agency of the Netherlands, Ministry of Economic Affairs, Staatsbosbeheer, West8 and the Deltametropolis Association – will be the advocates of a new way to link economic development to landscape policies and projects, inspired by the international practices mentioned in this publication. We will share this topic and bring our findings to ongoing public debates regarding the new Dutch Environmental Strategy (NOVI, Ministry of Infrastructure and the Environment, 2016-2017), the upcoming new Landscape development and conservation policies (Ministry of Economic Affairs, from 2016) and Metropolitan Economic and Landscape strategies in The Netherlands (Metropolitan Region of Amsterdam, Rotterdam-The Hague Metropolitan Region and Brainport Region, etc.). The second phase of this research will include workshops with Dutch regional authorities during the Rotterdam Architecture Biennial (IABR 2016). The results of this second phase of the research will be summarized in a follow-up publication.

Main regional landscape policies, projects and initiatives

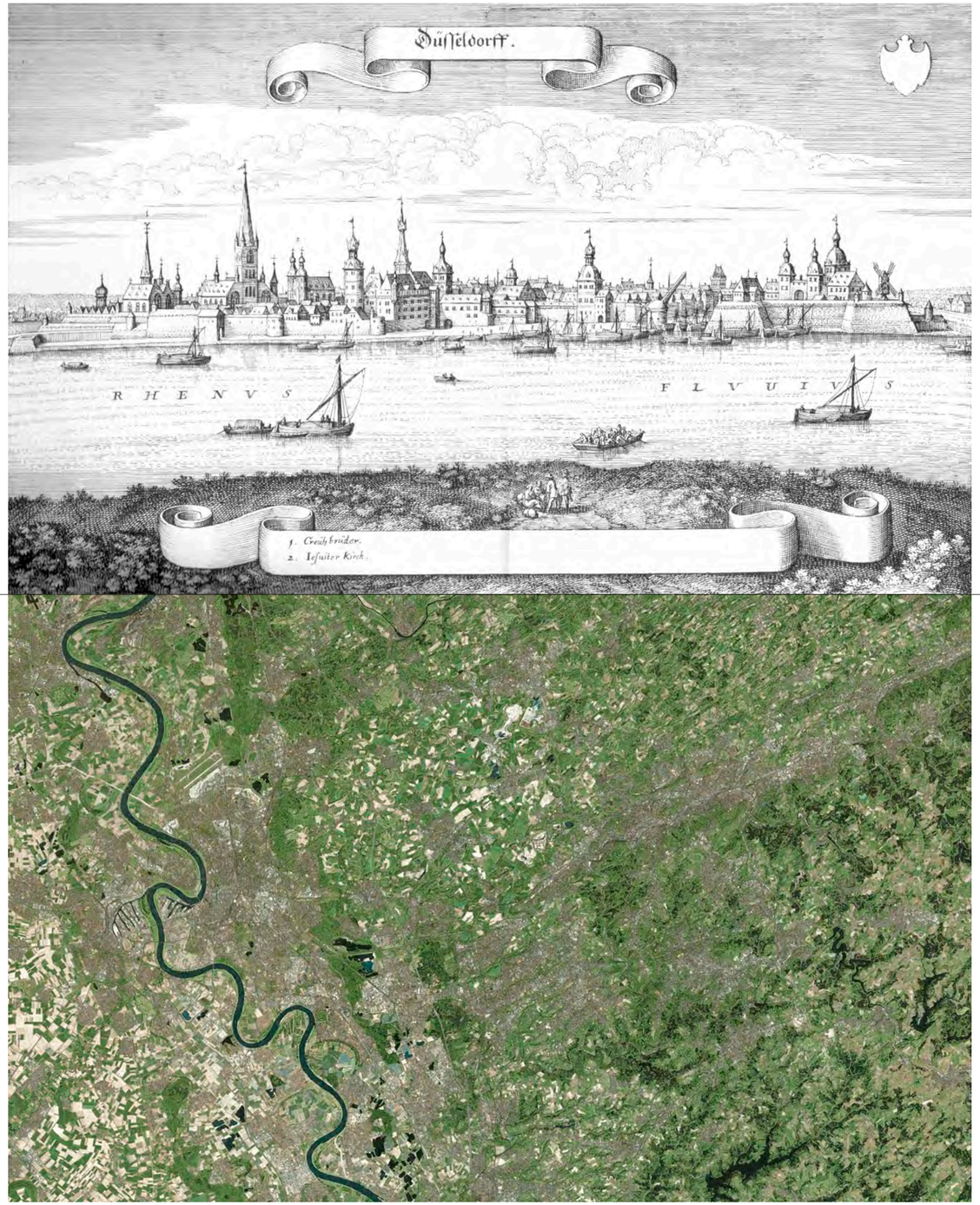
	Regional reserves, green belts and grids	Heritage and branding	Mega events	Attractive living in the landscape	Large sustainable infrastructure projects	Waterfront regeneration projects	Cycling strategies	Urban farming and park initiatives
RHEIN RUHR	Rhein Charta Emscher Landschaftspark Kulturlandschaftsnetwerk	Zeche Zollverein and other industrial heritage Central Köln	Essen (Ruhr) Capital of Culture 2010	Rhein Charta	Rhine-Ruhr Express (local trains)	Rheinboulevard Köln Cleaning of Emscher river and brownfields	Route der Industriekultur Bicycle highways	Belvedere Agricultural Park Köln
LONDON	London Greenbelt* All London Green Grid	Highstreet Project Unesco world heritage Gentrification of old neighborhoods	Olympic Games 2012 legacy plan Queen's Jubilee 2012	Barking Riverside	Crossrail Congestion Charge Docklands Light Rail	Thames Southbank and Docklands regeneration Tate Modern and Battersea Power Station	Cycle Super Highways Bike London	Farmers markets Land Trusts
TORONTO	Toronto Greenbelt Ravines and Don River protection areas Green Space System	Reforestation policies (forest = heritage) Evergreen Brickworks	Panamerican Games 2015	Neighborhoods near ravines	Ravine parkways	Waterfront Boulevard Portlands redevelopment	Toronto Islands Cycling Circuit Greenbelt Trails Toronto Bike Plan*	Greenbelt and Brickworks urban farming initiatives
RIO DE JANEIRO	Tijuca forest reserve Beaches Wetlands Guanabara Bay*	Carioca Landscape Unesco world heritage	Olympic Games 2016* Soccer World Cup 2014 Panamerican Games 2007	Barra da Tijuca* Porto Maravilha	Demolition of Elevado da Perimetral viaduct Arco Metropolitano ring	Porto Maravilha port regeneration	Plano Cicloviário Bike rental Bike Rio	Favela farming initiatives
SAN FRANCISCO	ABAG Bay Area Plan Primary Conservation Areas Greenbelt Alliance	El Camino Real* Golden Gate Bridge Alcatraz	Super Bowl 50, 2016	Central Corridor Eco District	BART lightrail	Crissy Field Park	San Francisco Bay Trail The Wiggle	Open SpaceTrusts Open Space Councils Mission Peak
PARIS	Île de France 2030 Ceinture Verte* City Parks (P. André Citroen, P. de la Vilette)	Seine, monuments, museums, and city core	1889 World Expo (Eiffel tower) Grand Paris Climat, 2015	New towns of Paris-Saclay, Marne la Vallée and Triangle de Gonesse	Seine Boulevard Promenade Plantée Grand Paris Express Autolibre	Seine boulevard pedestrianization Paris Plage	Vélib bicycle sharing	Grenelle Environnement
GAUTENG	Pillars of Radical Transformation and Green Strategic Programme Gauteng	Cradle of Humankind (Unesco world heritage) Central Pretoria Orlando Power Station	Soccer World Cup 2010*	Gated communities*	Corridors of Freedom (BRT network)	Orlando eKaya waterfront project, Soweto	Cycling lane between University and Park Station	Maboneng neighborhood regeneration
MILAN	Parco Agricolo Sud PGT Milano Raggi Verdi Lombardia Landscape Plan	Milano Metropoli Rurale Central Milan and village monuments	Milan Expo 2015	Milano Metropoli Rurale	Milan Metro Line 5	Valletta Waterfront Navigli Lombardi projects	Cash for Cycling, Milan	Parco delle Risaie Strada del Riso Milano Metropoli Rurale
TAIPEI	Central Mountain Range Conservation Axis Creative Parks	Strategic Plan for National Spatial Development Taipei Railway Workshop	World Design Capital 2016 Flora Expo 2013	International Village Communities	Civic Boulevard Expressway	Danshui river waterfront development	Youbike Cycling trail around Taiwan	City Garden Action International Village Communities
DELTAMETROPOLIS	Ecological Main Structure Nature development projects	Historic city cores Rural heritage Defense Line of Amsterdam (Unesco world heritage)	Floriade	Vinex compact suburb program	Zuidasdok High Speed Rail South A4 Midden-Delfland	North Sea boulevards Urban river fronts Dike reinforcements	National Bicycle Route network	Land Trust (Natuurmonumenten) Urban agriculture inititatives

* existing but not not used to its full potential

10 REGIONS OF 10 MILLION INHABITANTS COMPARED



DATA SOURCES: WORLD WILDLIFE FUND, 2015; UN HABITAT WORLD CITIES, 2015

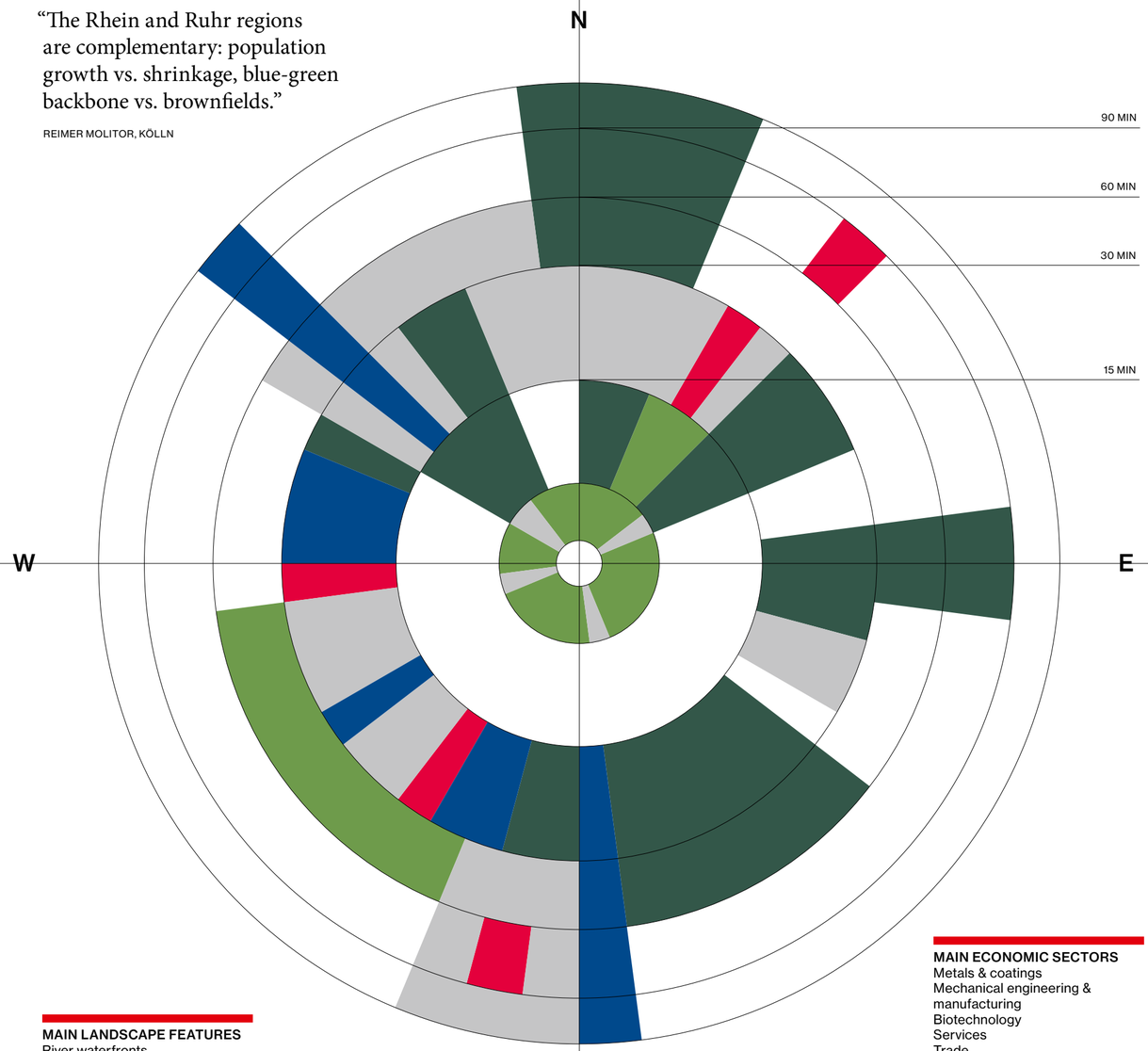


Copper-engraving of the view on Düsseldorf, 1647, by Matthäus Merian. SOURCE: WIKIPEDIA.ORG

Rhein-Ruhr (DE)

"The Rhein and Ruhr regions are complementary: population growth vs. shrinkage, blue-green backbone vs. brownfields."

REIMER MOLITOR, KÖLLN

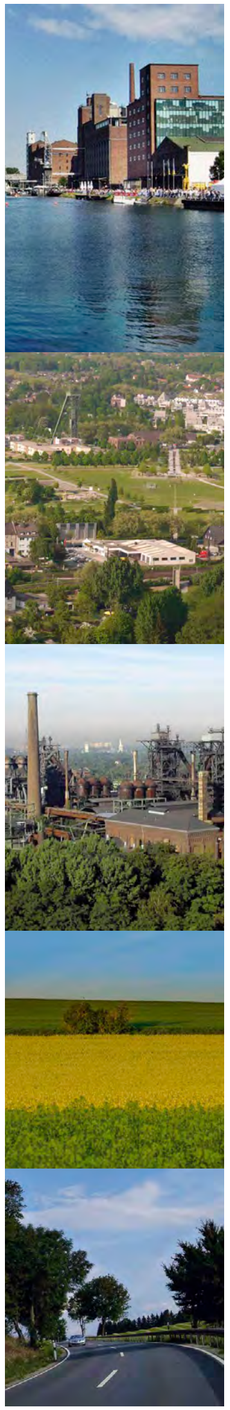


MAIN LANDSCAPE FEATURES
River waterfronts
Industrial heritage
Forest
Historical centers
Farmland
Autobahn
Hills

MAIN ECONOMIC SECTORS
Metals & coatings
Mechanical engineering & manufacturing
Biotechnology
Services
Trade
Information technology
Weapons industry
Diplomacy
Agriculture
Tourism
Product design

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmland Historic area Built area

Rhein-Ruhr Metropolitan Area (DE)



The Rhein-Ruhr metropolitan area is the largest conurbation in continental Europe, consisting of historic cities separated by agricultural land along the River Rhine, and the dispersed settlements and industries along the River Ruhr. Although both sub-regions have had a long history of collaboration within the Hanseatic League, they have developed in quite distinct ways as industrial regions in the 20th century, the first concentrating on (high-tech) manufacturing, the latter on mining and heavy steel industries. Nevertheless, the areas work together on both socio-economic and landscape issues. The landscape is well known for its river valleys (Lippe, Rhine, Ruhr, Weser, Wupper), forests, historic city cores and industrial heritage. The landscape is complimented with a complex system of infrastructure, including highways, railways, waterways and two international airports.

As a polycentric metropolis, different urban and rural landscapes are always nearby, albeit limited in size. Today the area faces the main challenges of accommodating growth along the Rhine without occupying too much open space and acknowledging the effects of climate change. In the postindustrial Ruhr area brownfield regeneration and population decline are important challenges. Long-term projects such as IBA (Internationale Bau Ausstellung – International Building Exhibition) have been an important factor in the recent development of Rhein-Ruhr.

Innenhafen Duisburg
WIKIMEDIA COMMONS, INDIANSUMMER

Ruhrgebiet
FLICKR ⓒ HARDO MULLER

Landschaftspark Duisburg Nord
WIKIMEDIA AIR-QUAD UG

Rapeseed
FLICKR ⓒ JENNIFER STAHN

Autobahn
FLICKR ⓒ MARIANO MANTEL

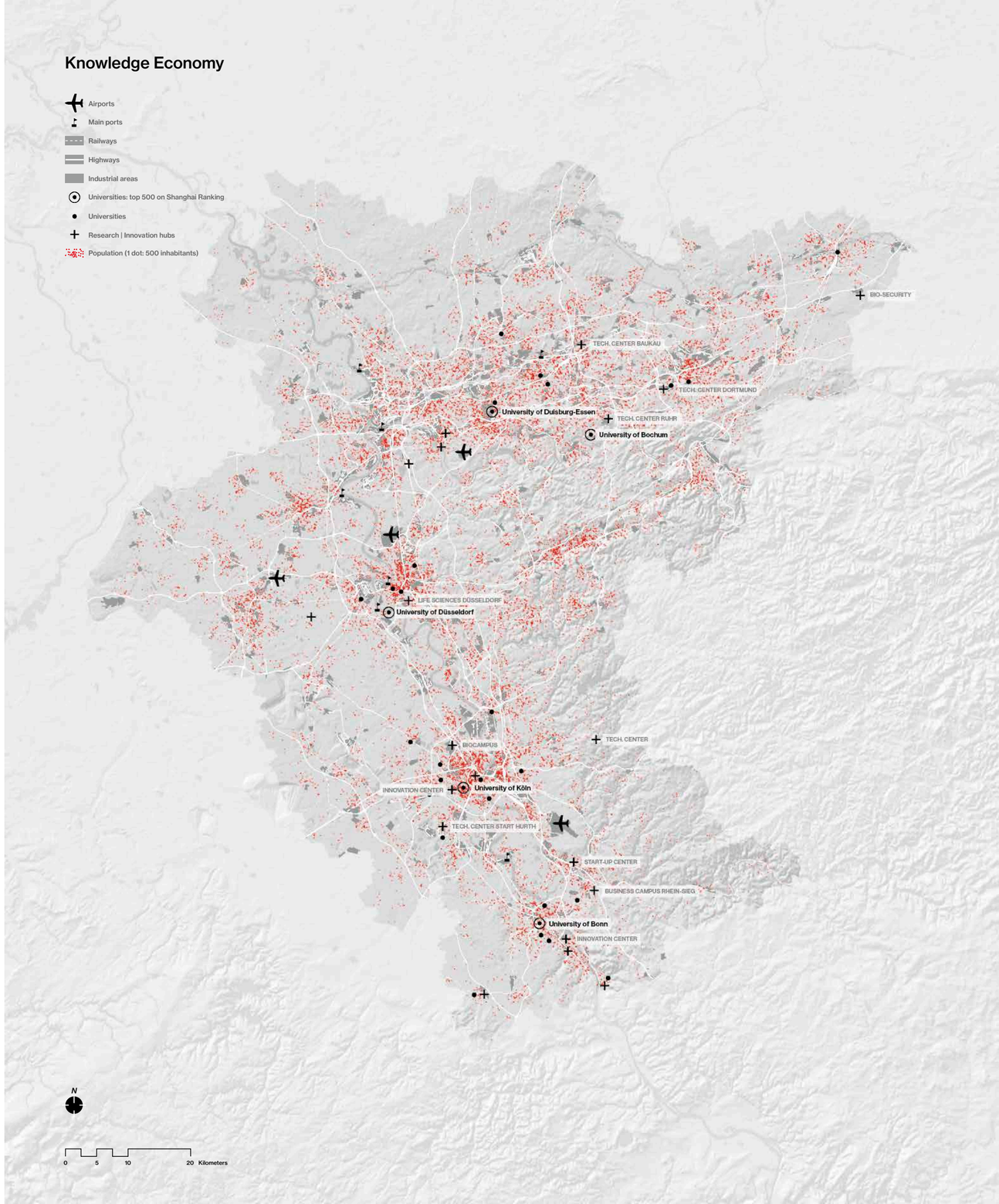
FOUNDING STORY

The cities along the Rhine date back many centuries, as the river was (and still is, for that matter) the transportation backbone of Western Europe. Until today, the Dutch and Swiss industries and logistics are strongly related to the German industries and trade activities along the Rhine. The excellent position for trading raw materials and goods, as well as the exchange of knowledge, led to flourishing city states and later, a booming complex of different crafts and industries. Technology, manufacturing and materials are still the main pillars of the region's economy. The Ruhr area also has a 200-year history of iron and tool production, first on a smaller scale with waterpower, and later on industrial scale with the coalmines and blast furnaces that are still present in the landscape. Just like other mining regions in Europe, the sector declined rapidly after the oil crisis in the 1970s, marking a new era for the Ruhr region. The polluted Emscher River and brownfields and unemployment in the area, became main points on the regional agenda. By then, the two regions, one growing and the other shrinking, complemented each other in many fields and are seen as one patchwork agglomeration.

EMERGING METROPOLITAN LANDSCAPE

The Rhine was and still is the main structuring element in the region. It divides a more hilly forest landscape east of the river from the flat and urbanized landscape intertwined with the agricultural land to the west. Strategic documents such as the Rhein Charta (2011) frame the regional challenges in fluvial terms: water management and drinking water, recreation and nature along the Rhine; research, jobs and production; and living environments along the river. Reimer Molitor of the Köln-Bonn region (2015) explains "both regions have a different approach to landscape, but they profit from each other. Köln-Bonn works with an agglomeration concept while it tries to deal with growing pains. Landscape is the backbone for spatial development." Since the plan of 2004, the River Rhine and the green space structure are regarded as a blue and green infrastructure. "Ruhr on the other hand focuses on competitiveness in the future, as it has to deal with population shrinkage. The landscape challenge is to use what's left of open spaces in the post-industrial region and regenerate brownfields", Molitor adds. Here the landscape strategy serves as a common ground, which is a central item in regional policy.

The development of the Ruhr region was greatly influenced by the Emscher Landschaftspark. During the 1980s it became clear that the region would not be globally competitive without solving its environmental issues, in particular the water quality of the Emscher River and the brownfields. Or as Michael Schwarze-Rodrian of the Regional Association Ruhr (RVR, 2015) put it: "we had to improve our soft location factors." There was strong political support for these decisions. As Minister for Regional and Urban Development and later as Minister for Urban Development, Housing and Transport of North Rhine-Westphalia, Christoph Zöpel together with Johannes Rau, Minister-President of the same



Rhein-Ruhr Metropolitan Area (DE)

Route der Industriekultur
WIKIMEDIA COMMONS DUPLOLINO

state, made sure it reached the federal agenda. Geographer and urban planner Karl Ganser led the (IBA) Emscher Park. The IBA, started in 1989 by Zöpel, turned the area into a live metropolitan landscape development lab for more than 20 years. After the official end of the IBA, the city of Essen, in the heart of the region, became cultural capital of Europe in 2010. The mining site Zeche Zollverein gained UNESCO world heritage status around the same time. The physical impacts of these transformations include turning old mines into cultural sites, old train tracks into bike paths, and a gasometer into an event center.

KNOWLEDGE HABITAT

According to Molitor "besides industry and logistics, the region is also strong in education and applied research and Bonn has a strong international sector (United Nations). Over time, upcoming sectors have replaced those declining. New areas are nanotechnology and surface coating, in line with the metal tradition of the Ruhr area. Both the Ruhr and Köln-Bonn regions have a highly skilled workforce." Schwarze-Rodrian affirms that people are a good reason for companies to choose for Rhein-Ruhr. With 180 nationalities, it has a unique mixture of social cultures and a legacy of hard work, respect and integration. The manufacturing tradition lies behind the current openness for change, interest in new solutions, lifelong learning and high-end qualification. A design school was built on the premises of the Zollverein industrial heritage site, adding to the region annual receiving of about 200,000 students each year. Moreover, Rhein-Ruhr features a strong base of medium-size enterprises. The living quality of the region is already quite high and continues to increase, according to Schwarze-Rodrian. Molitor reflects: "from the landscape engineering approach of the 1980s, the region moved towards a holistic landscape view, in which it has many dimensions such as food production, flood management, identity, recreation, quality of life etc. There is attention for active landscapes – biking and hiking routes; and the combination with regional identity, cultural heritage and environmental education."

> "The advantage of our dispersed region is the availability and diversity of the landscape. The disadvantage is the impossibility to experience larger landscape units, as the settlement structure is too dense."
>
> REIMER MOLITOR, KÖLLN

Zollverein Design School
PHOTOGRAPHY: MERTEN NEFS

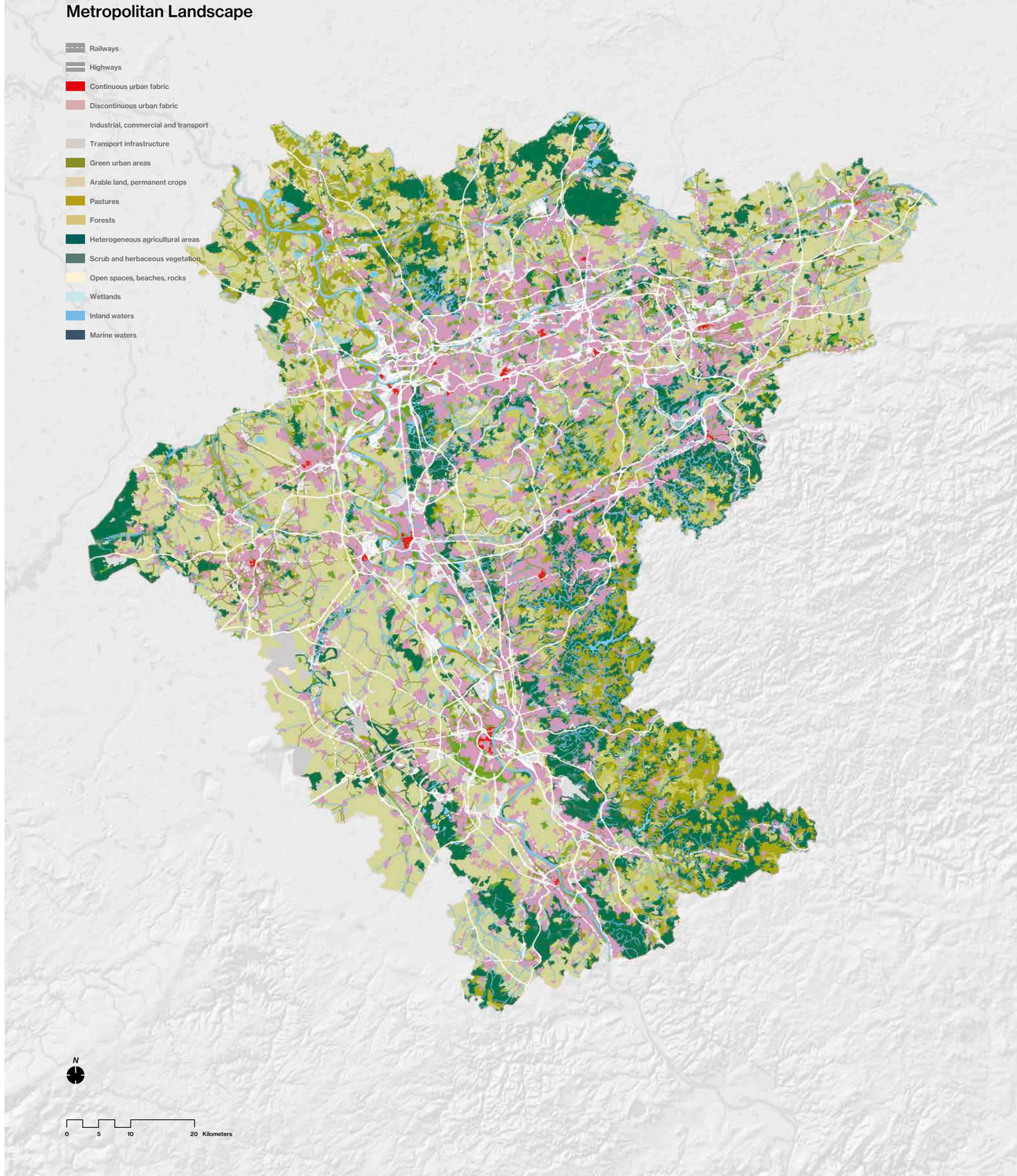
Private companies are returning to the Ruhr region because of the green quality. One example is the Krupp steel and weapons factory, a family business that began around 1800 in Essen but eventually left the region. In 2002 they returned and built their new headquarter on the land they still owned. Without state funding they redeveloped a contaminated site into buildings and public open space. Many sites around the Emscher Landschaftspark have been cleaned and redeveloped through private initiative. Approximately 80% of the former brownfields have been regenerated, whereas another 20 sites (1,000 hectares) have public-private agreements to be restored until 2040. In general, market prices are not high enough for restoration, explains Schwarze-Rodrian. Public investments are therefore necessary for the first 10 years, after which the land is resold to private companies. Moreover, knowledge of the safe 'in situ' solutions of brownfield regeneration is also exported.

The region has actively asked users of the landscape about their experience and specific shortcomings of the current infrastructure. Surveys show that over the last five years the situation has improved. At the beginning, planning doctrine aimed at avoiding the use of asphalt, but the opinions of cyclists and skaters have led to large tracts of new 'whispering asphalt', a type that absorbs part of the sound that is generated by the wheels. Many of the current recreation spaces in the Ruhr area are former 'forgotten' spaces in and between the cities. They were included in the green system, given back their old name and identity. In Rhein-Ruhr, the central question of how to make use of the polycentricity of the metropolitan landscape and capture its potential still remains.

METROPOLITAN LANDSCAPE POLICIES

The "State Development Plan of North Rhine-Westphalia" (2012) frames landscape aspects together with architectural heritage as 'cultural landscape' (Kulturlandschaften). The plan identifies significant areas and promotes cultural diversity as well as heritage protection. The guiding principle is sustainable spatial development, which balances social and economic demands with the ecological functions of the landscape and overall living conditions in the region (ESPON, 2013, TPM Territorial Performance Monitoring Annexes Regional Report North Rhine-Westphalia). The "State Development Program NRW" (2013) explicitly recognizes that skilled workers take into consideration 'soft location factors' such as environmental quality, family-friendly and barrier-free infrastructure and availability of cultural landscape (chapter 1.1, Globalisierung der Wirtschaft). In practice, regional programs such as the "Kulturlandschaftsnetwerk" improve quality of life and green infrastructure.

Typical of the "IBA Emscher Landschaftspark" (iba-emscherpark.de, 1989) was the decision to offer support for research and development to further the environmental quality. The region itself became a metropolitan landscape laboratory with 2.5 billion euros in funding. Although the IBA is not a transferable instrument, many of the IBA methods of the Emscher Landschaftspark have become standardized, such as the use of (international) competitions to ensure that the best solution is found (rather than contracting the usual suspects) and combin-



Rheinboulevard
PHOTOGRAPHY: MERTEN NEFS

Wuppertal monorail
CC WWWUPPERTAL

Landschaftspark Duisburg-nord
CC THOMAS WENSING

ing a centralized and decentralized approach. Local stakeholders are invited into an atmosphere of support and respect, where the focus lies on finding new solutions. On the other hand, collaboration among 17 mayors required a new openness. According to Schwarze-Rodrian, the success of the IBA lies in good governance, not government, a process that – just as in football – needs a trainer who is not in the field himself but qualifies, supports and capacitates the players.

In 1995 the state North Rhine-Westphalia, while writing their development plan, drew up the first contours of a "European Rhein-Ruhr Metropolitan area," reflecting on the development of the conurbation over the years. Because of the highly fragmented political and administrative structures in the region, somewhat similar to the situation in the Dutch Deltametropolis, the idea did not take off. Düsseldorf functions rather autonomously as the capital of the state, with its own governmental sector and industrial cluster. The Ruhr Metropolitan Region and the Köln-Bonn region both function as well-defined metropolitan areas and are quite different in character as explained above. These institutions work together on operational and strategic levels, especially in regards to landscape and economic development. For transport issues, an overarching authority was created for Rhein-Ruhr, but a metropolitan development authority on this scale will not exist anytime soon. Both long-term perspectives such as the Emscher Landschaftspark – underway for over 25 years and still a vital entity – as well as a culture of public and professional debate, however, do seem to connect and work in all parts of Rhein-Ruhr. Examples of this vital debate are the upcoming National Conference on Green Infrastructure (organized in the region in 2016) and a Conference on Green Capital (organized in Essen in 2017).

METROPOLITAN LANDSCAPE INITIATIVES

"Route der Industrikultur" (route-industriekultur.ruhr) is a 700-kilometer long cycling route that passes by the so-called 'cathedrals of industry,' including Zeche Zollverein, and connects the urban cores with the creative industries campus and forest areas. Recently, the first 5 kilometers of a fast bicycle highway for electric bicycles were inaugurated, which has the potential to become an important sustainable alternative for mobility in the region.

The "Rheinboulevard" is part of the Kulturlandschaftsnetwerk. The project enhances the central waterfront of Köln on the east riverbank of the Rhine. The waterfront functions as an urban stage facing the historic center, while connecting the Rhein Park to other elements along the river, like the Köln Messe event facilities.

Top 8 tourist sites by Rough Guide

1. Cologne
2. Schloss Augustusburg
3. Haus der Geschichte Bonn
4. Aachen cathedral
5. Eating and drinking in the Altstadt
6. Landschaftspark Duisburg-Nord
7. Folwang collection, Essen
8. Hermannsdenkmal, Detmold

Our top 5 sites for the highly skilled worker

1. Zeche Zollverein (Essen)
2. Kölln waterfront and center
3. Route der IndustrieKultur / Emscher Landschaftspark
4. Düsseldorf
5. Wuppertal Monorail

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MAP DATA
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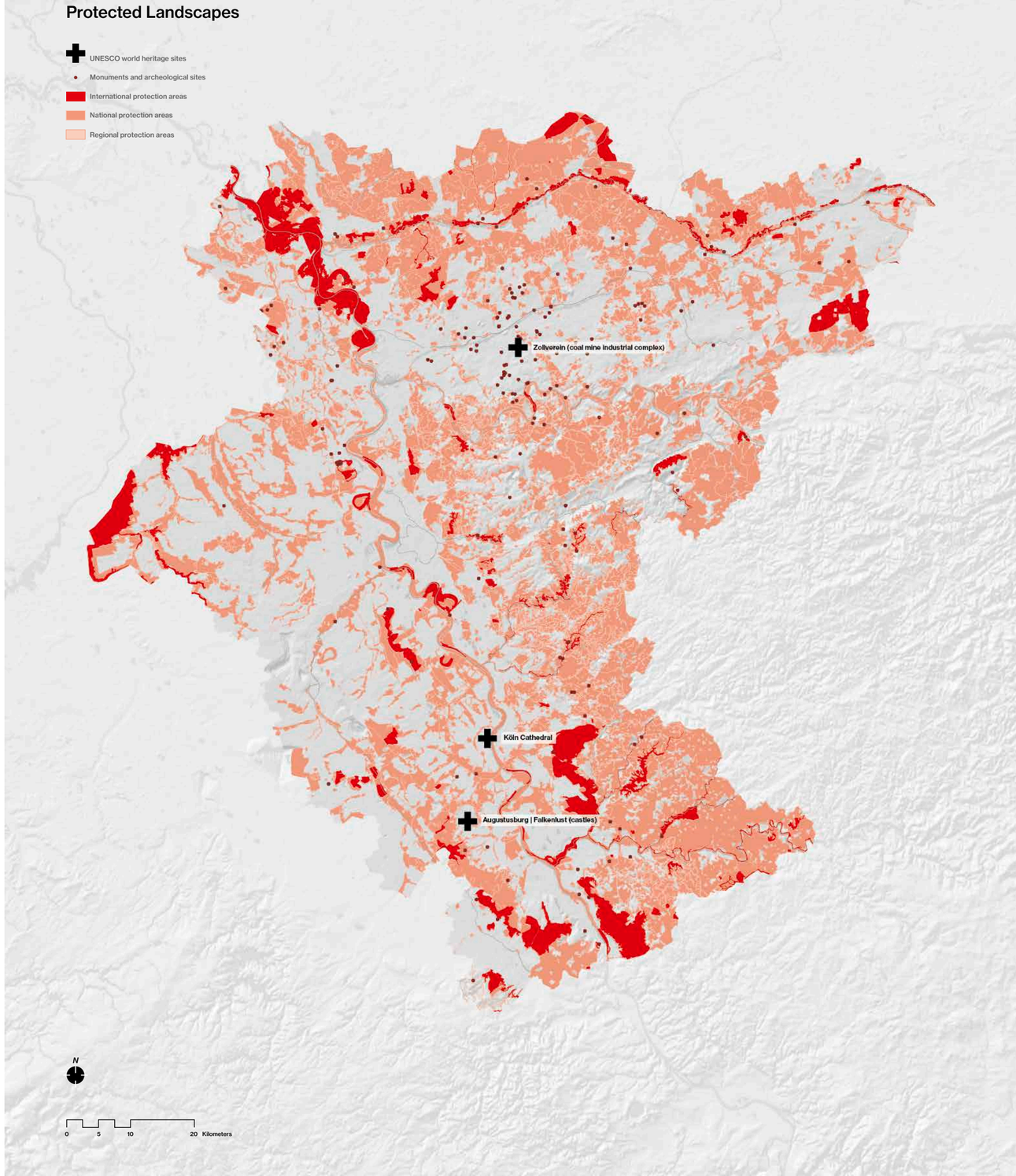


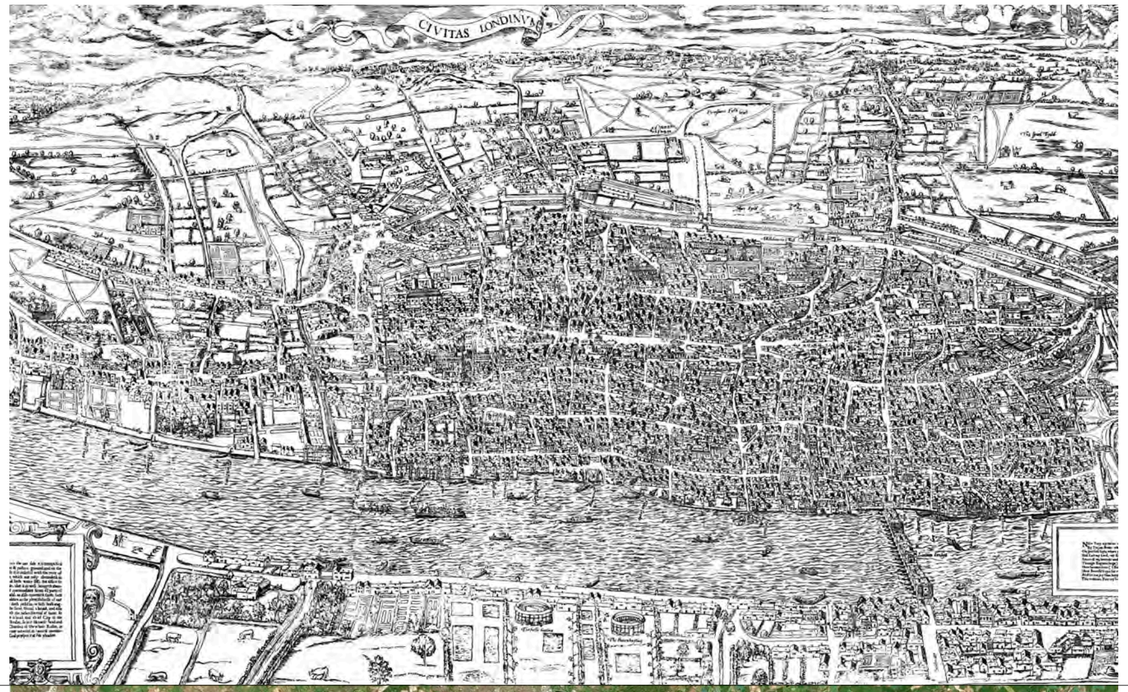
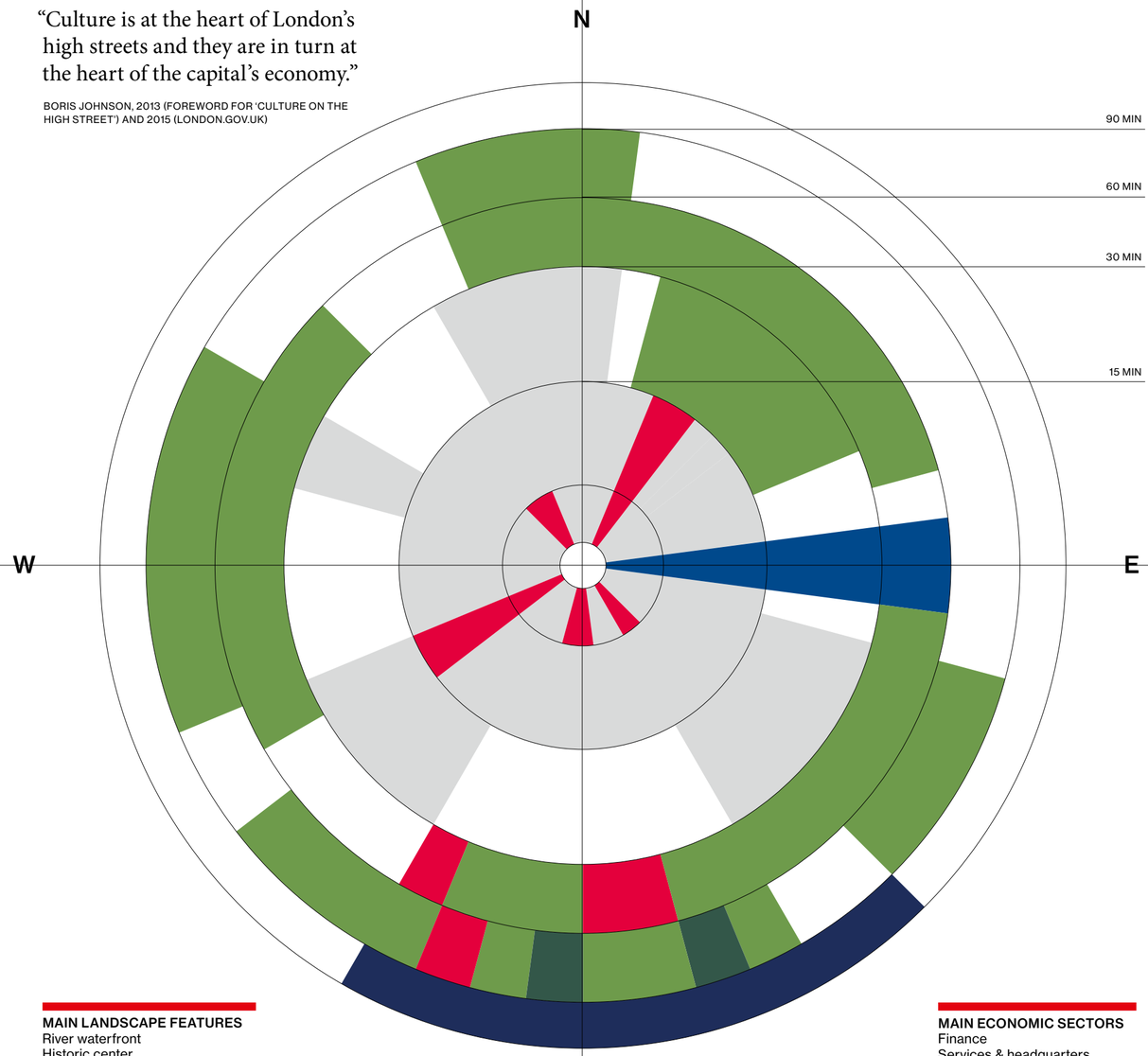


Image of Civitas Londinium, Agas' Map of London, c 1570-1605 - Maps of Old London, London, Adam and Charles Black, 1908. Scanned & corrected by Mike Calder. SOURCE WIKIPEDIA.ORG

London (UK)

"Culture is at the heart of London's high streets and they are in turn at the heart of the capital's economy."

BORIS JOHNSON, 2013 (FOREWORD FOR 'CULTURE ON THE HIGH STREET') AND 2015 (LONDON.GOV.UK)



MAIN LANDSCAPE FEATURES
River waterfront
Historic center
Urban parks
Landscape parks
Upcoming neighborhoods
River bank promenade
Farmland
Forest

MAIN ECONOMIC SECTORS
Finance
Services & headquarters
Information technology
Cultural industry
Tourism
Manufacturing & product design
Government & diplomacy
Biotechnology

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmlands Historic area Built area

London Metropolitan Area (UK)

Besides being the British capital, London is a command center of world politics, finance, services, culture and education. It is a global and cosmopolitan metropolis that contains 12% of UK population where 300 different languages are spoken. London Heathrow Airport is the fifth largest airport in the world. The Thames River is the backbone of this polycentric yet compact city. Between the 32 boroughs, there is great diversity in terms of architecture, public space and green areas, culture and population. Currently four sites in London are listed as UNESCO world heritage, including the Royal Gardens at Kew, which serves as an example of the English garden style developed in the 18th century. London is one of the few cities that have become so common in popular media that it is easily recognizable from its quintessential landmarks such as Tower Bridge, London Eye and the more recently constructed 'Shard' skyscraper. London is also the only city to host The Olympic Games three times.

Despite these strong qualities, London currently faces major metropolitan challenges, such as the extremely high cost of living and the shortage of affordable houses as a result of strong pressure from property developers and speculators. According to experts, the recent Housing Bill will be the end to affordable housing in the city all together (Foster, 2016), because the new laws merely benefit home owners, while many people with middle and low incomes cannot afford to buy. Tenants who live in council housing and earn more than £40,000 will be charged extra. Two primary consequences of these challenges include an increase in commuting time for inhabitants, and a decrease in air quality. These two factors have been mitigated in the central area to a certain extent with the Congestion Charge project, a license plate toll system that automatically charges a daily fee of £11.50 (2016) when a vehicle enters central London.

Thames and Tower Bridge
PHOTOGRAPHY: MERTEN NEFS

Brick Lane
PHOTOGRAPHY: MERTEN NEFS

Pimrose Hill
PHOTOGRAPHY: MERTEN NEFS

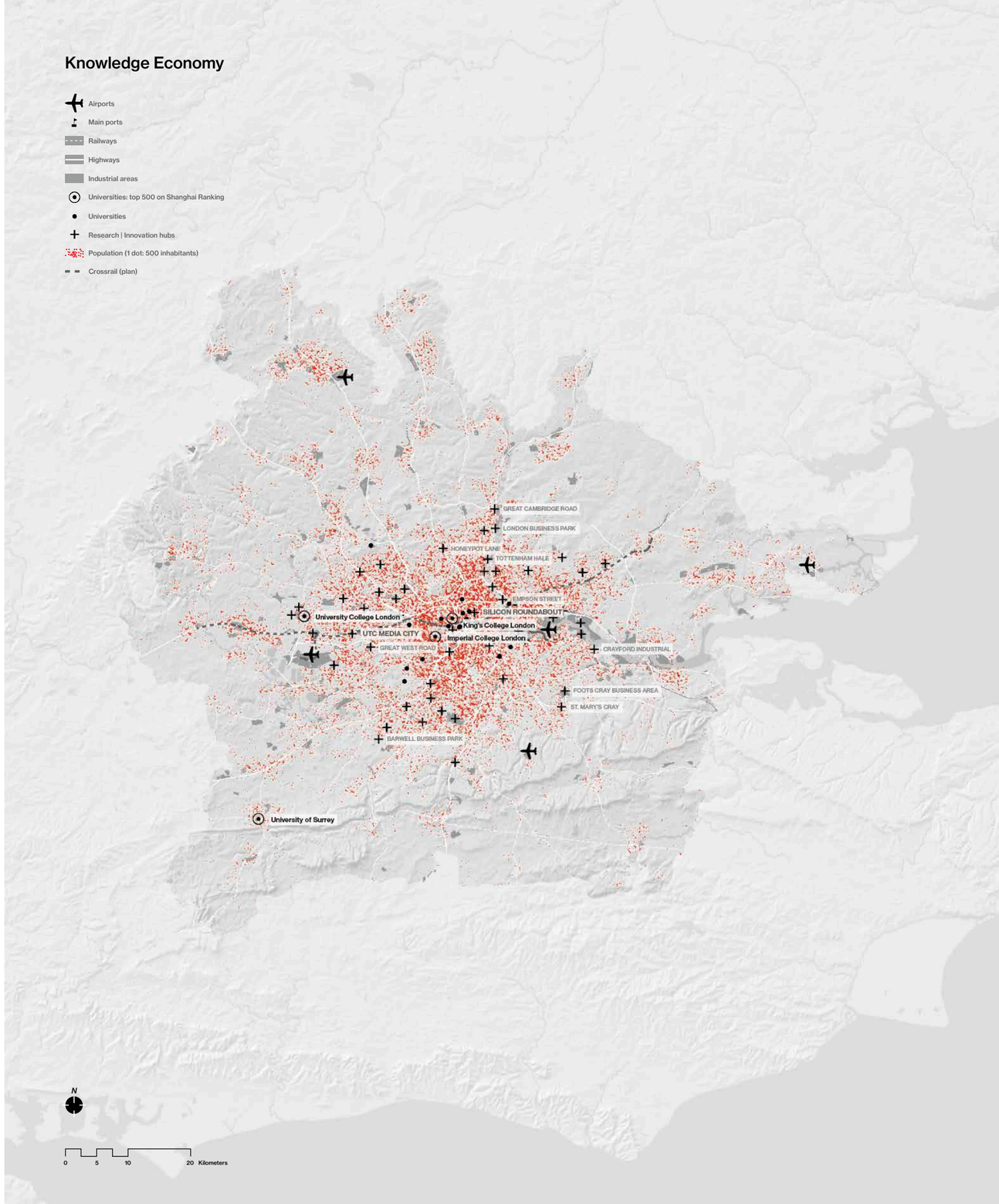
Greenbelt Landscape
FLICKR © HARRY POPE

FOUNDING STORY
London was founded by the Romans and has a 2000 year history. It was the capital of Roman Britain and benefited from major public works including the construction of temples and baths. Around 200AD a protective wall was built around the city, which would continue to define the city boundaries for 1600 years. In the 17th century London witnessed two historical calamities, The Great Plague and The Great Fire, together killed a third of the city's population and destroyed 60% of the built up area.

In the 18th century, Britain became the biggest colonial and industrial power, with London as its main center of global trade and one of the main centers of manufacturing. Between 1800 and 1900 the population increased from 1 to 6.5 million, making London the most populated city in the world. The need for improved public transport, together with the height of British innovation at the time, brought about the first underground railway system, The Metropolitan Railway. Since its opening in 1863, the Tube has grown into 11 lines, 270 stations, accommodating around 1.2 billion passengers per day, forming its own 'underground city'. The intensive railway construction and the mechanization of work caused vast transformation of the landscape including construction of factories, the appearance of slums and the city's continual expansion with low-density suburban houses. By 1939 the population of London had grown to 8.6 million, after which it remained more stable. The first metropolitan institutions, including the Metropolitan Police (1829) and Metropolitan Board of Work (1855), were set up long before comparable metropolises had administrations on this scale.

EMERGING METROPOLITAN LANDSCAPE
During the Second World War, Londoners suffered heavy bombardment and destruction. "The Town and Country Planning Act" (1947) formed the basis of the reconstruction process, a planning document that still serves as the cornerstone of the modern English planning system. This plan allowed local authorities to acquire land and lease it to developers, as well as to include green belt proposals in their development plans. The administrational boundary of 'Greater London' was formed in 1965, bringing the 32 boroughs together into one administration level for a more integrated planning model.

Technological innovations, the standardization of the intermodal container, the increase in cargo ship size and the acceleration of globalization brought radical transformation to the landscape in East London, which served as the industrial powerhouse of the city until the 1970s. The old London Docks gradually became redundant, leaving considerable areas unused. In the beginning of the 1980s, the government granted a special status for some docks to promote their redevelopment. As a result, the Canary Wharf complex was transformed into what is now the second financial center of London after "The City." In the same period the finalization of the Thames Barrier (1980) offered the local administration an instrument to protect the riverbanks from flooding.



High Street 2012 Project
MAP: GORT SCOTT

The beginning of the new millennium marked the addition of iconic landmarks to the city's skyline, including the Millennium Dome, the London Eye, Queen's Walk on the South Bank, and the transformation of the old Bankside Power station into the new Tate Modern art gallery accessed by the pedestrian-only Millennium Bridge. More recent transformations include the construction of the largest railway project in Europe - 'Crossrail', which aims to improve the transport service for commuters, the redevelopment of the Battersea Power Station and the completion of Barking Riverside, a new neighborhood for 25,000 residents by the Thames in the East. At the same time, several proposed developments and their consequences currently divide Londoners. For some, the extension of Heathrow airport is controversial in that it opposes larger economic interest of the nation and will increase local noise and air pollution. Many fear the impact of tall buildings upon the city-skyline and mock skyscrapers with words such as 'The Gherkin' and 'Lonbai'. Lastly, the combination of greater social inequality, an increase in foreign investment and heightened speculation in London has alarmed experts like Saskia Sassen (2015) and Anne Minton (2015). According to them, access to city and the green landscapes has become problematic for lower and medium income groups, which will result in a less diverse and cosmopolitan London.

> "[If we build on the green belt] you will never get the brownfield regeneration. We can build 400.000 homes on brownfield sites. And I think this is where we should start from."
>
> BORIS JOHNSON, 2015 (STATE OF LONDON DEBATE: ASK BORIS JOHNSON)

Tower Bridge from above
FLICKR @ BY STEW DEAN

London Olympics 2012
FLICKR @ BY BARNEY MOSS

KNOWLEDGE HABITAT

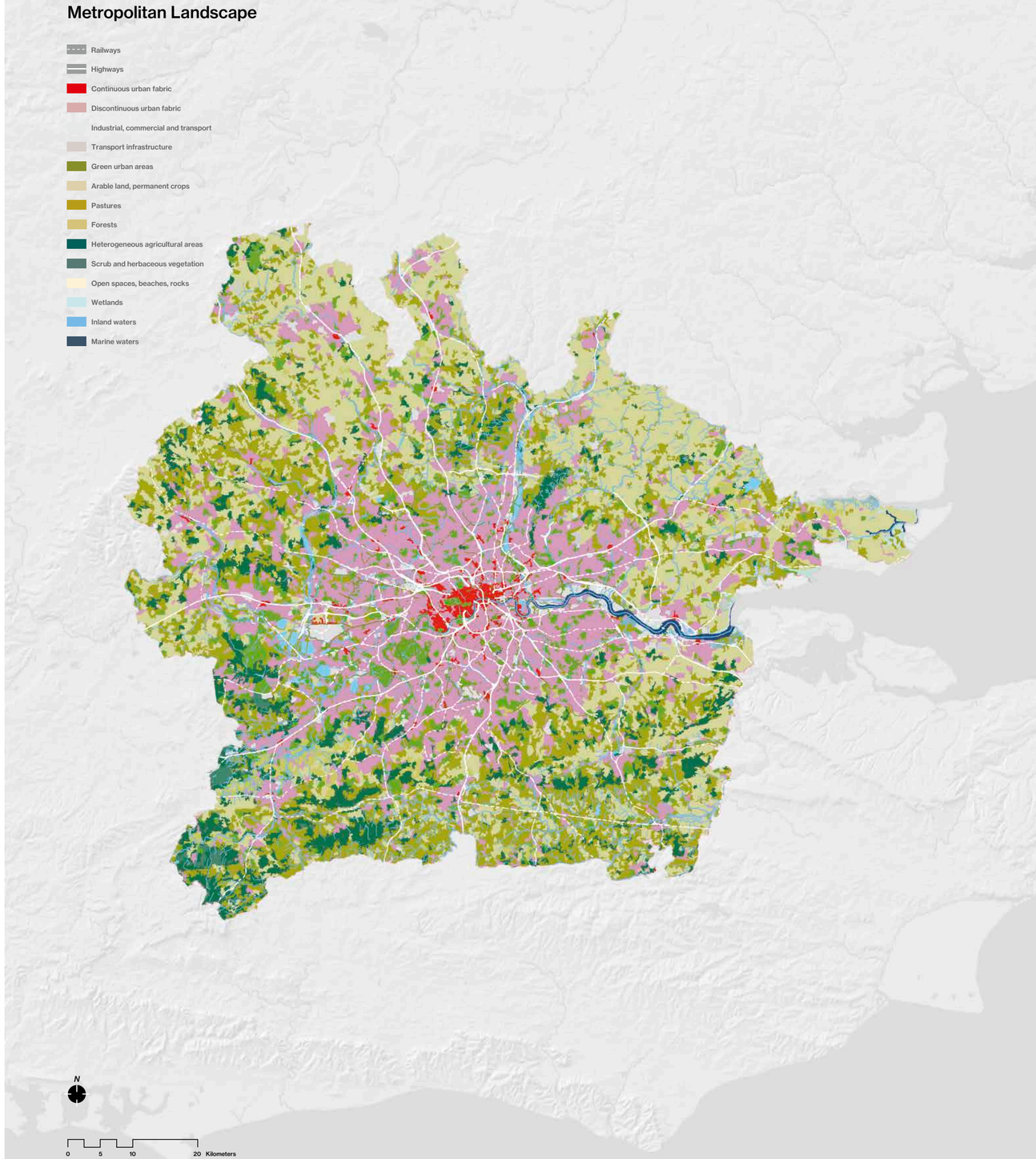
The London knowledge economy is highly competitive and attractive at the global level. It is composed of financial institutions, technology and design firms, top research institutions and cultural facilities. London is seen as a space of stability, continuity, transparency and a "liberal and vibrant" place, explains Jonathan Manns (planning director at Colliers International, 2015); "this offers safe markets and therefore companies are interested to make long term invests here". According to Max Nathan (economic geographer at London School of Economics, 2015) the reason London attracts so many skilled workers is because it provides access to European markets, work opportunities, well-developed infrastructure, cultural amenities and recreation spaces. The education and research facilities include numerous universities from which University College London and Imperial College London consistently rank in the World top 10. The high quality cultural amenities include theaters, music venues and numerous museums of international significance, with the majority being open for free to the public.

The credit crisis of 2008 was a blow to the financial sector in London, although it appears to be recuperating quite rapidly. In recent years, the government made the point to invest in the IT sector. The emerging knowledge hub, "Tech City", informally known as Silicon Roundabout, is located in the old working class neighborhoods of Old Street and Shoreditch. This knowledge cluster is now home to over 1,500 technology companies, as a result of the lower rent prices, which originally attracted start-ups, and the vibrant cultural scene in the area. According to Nathan, this rough urban quality of neighborhoods in transition is especially attractive to young professionals, as many of them are more interested in the 'city life' with its careers, culture and nightlife, than for instance, the green English landscapes. In this aspect, London is hard to beat. Starting a family and buying a house in central London however, is a different story.

METROPOLITAN LANDSCAPE POLICIES

The English planning system has traditionally focused on socio-economics and less on spatial structure. Since the last reform in 2010, it offers general principals without designing a mandatory plan. The "National Planning Policy Framework" (NPPF) provides guidelines to cities regarding how they should apply instruments like green belts – a staple in the English spatial planning (there are 14 in the United Kingdom). In practice, The Greater London Authority, led by The Mayor of London and the London Assembly and local borough councils shape London's metropolitan landscape. Quite frequently, local decisions are not coordinated between boroughs, resulting for example in incoherent housing developments. The main spatial policy document for London is the "London Plan". It aims to provide the "highest quality of life to be found anywhere" by drawing up housing quotas, a network of vibrant town centers, community and cultural facilities, as well as efficient transportation including cycling and walking. It also aims to improve the natural environment by promoting high quality local food and reinforcing the importance of the Metropolitan Green Belt.

The "Metropolitan Green Belt of London" was established in 1938 for the purpose of containing urban growth and protecting the countryside from sprawl. Although considerable in its size (4% of England's total land) the Green Belt is an abstract planning tool and often considered underused in terms of recreation. People would rather have greenery "outside their own house than sitting 20 miles away where they have no access to it" (Moore, 2014). Even though some National Cycling Routes actually cut through the center of London, bicycle access of the Green Belt remains a challenge due to its peripheral location. Currently, intense debates regarding construction of houses in the Green Belt are taking place. A report by Sarah Heath (2014) shows London will need 56,400 additional homes each year during the next two decades. Manns: "It is vital that we understand qualities [of the Green Belt] as much as we understand its constraints. The territory demarcated by the green belt is not empty; indeed it frequently functions as a social twilight



zone for opportunistic, illegal, or otherwise off- grid activity, as well as being a home to essential city infrastructure. It is far from untouched or unspoiled."

> "Our new center will provide not only a vital resource to nurture upcoming technology and creative superstars from around the world, it will drive huge investment into the capital and help create thousands of jobs. […] It's nothing less than a 'Silicon roundabout'."
>
> DAVID CAMERON, 2012 (SPEECH)

The "East London Green Grid", launched by Mayor Ken Livingston in 2007, defines a network of open spaces and rivers connecting urban areas to the Thames as well as the Green Belt. In 2012, Boris Johnson extended the policy to "The All London Green Grid" (ALGG), a multifunctional network of green spaces including parks and green roofs that is planned, designed and managed to provide services for a higher quality of life by reducing the risk of flooding, improving air quality, cooling the urban environment, and providing recreation opportunities. Similarly, the "2012 Olympic and Paralympic Longterm Legacy Plan" aims to regenerate and raise the prosperity of East London. The policy focuses on economic growth, welding the communities, offering healthy living conditions and access to sport facilities. Recent developments in this area occur with the program "Here East" (hereeast.com). Both national and local spatial plans focus on quality of life, but not explicitly as a means to attract knowledge-intensive firms and highly skilled workers.

METROPOLITAN LANDSCAPE INITIATIVES

Transit, pedestrian and cycling networks are high on the agenda of the Mayor of London, who launched the "Infrastructure Plan 2050" in 2014. A key project that will impact the current landscape is the construction of the "Cycle Superhighway 1", which will cross the city from Tower Hill in the east to Lancaster Gate in the west. The idea of Cycle Superhighways was first launched in 2008 to provide safer infrastructure to cyclists. CS1 intends to offer a safe two-way segregated cycling track with improved crossings. The route is planned to open in the summer of 2016 and designs are underway for several others, however some of the designs are criticized for not achieving their safety objective and lacking coherence.

"Greater London National Park City" is an independent initiative that aims to create a green, healthy and fair "city where people and nature are better connected" (nationalparkcity.london, 2015). The initiator argues that 47% of London is green and that the opportunities of that landscape are not yet seized. Meanwhile, the "High Street 2012 Project", an initiative of the Mayor of London, regenerates the network of multifunctional streets, where local communities and heritage are concentrated. The project aims to restore the quality of the public space, give incentive to renovate the buildings and make these streets more attractive for locals and visitors.

Top 9 tourist sites by The Rough guide

1. British Museum
2. London Eye
3. Tate Modern
4. Shakespeare's Globe Theatre
5. Highgate Cemetery
6. Greenwich
7. Kew Gardens
8. Hampton Court Palace
9. East End Markets

Our top 5 sites for the highly skilled worker

1. Upcoming neighborhoods in the east, north and south of the city
2. South bank promenade with Tate Modern, National Theatre and Jubilee Gardens
3. Greenwich
4. Yearly changing Serpentine gallery, Kensington Gardens
5. Silicon Roundabout (Old Street & Shoreditch)

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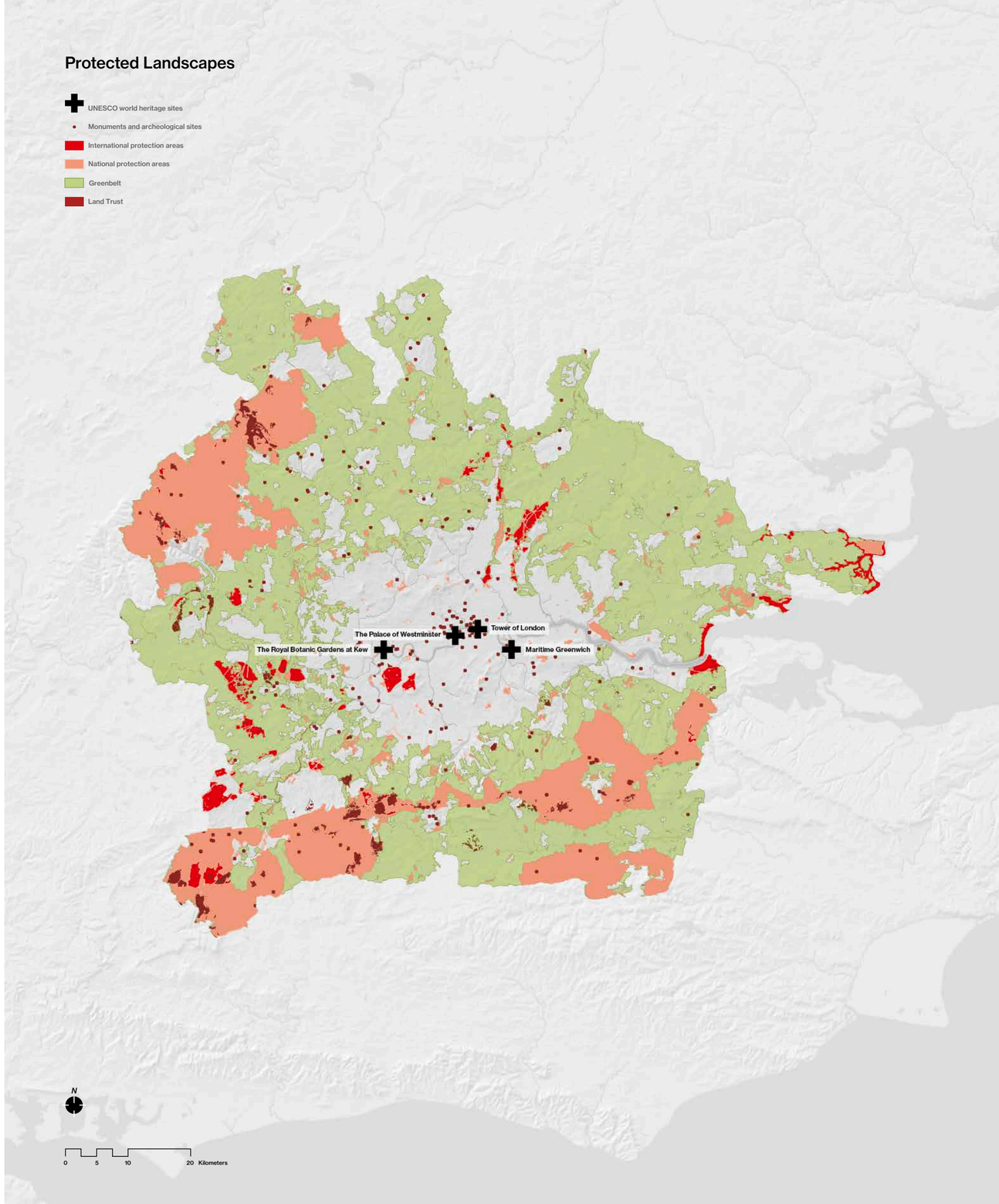
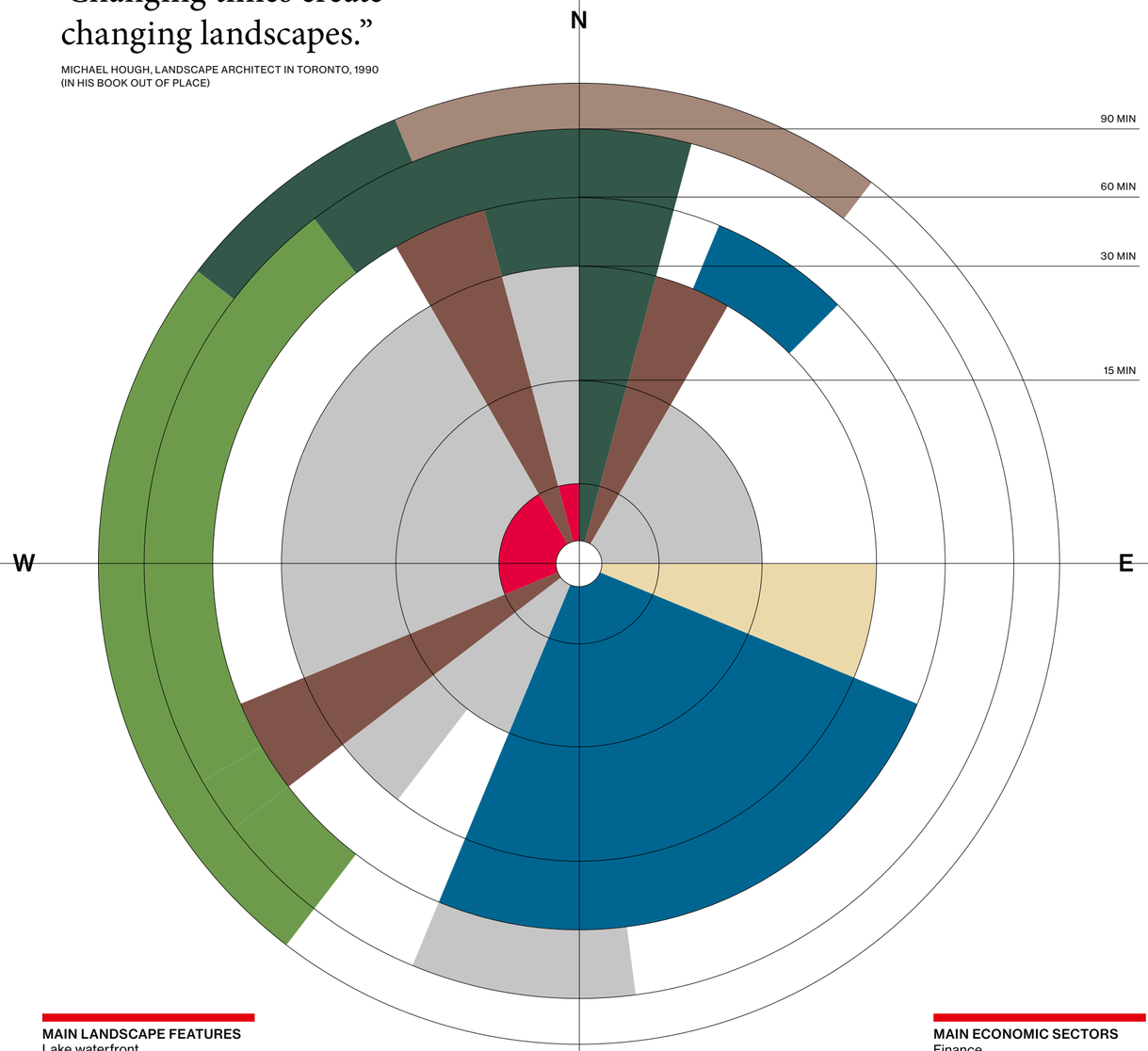


Birds Eye View of Toronto from New Album of Toronto Views. Published ca 1879 by Canada Railway News Co.
SOURCE OPENLIBRARY.ORG

Toronto (CA)

"Changing times create changing landscapes."

MICHAEL HOUGH, LANDSCAPE ARCHITECT IN TORONTO, 1990
(IN HIS BOOK OUT OF PLACE)



MAIN LANDSCAPE FEATURES
Lake waterfront
Ravines
Forests
Farmland
High-rise
Rivers
Industrial heritage

MAIN ECONOMIC SECTORS
Finance
Automotive
Biotechnology
Information technology
Film & television industry
Tourism
Agriculture

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmland Historic area Built area

Toronto Metropolitan Area (CA)

Toronto Skyline
WIKIMEDIA CHRISTINE WAGNER

Don Vallley Parkway
WIKIMEDIA FLOYDIAN

Ravine
FLICKR ⓒ RAVINE RYAN

The Toronto Metropolitan Area is a rapidly growing center of trade and manufacturing, just as in many other industrial cities along the great lakes of North America. In recent years, it has also become a strong center for finance, technology and culture. The lakes, forests and ravines, which run from the moraine at the edge of the metropolis and cut through the urban areas to the lake, composite tangible parts of the metropolitan landscape of Toronto. During the period of industrial growth, the ravines were used as transport corridors, limiting the amount of free flow water to concrete riverbeds and drains.

In the transition to a knowledge-intensive economy, Toronto invests heavily in the revitalization of the waterfront, the green space system and greenbelt. The state recognizes the importance of landscapes, both as a source of heritage and providers of quality of life in supporting economic competitiveness and cluster growth. Toronto ranks as first North-American city in The Safe City Index (The Economist, 2015). Accessibility to the many outdoor destinations by bike and on foot is being improved with the aim of relinking the city with larger landscape elements. The islands and beaches along the lake are a popular destination for visitors and residents. Climate change serves as one of the greatest challenges facing Toronto because of the river corridors' limited capacity for storm water discharge. Absorbing rainwater by creating new forest areas is currently being considered as a strategy. Because forests in Canada are regarded as national heritage, planting trees serves as a strategy for creating new heritage as well.

FOUNDING STORY

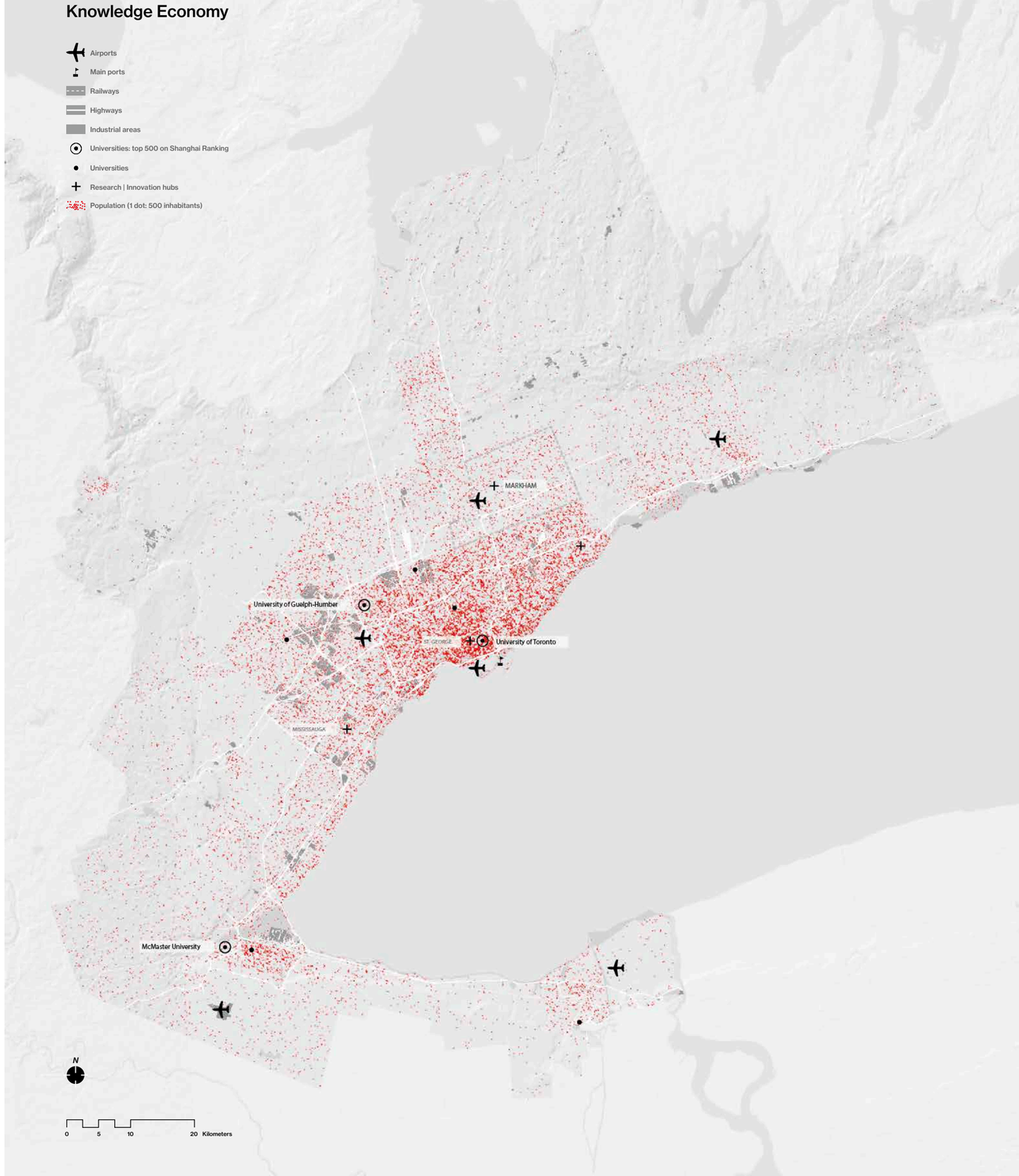
Toronto was founded at the crossing of existing aboriginal trade routes with natural harbors. In early maps, it is clear that both trade and water flows define the early city's positioning. Due to this strategic position and the availability of hydropower, the city became an industrial and manufacturing center, serving the Ontario region. At the end of the 19th century, Toronto also became a hub in the North-American railroad network. After World War II and an influx of European migrants, the city grew rapidly, passing the other large Canadian urban center, Montreal, around 1970. It is said that Quebec separatism further contributed to this boom in the 1970s, as English speaking people and their businesses moved from Francophone Montreal to Toronto, In the decades since, Toronto has witnessed a constant stream of immigrants, resulting in different pockets of culture within the city, including 'Little Italy' and 'Greek town'.

While the ravines used to be exploited for industrial purposes, after a destructive flood in 1954, these areas were transferred to the Toronto and Region Conservation Authority (TRCA) under protection as drainage structures. The "Conservation Plan" of the 1960s combined drainage and public space with a transport system in the ravines, while permission for building in the ravines was no longer given. Besides protecting river courses and floodplains, the TRCA also manages heritage, provides infrastructure for recreation, and plays a part in urban development projects, according to Carolyn Woodland (Senior Director, Planning, Greenspace and Communications at the TRCA, 2015). This qualifies a more integrated approach than, for example, the role of the Dutch water boards. By law, land developers in Toronto are now required to contribute to reforestation.

EMERGING METROPOLITAN LANDSCAPE

In the late 1980s, like in many other cities, industries moved out of the central area of Toronto to find larger plots at a cheaper price in the periphery of the Greater Toronto Area. By this time, the different cities and towns of the so-called "Golden Horseshoe" around Lake Ontario had begun to form a continuous urban agglomeration with about a quarter of the total population of Canada (this is the metropolitan area considered in this research). Here, the automotive industry grew rapidly, making Toronto currently the second largest automotive center in North America, following Detroit. In 2005 the provincial government of Ontario installed the Toronto Greenbelt to counter urban sprawl and protect the fertile agricultural land of the Golden Horseshoe. Today, Central Toronto is quite dense, featuring many high-rise condominiums located close to the transit system. The high-rise buildings together with the waterfront have become a main icon of contemporary Toronto. The periphery of Toronto is suburban and more oriented towards car use.

The ravine drainage structure plays a key part in the water management of the city. The use of this landscape element to battle the effects of climate change requires constant rethinking. Because of their size and subsequent visual presence in the

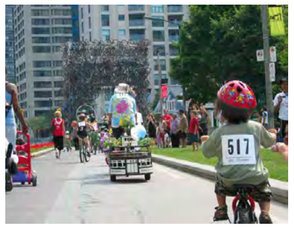


Toronto Metropolitan Area (CA)

The new greenbelt cycling route
WWW.GREENBELT.CA

city, the ravines serve an important part of everyday life in Toronto, especially on a recreational level. Bike and pedestrian trails form a loop of slow traffic routes that connect daily urban systems in the city, according to Woodland. The ravines have however brought problems related to safety, serving as a refuge for homeless and the illegal dumping of garbage (The Globe and Mail, 2010). According to Jane Wolff (Associate Professor of Landscape Architecture at the University of Toronto, 2015), the green belt area was not originally intended for recreational use, but Torontonians still colonized the beautiful cottage landscape. The outer landscape serves older generations who leave the city and drive 2-3 hours north, often causing weekend traffic jams between May and October. Recently, programs aimed at installing and maintaining trails and other recreational developments, such as in the new national park along the Rouge River are being developed. The implementation of the ambitious "Toronto Bike Plan" (2001) came to a standstill when Tom Ford was elected mayor in 2010. Having promised in his campaign to "stop the war on cars", he actually had several kilometers of the Jarvis Street Bicycle Lane removed (Bikes vs Cars, 2015). The current mayor, John Tory, is taking a similar position with regards to the urban cycling plans. The renewed waterfront, a project that had started already in the year 2000 and couldn't be stopped, was inaugurated in 2015, including a boardwalk for pedestrians and cyclists.

> "Part of building a greener and more prosperous future for Toronto involves unlocking the economic and environmental potential of the port lands."
>
> JOHN TORY, MAYOR OF TORONTO, 2014 (SPEECH)



Opening waterfront Toronto
PHOTOGRAPHY: RIETTE BOSCH

Paddle the Don
PHOTOGRAPHY: PADDLETHEDON.CA

KNOWLEDGE HABITAT

Toronto's economy has diversified into several service-based industries. It is the center of the Anglophone media industry in Canada, advertising, fashion, software development and pharmaceutical industry, as well as entertainment. Wolff explains that the latter is a result of the cheaper Canadian dollar and the American-like streetscape, which together make the filming of movies in the city attractive. Above all of these industries however, Toronto is first and foremost a financial center, the third largest in North America after New York and Chicago. The financial position of the Greater Toronto Area has in turn attracted many multinational headquarters. The metropolitan region has also developed its tourist industry, transforming central harbor areas for residential and mixed use. These areas, which offer a piece of heritage situated in the vibrant center of Toronto, attract the families of young professionals who often work in the nearby-located banking sector.

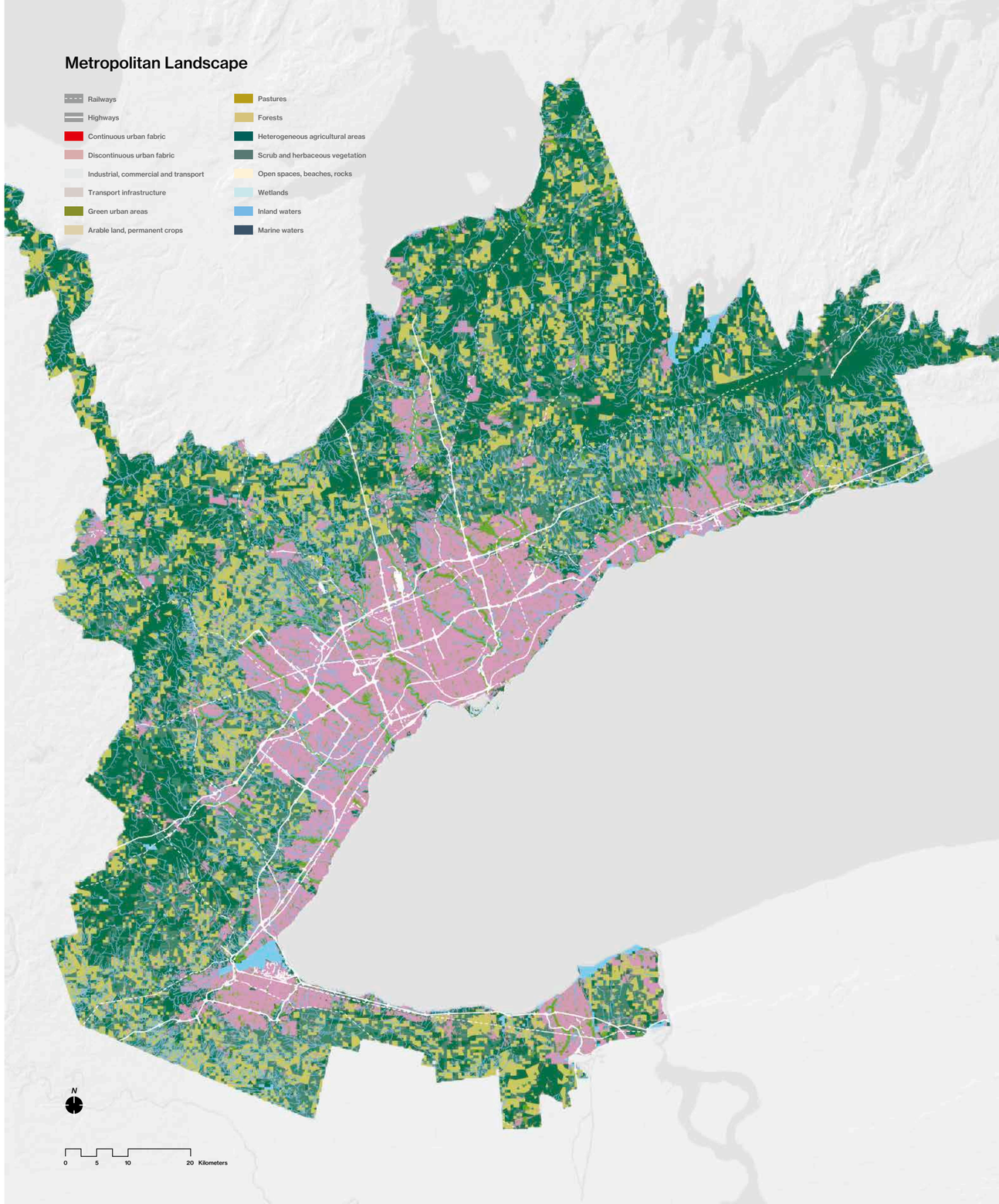
Due to its cultural diversity, Toronto is a popular example of 'creative class' geographer Richard Florida. The new developments along the waterfront and in other parts of the metropolitan landscape have the potential to further strengthen this quality. The highest concentration of high-tech companies in the whole of Canada can be found in the city of Markham, located 20 kilometers away from Toronto's center. Together with two satellite locations of the University of Toronto, the town of Markham as Canada's 'High-Tech Capital' represents the dispersal of the knowledge structure in metropolitan Toronto.

Politicians like Bill Mauro (Minister of Natural Resources and Forestry) and Kathleen Wynne (Premier of Ontario) have explicitly linked landscape development to the economic success and competitiveness of Toronto. This relationship is further visible in the "Toronto Official Plan" (2010). The diversity of landscapes, from plains to mountains to water, is viewed as the metropolitan region's most attractive element. According to Woodland, outdoor activities like hiking and real estate prices have increased as a result of the growing banking sector and influx of these workers over the last 20 years. The recent "Port Land Project" includes the restoration of the mouth of the Don River. Public money, which is invested in water ecology aims to not only create an attractive environment, but also provide space for new developments near the central area. The rerouting of the Don eliminates the current 90-degree angle, providing a better connection to the lake and thereby reducing the flood risk of an area totaling to 3.5 square kilometers. In the summer of 2015 the municipality approved funding for an environmental assessment.

Woodland reminds us that "healthy cities need to have nature incorporated" and that green infrastructure makes good economic sense, especially in the light of climate change. The concept of green infrastructure, used at the TRCA, integrates different functions of the landscape with the urban economy, saving money on flood containment structures, increasing natural heritage assets and real estate prices, while also accommodating new public leisure activities in the landscape. Events are an important part of experiencing the landscape, for example those concerning monuments and aboriginal culture or the yearly 'Paddle the Don', when the dam is slightly opened to allow rafting in the shallow river. Even eight years before the new waterfront was to be built, the city prepared the forthcoming development by creating the temporary cycling lane 'Arc de Velo' or 'Triumph Gate', which replaced one of the busiest traffic lanes.

METROPOLITAN LANDSCAPE POLICIES

The "Toronto Official Plan" (2010) claims that "The City's Green Space System, made up of parks and green spaces, the natural heritage system and a variety of privately managed but publicly accessible spaces, is an integral part of our quality of life and social well-being. It provides opportunities for recreation, relaxation and experiencing nature in



peace and quiet and contributes to Toronto's competitive advantage as a place to invest." It recognizes the importance of thinking forward and asking the question of how Toronto will grow rather than if it will grow. Recognizing the fact that a high quality of life attracts investments, the plan gives special attention to making Toronto a city of beauty and celebrating its cultural heritage that has brought it from "its early roots on the shores of Lake Ontario [to] a vibrant and modern city." In other words, the protection status and investments concerning natural and cultural heritage is seen in the Toronto Official Plan as a precondition for an economically viable region of the future.

> "Ontario's Greenbelt builds and strengthens many local economies and enhances the quality of life for millions of residents and thousands of businesses in the region, making it a vital part of a strong and successful economy."
>
> ROB FORD, MAYOR OF TORONTO, 2012 (PROCLAMATION TEXT OF GREENBELT DAY)

The "Green Space System" (Parks Plan 2013-2017) includes areas of cultural heritage and natural value. It explicitly recognizes the ability of these landscapes to offer unique tourist destinations and attract people from the region and beyond. Public views along the water enhance a sense of belonging to the community. The system explicitly links the cherishing of these qualities to the growth of economic clusters and "supporting the foundations of a competitive region."

The "Greenbelt Plan" (2005) protects valuable agricultural and natural areas from urbanization. The enormous area is subdivided into four areas: the 'Oak Ridges Moraine' in the north, the 'Niagara Escarpment Plan' in the south, the 'Parkway Belt West Plan' and the 'Protected Countryside'. It encompasses specific policies in each area, outlining measures to protect the agricultural and natural systems and developing parkland, open spaces and trails. It also contains the urban development of the historic hamlets located in the green belt.

The "Flood Control Plan" (1959) paved the way for the "Land Acquisition Plan" (1960) following the arrival of Hurricane Hazel, the storm that served as the jump-starter for the formation of the TRCA in 1954. Following large flood damage in 2005 and 2013, water management continues to be a critical issue in the Greater Toronto Area. Currently, the main policy document for the TRCA is "The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority" (approved November 2014), a digital publication that allowed online reviewing and contributions from the public.

METROPOLITAN LANDSCAPE INITIATIVES

The "Toronto Islands Cycling Circuit" allows inhabitants to cross the Toronto islands and the outer harbor, where impressive views of the Toronto skyline are offered. This cycling route is also connected to Billy Bishop City Centre Airport. The islands are accessible by ferry and include beach areas. Besides this circuit, there are other cycling and hiking trails such as the 450 kilometer "Lake Ontario Waterfront Trail" (waterfronttrail.org) traveling from the east to Niagara on the Lake and the "Greenbelt Route" (*greenbeltcycles.com*), which opened in 2015.

"Evergreen Brick Works" is the reinvention of a large heritage quarry in the Don River valley, run by the national NGO Evergreen that promotes links between rural and urban areas (evergreen.ca/get-involved/evergreen-brick-works). The site accommodates food production, farmers markets, and spaces for leisure, events and education. From 1889 to 1984, the Don Valley Brick Works was one of Canada's pre-eminent brickyards, whose bricks were used in many of Toronto's iconic heritage buildings, like the Eaton Building. The 16-hectare site contains two main spaces: the Weston Family Quarry Garden with wetlands, wildflower meadows, ravine forests and trails which is managed by Toronto Parks, Forestry and Recreation, and the Industrial Pad, with the historical Brick Works buildings.

Top 10 tourist sites by Lonely Planet

1. Eaton Centre (shopping mall)
2. CN Tower
3. Casa Loma
4. Royal Ontario Museum
5. Centre Island
6. Distillery District
7. Yorkville
8. Hockey Hall of Fame
9. Art Gallery of Ontario
10. Chinatown

Our top 5 sites for the highly skilled worker

1. Ravines and adjacent neighborhoods
2. Toronto Islands Cycling Circuit and Waterfront Trail
3. Evergreen Brick Works
4. Greenbelt trail and historic Hamlets
5. Rouge River National Park

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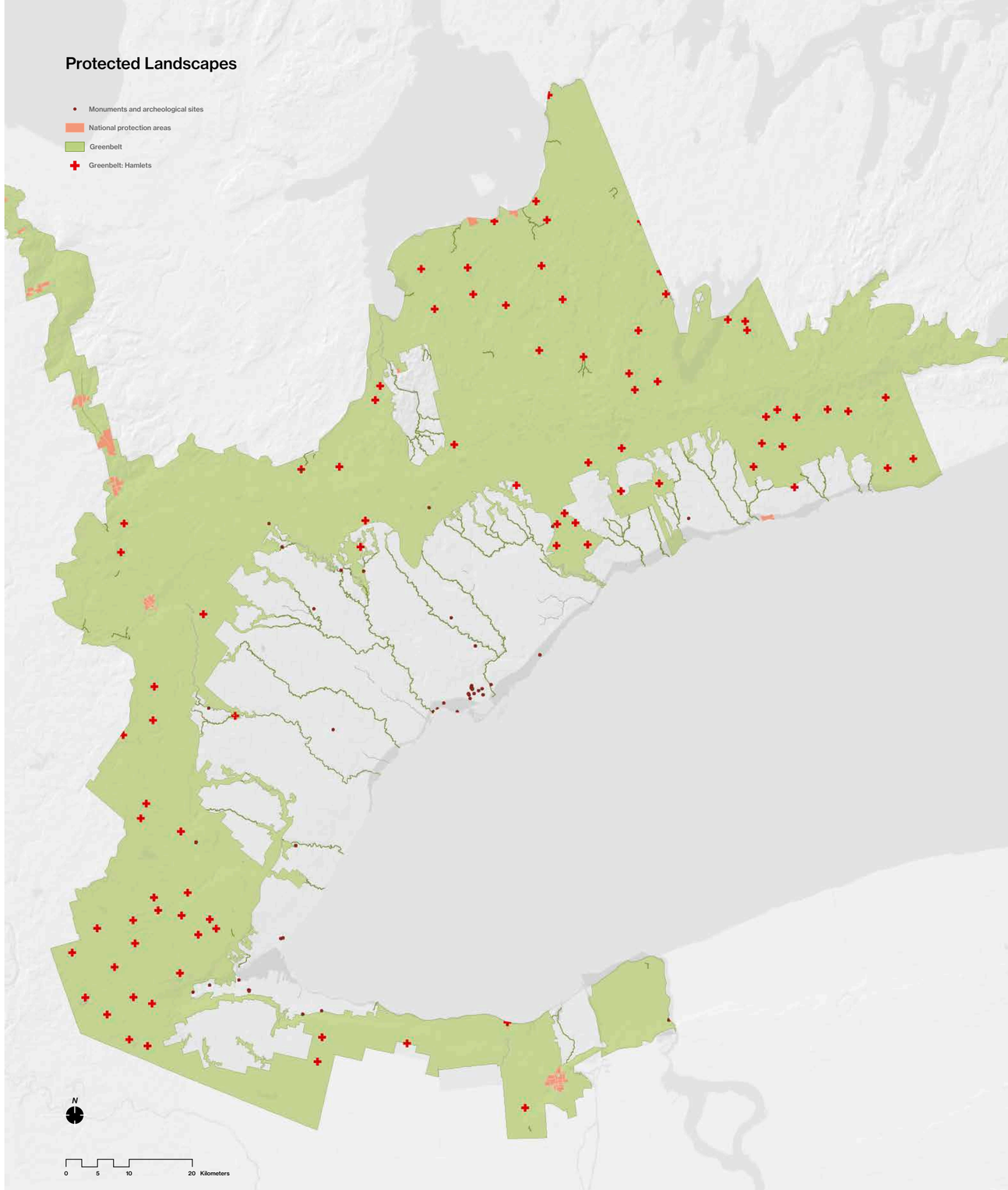
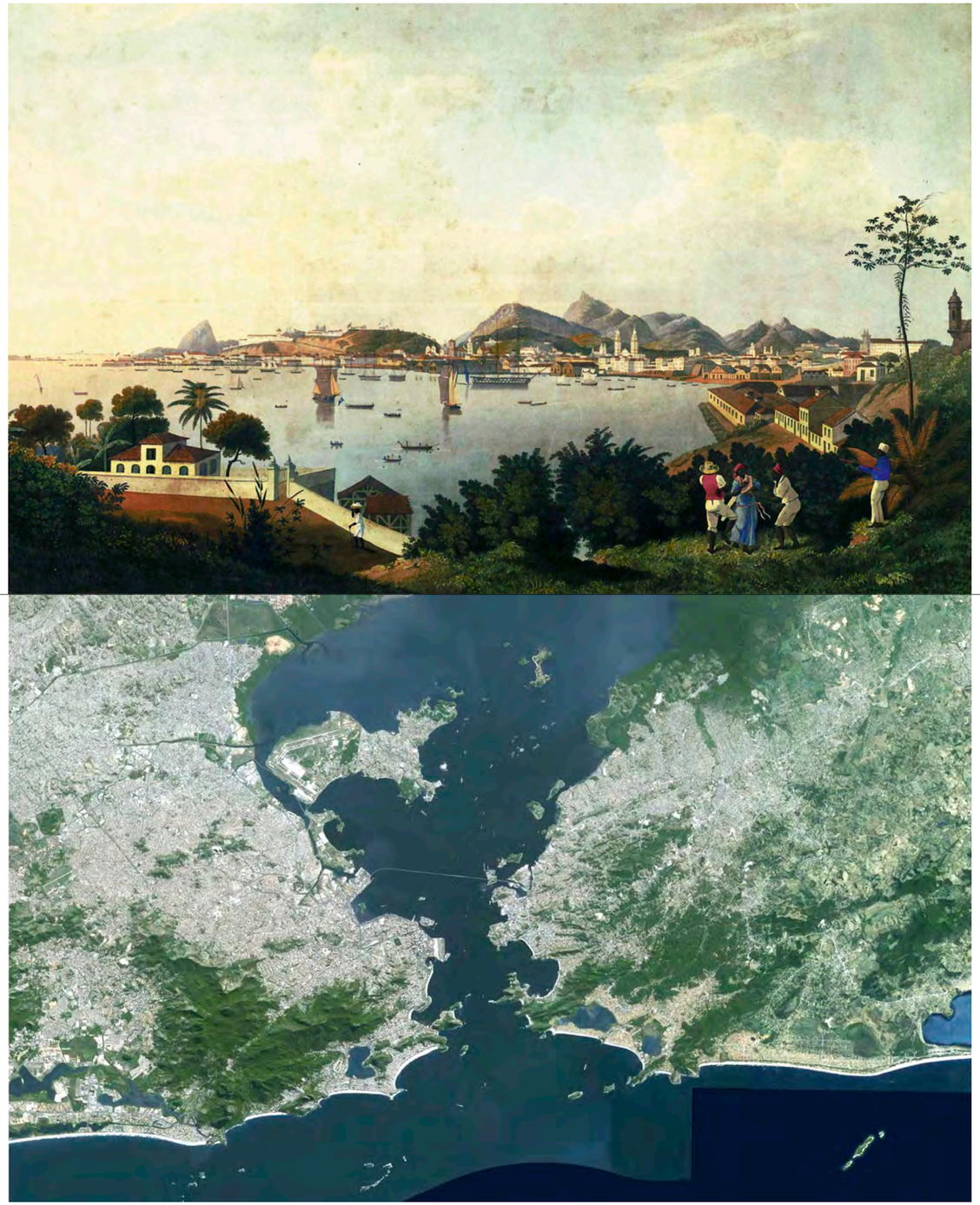


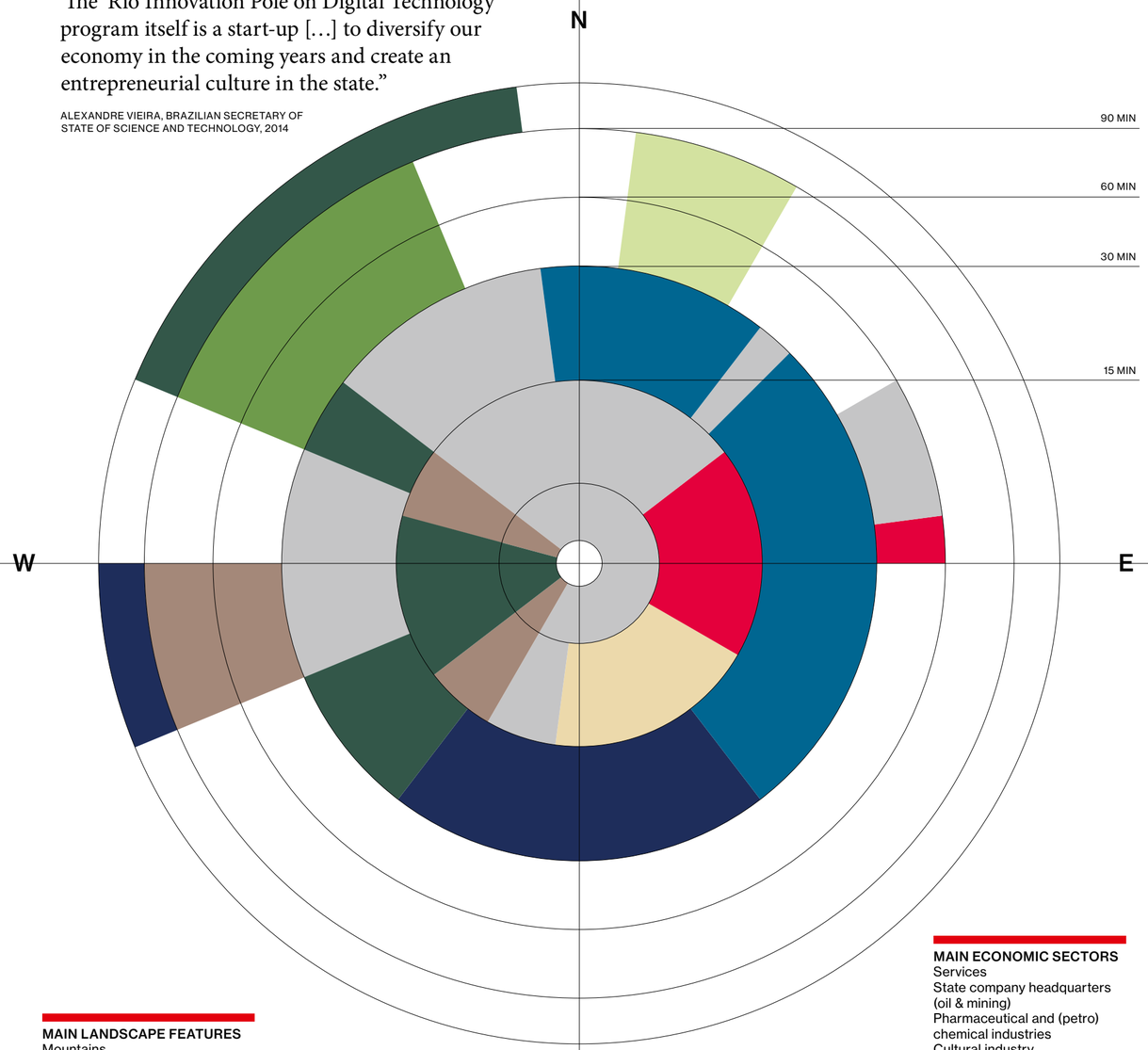


Rio de Janeiro from Ilha das Cobras, 1833, by Fielding, Newton Limbird Smith. SOURCE: BIBLIOTECA NACIONAL DIGITAL

Rio de Janeiro (BR)

"The 'Rio Innovation Pole on Digital Technology' program itself is a start-up […] to diversify our economy in the coming years and create an entrepreneurial culture in the state."

ALEXANDRE VIEIRA, BRAZILIAN SECRETARY OF STATE OF SCIENCE AND TECHNOLOGY, 2014

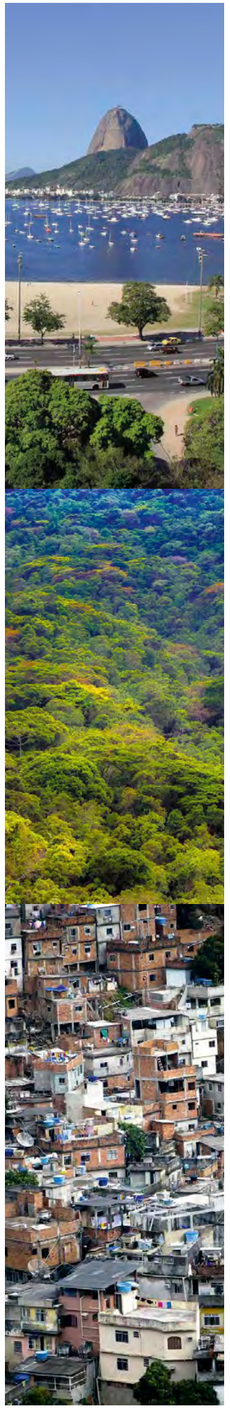


MAIN LANDSCAPE FEATURES
Mountains
Beaches
Ocean
Historic center
Lagoon
Rainforests
Wetlands

MAIN ECONOMIC SECTORS
Services
State company headquarters (oil & mining)
Pharmaceutical and (petro) chemical industries
Cultural industry
Information technology
Tourism
Naval industry
Government
Military
Agriculture

Ocean · Lake · River · Wetland · Beach · Mountain · Ravine · Heathland · Forest · Farmland · Historic area · Built area

Rio de Janeiro Metropolitan Area (BR)



Botafogo Praia
WIKIMEDIA BY HALLEY PACHECO DE OLIVEIRA

Mata Atlantica
FLICKR ⓒ BY HENRIQUE FERREIRA

Favela
FLICKR ⓒ BY ANTHONY GOTO

Rio de Janeiro is the second largest agglomeration in Brazil and is internationally known for its cultural sector, Carnival, Petrobras – the national oil company, and the upcoming 2016 Olympics. The city has an International airport, which is located close to the Federal University of Rio de Janeiro campus, as well as a domestic airport in the city center. A subway system links the north zone to the city center and to the beaches in the southern zone. A train line also connects the north zone to the city center. Bus lines provide transportation to the rest of the metropolitan area. Cycle paths are available along the beaches.

The world's largest urban forest is located in the core of Rio de Janeiro. Urban outdoor activities include the popular hiking trails through the Tijuca Forest, cycling and jogging paths around the Lagoon Rodrigo de Freitas, sporting at the Flamengo Park, relaxing at the beach, rock climbing, and the nightlife at Lapa. Famous yearly events are Carnival, New Year's Eve at Copacabana and Rock in Rio, which even has a copy in Portugal (Rock in Rio Lisboa). "Carioca Landscapes between the Mountain and the Sea" was defined in 2012 as Unesco World Heritage. The urban fabric of Rio spreads between the physical boundaries of the mountains, ocean and beaches. Niteroi, on the other side of the bay has a similar kind of coastal landscape, but the environment in other municipalities of the metropolitan region are currently less attractive. The compact metropolis is however, slowly decentralizing, with investments outside of what is traditionally considered as the central area. New economic activities will require new landscapes and metropolitan planning.

FOUNDING STORY

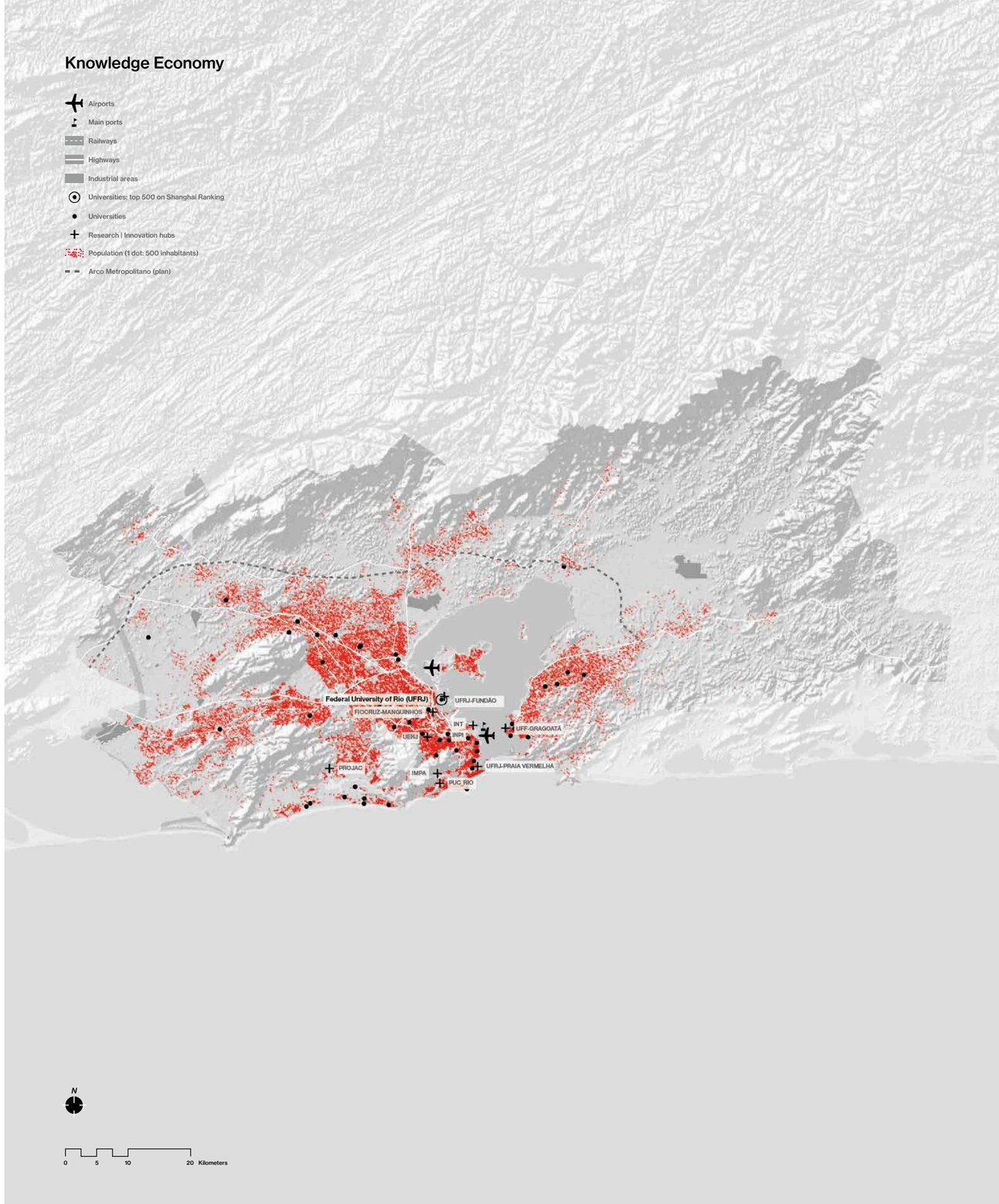
The city began as a Portuguese settlement on the hilly shores of the January River, which was later to be discovered as an oceanic bay. It was originally used as a trade outpost and a safe place from which the Jesuits could perform their missionary work with the native population of the young colony. With increasing colonial activities, the shipping and military role of Rio de Janeiro became more important. In 1808 something unique happened. The monarchy, on the run from Napoleon, moved the entire court, including the whole upper caste, scholars, artists and craftsmen, from Portugal to Brazil. Rio de Janeiro turned from colonial outpost into the capital of the empire. Brazilian ports were opened up to global trade, providing a great boost to the cultural and spatial development of the city. When Brazil became a republic, Rio remained the main military base, maintaining a large government sector and later becoming the heart of the Brazilian oil industry.

The steep hills, close to the sea, have always been Rio's landmark and at the same time, its spatial limitation. In the early twentieth century, the Castle Mountain (Morro do Castelo) of the early Jesuit settlement was demolished to provide space for expansion of the urban area. Over the course of three years, the entire hill was mixed with water and flushed down with pipelines leading to the Guanabara Bay, where the resulting landfill was soon built up complete with buildings, a coastal boulevard and other public spaces. Around the 1950's several steep hills in the center became populated by informal settlements and the city expanded to the north, where the growing working class population occupied the Fluminense plain. Today, many workers still commute daily between the north and central area by train and bus.

EMERGING METROPOLITAN LANDSCAPE

According to Guilherme Lassance of the Federal University of Rio de Janeiro (2015), the metropolitan region of Rio de Janeiro has a monocentric structure. Jobs and amenities are concentrated in the capital, surrounded by dormitory cities. Landscape is recognized as the major asset of the city of Rio de Janeiro, but the metropolitan region currently does not benefit from that.

Three urban strategies have led to the metropolitan area's current form, which features several centralities. From the 1970s, the development of a middle class neighborhood and business district at Barra da Tijuca has shifted the balance slightly to the west of the hills. The construction of the Olympic village for the 2016 games in this area has already brought further employment and investments. Second, the construction of a new ring road, the Arco Metropolitano, will connect the main existing access roads in the region to a new port in the west and the recently developed oil fields in the east. On the one hand, this aims to increase the living quality of the central area, since heavy traffic will be rerouted. On the other hand, the new infrastructure is expected to accelerate the urbaniza-

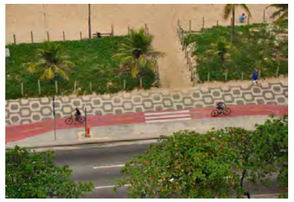


Rio de Janeiro Metropolitan Area (BR)

Parque Lage
PHOTOGRAPHY: MERTEN NEFS

tion of the north and west of the metropolitan area, according to Lassance. Traditionally, this region has not witnessed investments in landscape and public space that the center has enjoyed for centuries. It does, however, have a number of valuable ecological reserves and agricultural landscapes. Third, the old central port is being transformed into a mixed-use neighborhood with a new waterfront, made possible by the demolishing of a 5.5 kilometer long overhead expressway, the Elevado da Perimetral. Due to the booming real estate market, however, primarily offices have been constructed adding to the already unbalanced situation and heavy commuter traffic.

> "The landscape of Rio de Janeiro is the city's most valuable asset, responsible for its renown as a world icon and for its insertion in the country's touristic economy, generating employment and income."
>
> UNESCO SITE MANAGEMENT PLAN RIO DE JANEIRO



Ciclovia Rio de Janeiro
FLICKR @ BY EMBARQ BRASIL

Tearing down the Elevado da Perimetral
PHOTOGRAPHY: PREFEITURA DO RIO DE JANEIRO

KNOWLEDGE HABITAT

Recently, an effort to create a metropolitan governance entity and making a Strategic Development Plan for Rio de Janeiro has been made. The area seems to bare great potential as a more polycentric structure where landscapes become more visible and accessible to the population. The new centralities of metropolitan Rio have great potential to bring balance to a highly concentrated city, but this would require development of their landscapes and identities. Some of the informal settlements have recently gentrified in light of the real estate boom and due to their excellent geographical positioning. Infrastructure and services in those areas are however, still quite precarious.

Besides construction, logistics and the oil-related sector, Rio de Janeiro has a thriving cultural entertainment and tourist sector. A large part of Rio de Janeiro's landscape was appointed as a Unesco World Heritage site in 2011. Some of this attention and appreciation could eventually spill over to the north and west of the metropolitan region and guide the sustainable and high quality development of the new living environments to these areas. The upper and middle class neighborhoods of Leblon, Ipanema and Copacabana in the central areas have become too expensive for most inhabitants, leading these social groups to spread across the metropolitan area. Whether the knowledge sector and research facilities will similarly spread throughout the metropolitan area remains to be seen. Besides the urban Unesco area and the Guanabara Bay, the Tijuca forest park and the nearby mountains are important parts of the metropolitan landscape of Rio. The latter are quite far from most universities and knowledge intensive clusters.

POLICY OVERVIEW

The "Sustainable Development Master Plan" of Rio de Janeiro (2011) rigorously addresses landscape preservation and land use planning in order to combat irregularities and prevent risky situations, such as informal settlements on flood plains.

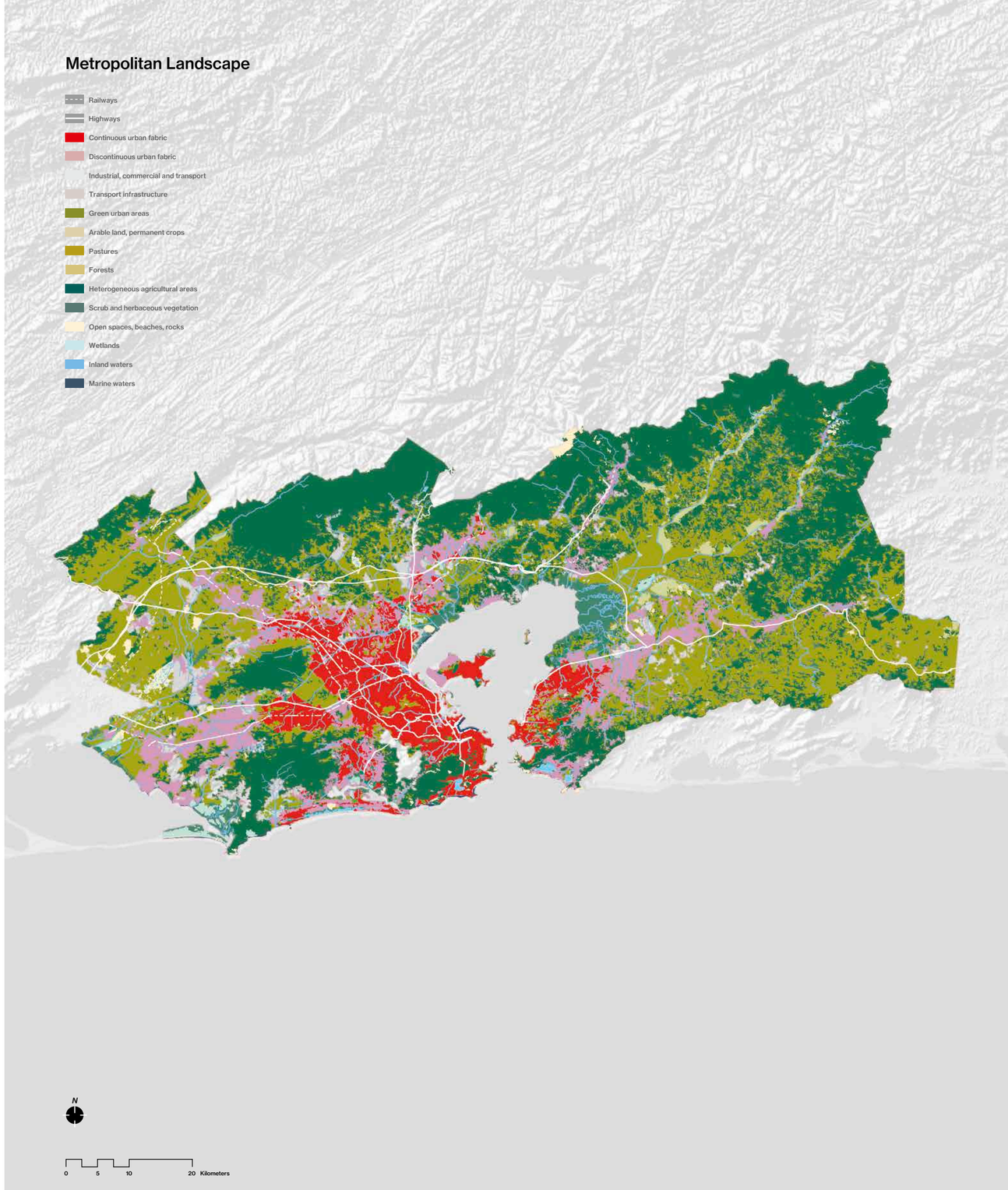
The "Arco Metropolitano Master Plan" (2011) encourages the development of new economic activities, improvement of urban infrastructure (sanitation, housing and mobility), control of actions and risks inherent to the new built environment in relation to the landscape, and the improvement of the institutional management of the metropolitan area. The plan for the new ring road is a broad strategy that combines the development of new economic activities with preservation and upgrading of the metropolitan landscape. The installation of companies and industries in the area is expected to generate 10,500 jobs throughout the state of Rio de Janeiro (Globo, 2015). The construction of the new ring road without proper zoning plans and control of the occupation in the surrounding areas poses a potential large threat to the metropolitan landscape. The construction of the ring road has already started but the governance of the metropolitan area is still being organized.

The "UNESCO Site Management Plan – Rio de Janeiro: Carioca Landscapes between the Mountain and the Sea" was drawn up by national heritage agency IPHAN and the Rio World Heritage Management Committee in 2014. The scope is broad and the claims regarding importance and identity are high. "Landscape is understood as the visual configuration of the city and its components, resulting from the interaction among natural, historical and cultural elements. The landscape of Rio de Janeiro is the city's most valuable asset, responsible for its renown as a world icon and for its insertion in the country's touristic economy, generating employment and income."
One of its primary goals includes "integrating proposed actions and projects within the process of the Site's sustainable preservation, offering suggestions to promote ecologically balanced and culturally diversified territorial and social-economic development". However, no mention of integrating the Site Management Plan with existing or future economic policies is made.

The "Strategic Development Plan of the Metropolitan Region of Rio de Janeiro" while still under development, is needed now more than ever according to Lassance.

METROPOLITAN LANDSCAPE INITIATIVES

"Floresta da Tijuca" has a long history, being older than the first National Park, Yellowstone Park in the U.S. In 1861 Dom Pedro II declared it a protected area, after wood extraction and coffee plantations had devastated the land. The reforested area now



Dismanteling of Castle Mountain
PHOTOGRAPHY: AUGUSTO MALTA

Carnival
FLICKR @ BY ANNE CORBUCCI DE MORAES

Lagoa Rodrigo de Freitas
FLICKR @ BY CLAUDIA REGINA

offers a rich and diverse experience of forests, ruins, remnants of coffee plantations and belvederes. Since 1961 it has been the national park "Parque Nacional da Tijuca" (parquedatijuca.com.br). Over time, new areas have been added, such as Parque Lage, a sugar factory heritage location from the early 19th century, and Corcovado (the hill with the famous Christ the Redeemer statue). The total area is now 40 square kilometers, served by a network of trails and restaurants.

Over the last years, the municipality has increased the amount of cycle paths to around 300 kilometers in the city, as part of the "Plano Cicloviário do Rio de Janeiro". The flat lands along the coast are especially ideal for cycling, and in between the mountains more and more paths have been built as well. Rental bicycles are available at many locations, just like "Bike Rio", the free bike sharing system of the city that was implemented in 2011 together with the bank Itaú Unibanco (mobilicidade.com.br/bikerio.asp). This system offers about 250 access points.

Top 10 touristic sites by Lonely Planet

1. Carnaval
2. Ipanema Beach
3. Copacabana Beach
4. Nightlife in Lapa
5. Pao de Açucar (Sugarloaf Mountain)
6. Cristo Redentor
7. Santa Teresa
8. Maracanã Football Stadium
9. Floresta da Tijuca
10. Lagoa Rodrigo de Freitas

Our top 5 sites for highly skilled workers

1. Floresta da Tijuca and Parque Lage
2. Cycling routes along the beaches and Lagoa
3. Green and historic living environments of Urca, Santa Teresa, Ipanema and Leblon
4. Cultural districts Cinelândia and Lapa
5. Niteroi and ferry connections

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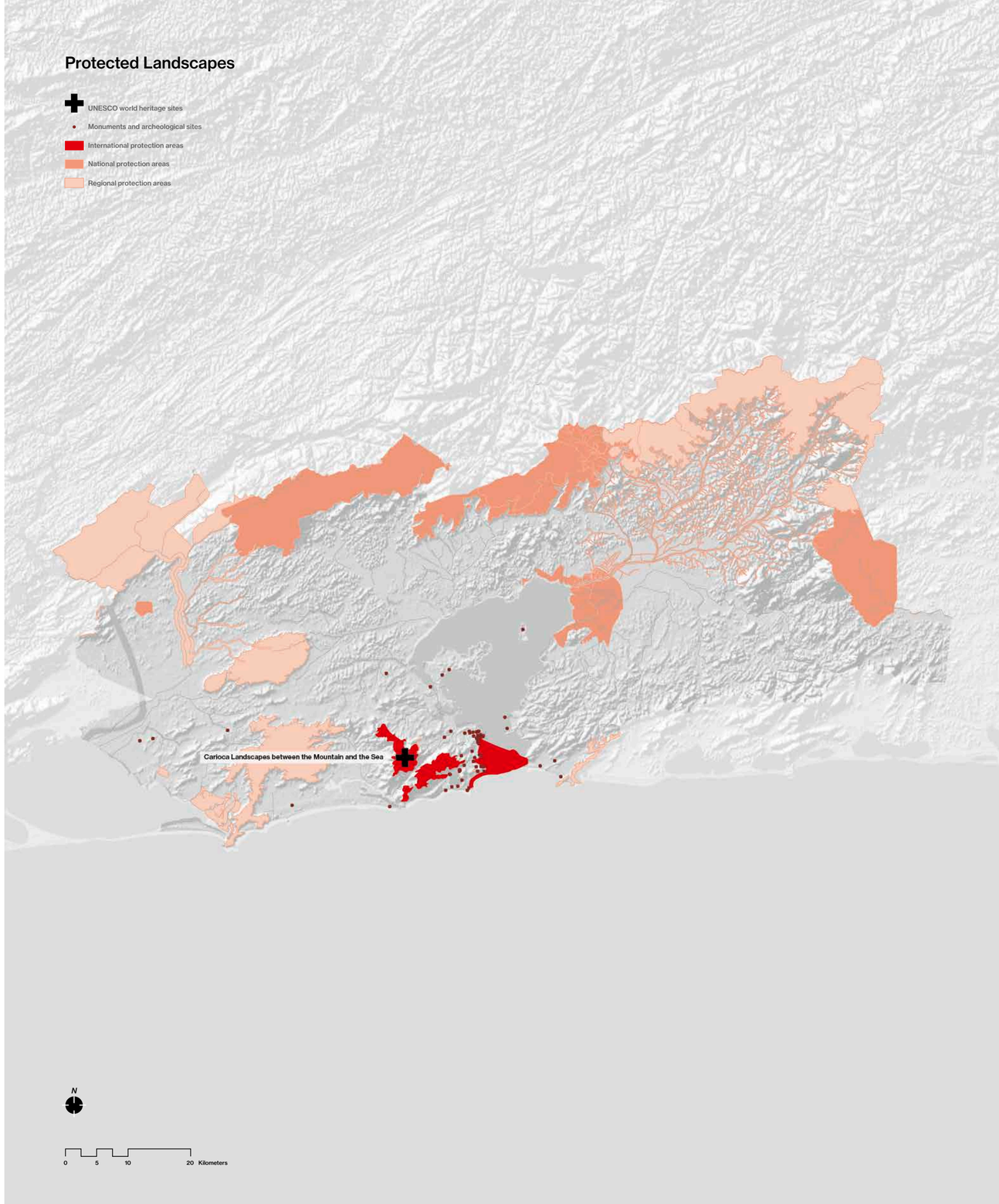
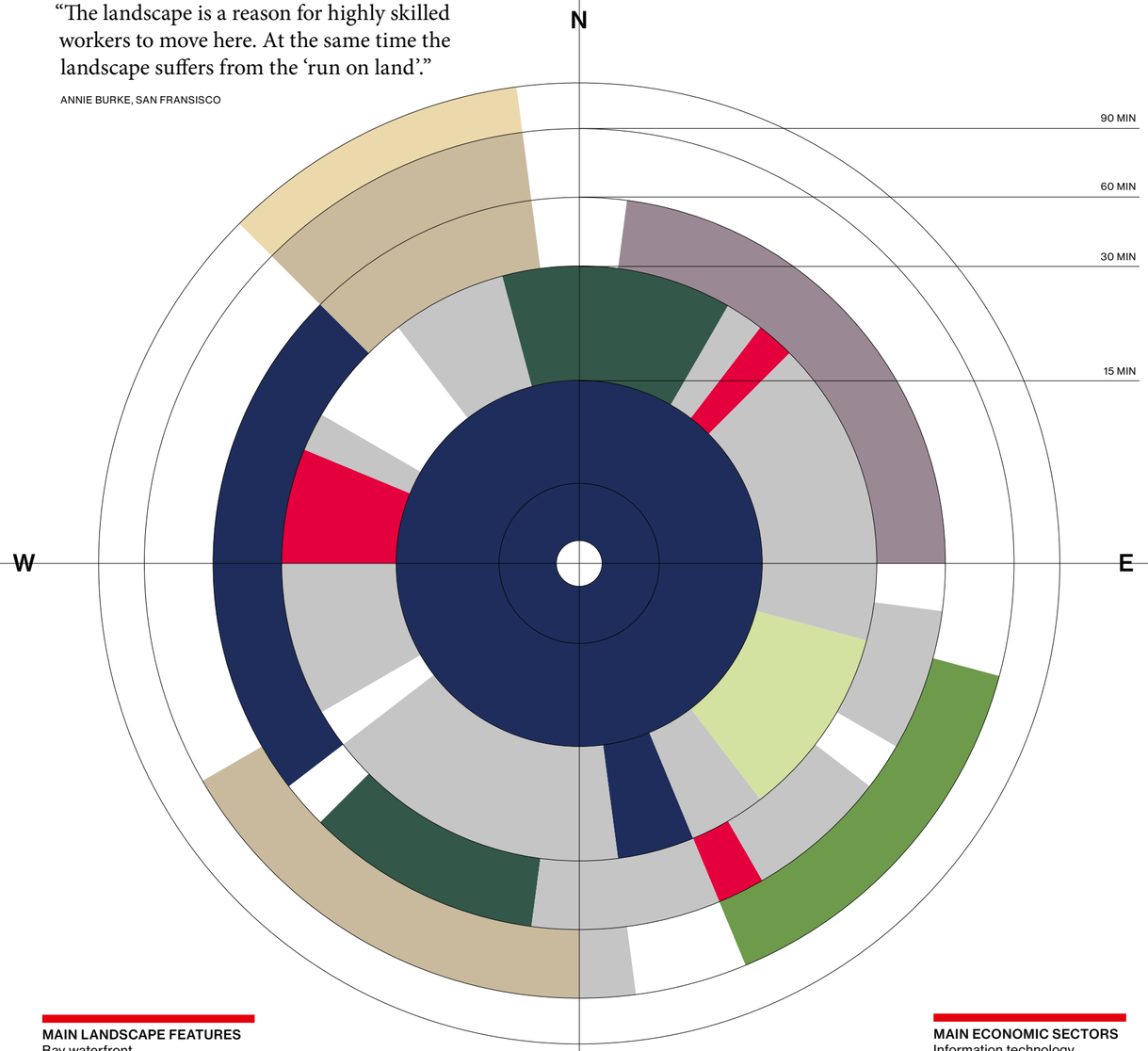


San Francisco (US)

San Francisco bay, 1878, by C.R. Parsons. SOURCE: WORLDMAPSONLINE.COM

"The landscape is a reason for highly skilled workers to move here. At the same time the landscape suffers from the 'run on land'."

ANNIE BURKE, SAN FRANSISCO



MAIN LANDSCAPE FEATURES
Bay waterfront
Mountains
Forest
Wetlands
Orchards
Historical centers
Ocean

MAIN ECONOMIC SECTORS
Information technology
Hardware technology & manufacturing
Biotechnology
Finance & services
Tourism
Product design

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmland Historic area Built area

San Francisco Bay Area (US)

San Mateo
FLICKR © YUGEN

San Francisco Bay National Wildlife Refuge
WIKIMEDIA PUBLIC DOMAIN HOLLINGSWORTH

San Francisco
WIKIMEDIA MICHAEL W. PARENTEAU

San Francisco
FLICKR © DAVID YU

San Francisco forms a circular metropolis around the San Francisco Bay, together with 12 other major cities, including Santa Clara, San Jose, Berkeley and Oakland. The region is rich with mountains, forests, wetlands and fertile land. Its mild climate and the attractive sceneries, orchards, flowers and fruits have served as inspiration for generations of immigrants. Another strength of this area is the wide availability of jobs. The valley south of the bay has transformed from a wide horticulture landscape into the world's largest knowledge-intensive cluster: Silicon Valley, home of information technology and Internet giants such as Cisco, Google and Apple. San Francisco is also known for its historic downtown area, its positioning on steep hills, historic cable car system and of course the Golden Gate Bridge, which appears in many corporate and institutional logos.

Despite enormous urban growth, the landscape of the Bay Area is rather well protected, but the region struggles with its own success: the 'run on land' (large scale buying, with resulting increase in land prices) makes it difficult to create affordable housing near the main centers, while social equity and diversity are under stress. The San Francisco Bay Area has a number of public, private and non-profit initiatives aimed at acquiring, maintaining, developing and using the natural landscape. "The Bay Area has a highly competitive labor market that attracts world-class talent from around the globe," affirms Tracey Grose (Vice President Bay Area Council Economic Institute, 2015). "The mild climate allows for outdoor activities year round. With the ocean, bay and nearby mountains, there's a lot to choose from. The environment is also relatively clean compared to many other parts of the state and nation."

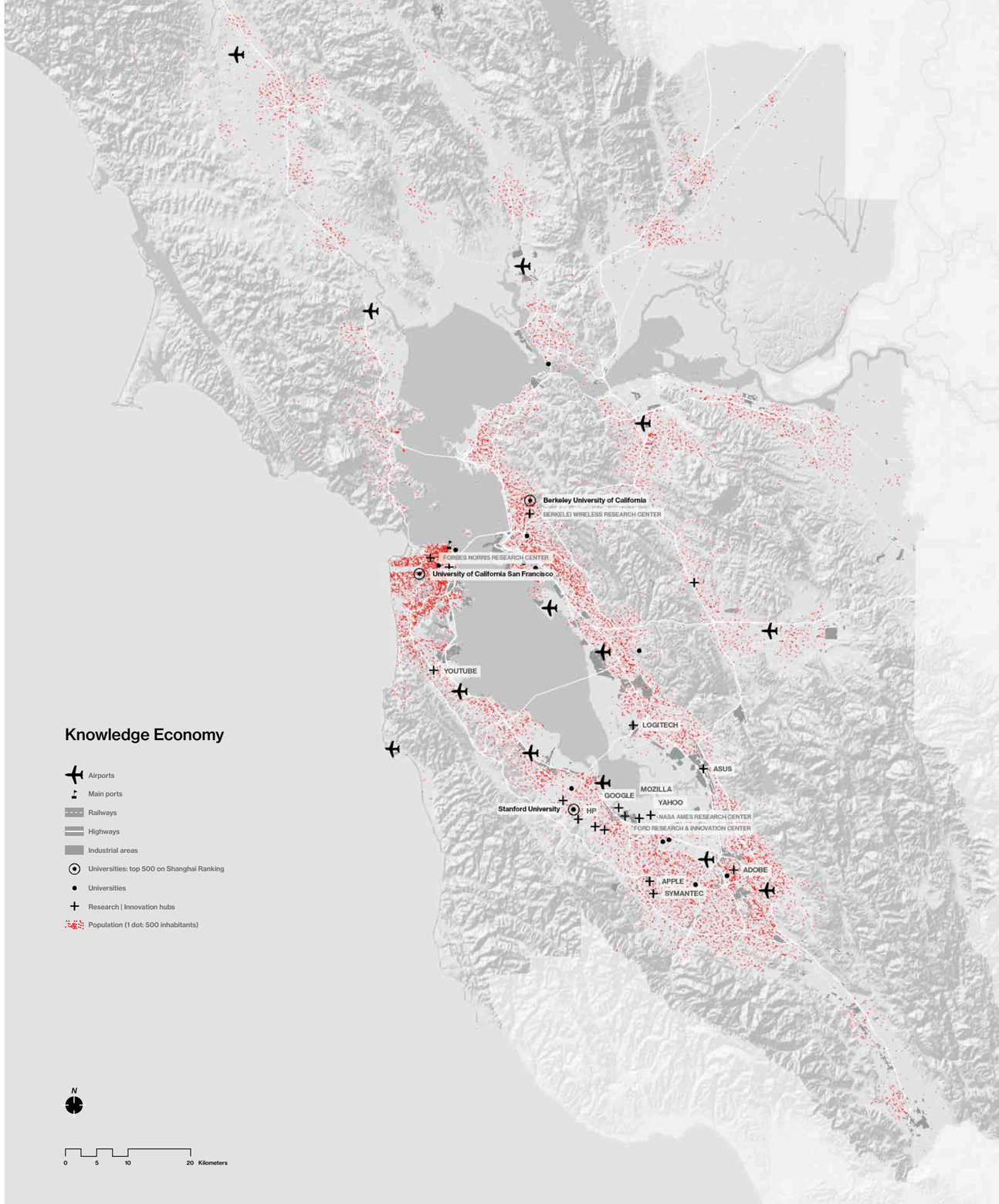
FOUNDING STORY

San Francisco began as a maritime trading settlement. After being inhabited for millennia by Native Americans, the Spanish established The Royal Fortress of Saint Francis on the northern tip of the peninsula in the 18th century as a military base and Catholic missionary center. The year of 1848 was crucial for San Francisco. With the ending of the Mexican-American war, the state of California was officially admitted to the U.S. in 1850. At the same time, a gold rush led to a large boost in the population of San Francisco, which became the largest city west of the Mississippi River, passed by Los Angeles only in 1920. Soon the city harbor was crowded with people and goods, sometimes waiting for days to dock. During the gold rush, the city had two 'faces' – a religious center and a place for prostitution and gambling at the so-called Barbary Coast (now Chinatown). In the late 19th century the city expanded rapidly becoming the 'Paris of the West' despite its steep hills, marshlands and lack of drinking water. An ingenious cable car system was developed to connect neighborhoods located on top of the hills to the central area. After recovering from the 1906 earthquake, San Francisco attempted to form a metropolitan area with neighboring counties, but these attempts failed. In the 1930s several iconic buildings, including the Golden Gate Bridge and the maximum-security prison Alcatraz, were built. In the same decade, the region became a destination for many farmers in the Midwest, as described in Steinbeck's novel The Grapes of Wrath (1939), fleeing from the Dustbowl with hope of building a new life as a fruit picker.

EMERGING METROPOLITAN LANDSCAPE

Because of its endless expanse of orchards, the Santa Clara or 'Silicon' Valley used to be known as "Valley of Heart's Delight". Until 1919 the only road connecting San Jose to San Francisco was the colonial "El Camino Real" (US 101). Another county road from San Francisco to Belmont served the wealthy that owned estates in the countryside. Agriculture grew rapidly in the valley and, thanks to the invention of the refrigerated railroad car, soon became the largest fruit production and packing region in the world, with 39 canneries in the valley, most notably the San Jose Fruit Packing Company. The first transcontinental railroad, completed in 1869, linked the east coast with Oakland (and then by ferry to San Francisco). Silicon Valley is now an undisputed global knowledge cluster, which attracts many companies and highly skilled workers. Quickly, a ring-shaped agglomeration emerged around San Francisco Bay, leading to the area's current challenge of available affordable housing. Grose: "The current housing crisis is jeopardizing the situation. The region needs to be building more housing and in a denser fashion, but people don't like change when it's near their neighborhoods. This pushes development outward from the urban cores of the region."

"In general, the decision makers in the region recognize that quality of life is important to invest in and so parks are developed and environmental resources are protected. It is important to mention however



RMS Queen Mary 2 in San Francisco Bay
PHOTOGRAPHY: WIKIMEDIA BROCKEN INAGLORY

Google campus
PHOTOGRAPHY: CC RYAN ORR

Golden Gate Park
PHOTOGRAPHY: DADEROT

that because we don't have regional governments, it is challenging to get things done on a regional basis with a regional perspective" (Grose, 2015). The absence of a single, regional authority has made the Bay Area a region of collaboration and many public-private platforms and organizations. One of the major achievements of this collaboration has been the implementation of a high frequency metropolitan transit system, the BART (bart.gov). Also in light of increasing environmental issues, such as climate change and flooding, advocates from different sectors and levels of government tend to work together. The conservation of mountains, forests, water quality and wetlands are among the current shared values of the Bay Area municipalities and institutions.

> "The Bicycle Strategy is one of the key building blocks for the city to remain economically competitive and culturally unique in this global world. It combines […] management and […] investment to reach quality of life goals. Now is the time to make bicycling a part of everyday life in San Francisco."
>
> ED REISKIN, SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY, 2013

KNOWLEDGE HABITAT

San Francisco has a diversified service economy, with employment spread across a wide range of professional domains, including financial services, tourism, and an ever-increasing technology sector. Silicon Valley, extending from San Mateo to Palo Alto, Mountain View and Santa Clara, is a leading hub and startup ecosystem for high-tech innovation and development, accounting for one-third of all of the venture capital investment in the United States.

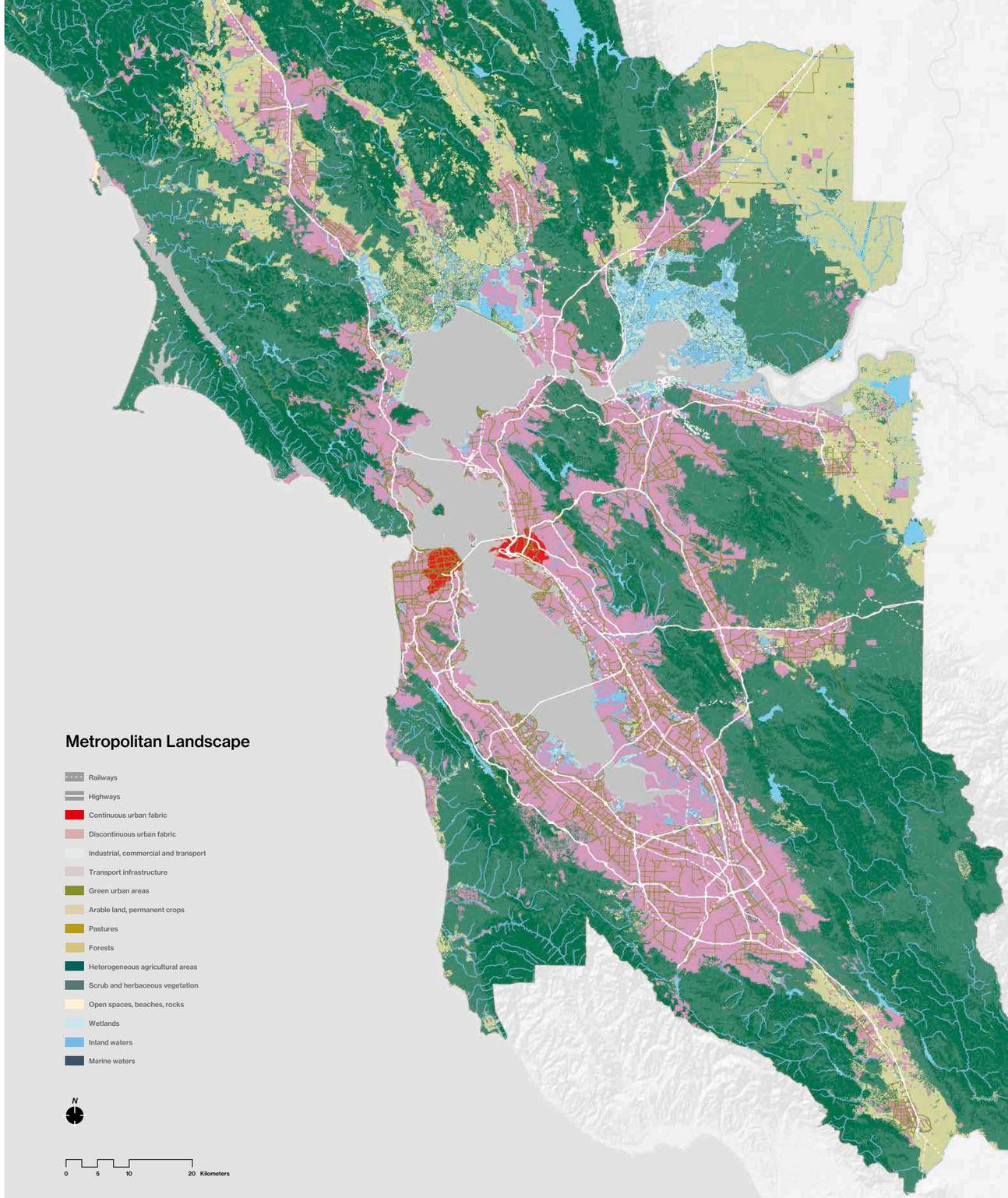
In 1891, the Stanford family donated land and money to open Stanford University. The University, its affiliates and graduates have played a major role in the development of the area. Within a period of several decades, high-tech firms slowly replaced the orchards and related agriculture and food production companies. Silicon Valley now includes many knowledge institutes and research centers. Besides the semiconductor industry, the San Francisco Bay Area has produced high-tech concepts and products and had already attracted similar companies by the late 1960s. Until now, the technology scene of the Bay Area has a curious mix of positivist hippie culture and some of the most powerful and largest multinationals in the world. This paradoxical mix persists within some of those companies, like Google, as described by Dave Eggers in his novel The Circle (2013). Across the bay, another large knowledge cluster can be found around the Berkeley University campus.

The institutional and public attitude towards landscape in the Bay Area is both defensive and engaging, varying according to a certain area. Annie Burke (Deputy Director Bay Area Open Space Council) affirms "there is a lot of diversity in the Bay area. In areas with high development pressure we try to protect the landscape, in densely built areas it's about parks, in Santa Rosa about farming communities." Because of the economic forces, private initiatives have a stronghold alongside governments and NGO's. "In the Bay Area, land conservation is financed from private and public dollars. For example, counties have taxed themselves to protect for public benefit. Land trusts raise money from private philanthropy to buy land that then turn into public parks, or protected in perpetuity under a conservation easement. In any given land transaction there can be a land trust, county agency, regional trail group, and a water agency. That kind of collaboration happens all the time" (Burke, 2015).

"Landscape is a reason to move to the Bay Area" affirms Burke. "There is an outdoor recreation culture for the highly skilled professionals in the Bay Area. Many people are riding their bikes every day to work, running, going to the beaches, going sailing." The success of the region has caused a 'run on land'. "People buy houses in cash like it were monopoly money [....] one wonders how long this will go on." Sustainable growth and zoning is important to counter this run on land and many politicians try to maintain the diversity of the Bay Area. "Until now we have managed to protect about a fourth of the area, the target being 2 million acres [8.100 square kilometers], roughly half of the total area." Increased land prices add to a growing inequality in the region. Lower income groups have less access to high quality landscapes and housing. Therefore, most policies are focused on this target group and as a result, less concerned with making the region more attractive to expats and highly skilled workers. This choice is based on the premise that these groups can take care of themselves and that the specific catering to this group would have a polarizing effect.

POLICY OVERVIEW

The most relevant policy document for the region is the "Bay Area Plan", drawn up every four years by the Association of Bay Area Governments (ABAG), the Regional Planning Agency and Council of Governments, and the Regional Transportation Commission. The next plan will be ready in 2017. The current plan from 2013 promotes sustainable growth and zoning, it recognizes the importance of green areas and landscapes and has the goal of investing more money in Primary Conservation Areas (PCA's) in order to create a 'greenprint' or green infrastructure plan across the Bay Area by 2017. The plan further mentions that urban development should occur only via infill projects. While increasing the quality of life is of focus, no explicit link is made between landscape and economic competitiveness. The plan furthermore contains no central landscape element like a green belt, but rather a mix of natural areas that are highly valued.



Sunshine fruit and flowers, Santa Clara County and its resources
SAN JOSE MERCURY SOUVENIR BOOK, 1895

Mission Peak
PHOTOGRAPHY: CC DISTERICS

Besides government policy, the Bay Area has many councils, initiatives and interest groups that protect, discuss and develop the landscape, such as the San Francisco's Clean and Green City Summit 2006, the Bay Area Council, the Open Space Authority, the Livable City Initiative, the Mayor office 'City Greening', and the Community Corridors Partnership Program, to name a few. Even though the Bay Area Plan does not delimit a green belt, in practice, the independent Greenbelt Alliance "shapes the rules that govern growth around the San Francisco Bay Area so that the right development happens in the right places." Through advocating and sharing expertise, the Greenbelt Alliance promotes land-use decisions that avoid sprawl and conserve the green area outside of the urbanized ring of the Bay Area, by shaping the policies and plans of counties, cities, and towns. The "Bay Area Open Space Council" (openspacecouncil.org) is less focused on policymaking, but brings actors together including 65 members from within the nine counties. Enhancing the attractiveness and quality of life of the Bay Area is one of their missions, especially for inhabitants without access to a high quality environment. "Outdoor Voice" is one of their initiatives. The "Peninsula Open Space Trust" (openspacetrust.org) buys land to protect the green landscape around Silicon Valley and keep it attractive in the future. Besides public institutions, many private foundations and high-tech companies, such as Adobe, heavily invest in this trust to protect green space.

METROPOLITAN LANDSCAPE INITIATIVES

"San Francisco Bay Trail" (baytrail.org) is a plan for 800 kilometers of hiking and cycling trails that will encircle the Bay. Of these, more than 500 kilometers are completed at the time of publication. This system provides connections to existing park and recreation facilities, creates links to existing and proposed transportation facilities, and is planned in such a way as to avoid adverse effects on environmentally sensitive areas. "The Wiggle" is currently San Francisco's most popular cycling lane, connecting Market Street and Golden Gate Park and providing easy access to Marine Headlands across the Bay Bridge. "El Camino Real" is a historic 966-kilometer road, connecting the former Alta California's 21 monasteries (missions) and four fortresses (presidios), stretching from Mission San Diego de Alcalá in San Diego in the south to Mission San Francisco Solano in Sonoma in the north. Today, several modern highways cover parts of the historic route, though large sections also fall on streets within the city. The stretch between San Jose and San Francisco has especially high potential for redevelopment and recapturing the identity of the old road. Projects aimed at redeveloping 300 kilometers of El Camino Real are currently underway.

Segregation and inequality have a high impact on the use of parks in the United States. "Mission Peak" (Fremont) is an unusual case. "Unlike other Northern California parks, Mission Peak draws a crowd that reflects the local population. Fremont, a sprawling city southeast of San Francisco and close to Silicon Valley, is 50 percent Asian – mostly Indian, Chinese and Filipino. Nearby San Jose is 33 percent Latino. [...] For generations, hikers ignored Mission Peak. Then came the economic downturn. 'People who were laid off or downsized had to give up their gym memberships,' said Michelle Julene, an East Bay Regional Park District planner. They discovered Mission Peak" (Pogash, 2014). The intensive use of this park has recently come under discussion. On the one hand, the value of such a popular and public outdoor facility is clear. On the other, parking problems and littering disturb residents. Plans are currently being made to build another trail that leads to the peak, which will provide more shade and parking spaces.

Top 10 touristic sites by Lonely Planet

1. Golden Gate Bridge
2. Golden Gate Park
3. Alcatraz
4. Cable Cars
5. Coit Tower
6. Fisherman's Wharf
7. Neighborhood boutiques
8. Exploratorium
9. Ferry Building
10. Mission Bars

Our top 5 sites for highly skilled workers

1. San Francisco Bay Trail and The Wiggle
2. Golden Gate Park and Downtown SF
3. Mission Peak
4. El Camino Real
5. Silicon Valley and the hills

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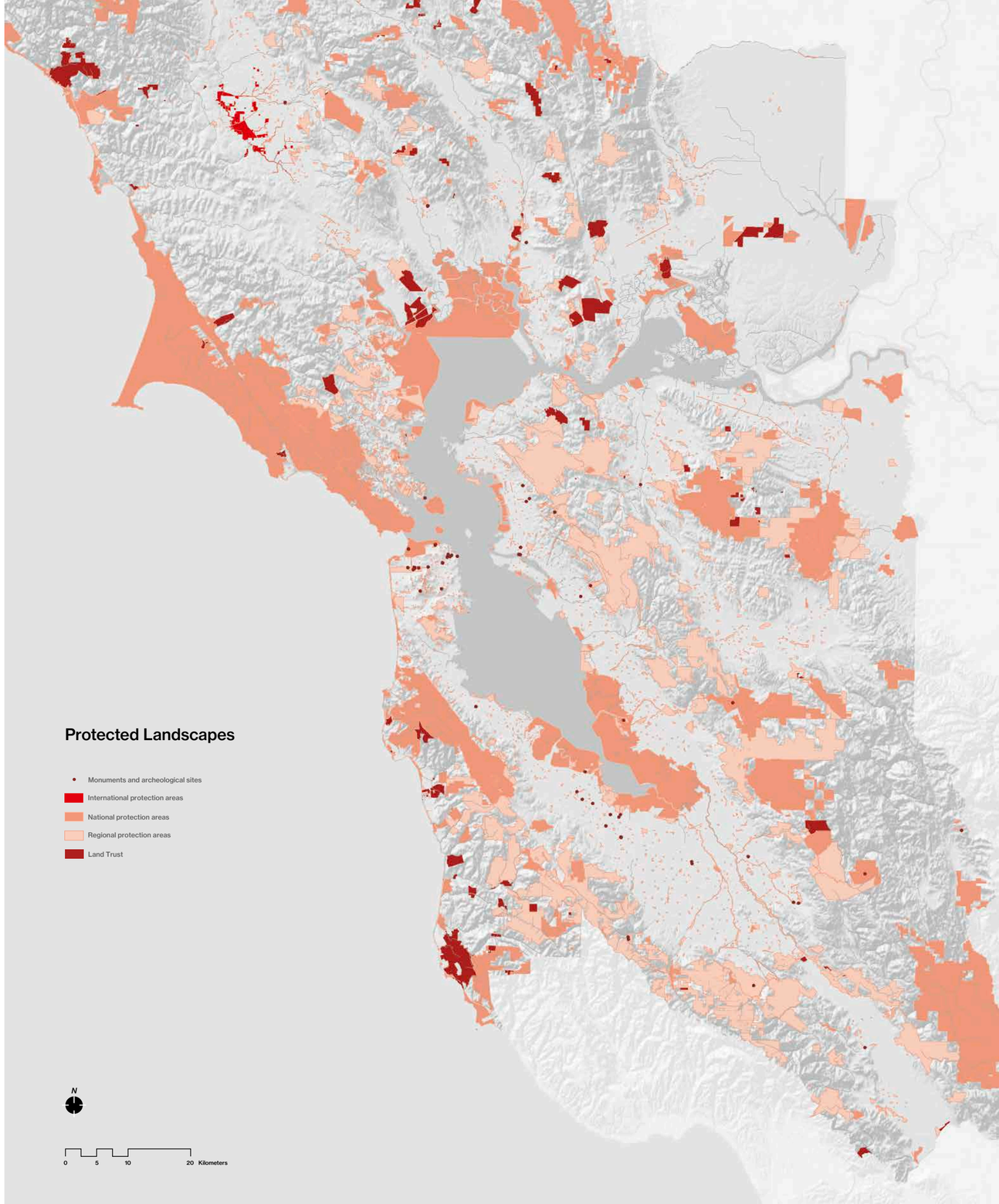
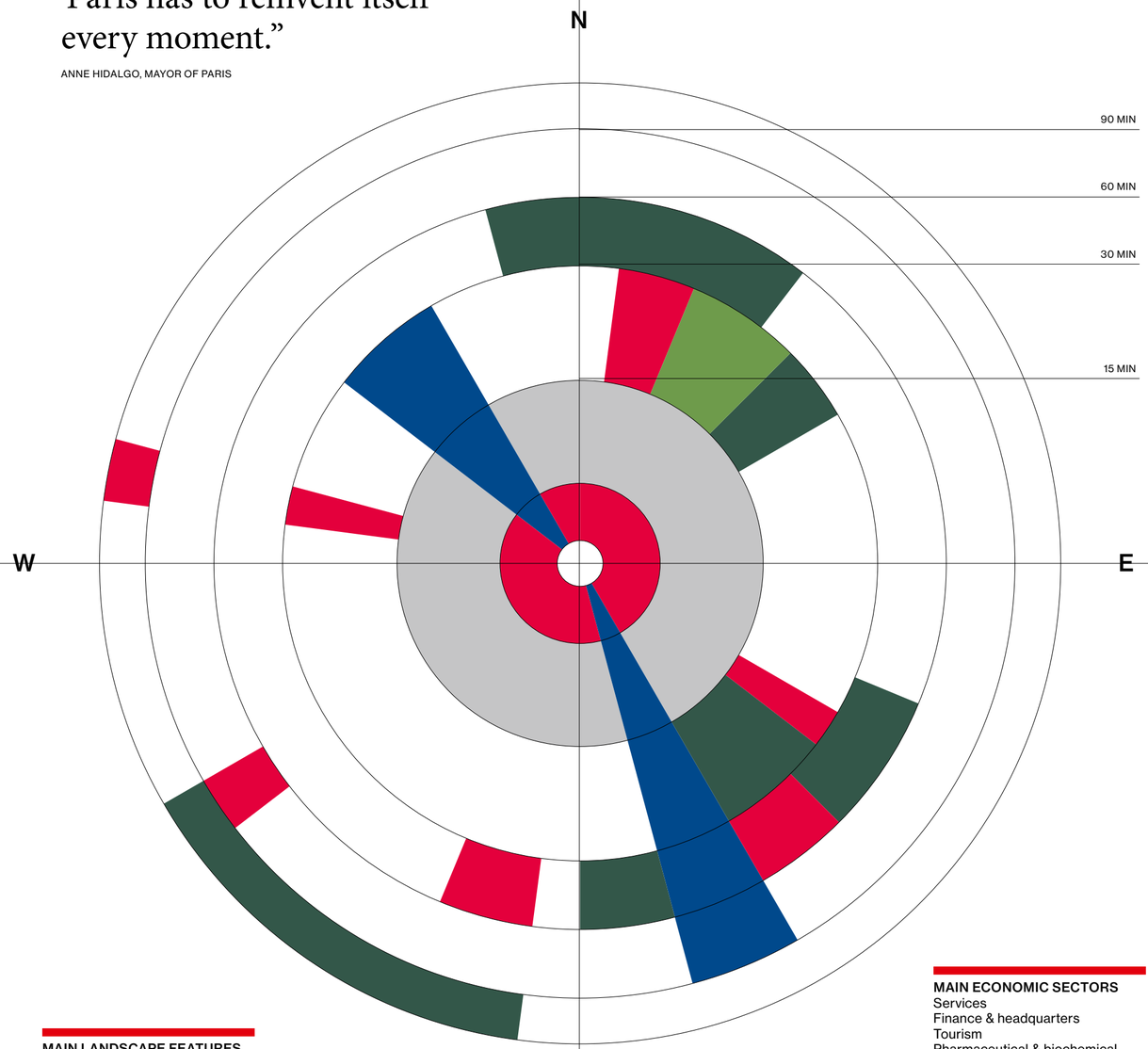


Plan d'Arnoullet (1552) reproduction of Sebastien Munster's work from 1530. SOURCE OLDMAPSOFPARIS.COM

Paris (FR)

"Paris has to reinvent itself every moment."

ANNE HIDALGO, MAYOR OF PARIS

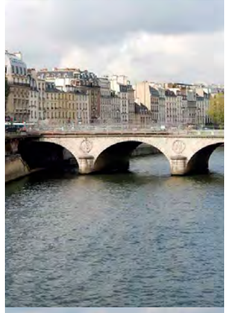


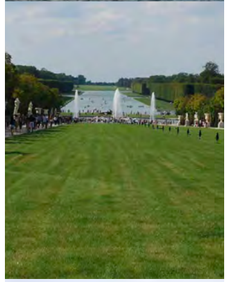
MAIN LANDSCAPE FEATURES
River waterfront
Historical center
Urban parks
Farmland
Forest
Industrial heritage

MAIN ECONOMIC SECTORS
Services
Finance & headquarters
Tourism
Pharmaceutical & biochemical industries
Culture
Information technology
Government & diplomacy
Fashion
Agriculture

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmlands Historic area Built area

Paris metropolitan area (FR)





Montparnasse view
FLICKR ⓒ BY ANDREW

Seine
FLICKR ⓒ BY MAGNUS D

Versailles
FLICKR ⓒ BY PABLO CUNEO

Centre Georges Pompidou
PHOTOGRAPHY: MERTEN NEFS

The Paris metropolitan area represents 30% of France's GDP (INSEE, 2011) and ranks as one of the five wealthiest regions in Europe. It is the banking and financial center of France, and home to many multinational headquarters. Also called "aire urbaine de Paris", this area grew to extend significantly beyond Paris' administrative Île-de-France region in 2010. The French national statistics office INSEE uses this entity frequently to describe commuter movements between Paris and its suburbs. The city is a major rail, highway, and air transport hub, served by the two international airports, Paris-Charles de Gaulle and Paris-Orly. Opened in 1900, the city's subway system, the Paris Métro, serves 4.5 million passengers daily (Schulz, 2015). The identity of Paris depends strongly on the River Seine. The riverbanks, where one can experience the historic development of the city, are a UNESCO world heritage site. In 2014 Paris received 22.4 million visitors, making it one of the world's top tourist destinations, while the Louvre museum is the most visited art museum in the world.

Beyond its solid urban core, Île de France is a very green region with almost 80% of the area remaining unbuilt. The landscape varies across the region. The hills in the west were the hunting grounds of the monarchy and feature, still today, a high-income population. The working class has traditionally lived in the northern suburbs of Paris and in the valley of the Seine where industry was once located. Today, the metropolitan area of Paris attempts to achieve more equity in its territory. The latest plan for Île de France focuses on society, aiming to provide equal distribution of services and accessibility to high quality environments. Furthermore, the central neighborhoods of the city are being protected from gentrification and the forming of 'ghettos for the rich' to ensure that diversity and social inclusion will remain important elements of the Parisian metropolis. The housing policy in Paris is quite different from London in this respect.

FOUNDING STORY

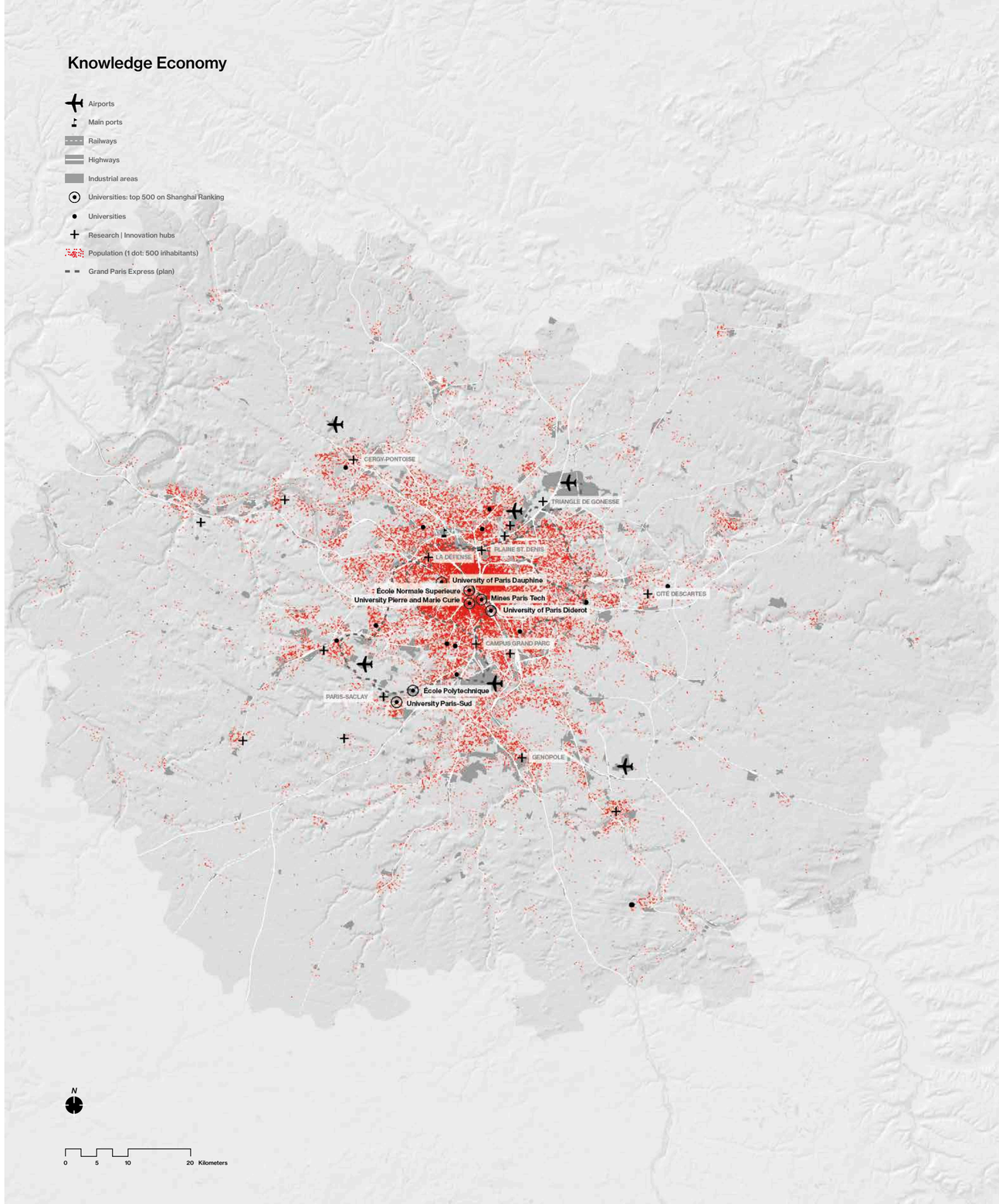
Paris has a very strong image as a river city. "This river system is the backbone of Paris and the identity of the region is this river", affirms Paul Lecroart (2015), Senior Urban Planner at Institut d'Aménagement et d'Urbanisme de la Région Ile-de-France (IAU). A Celtic people called the Parisii, who gave the city its name, founded the city in the 3rd century BC. Paris started from the island "Île de la Cité" in the middle of the Seine, which served as a trade spot with other river settlements in Europe. The bridges that connected the two banks of the river were frequently used to go from Northern France to Southern France and from the Netherlands to Italy, even before Roman times. The urban tissue began to grow into the broad agricultural lands of the plain of the "Bassin Parisien," restructured by Haussmann in the years 1853-1870, giving Paris its well-known and appreciated diagonal boulevard network and complex and segmented character.

The Paris metropolitan area continued to develop during a period of strong economic growth from 1945–1973, following the Second World War, when certain undertakings (wholesale market, facilities, large building projects) were moved out of the capital and new forms of rapid transport were set up: airports, suburban railways and the high speed train. The city of Paris developed quite organically with the landscape, following the 'veil' concept: low structures built on the plains and higher ones on the hills. Today the most important landmarks are found on hilltops, like la Defense or L'Etoile.

EMERGING METROPOLITAN LANDSCAPE

The historic city as well as the current metropolitan area of Paris have monocentric structure. Today's emerging Parisian metropolis is a result of the principles conveyed by the first Schéma Directeur-SDAURP in 1965. At that time, the immense growth of the city, combined with terrible conditions in the outer districts and a congested historic center all demanded an urgent and decisive response. The director of the plan, Paul Delouvrier, accepted urban sprawl, attempting to steer it in the 'right' direction. To lessen the pressure on Paris, five new suburbs were built, dozens of kilometers away from the inner city and green areas were planted between existing urbanized areas along the periphery wherever possible (Bosma, 1997). These new towns were also provided with their own commercial and industrial areas, while business districts were also planned, including La Défense and Charles de Gaulle airport. The RER- Regional Express Network was a key rail project that began with the SDAURP 1965 and continued to significantly contribute to Paris' growth into a metropolitan region.

The latest, on-going project "Grand Paris", initiated in 2007 under Nicolas Sarkozy's presidency, is a milestone for Paris in the global competition among the world's leading metropolises. One significant outcome is the forming of a new metropolitan authority, the "Metropole du Grand Paris." It also features a new transportation master plan for the re-



Paris metropolitan area (FR)

Parc André Citroën
PHOTOGRAPH: WIKIMEDIA COMMONS ANDREW DUTHIE

gion and several plans for strategic development in certain target areas.

KNOWLEDGE HABITAT

The Île de France region constitutes the main concentration of higher learning and research institutions in France. It hosts more than 650,000 students, amassing 40% of all research laboratories in the country. Today, redefining the role of higher learning and research has become the center of local and regional politics, aligned with the restructuring of the university system around eight research and higher education clusters.

Paris-Saclay is an important example of a research-intensive business cluster currently under development in the south of Paris (epaps.fr/en/a-

> "This river system is the backbone of Paris and the identity of the region is this river."
>
> PAUL LECROART, INTERVIEW 2015

global-cluster). Launched in 2006 by Sarkozy, this Grand Paris flagship project is planned for completion in 2030. The goal is to place Paris and France among the top international hubs in the innovation economy and to compete with other similar clusters like Silicon Valley. The campus will be served by a metro line connecting it to the center and to high quality natural and agricultural spaces and strong local heritage (Versailles, Port-Royal) offering "an attractive setting in which to live, work and study" (Établissement public Paris-Saclay, 2015). Although many people believe the plan is needed to reinforce the economic capacity of France, "as a greenfield project it is not sustainable." (Lecroart, 2015)

A similar project is "Le Triangle de Gonesse", an area in the North of Paris with a total of 1,000 hectares of land used primarily for agriculture (triangledegonesse.fr). This project is part of the extensive Grand Paris plan and is planned to become an all-encompassing hub of research and development, headquarters and small-medium enterprises, and a high-quality living environment with opportunities for recreation and shopping. The project includes a 'creative park,' which is part of a system of urban parks, as well as a vast agricultural area of 400 hectares. Lecroart (2015) explains: "you cannot imagine a large scale development in the city of Paris without the creation of a park." However, he critically adds that 'green' in the case of Gonesse is mainly part of project marketing rather than its fundamental element. Like Paris Saclay, Le Triangle de Gonesse is a greenfield development and therefore not necessarily sustainable. In their case, the high quality landscape works as an attractor and face of the advertising campaign. As Lecroart argues, traditionally in Paris "we are much better in creating small-medium parks for attracting businesses and people."

Paris Plage
FLICKR @BY JEAN-LOUIS ZIMMERMANN

Velib' bikesharing station
FLICKR @BY MARIORDO59

METROPOLITAN LANDSCAPE POLICIES

The "Grenelle Environnement" is a conference bringing together the government, local authorities, trade unions, business and voluntary sectors to draw up a plan of action consisting of concrete measures for tackling issues related to environment, ecology and sustainable development. Officially launched in 2007, the Grenelle Environnement combines the state and civil society in order to define new actions for sustainable development in France, which meets the needs of the present without compromising the ability of future generations.

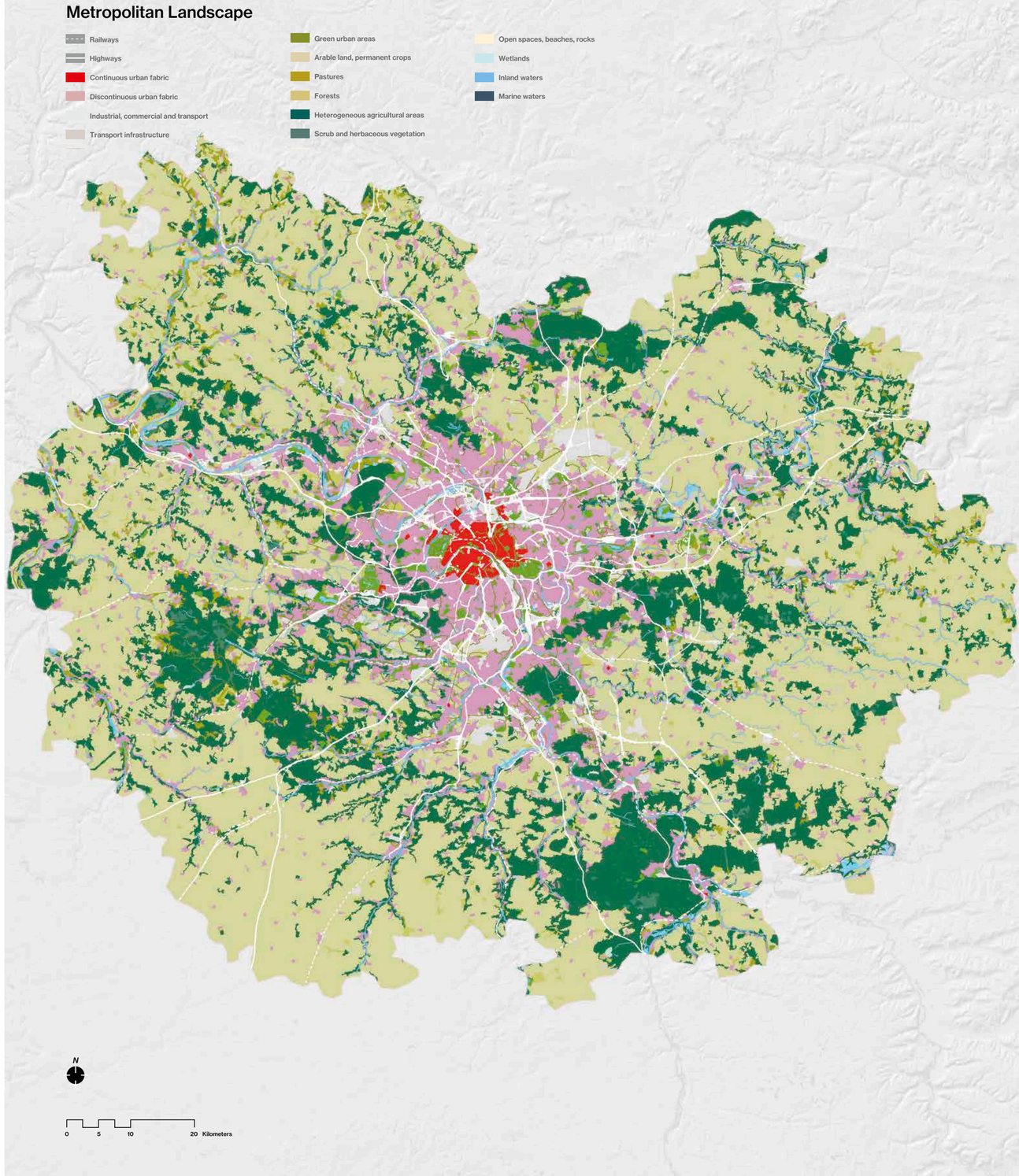
The "Green Belt of Île-de-France" (La ceinture verte de la metropole Parisienne) is a particularly representative territory of regional action in the field of environmental protection. First conceived in the mid-1970s, and outlined in 1994, the concept of a green belt first expressed an ambitious regional commitment and consistent regional policy that led to land acquisitions and development of forest areas in 1983. The green belt is one of the four main policies of the Green Plan, published in 1995, and is often considered a weak policy, setting primarily guidelines rather than rules for development. In this framework the green belt serves more as a tool of discussion within the framework of the regional master plan. Furthermore, in the Parisian context, the greenbelt includes a mixture of green, urban and peri-urban areas.

The "Schéma directeur de la région Île-de-France (SDRIF) 2030" is described as a societal plan to "make the Île-de-France region united, dynamic, attractive and sustainable where the Francilien is at the heart of the project." It aims to equally distribute high quality infrastructure in order to bring social and geographic solidarity and create a healthy society through better access to the natural environment. The plan focuses on the provision of affordable houses to accommodate the rising population in the region as well as new employment. The strengthening and modernization of the mobility system is a major priority, including the implementation of the new automatic subway "Grand Paris Express". Landscape is seen as an asset for a wealthy and attractive region in 2030. Its development and conservation is brought about by installing new park infrastructure and limiting urbanization.

METROPOLITAN LANDSCAPE INITIATIVES

The Seine is the most important public space of Paris. The city has the tradition of opening up new parts to the river and offering connections with the city. One example is "Parc André Citroen", which transformed a former Citroën automobile manufacturing plant into a 14 hectares public park. Two large greenhouses in the southeast overlook the park express, the natural and pure 'garden' aspect of the park. This park, with its extensive size and innovative design, sets an example for a new generation of urban parks in Paris.

A major trend regarding landscapes currently includes converting infrastructure from the 1970s into public space, for example through the transforma-



tion of highways into urban boulevards. An earlier example was the Promenade Plantée, a former elevated railway that was transformed into a park in the 1990s. A more recent example is the 'pedestrianization' of large sections of 1960s expressway on the banks of the Seine. The highways were the pride of Georges Pompidou, as result of "France's love affair with the car in the 1960s" (Chrisafis, 2012).

> "Boris [Johnson] invited me to come to London to ride a tandem, so I shall come."
>
> ANNE HIDALGO, MAYOR OF PARIS, 2015

Environmentalists have long condemned these highways as "dreadful, polluting waste of architectural heritage" (Chrisafis, 2012). In 2012, the socialist mayor Bertrand Delanoë finally managed to "give Parisians back their river," profoundly changing the city and providing "an opportunity for happiness" for residents (Chrisafis, 2012). Such developments further attract businesses and cultural activities, as they represent an active and lively Paris. "Paris has to reinvent itself every moment," affirms current mayor Anne Hidalgo (reinventer.paris, 2015), "particularly in terms of housing and everything relating to density, desegregation, energy and resilience. It is important to find new collective ways of working that will give shape to the future metropolis." Paris invented the public bike system Vélib', AutoLibre, ParisPlage and launched the Réinventer Paris call for projects. It is important to show that it stays high in the ranking (Lecroart, 2015).

Top 7 tourist sites by Lonely Planet

1. Versailles
2. Vaux-le-Vicomte
3. Chantilly art collection
4. Fontainebleau
5. St. Denis
6. Chartres
7. Disneyland Paris

Our top 5 sites for the highly skilled worker

1. Seine Riverside "pedestrian highway"
2. Le CENTQUATRE-PARIS – Centquatre – 104
3. Park de la Villette and Parc André Citroën
4. Promenade plantée
5. Palais de Tokyo

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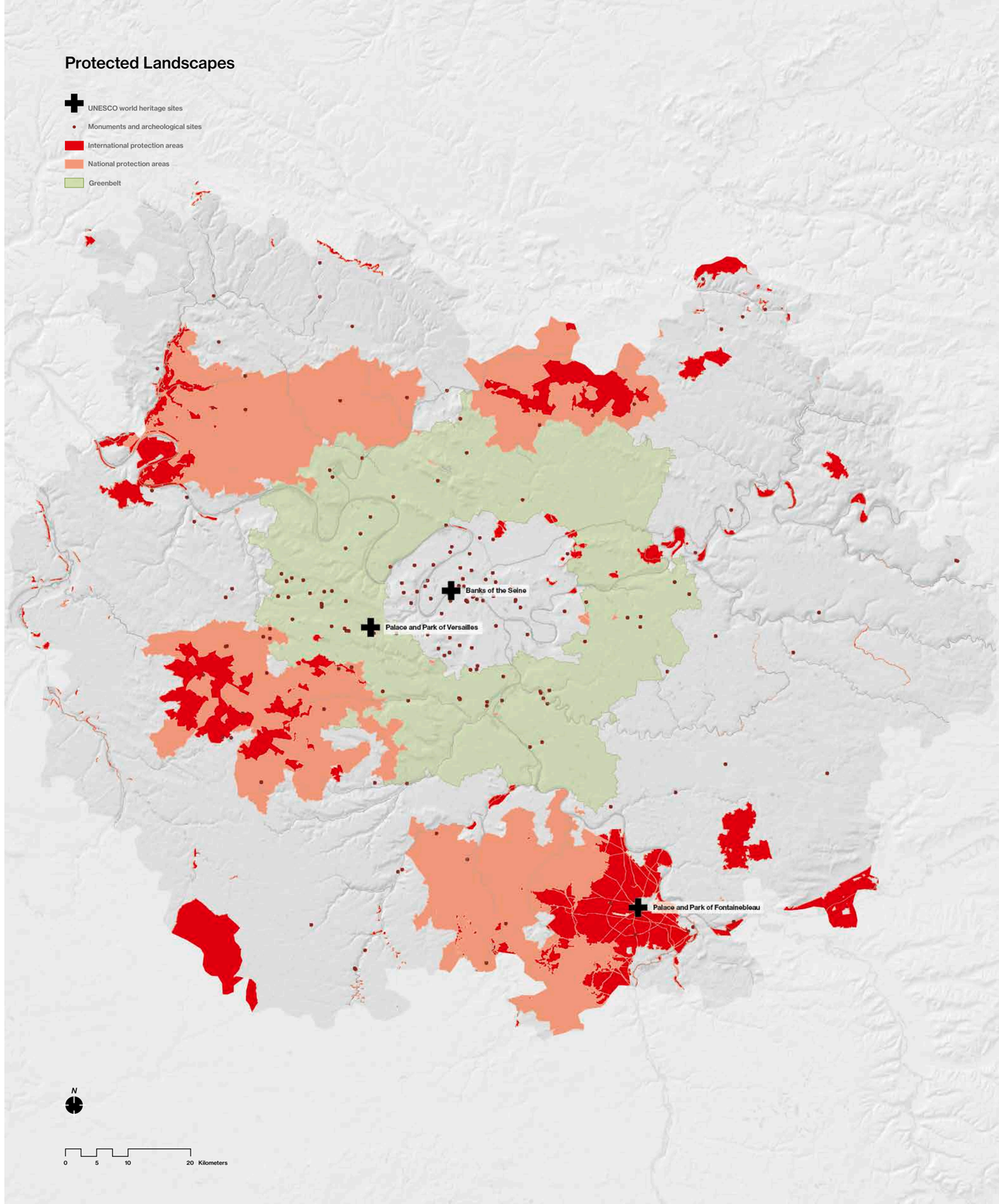
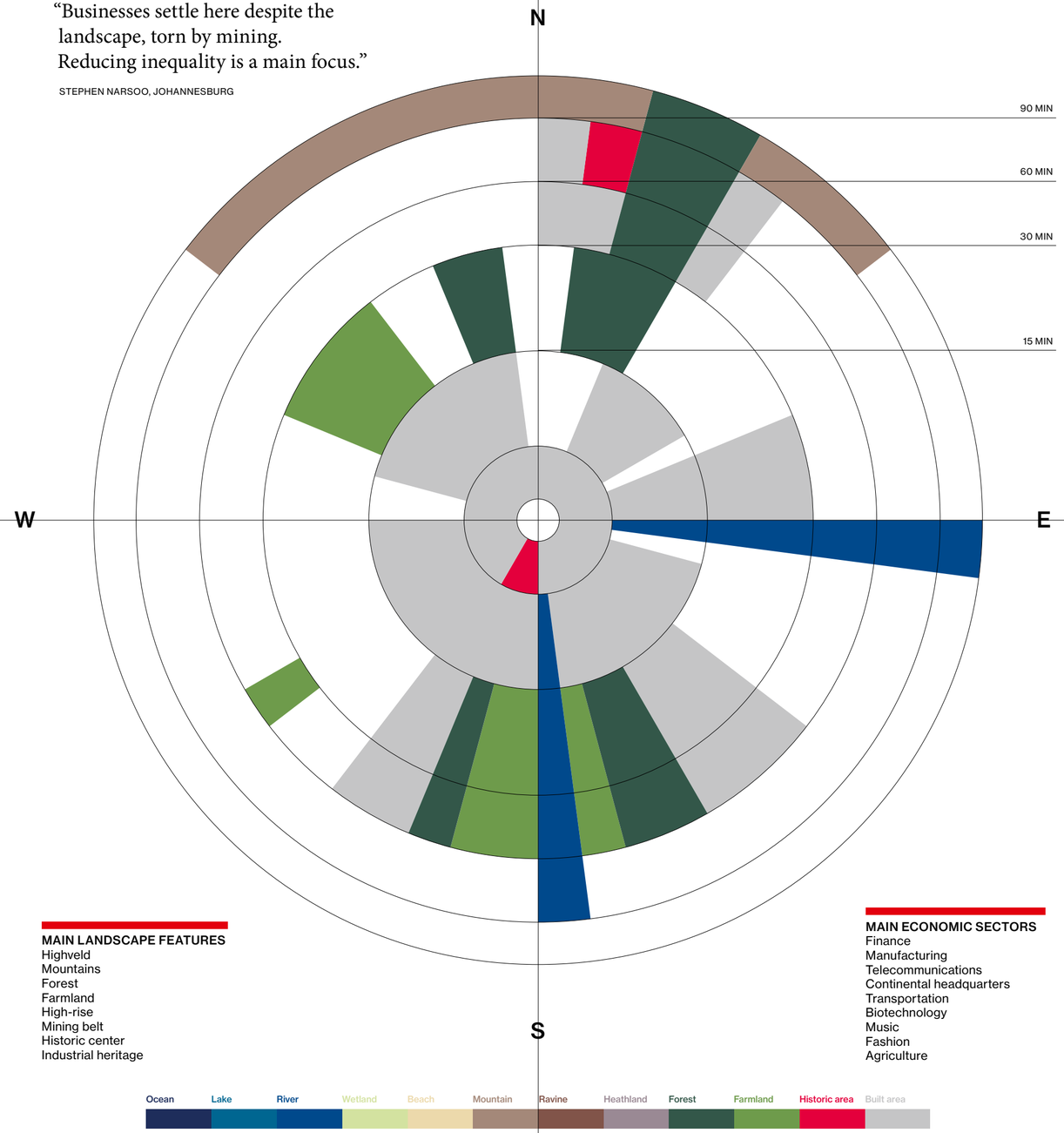


Map of Johannesburg and Suburbs, 1929, by Holmden. SOURCE: JOHANNESBURG1912

Johannesburg (ZA)

"Businesses settle here despite the landscape, torn by mining. Reducing inequality is a main focus."

STEPHEN NARSOO, JOHANNESBURG

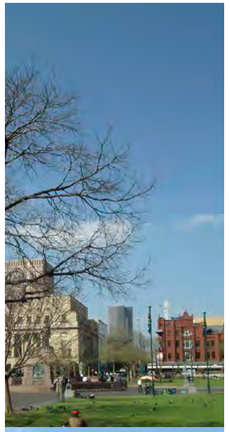


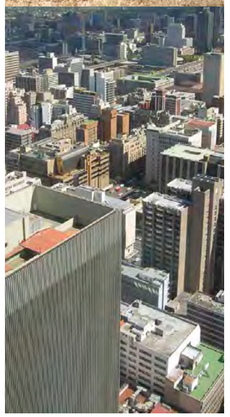
MAIN LANDSCAPE FEATURES
Highveld
Mountains
Forest
Farmland
High-rise
Mining belt
Historic center
Industrial heritage

MAIN ECONOMIC SECTORS
Finance
Manufacturing
Telecommunications
Continental headquarters
Transportation
Biotechnology
Music
Fashion
Agriculture

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmland Historic area Built area

Gauteng Province – Johannesburg (ZA)





Pretoria
FLICKR BY GUNTHER FLALG

Countryside
FLICKR BY FITZ CARRALDO

Wildpark
FLICKR BY JOJOS7

Carlton Centre Gauteng
FLICKR BY CHRIS EASON

Gauteng province is the political and economic heart of South Africa and one of the largest conurbations on the continent. While it is the smallest province of South Africa, only 1.5% of the national land area, it is the most urbanized. Gauteng province contains about a fourth of the national population and a third of the national GDP (STATSSA, 2012). Together with government center Tshwane (Pretoria), Ekurhuleni, Sedibeng and West Rand, Johannesburg forms a polycentric and dispersed metropolis and is regarded as the financial center of Africa. For decades, Gauteng has been a magnet for migrants who seek economic opportunities and a better quality of life. Between 1996 and 2011, the population grew by 33% (STATSSA, 2012).

Most of Gauteng is on the 'Highveld', a grassland area around 1500 meters above sea level. Between Johannesburg and Pretoria there are low parallel ridges and undulating hills, some part of the Magaliesberg Mountains and the Witwatersrand. The north of the province is more subtropical, due to its lower altitude and is mostly dry savanna. At the province border lays the Vaal River. Rural and peri-urban areas within Gauteng are highly transformed and cultivated. Most of the landscape is private owned extensive farmland, golf courses or part of schools, residences or other (semi-)private compounds (Gauteng City-Region Observatory – GCRO, 2013). Currently, the main challenges of Gauteng are to include the informal parts of both economy and settlements, to accommodate strong demographic growth, to deal with the spatial legacy of its mining history, and to counter social inequality and segregation which still remains after the only recently abolished apartheid planning system.

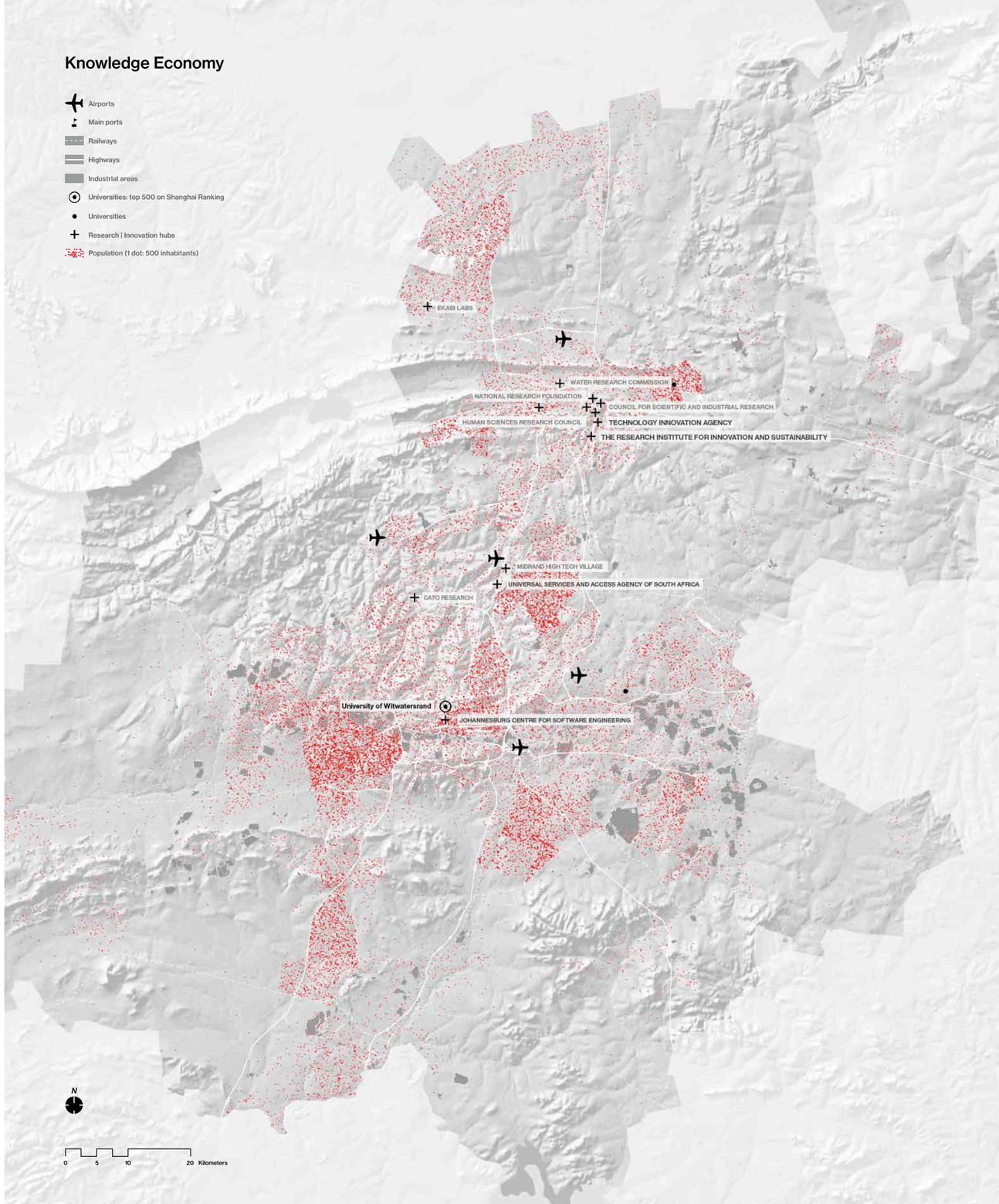
FOUNDING STORY

After a long occupation by indigenous tribes, Gauteng's colonial history revolved mainly around mining. Settlers from the Dutch-British Cape Colony arrived in the region around the year 1800. 'Gauta' in Sotho means gold. The discovery of gold in 1886 at a farm in Witwatersrand, south of the young capital Pretoria (1855), gave rise to a gold rush. Ten years later the site was a busy town of 100,000 inhabitants called Johannesburg, and was, at the time, the largest gold extraction site on earth. Pretoria played a crucial role in the 2nd Anglo-Boer Freedom War, which the local Boer community lost to the British in 1902. Three years later near Pretoria, the Cullinan diamond, the largest diamond in the world, was found. In the next decades the mining industry grew and Johannesburg developed around the central west-east mining belt (Ahmad, 2010), which remains a large and central spatial entity in contemporary Gauteng.

In 1910 The Union of South Africa was founded as a dominion of the British Empire. It was governed under a form of constitutional monarchy, with the British monarch represented by a governor-general. Johannesburg began to establish itself as a financial and business center from the 1920s onward. The Union came to an end in 1961, when the constitution was enacted and the country became the sovereign Republic of South Africa. The administration of the new republic remained in Pretoria, while parliament would be seated in Cape Town. Recently, President Zuma (2016) questioned this solution of two capitals, as members of the executive need two cars and two houses – one in Cape Town and one in Pretoria – and travel between the two cities. Only in 1994 was the province named Gauteng, following its separation from the former province Transvaal.

EMERGING METROPOLITAN LANDSCAPE

Between 1948 and 1994, the National Party's apartheid policy served as the overall paradigm during the development of Gauteng. Besides the well-known socio-economic and political consequences, apartheid also left a spatial legacy in Gauteng. The highly segregating urbanization strategy aimed to cleanse the white neighborhoods by creating black new towns. An example of such a black township is Soweto, deliberately planned south of the mining belt, downwind from the 'tailings' or large dumps of mine dust. After Mandela was released from prison in 1990 and elected in 1994, apartheid formally came to an end, yet the scars of the system are still visible in the metropolitan landscape 20 years later. Poor black settlements continue to face contamination (uranium, acids etc.) from the mining sites, unemployment, and limited access to services, transport, education and recreation. South Africa remains one of the most unequal societies in the world, a stark reality that is particularly evident in Gauteng cities and towns (GCRO, 2015). Despite this and the financial crisis of 1997, Johannesburg and Gauteng continue to attract visitors and new inhabitants. In the first decade of the 21st century, the population of Johannesburg alone increased by more than one million. In the meantime, the mining



Corridors of Freedom
GOOGLE STREET VIEW

situation remains a source of conflict, such as in 2012 with the Marikana massacre, a violent police action against mine strikers in the western part of Gauteng. Segregation continues to be a paradigm for the "self-contained megaprojects [that] represent the utopian dreamscape of the postmodern age, where privilege elites seek to isolate themselves from the harsh realities of impoverishment, jobless and straitened circumstances that exist all around them" (Herbert & Murray, 2015).

KNOWLEDGE HABITAT

Gauteng is considered the economic hub of both South Africa and the continent as a whole, making up 7% of the total African GDP. It has clusters of financial, manufacturing, transport, technology, and telecommunications sectors. It also hosts a large number of overseas companies requiring a commercial base in Africa. Gauteng is home to the Johannesburg Stock Exchange, the largest stock exchange on the continent. Some of the largest companies in Africa and abroad are based in Gauteng, or have offices and branches there, including Vodacom, MTN, Neotel and Microsoft South Africa. Besides these sectors, Gauteng has strong government, culture and creative sectors - fashion, music, visual arts, in the form of both startups and larger companies. Education and research are also important, concentrated mainly in two of the 19 university campuses of Gauteng: University of Pretoria and University of the Witwatersrand. The Gauteng Growth and Development Agency, which focuses on natural and social capital, opened the Innovation Hub Pretoria in 2014 (theinnovationhub.com), an internationally accredited science park that brings together smart industries, bioscience and green economy projects and their companies, providing support and event venues.

> "So we are looking now at tourism, growing the tourism sector. The Maropeng [Cradle of Humankind] site, as a world heritage site, is the new gold for us. We would like to invest in the infrastructure there."
>
> DAVID MAKHURA, PREMIER OF GAUTENG SINCE 2014

Maboneng
FLICKR © BY THERESA HUME

Mining belt of Johannesburg
FLICKR © NASA JOHNSON

History plays an important role in the identity and development of Gauteng. Examples of cultural heritage are The Cradle of Humankind Unesco World Heritage site, which shows the recent discovery of Homo Naledi, a branch in the family tree of Homo Sapiens (2013), as well as Freedom Park, the Apartheid Museum, the historical center of Pretoria and the Golden Reef City. Although Johannesburg is not a main tourist destination in South Africa, the local heritage in combination with life sciences and cultural activities certainly holds great potential. On its way to becoming a knowledge-intensive economy, Gauteng faces several challenges, including high unemployment rates, access to education and other amenities, public safety and accessibility by different forms of transport throughout the territory. In 2008 the Gauteng City-Region Observatory (GCRO) was created in order to monitor the transformation of the urban system and contribute to provincial planning policies, by offering maps, fact and figures about the metropolitan landscape of Gauteng. Kerry Bobbins and Guy Trangoš (GCRO, 2015) explain that an integrated planning system is difficult to implement in light of the current situation where economic growth comes first and equality second in the list of priorities. Landscape is currently not a planning priority. Below we will discuss a few key policies for the metropolitan development of Gauteng.

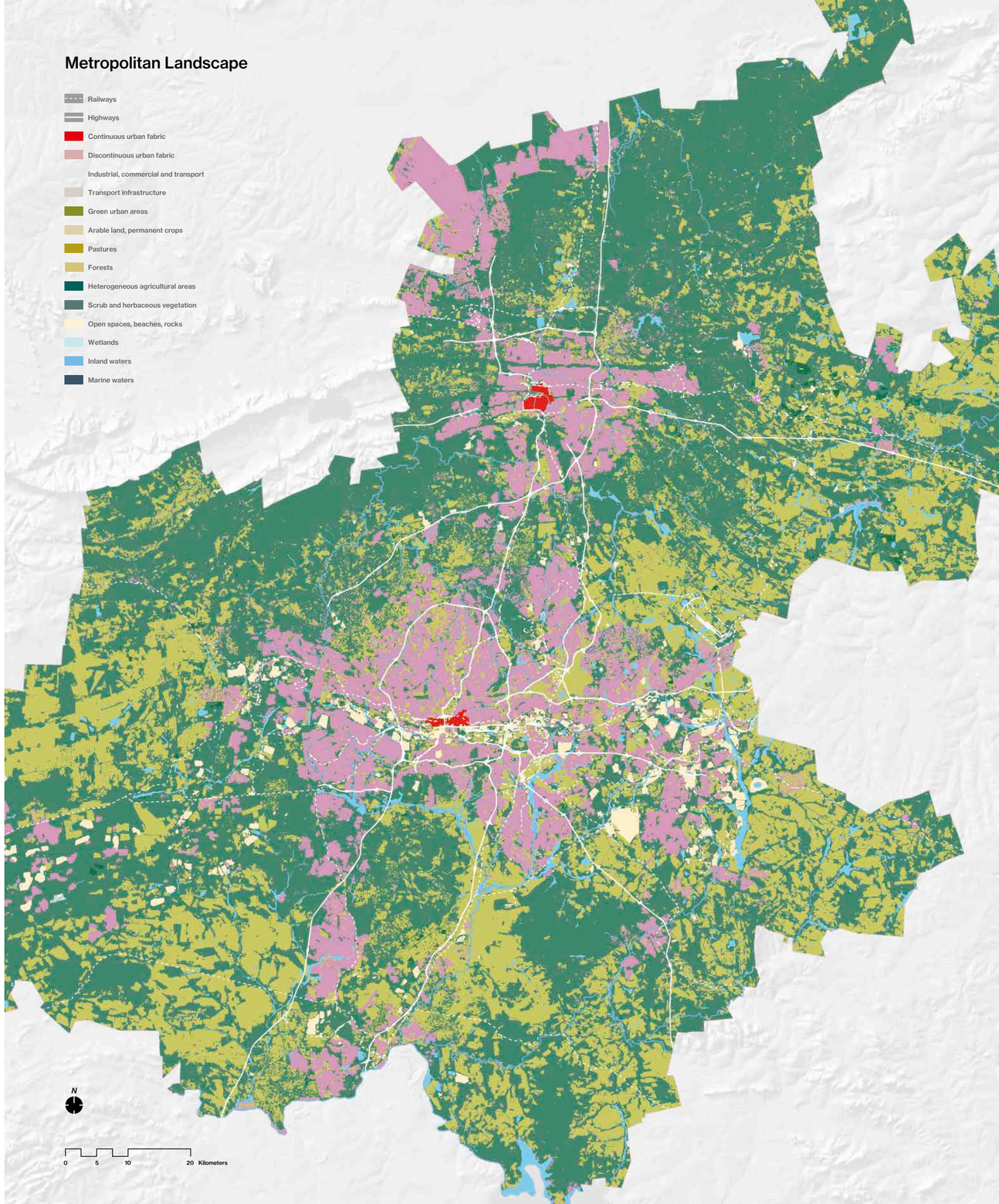
METROPOLITAN LANDSCAPE POLICIES

The "National Development Plan 2030" (NDP) aims to eliminate poverty and reduce inequality. It focuses on economic growth, living conditions, sprawl and accessibility. Even though the plan mentions goals regarding sustainability and resilience, landscape is not mentioned in the document but is rather a result of its implementation. Additional national policies shaping the metropolitan landscape are the "Environmental Management Act" (1998) and "The Heritage Act" (1999). On the local level there are the "Local Government Municipal Act" (2000) and "The Biological Act" (2004).

"Gauteng Pillars of Radical Transformation" (PRT, 2014) is the main strategy used by the current Premier of Gauteng, replacing the "Gauteng Vision 2055". The PRT pledges for radical changes and for "making Gauteng an integrated global competitive city-region." It aims to revive the economy, re-industrialize and modernize public transport, social transformation and "decisive spatial transformation". By improving the relation between working and living areas, the province seeks to develop "integrated sustainable human settlements" and an "inclusive spatial landscape" (PRT, 2014). While, landscape and quality of life aspects are mentioned here, no clear actions are outlined.

The "Green Strategic Programme for Gauteng" covers various topics from food security and sanitation to climate change. The document emphasizes the need for a sustainable region that must "proactively invest in natural capital and the green economy" (Gauteng Province, 2011). Moreover, it defines objectives for more sustainable land use based on productive landscapes and more efficient, resilient and equitable settlements forms, where biodiversity and ecosystems are protected (Gauteng Province, 2011).

"Joburg 2040" is a holistic strategy for Johannesburg aimed at transforming the unjust apartheid city of the past into a just, equitable, multi-cultural, multi-racial city of the future (Groesser, 2013). The strategy presents four drivers of change: environment and services, social development, gover-



Johannesburg
MINING AND ENGINEERING JOURNAL, 1891

Soweto Skyline
FLICKR © BY GRATPIC

nance and inclusive economy. One of the desired outcomes is “the improved quality of life and development driven resilience for all.” Quality of life in this policy however, concerns mainly the provision for primary needs (poverty, food security, literacy, HIV) and does not consider landscape quality and culture.

METROPOLITAN LANDSCAPE INITIATIVES

A concrete initiative that came about in the “Joburg 2040” strategy is “Corridors of Freedom”, the development of a Bus Rapid Transit (BRT) network, accompanied by the restructuring and densification of the urban fabric. The desired result is better access to opportunities and better quality of life through the linking of existing settlements – which were once divided by the apartheid policies – and the implementation of mixed use development nodes where jobs and services concentrate. According to Stephen Narsoo, author of Joburg 2040 and former policy and strategy expert for the City of Johannesburg, the project will also attempt to valorize key heritage sites. Currently five BRT routes are under implementation.

Another initiative influencing the metropolitan landscape is the “Maboneng neighborhood regeneration”, developed by a private investor in a former industrial area of Johannesburg. The plan attracts the ‘creative class’ and generates new activities. By renovating several buildings in the neighborhood, the initiators have created space for offices, restaurants and housing. An earlier initiative is the transformation of the closed Orlando Coal Power Station into an entertainment and business park in 2006. Its cooling towers became painted art landmarks of the World Cup in 2010.

Quality of life plays a large role in the various controversial projects for gated communities in Gauteng. “Cradle City”, for example is a fully private greenfield development proposal that promises to build a 900 ha city around the Lanseria International Airport. The plan incorporates all required facilities and services including “aesthetically-pleasing places for leisure and entertainment” (Herbert & Murray, 2015). Critics fear, however, that it will bring about a private city, self-contained and separated from the city-region which lies outside the mandate of public authorities.

Top 6 Gauteng Province (Lonely Planet)

1. Africa’s cultural hub in the revamped Johannesburg suburbs of Newtown, Braamfontein and Doornfontein
2. Apartheid Museum and Constitution Hill
3. Orlando Towers, Soweto
4. Melville, Johannesburg
5. Cradle of Humankind
6. Freedom Park, Pretoria

Top 5 Talented Planet

1. Cradle of Humankind (and Rhino and Lion National Reserve)
2. Maboneng Precinct
3. Orlando Towers Soweto
4. Liliesleaf Farm
5. Freedom Park Pretoria

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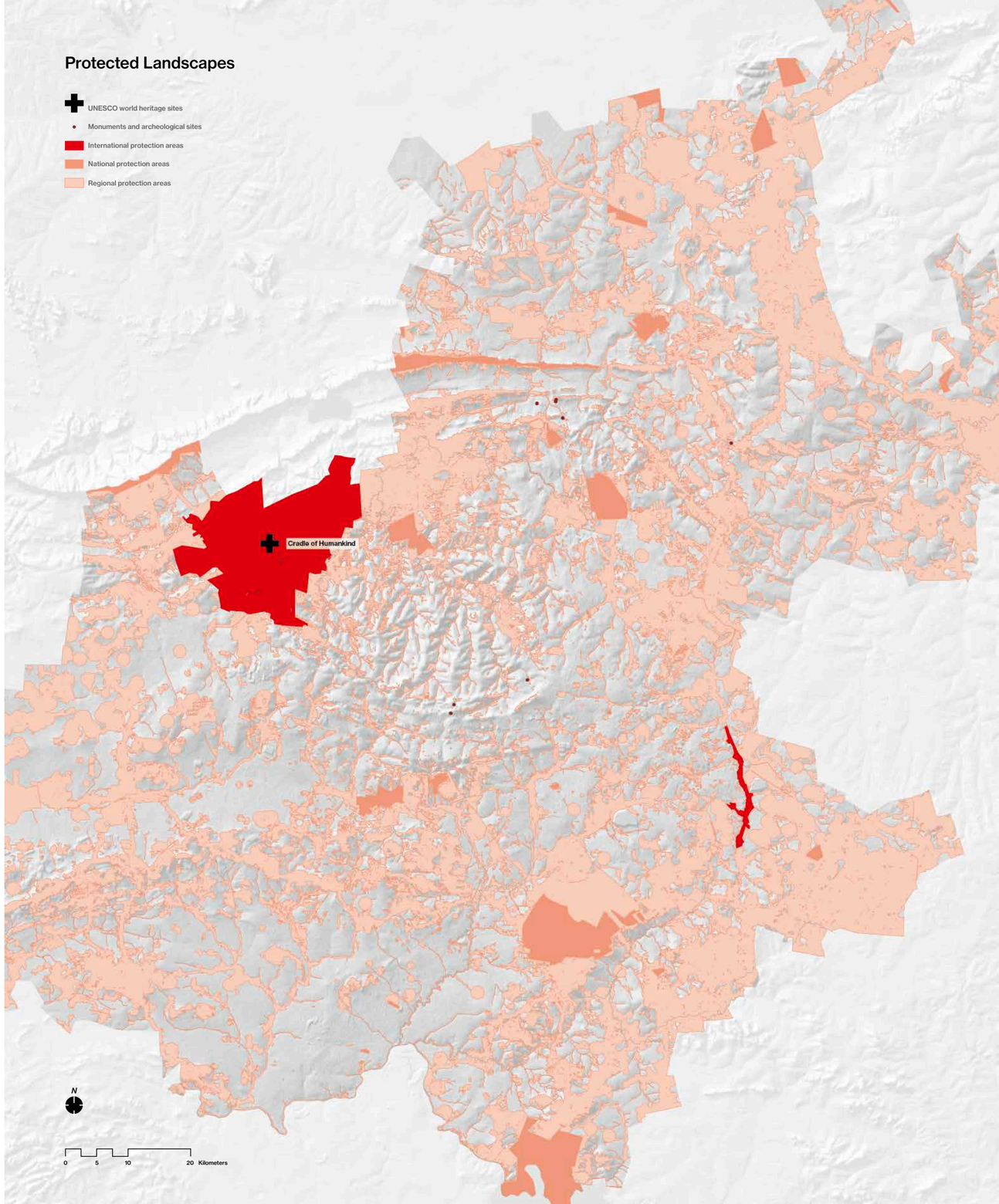

Civitates Orbis Terrarum, 1572 (edition of 1593) Herzogin-Anna-Amalia-Bibliothek, Weimar, By Georg Braun and Frans Hogenberg.
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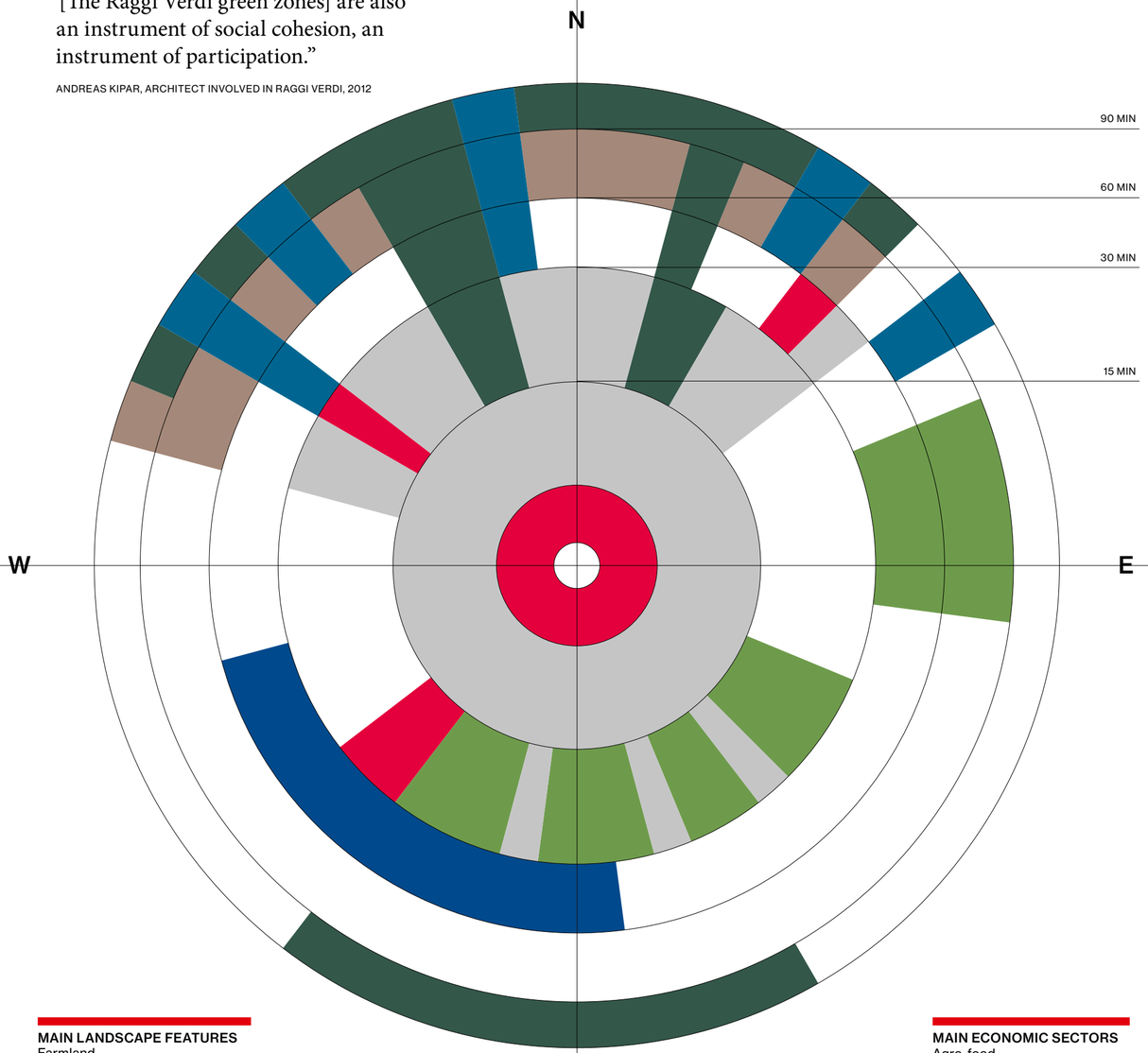
Milan (IT)

"[The Raggi Verdi green zones] are also an instrument of social cohesion, an instrument of participation."

ANDREAS KIPAR, ARCHITECT INVOLVED IN RAGGI VERDI, 2012

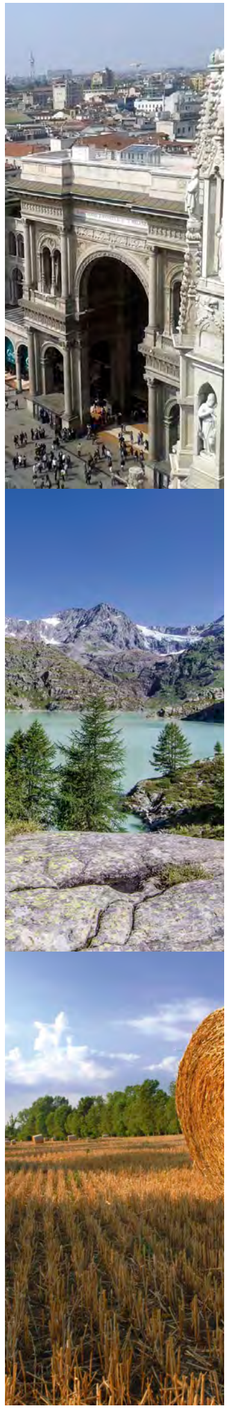


MAIN LANDSCAPE FEATURES
Farmland
River plain
Mountains
Historical center
Monasteries
Villages
Forest

MAIN ECONOMIC SECTORS
Agro-food
Financial services
Product design & manufacturing
Information technology
Biotechnology
Automotive
Tourism

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmland Historic area Built area

Milan Metropolitan Area (IT)



Milan metropolitan area is located in the north-western part of the Po River valley. Thanks to the great abundance of groundwater and surface water, the high fertile soil and the flat topography, this territory has a rich agricultural economy legacy, diversified with industrial and service activities in nearby cities (Borasio & Prusicki, 2014). Milan is Italy's richest urban agglomeration and a central headland in European networks. In terms of GDP, Milan has the third largest economy among EU cities, after London and Paris. The Milan metropolitan area features strong economic sectors in financial, commercial and juridical services, marketing and bio-health. Furthermore, Milan is famous for its fashion and design businesses, which are strongly linked to the textile and furniture clusters in the municipalities in the northwest and northern part of the region (Meijers, et al., 2012). The city is also well known for several international events and fairs, such as Milan Fashion Week. In 2015, it hosted a Universal Exposition for the second time (expo2015.org).

Only 20 percent of the total population actually lives in the city of Milan. Consequently, Milan strongly depends on the 'critical mass' in its surrounding region, called Lombardy. Over the last decades, the constant expansion of built up areas at the cost of agricultural areas and soil sealing (covering soil with an impermeable material) have affected the water bodies and the risk of flooding in urban areas is considerably high. Today, the city is attempting to reverse this trend. A 'neo-ruralization' process is taking place by regenerating the rural areas with a new valorization of the water resources, the fringe areas and the open spaces (Rurbance, 2013). At the same time, the Lombardy region has a long tradition of industrial activities which is now shifting towards the high tech and development sector. Regional policies attempt to attract investments in peripheral economic clusters that are related with agro-food, bio-health or ICT.

View from the roof of Duomo
FLICKR BY ALI T

Milan mountain and lake Lorencoclick
FLICKR BY NONCOMMERCIAL 2013

Lombardia countryside
FLICKR BY FABRIZIO

FOUNDING STORY

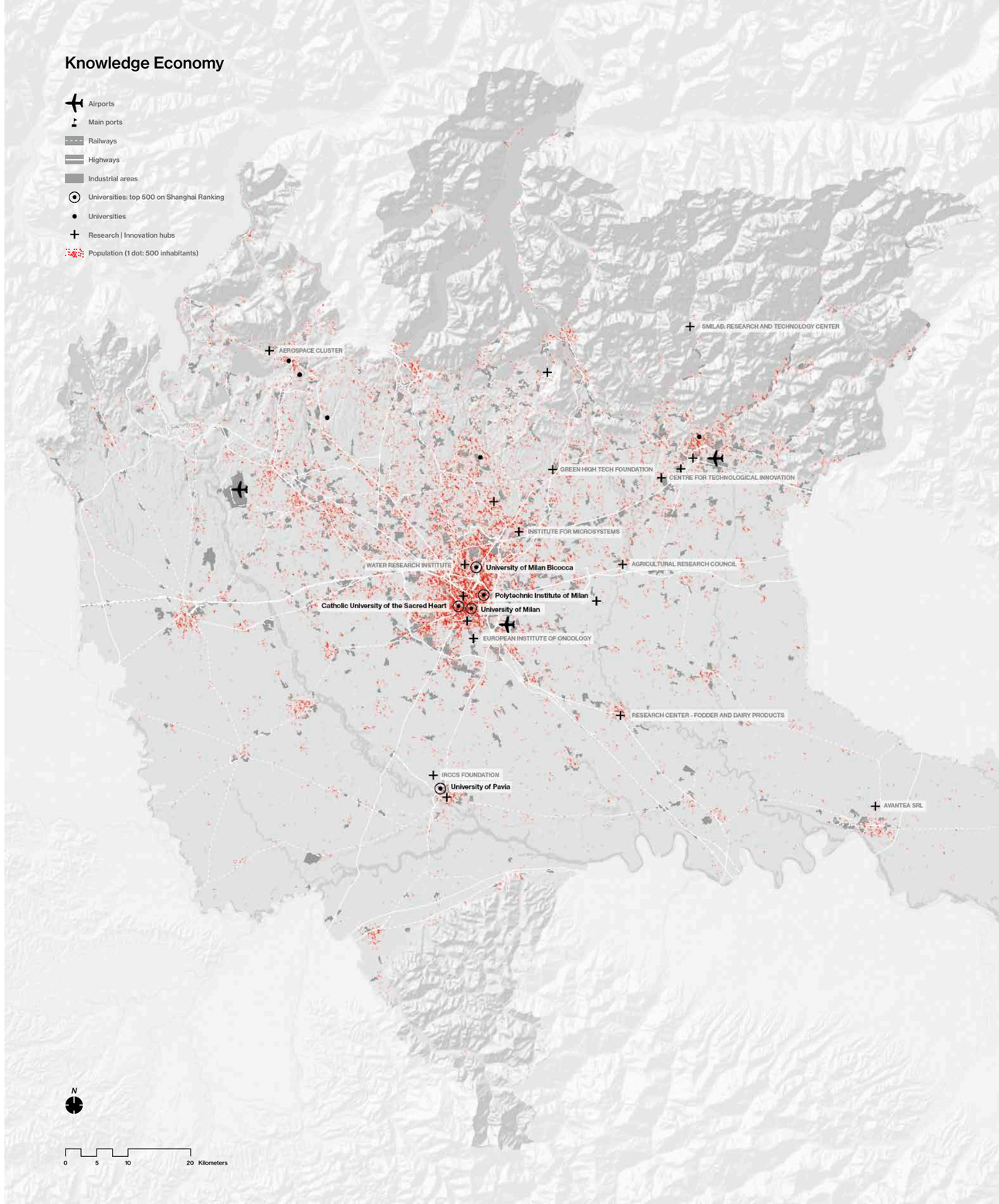
Around 400 BC, the Gauls founded the city in the heart of the Lambro-Seveso-Olona basin (part of the Po valley) thanks to the extraordinary profusion of water. This resource still serves the land in the Milan metropolitan area, making it one of the most fertile sections in the surrounding area (Gambi & Gozzoli, 1982). Named Mediolanum, the city was occupied in 222 B.C. by the Romans. Until the end of the 19th century the Spanish inner walls of the city remained a mold for its future urban development. All land-use decisions made in this period were aimed at making Milan a more suitable city to live in: interventions took place on the streets by widening and paving the roads. Due to the demographic expansion at the beginning of the 20th century, a master plan was formulated which allowed the city to grow beyond the walls.

In the fascist period, the predominant tendency was a radical redesigning of both the roads and building systems within the urban center in order to have better economic exploitation of the land. In addition a complex grid of roads and building structures were to be realized outside of the city walls. The new master plan, designed between 1931 and 1934, covered almost all of the town's administrative boundaries, with exception for the most southern section occupied by flourishing agricultural firms. This was the area where, later on, the Agricultural Park Milan South was constituted for the purpose of restricting urban development in the southern part of the province.

EMERGING METROPOLITAN LANDSCAPE

In the period between the two World Wars, Milan expanded towards the periphery, until it reached villages along the main roads. During the last decades, the establishment of large industries, together with an increase in the population, led to a drastic expansion of the urbanized area in Milan. At the same time many households from the city of Milan moved away towards small- and medium sized municipalities in the countryside. These small villages transformed into large suburbs that are today closely integrated with the urban system of Milan. Borasio & Prusicki observe in their study (2014): "The confrontation of land cover maps and terrain coverage of this region shows how the city has moved towards the countryside and the countryside has moved towards the city in an inseparable interweaving from the 1950s to the present." Currently, there is a process of counter-urbanization happening, which can be explained by changes in the residential preferences and the rise of household incomes. Since the crisis, the municipality of Milan has focused on maintaining and attracting new metropolitan functions in order to remain competitive. At the same time, in the rural parts of the city, a revolution is taking place through the combination of innovative farming processes related with the provision of healthy food, renewable energy, environmental and landscape quality, and biodiversity protection.

In recent years, new forms of metropolitan governance and cooperation have emerged, with the aim



Milan Metropolitan Area (IT)

Milan Metropolitan Area
WIKIMEDIA COMMONS SETAFANO STABILE

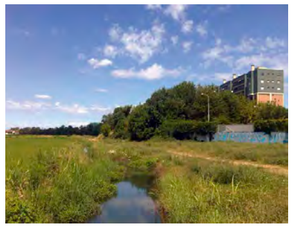
of managing the transformation processes of the territory. Here, rural and urban aspects are strongly intertwined. In the increasingly congested region, 'livability' and 'quality of life' have become important factors for attracting and maintaining high-skilled people or expats (Meijers, et al., 2012).

KNOWLEDGE HABITAT

Milan and its metropolitan region have long enjoyed an outstanding industrial history. Nowadays, the region is entering a new era of increasing global competition to attract investment and talent. Both the core area of Milan and its peripheral cities host clusters of knowledge intensive activities such as ICT and biotechnology. In line with the process of 'smart specialization' at the national and European level, investments from the Lombardy government aim at identifying and supporting technology clusters of regional importance. Such investments aim to encourage synergy, optimize the use of resources and widen the involvement of the region in areas that are strategic for the economy and the competitiveness of Lombardy (Lombardy Region, 2015).

> "Periurban agricultural areas have real potential as agricultural parks, creating green areas for metropolitan zones."
>
> LOMBARDY REGION, IN *PERIURBAN LANDSCAPES – LANDSCAPE PLANNING GUIDLINES*

Bosco Verticale (Vertical Forest), pair of residential towers in Porta Nuona Milan district
FLICKR © BY FABCOM



Parco Agricolo Sud
FLICKR © BY FABCOM

Thanks to the concentration of highly skilled professionals and specialized universities, the area features different kinds of services including product design, finance, management, media and communication. The metropolitan region is also rich in enterprises that work in the 'green economy sector' with 'green jobs' growing despite the global economic crisis. The attractiveness of Milan area for highly skilled workers is related to a good 'hardware', including infrastructure, international airports and the high concentration of cultural heritage, historic settlements and landscape qualities in the capital. Quality of life, including access to high quality food and a vibrant urban environment seems to play an important role as well, especially for the creative professionals in Milan, according to Luisa Pedrazzini (Lombardy Region Landscape Structure Department, 2015).

Finally, the brand of "Milan" is still quite strong due to the city's industrial history and the continual presence of fashion, design and high tech sector. In the agriculture sector, despite the prevalence of intensive farming, the gradual consolidation of the Milan rural district falls in line with the historical rural tradition in the area. Agriculture is becoming more multifunctional: it produces high quality food, protects the natural resources, offers tourism and leisure activities, and supports and promotes cultural initiatives.

METROPOLITAN LANDSCAPE POLICIES

Landscape in the Milan metropolitan area is viewed as the combination of both natural and cultural characteristics. Pedrazzini explains: "In Italy, as in many places in Southern Europe, landscape is very much seen as the anthropic [man made] landscape. In the Lombardy regional plan we would like to merge the environmental aspects and the anthropic component. The region is very important in terms of concentration and density of population, but at the same time it is very close to the wild part of the Alpine region."

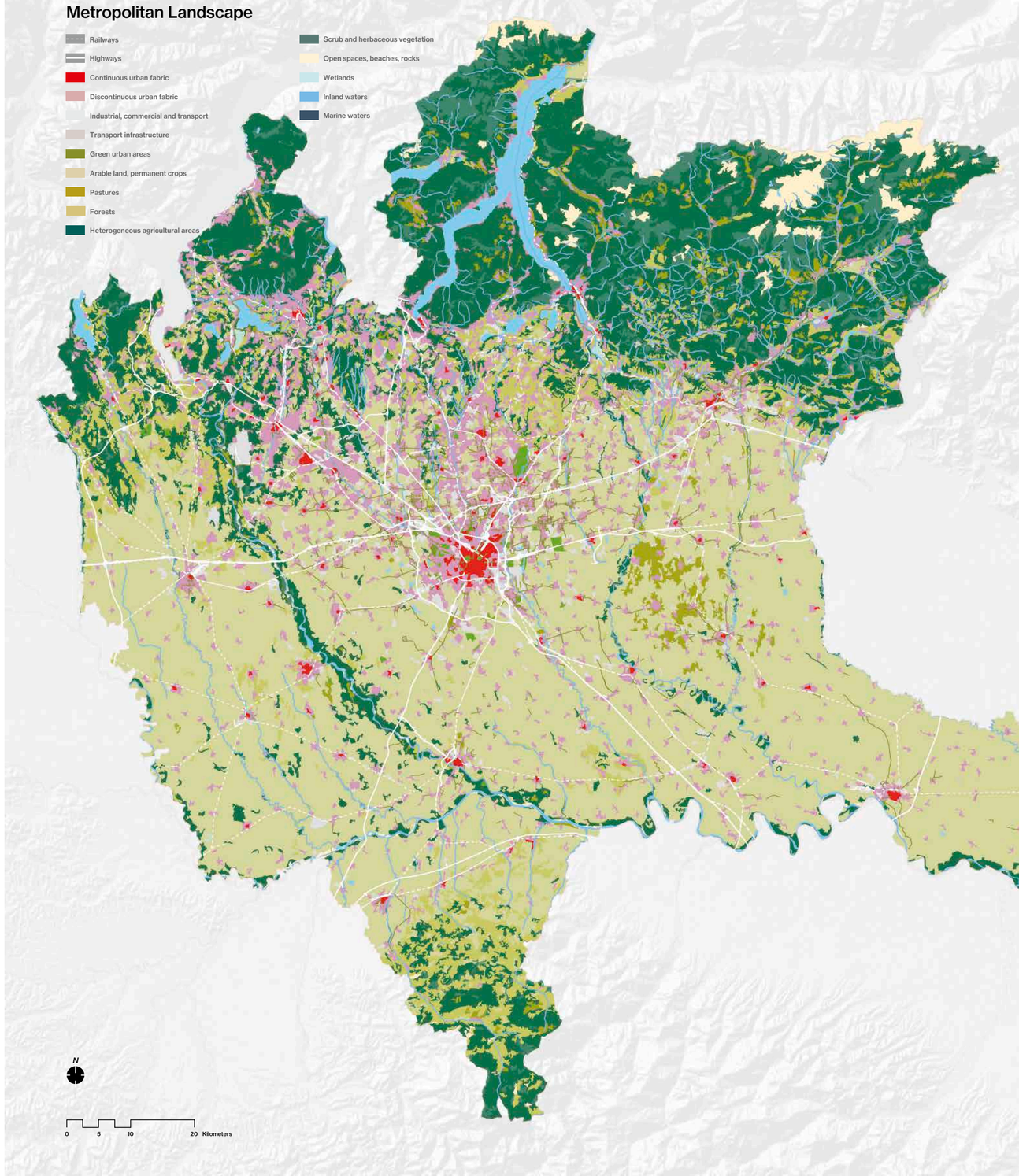
In the "Piano Paessaggistico Regionale" (Regional Landscape Plan, part of "Piano Territoriale Regionale") spatial development and infrastructure is guided by rules concerning landscape protection and environment. Heritage conservation however is not considered, due to the fact that cultural heritage in Italy is managed at the national level (Ministry of Cultural Heritage) in contradiction to all territorial planning that is executed by regional and local authorities (Pedrazzini, 2015).

An important strategy for regional cooperation is the "City of Cities Strategic Project" In 2005, the Province of Milan decided to cooperate with the Polytechnic University of Milan, to make a new strategic plan for the Province. The term "abitabilita" meaning habitability, is strongly present in the resulting plan (Città di Città). This plan focused on achieving a high quality of life and environment for the residents, temporary users or traders and companies. Although the plan was never implemented, it remains a reference for the city's metropolitan development.

"Piano di Governo del Territorio" (PGT) is the land use plan of the municipality of Milan. PGT2012 proposes a "Network of the Ecological City", aimed at the connection of large environmental systems, both existing and planned. "Raggi Verdi" – Green Rays is a project that fulfills the goals of the PGT2012, implementing the idea of a green network with radial paths that link places of urban regeneration and major local and urban centers, relating them with the heart of the city's metropolitan park belt. It guides urban development and constitutes a 72-kilometer network of pedestrian and cycle paths leading through eight 'green rays' from the center of Milan to its outer suburbs.

METROPOLITAN LANDSCAPE INITIATIVES

In the rather rural metropolitan area of Milan, conflicts between farming and urban expansion is a key issue. Over the last few years, citizen awareness related to the role of urban agriculture has grown. Recently an alliance was formed between farmers and citizens to stop new settlements. As a result, an area of about 650 hectares was restored to traditional agricultural use. Today it is a multifunctional park: an agricultural area that is used by citizens, which hosts at the same time cultural, recreational, social and educational activities connected to



Map of Parco Agricolo Sud
MAP BY WWW.PARCODELLERISAIE.IT

Milano Expo 2015
FLICKR ⓒ BY ROWENA

the rural traditions and origin of food. The place is called “Parco delle Risaie” and is part of “Parco Agricolo Sud”. One result of the project is the “Strada del Riso” (Rice Road), a thematic route that conveys knowledge of the rice farming tradition and functions as green area for open-air and leisure activities. The project is run by the Parco delle Risaie Association, a non-profit body consisting of primarily citizens who live in the surrounding areas.

The Lombardy region, together with the province, Milan Municipality and the municipalities of Milan metropolitan area, has signed a common agreement to transform Milan into an agricultural/rural metropolis. With the name “Milano Metropoli Rurale”, this project proposes a network of farms, distribution and processing sites, consumption cooperatives, schools and education agencies, and social cooperatives. The network provides know-how and employment for farmers and other actors and, above all, aims to utilize the abundance of well-governed water in high quality food (Borasio & Prusicki, 2014). With farms dating back 300 years and monasteries from the 11th century, this rural area is rich in cultural heritage. Monasteries served as the ‘founders’ of agricultural activity in the southern part of Milan, where they redeveloped the existing canal network for irrigation and drainage purposes (Pedrazzini, 2015).

The “Expo 2015 – Feeding the Planet, Energy for Life” offered a great opportunity for Milan to establish its identity as a rural metropolis from a marketing perspective. The exhibition included an array of greenhouses and farmland where each pavilion could grow its own crops. The legacy plan aims to join it to the 47,000 existing hectares of Parco Agricolo Sud and a network of existing farms. As a result of the expo, the “Milan Charter” was signed, a manifesto that fights against malnutrition and waste, while promoting equal access to natural resources and a sustainable management of food production.

Top 8 tourist sites by Lonely Planet

1. Roof of Milan’s Duomo
2. The Last Supper
3. Shopping in Milan
4. Certosa di Pavia Monastary
5. Cycling around Mantua
6. Tortelli alla zucca (local dish)
7. Lake Como
8. Citta Alta, Bergamo

Our top 5 sites for the highly skilled worker

1. Parco delle Risaie/ Parco Agricolo Sud
2. Expo 2015 site
3. Biking in the rural countryside
4. Lake Como
5. Monasteries in the periphery of Milan

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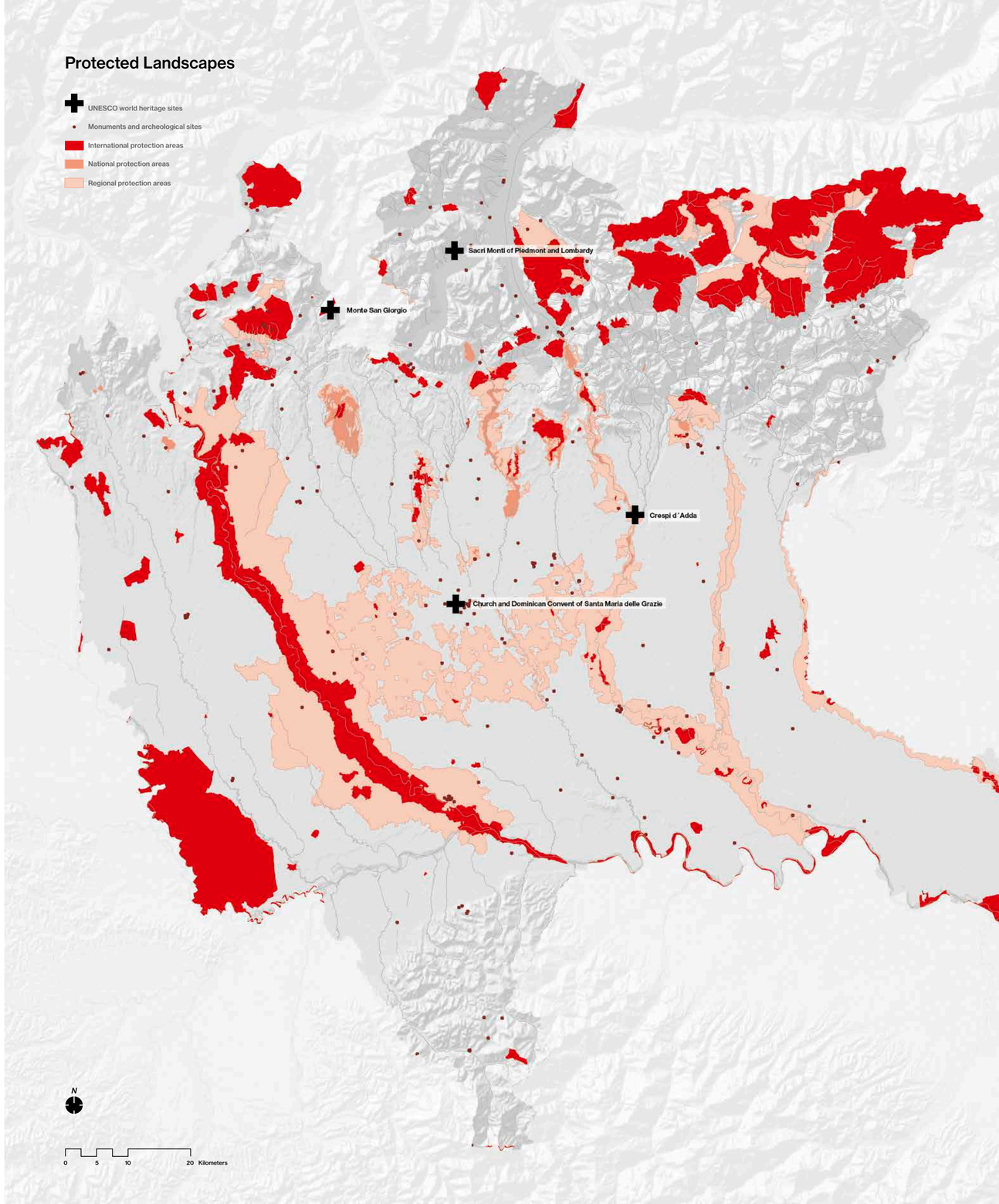
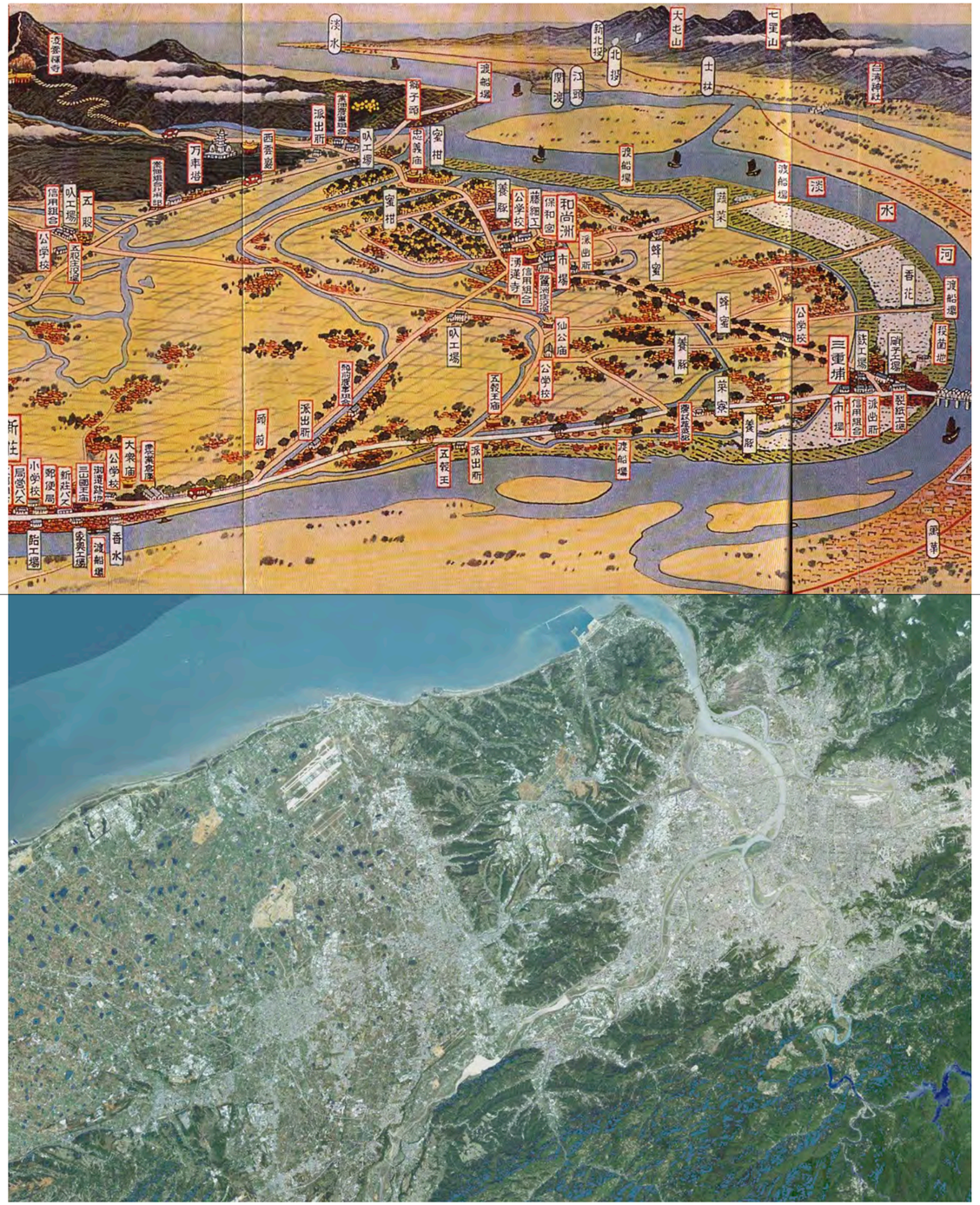


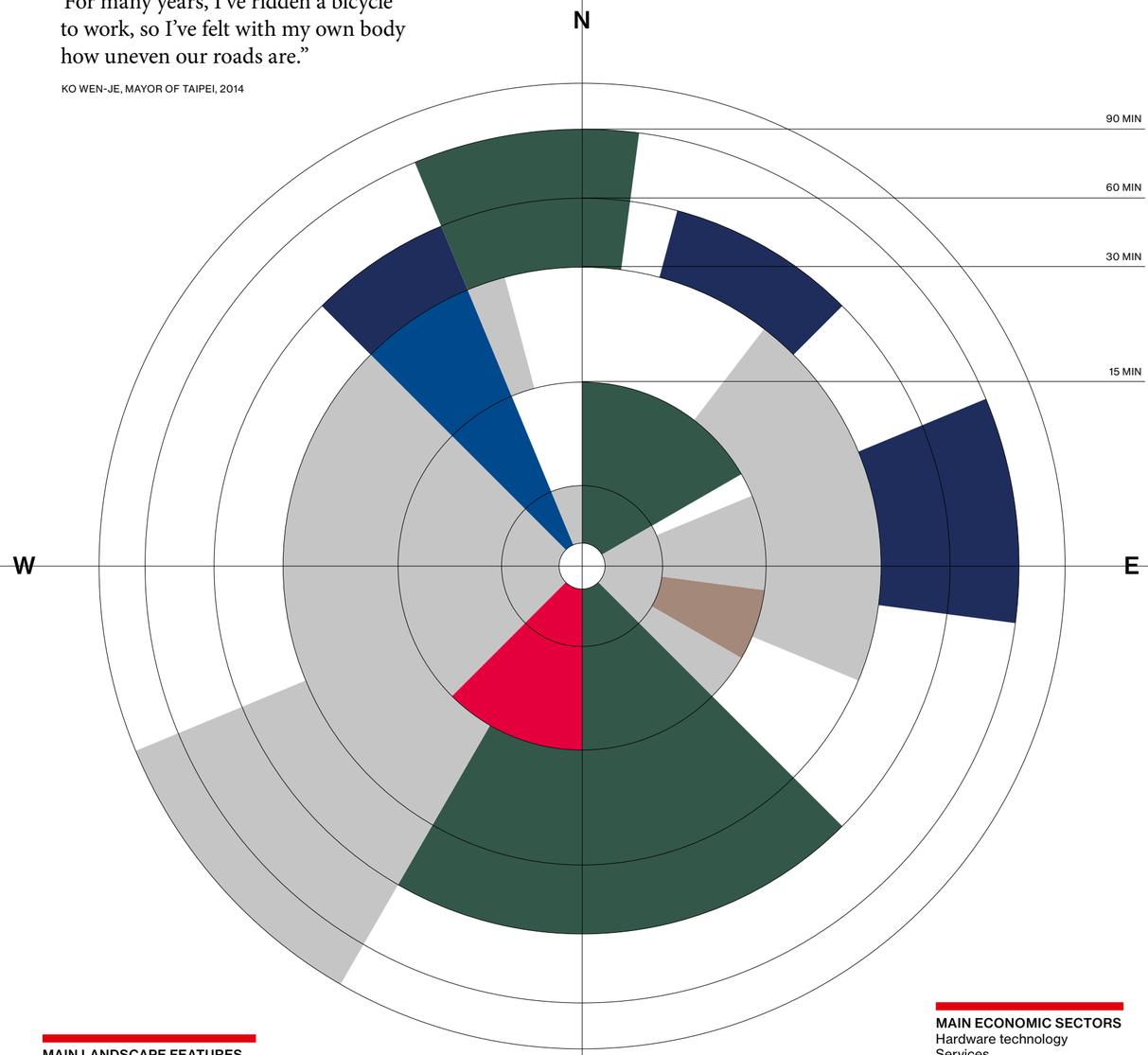


Taiwan Formosa Vintage History Travel Maps, date unknown, author unknown. SOURCE: TAIPEI25.COM

Taipei (TW)

"For many years, I've ridden a bicycle to work, so I've felt with my own body how uneven our roads are."

KO WEN-JE, MAYOR OF TAIPEI, 2014

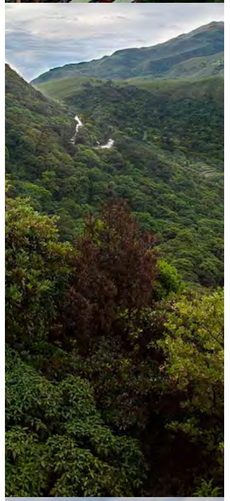


MAIN LANDSCAPE FEATURES
Mountains
River waterfront
Historic neighborhoods
Forests, ocean
High-rise
Industrial heritage

MAIN ECONOMIC SECTORS
Hardware technology
Services
Electronics manufacturing
Information technology
Biotechnology
Finance
Tourism
Agriculture

Ocean Lake River Wetland Beach Mountain Ravine Heathland Forest Farmlands Historic area Built area

Taipei metropolitan area (TW)



Taipei skyline
FLICKR BY GIGGS HUANG

Forest Taipei
EDDYTSAL ATTRIBUTION-CC SHAREALIKE 2.0 GENERIC

Taipei waterfront
FLICKR BY JIMMY YAO

The Taipei metropolitan area is an urban agglomeration in the north of Taiwan Island situated along the valley of the Tamsui River. The region is characterized by an extreme variation of landscapes within very small distances. A range of mountains, including the 1120-meter high Cising Mountain, the highest (inactive) volcano in Taiwan located in the nearby Yangmingshan National Park, surround the central lowlands. The city of Taipei is the political, economic and cultural center of Taiwan. It is connected by a network of (high-speed) railways, highways, and bus lines to the rest of the Taiwan Island and is served by two airports, Taipei Songshan and Taiwan Taoyuan International Airport. Further south is the Hsinchu Science Park, a community where most of the high–technology industries in Taiwan are concentrated. In general, the Taiwanese capital is home to a large number of R&D headquarters with several multinational companies (electronics for example), while at the same time a rising scene of creative start-ups completes Taipei's contemporary metropolitan scene.

In the previous decades, extreme urbanization led the city to the heavy pollution of the Tamsui River, leading to a disconnection between the river and the city. After a long period of focusing merely on economic growth, landscape development has become a new priority in spatial planning. Recently, the region has attempted to improve its ecological performance and offer a high quality environment for citizens and tourists. Big events, like the Flora Expo 2010 and the Design Capital 2016, drive Taipei's reinvention as a contemporary metropolis with strong heritage and distinctive natural landscapes.

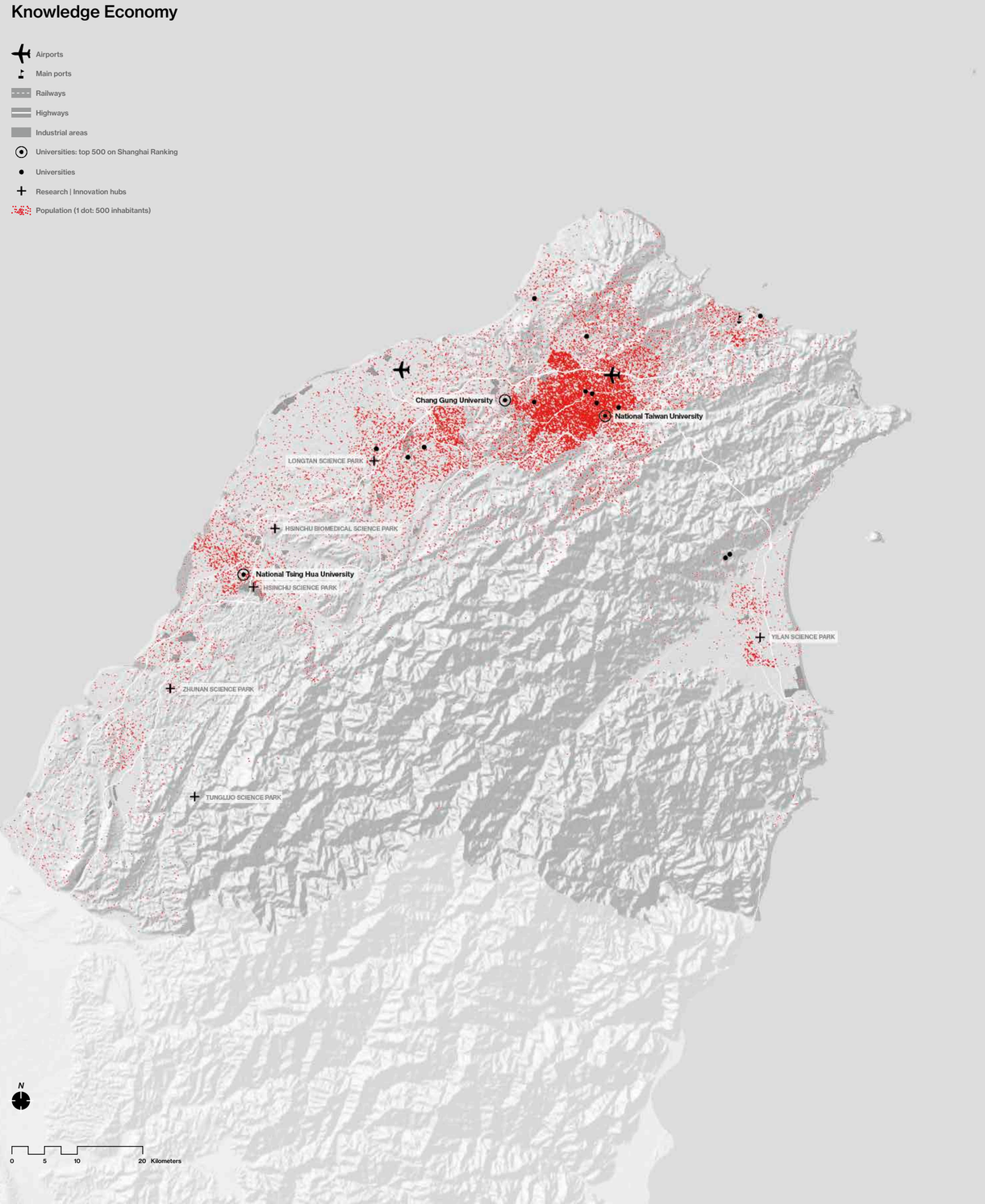
FOUNDING STORY

Taipei City developed in the Taipei Basin, formed by the Tamsui (or Danshui), northern Taiwan's largest river, and its tributaries, the Keelung and Xindian Rivers. As its main transportation corridor, the city developed in close relation with the water. The aboriginal group Ketagalan was the first to occupy the Taipei basin area. In the 17th century, various powers clustered around the Formosan Island (from Portuguese: Ilha Formosa, "Beautiful Island"). The island, close to Japan, China and the Philippines, became a base for trading and missionary activities. The Chinese, Japanese and Western powers, including the British, Dutch and the Spanish, opened ports and began to implement their commercial and political strategies (Chiang, 2012).

In the 18th century, Chinese settlers had already occupied most of the aboriginal territory in the Taipei basin, turning the area into farming fields and villages. The word Taipei, which literally means "north of Taiwan" had been used for quite some time, but became the official name of the current area around 1875. Báng-kah was one of the first settlements, located at the meeting point of two branches of the Tamsui River. This strategic geographical location paved the way for the shipping of agricultural products to Mainland China. When, in the 19th century Báng-kah became too shallow for shipping, the center of Taipei moved to the northern area of Dadaocheng. An integrated administrative district was not formed until the 1920s when the Japanese government began further developing Taipei. In the 1860s, Scottish trader John Dodd set up a tea refinery factory in Dadaocheng. Other foreign companies followed, leading Dadaocheng to become the international trading center of north Taiwan. Tea was grown in the mountains north of Taiwan and transported to Dadaocheng for the refinery process. In 1869, the first export of tea was moved from the port of Dadaocheng to New York. 'Formosan Oolong' tea became a well-known product in North America and Europe.

EMERGING METROPOLITAN LANDSCAPE

Taiwan entered the railroad era in 1900, following a domination of transportation primarily via waterways. The initial construction of the Keelung harbor was completed in 1900. In the period of Japanese occupation (1895-1945) the first priority was transport infrastructure for the purpose of military control and economic exploitation. During this period, Taipei was defined as the administrative center of Taiwan. Six urban planning proclamations occurred during this period. The Japanese built government buildings, hospitals, parks and other public infrastructure, like an electricity network, within the inner-city area, transforming the landscape from a traditional Han Chinese settlement into a modern city. Taipei expanded strongly in the decades following the Japanese occupation. At that time, the city's total area increased fourfold, absorbing several surrounding towns and villages. The city's population, which had reached one million in the early 1960s, expanded rapidly after 1967, exceeding two million by the mid-1970s and stabilizing at its current



Taipei metropolitan area (TW)

Memorial Hall
WIKIMEDIA © BY MA JIEN-KUO

size of 7 million by the mid-1990s (administrative metro area).

Together with the growth of the city, the economy of the Taipei metropolitan area likewise evolved. The growth of commerce and industry in this area naturally attracted complementary sectors like banking. Taipei soon became a financial, trading and service center. The subsequent growth and urbanization in the river basin had certain negative consequences, reducing the available watershed area. As a result, Tamsui River became seriously contaminated by various sources of wastewater.

> "The biggest gap for us to bridge is not distance. It's when we stop believing in ourselves. If we can't have a dialogue with the world on the basis of our own culture, we won't see the power of Taiwan design on the global stage."
>
> CHEN JUN-LIANG, GENERAL MANAGER FREEIMAGE DESIGN, IN DESIGN XTAIPEI WORLD DESIGN CAPITAL 2016 BID – YOUTUBE

Cable Car Taipei
FLICKR © BY ALEXANDER SYNAPTIC

Flora Expo, Taipei
BIO-ARCHITECTURE FORMOSANA | WWW.BIOARCH.COM.TW

High embankments and elevated highways have been built along the river for the purpose of flood control and transportation. These constructions currently block accessibility to inhabitants hoping to enjoy the waterfront scenery.

KNOWLEDGE HABITAT

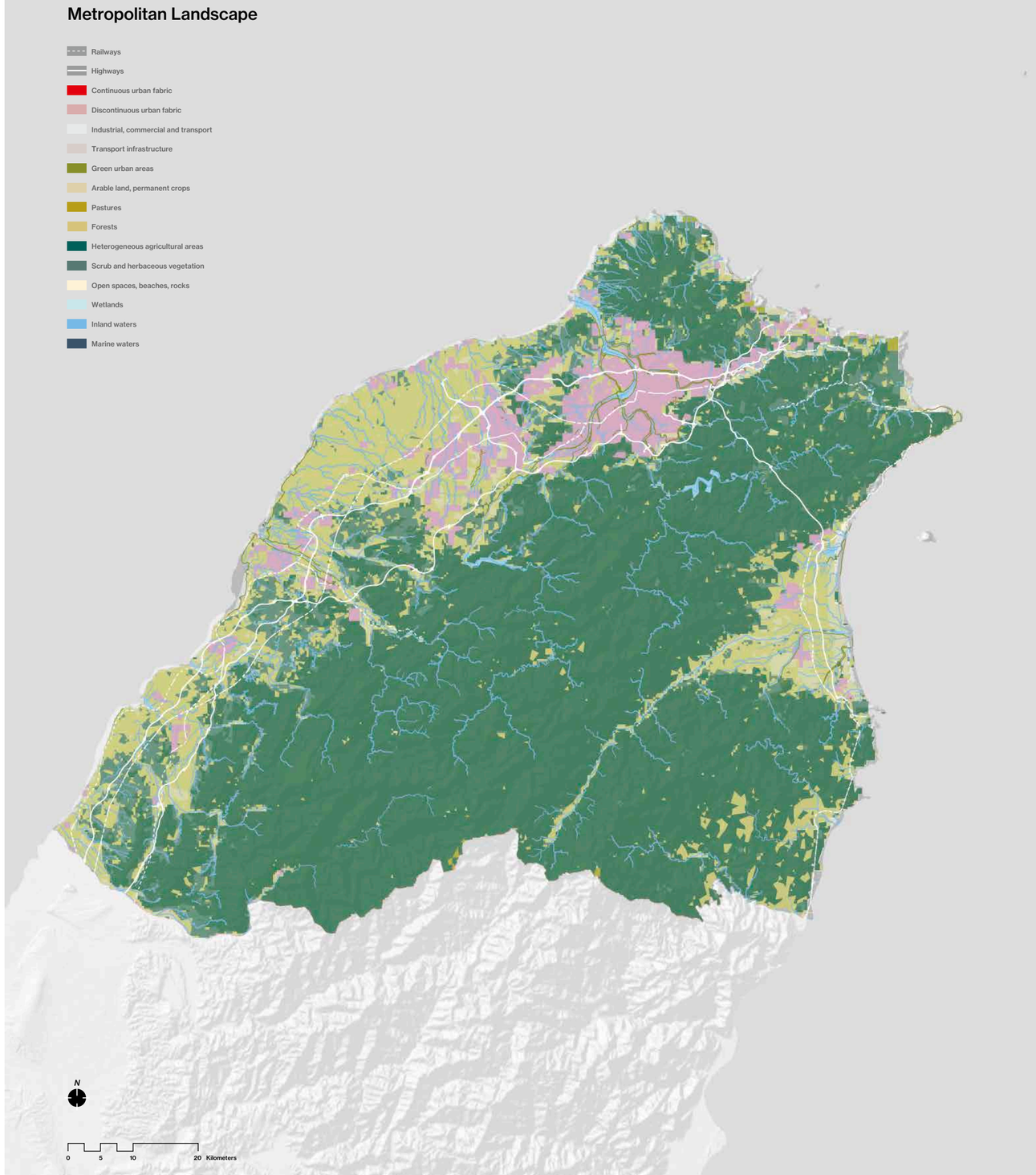
Following the global trend, the gravity point of Taipei's economy is changing from manufacturing to services. The national government has created incubators and technology innovation clusters to attract knowledge-intensive companies. Today Taipei is a key player in the global value-chain of high-tech industries. It also possesses competitive industrial clusters, as exemplified by the Hsinchu and Taipei Science Park. Taiwan features a strong clustering of information hardware manufacturing, information software, and emerging biotech industries, which gradually form regional 'sci-tech' corridors. Based on each region's strengths in industrial clustering, Taiwan is setting up innovation support systems that tap into existing academic and research capabilities, for example universities, R&D institutions and enterprise laboratories. Besides creating an attractive investment environment, these systems bridge and enhance the innovative capacities of small and medium enterprises. Science parks tend to be high quality designed landscapes that include recreational areas. As Tang Yung-Ching, researcher at the economic development of Taipei City Government, explains: "to a large extent, the mindset has changed. In the 1970s and 1980s we were competing for massive construction projects. Nowadays, both the private and public sectors care about the environment and landscapes. Also, the government is aware of the needs in green space and parks in urban planning, as well as the importance of citizens' education for sustainability."

The Taiwanese government makes a distinction between expat knowledge workers and local residents. The current trend is to develop high quality "international village communities" for the knowledge workers, instead of inviting them to inhabit their existing cities. Wei-Ju Huang, who conducted research in spatial planning and high-tech development, argues that such projects are not always successful, leading to the rise of other, more spontaneous locations. Such an example is the Treasure Hill Artist Village, where the presence of a distinct identity and heritage has led to the formation of a "talent-community". Originally a hillside village illegally constructed by Mainland Chinese immigrants after the Second World War, the Treasure Hill Artist Village was to be demolished due to its location in a water conservation zone. However, in 1999, after strong opposition from community activists and cultural groups, the Cultural Affairs Commissioner decided to develop Treasure Hill as an artist village (Yung-Ching, 2015). Today, it is a creative hub with an attractive atmosphere that attracts talent, young people and tourists.

METROPOLITAN LANDSCAPE POLICIES

Spatial planning in Taiwan is centralized and state-led. The metropolitan landscape of Taipei's is likewise centrally managed, although some decisions are made through a regional cooperation in North Taiwan. From the 1950s to 1980s, Taiwan was recognized as a developing society, where economic policy had a privileged position compared to other policy issues (Huang, 2013). Since the 1990s, other issues such as living quality, land conservation and disaster prevention, have been addressed in national spatial planning policies, due to the emerging civil society and natural disasters like the 1999 earthquake and Typhoon Morakot in 2009, which resulted in thousands of deaths. Managing national land in a more sustainable way has become one of the major challenges for the Taiwanese planning community in the twenty-first century.

The "Strategic Plan for National Spatial Development" (CEPD, 2010) focuses on building green infrastructure, enhancing disaster prevention capabilities in urban and rural areas, identifying a central mountain range conservation axis and a coastal development conservation belt. The central mountain range conservation axis aims to link a national park and conservation area and to form a 340-kilometer long and 80-kilometer wide ecological corridor (Huang, 2013). "In the future, we should carefully protect and actively utilize all of Taiwan's natural landscapes, resources, folk spirit, festivals, traditional buildings, and traditional crafts to develop unique local 'identification marks'. Natural and cultural landmarks everywhere should be restored, maintained and enhanced so as to strengthen the people's bonds of identification with and attachment to these spaces, and make them a 'spiritu-



Taipei metropolitan area (TW)

Dutch map of Taiwan (Formosa), 1640
MAP BY JOHANNES VINGBOONS

Taipei Railway Workshop
FLICKR © BY BILLY1125

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al homeland' for the people (CEPD, 2010)." In the same plan, West Taiwan is conceptualized as an innovation corridor with a concentration of knowledge-intensive clusters.

At the regional level, Taipei City has joined eight counties and cities in Northern Taiwan to promote regional cooperation and resource integration. The "Northern Taiwan Development Commission" (NTDC) is the first inter-regional cooperation platform in Taiwan. First introduced in 2004, it subsidizes universities to organize international exchanges and cooperation in urban planning and urban design (Taipei International co-workshops by Universities, NGOs Grant Program). It also encourages creative teams to utilize vacant properties in the region.

The city of Taipei has also adopted regeneration strategies for its inner-city landscape concerning, for instance, rivers and vacant spaces. An important plan is that of "Tamsui River Waterfront Development". To restore the city's relation with the river, Taipei has initiated projects to redefine, reconnect and reinvent the relationships between city life and the waterfront (Department of Urban Development Taipei City Government, 2013). The plan aims to define guidelines for the urban design of the waterfront and attract citizens.

METROPOLITAN LANDSCAPE INITIATIVES

City officials are conscious of the need for green spaces. Along with the hosting of Flora Expo in 2010-11, the city has transformed vacant urban space into gardens. Since 2008, this "City Garden Action" initiative has created 170 green spots and promoted the initiative to 100,000 households. In addition, the authorities are encouraging neighborhoods to improve the local environment by allowing engineers to plan roof gardens and educate the citizens, free of charge (Yung-Ching, 2015). Furthermore, the government is now promoting edible landscapes in schools and communities, encouraging the citizens to participate in urban farming with natural techniques that are less interrupting to the environment, enhancing quality of life through a healthier lifestyle. Another example of government initiative is "Youbike", a successful project of public bike renting, with more than 200 stations in the metropolitan area and a digital application that informs users how many bikes are available at each station.

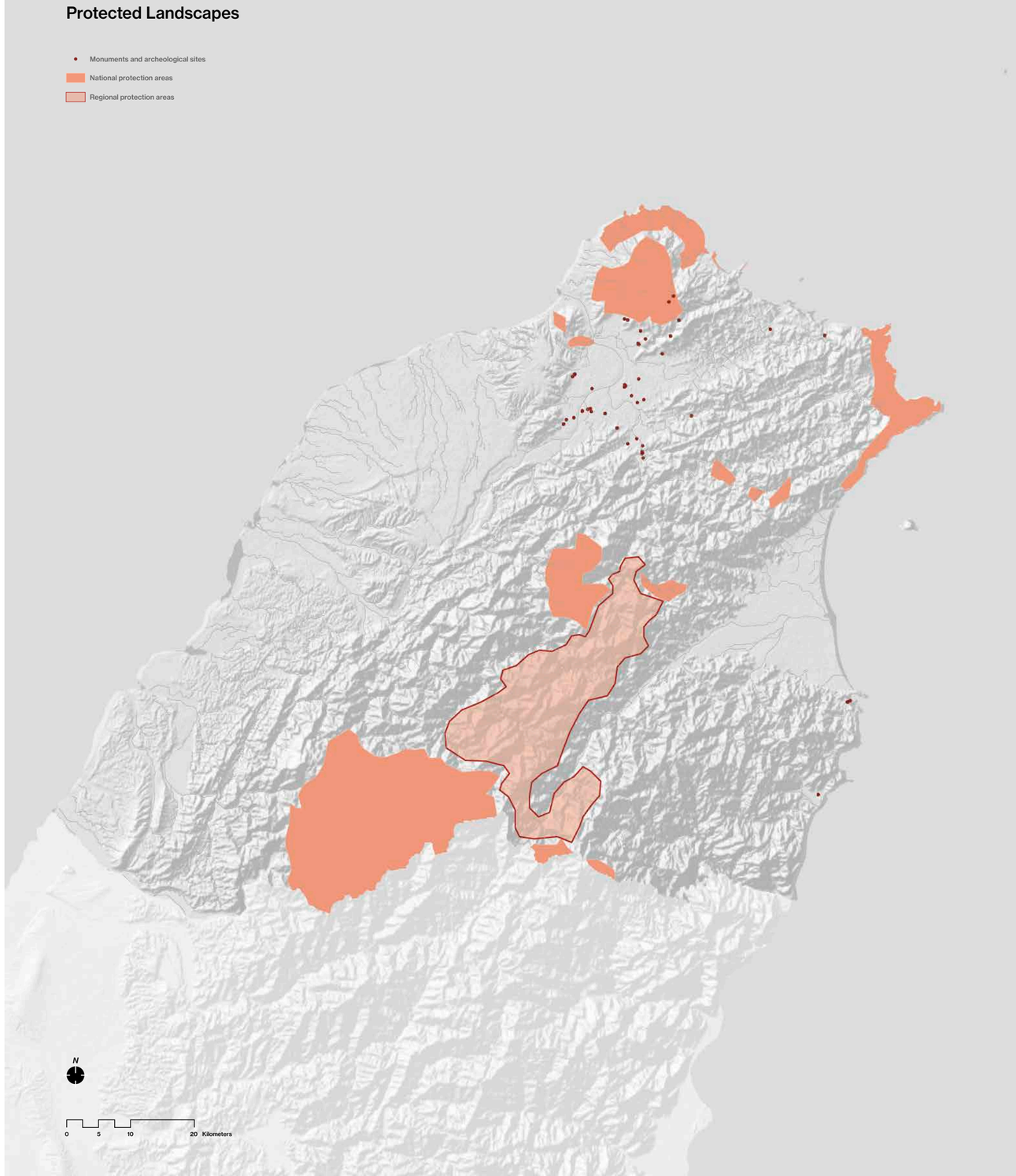
The development strategy regarding heritage has also shifted to a new direction. The ongoing development of the "Taipei Railway Workshop" area, for example, concerns the transformation of a Japanese colonial-era train repair facility in the prosperous and central Xinyi District. The initial plan was to give out 56% of land for commercial and residential mixed-use buildings. However when mayor Ko Wen-je took over, and after strong contests from the local society, the entire area was designated as a heritage site and transformed into a railway museum. Ko Wen-je hereby broke with the trend of building shopping malls and hotels in historic buildings. The Railway Workshop project is part of a greater redevelopment that encompasses the removal of surface railways and replacing them with a 23-kilometer long tunnel. Part of the resulting development space will become the new "Civic Boulevard Expressway", as well as 'cultural and creative parks' - Huashan 1914 Creative Park and Songshan Cultural and Creative Park - besides commercial areas and infrastructure. This flagship project aims to change the global image of central Taipei through iconic architecture and heritage conservation.

Top 10 tourist sites by Lonely Planet

1. National Palace Museum
2. Historic district Tamsui
3. Bao'an Temple
4. Cycle urban riding lanes and riverside paths
5. District Ximending
6. Yangmingshan National Park
7. Historic Dihua Street
8. Nigxia Night Market
9. Tapei 101
10. Yeliudishi Park/ Queen's Head monument

Our top 5 sites for the highly skilled worker

1. Treasure Hill Neighborhood
2. Taipei Waterfront
3. Taipei Railway Workshop
4. Biking/hiking trails around Taipei
5. Queen's Head

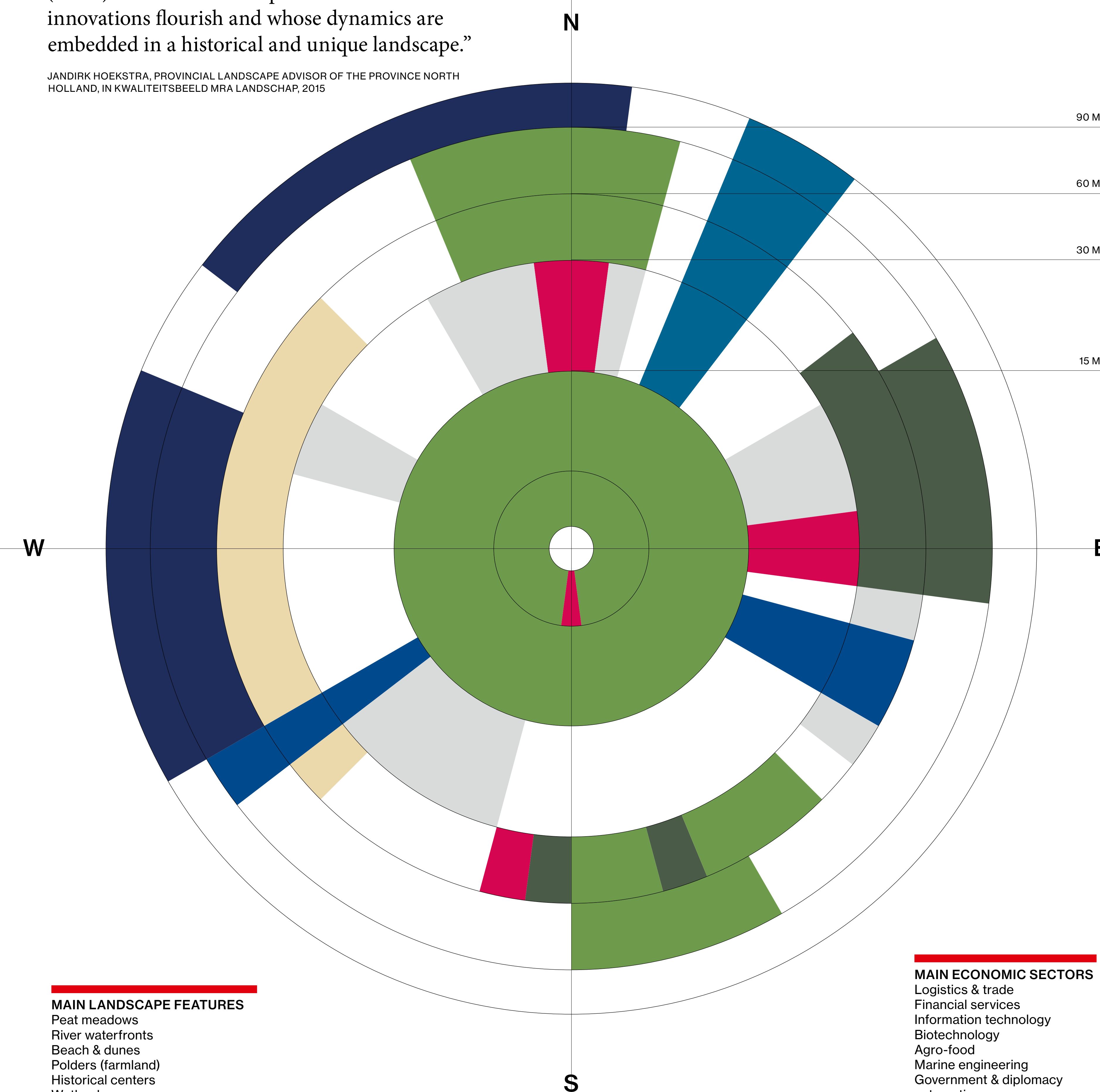


Hollandiae Antiquorum Catthorum Sedis nova Descriptio Auctore Iacobo A Daventria, 1574, by Abraham Ortelius

Deltametropolis (NL)

"The Metropolitan Region of Amsterdam (MRA) is a vibrant metropolis where economic innovations flourish and whose dynamics are embedded in a historical and unique landscape."

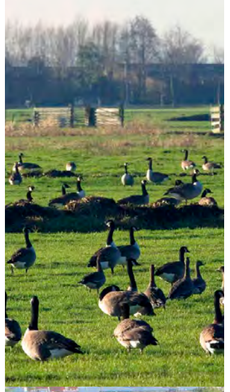
JANDIRK HOEKSTRA, PROVINCIAL LANDSCAPE ADVISOR OF THE PROVINCE NORTH HOLLAND, IN KWALITEITSBEELD MRA LANDSCHAP, 2015



MAIN LANDSCAPE FEATURES
Peat meadows
River waterfronts
Beach & dunes
Polders (farmland)
Historical centers
Wetlands
Forest

MAIN ECONOMIC SECTORS
Logistics & trade
Financial services
Information technology
Biotechnology
Agro-food
Marine engineering
Government & diplomacy
automotive
Nanotechnology

Deltametropolis (NL)



Veluwe Posbank
FLICKR ⓒ BY JORICK HOMAN

Schipluiden
PHOTOGRAPHY: MERTEN NEFS

Midden-Delfland
FLICKR ⓒ BY JEANNEMIEKE HECTORS

Amsterdam Cityscape
WIKIMEDIA PUBLIC DOMAIN

The Dutch Deltametropolis is an agglomeration of several small and medium sized cities located in the estuary of the lower Rhine delta. While Amsterdam is the most dominant player in the Deltametropolis, the metropolitan region hosts a number of other city regions, including 'Brainport' in Eindhoven, which generates the most patents of all European regions and thousands of high-tech jobs. In contrast to the wet clay and peat areas in the west, Eindhoven and other parts of Noord-Brabant province were characterized by dryer soils and a lower working class population in the 19th century, which made the region originally attractive for industrial pioneers such as Philips. In the west of the country the fertile flatlands and the waterway connections to the North Sea and the European hinterland paved the way for the region's vocations in agriculture, trade and logistics. The Deltametropolis is rich in various soil and landscape types, but is internationally best known for its flat meadow areas with cows, windmills and villages. The water infrastructure and the flood defense system are other well-known aspects of the Dutch landscape. Expertise in this field serves as a major knowledge export product for the country, along with intensive agriculture systems.

Despite several attempts since the 1950s, the 'Randstad' metropolitan region in the west of the Netherlands has never produced a single metropolitan government. The rural and equalitarian spirit of Dutch politics, with preference towards several smaller independent cities as opposed to a single cosmopolitan center of power and culture, largely explains the lack of an overarching governing body. While Amsterdam is the capital of the Netherlands, the national government bodies and diplomatic institutions reside in The Hague, the central seaport is located in Rotterdam and the largest technological centers are located in smaller (university) towns like Delft, Leiden, Eindhoven, Enschede and Wageningen. In short, the Deltametropolis is a very complete yet spread-out metropolis, a characteristic that is not always reflected in the organization of the different levels of government. Recently, metropolitan authorities were established for Amsterdam (MRA) and Rotterdam-The Hague (MRDH), two sub-regions of the Deltametropolis, which continue to grow into integrated and well-connected urban entities. Travel time between these two metropolitan regions is about one hour. Compared to other cases, the Deltametropolis is a real cycling metropolis, although in some areas, connections between urban centers and their rural periphery are lacking.

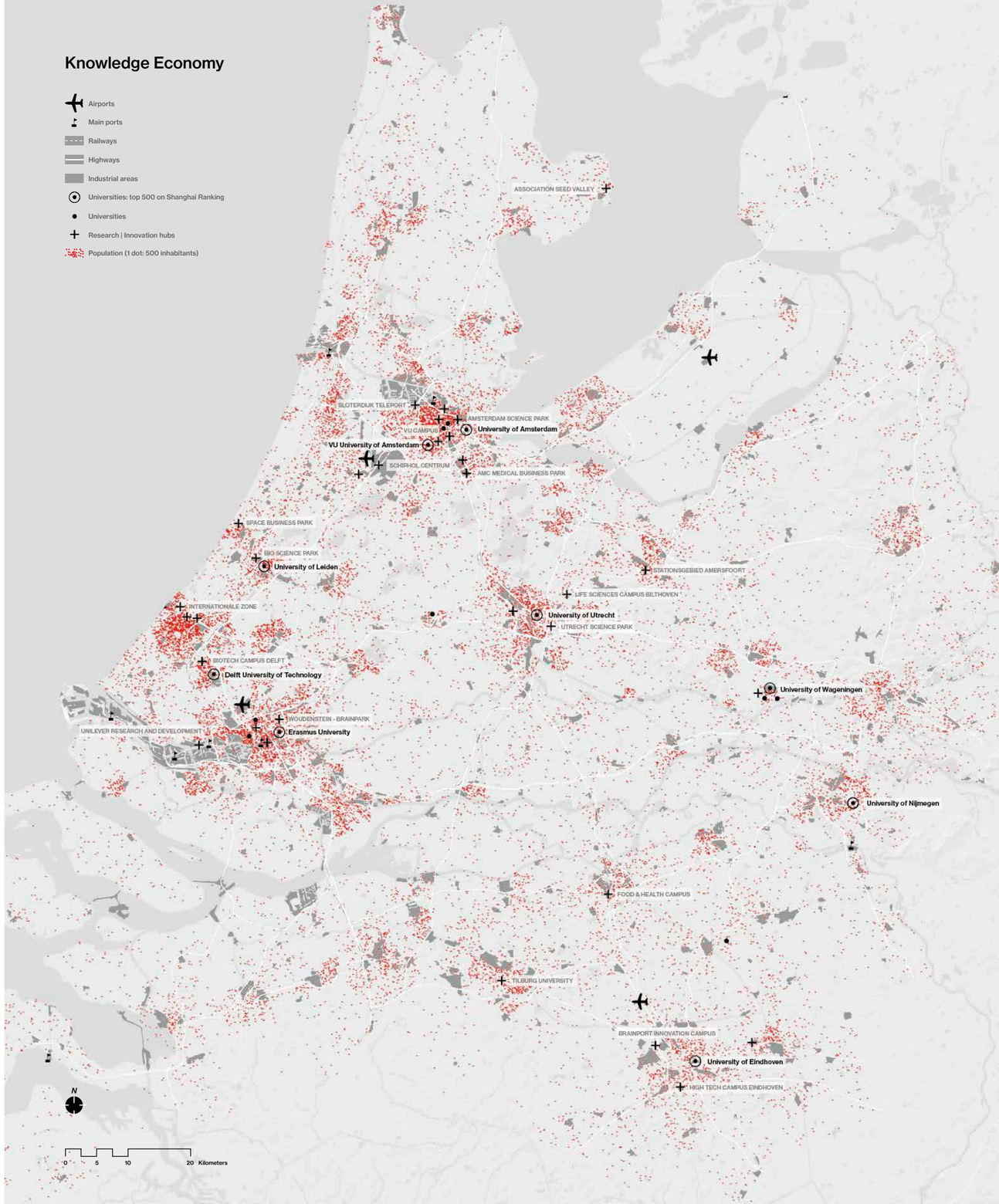
FOUNDING STORY

The historical centers of the Deltametropolis emerged in different periods. Most of the 'water cities' in the west and along the Rhine and IJssel rivers boomed in the so-called Golden Age (17th century) when the Dutch city states became independent from Spanish rule and started to exploit its unique trade positions in western Europe and in colonies overseas (Indonesia, Brazil, South Africa, Surinam and islands in the Caribbean). The capital accumulation from the commodity trade (grains, sugar, fish, spices, metals, and dairy products) was reflected in the construction of urban canals and richly decorated buildings. The boom had further effects on the landscape surrounding the cities. While the peat areas in the west and north had been drained and cultivated for centuries, they were excavated on a large scale for fuel for the developing cities and industries during this period. Dairy production grew as well due to a growing demand from the cities and the international trade scene. During the Golden Age, the estates of wealthy city dwellers started to colonize the surrounding landscapes, especially those around Amsterdam and The Hague. Members of the elite would travel by boat to the countryside in the weekend or in the summer, when the urban canals, which were also used as sewer system, had an unpleasant smell. In the 18th century the Dutch economy began to decline. While neighboring countries such as Belgium and England were industrializing, the Netherlands lagged behind (Van der Woud, 1987; 2006 | Rutte & Abrahamse, 2015). Several estates disappeared because the polders in which they were built, became too wet.

In the east and south, development occurred differently. These areas prospered in the 19th century through mining and textile industries. The digging of canals to the industrial areas and the (relatively late) implementation of the railroads turned the country into one manageable area. Until the end of the 19th century, virtually all of the natural areas were cultivated and many of the inland seas and lakes were drained (Van der Woud, 1987; 2006 | Rutte & Abrahamse, 2015). The pressing need for large-scale water management, drainage works, and land acquisition served as the driving force behind Dutch governance in the 13th century. This governance structure is known as the Polder Model, characterized by a shared cooperation and participation among members of society.

EMERGING METROPOLITAN LANDSCAPE

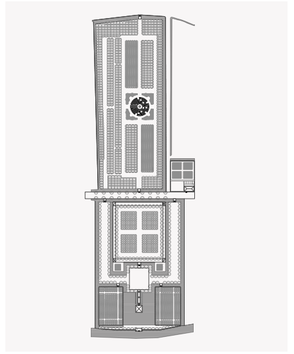
Cities in the Deltametropolis are relatively small in size and very closely situated, a common feature in northwest Europe. Like in most countries, Dutch cities expanded strongly after the Second World War, propelled by increasing auto mobility and suburbanization. Initially, new neighborhoods were planned close to the 19th century cores. In the 1970s and 1980s, new towns like Purmerend near Amsterdam and Zoetermeer near The Hague were built, connected by metro or train to the larger urban centers. In the 1990s and 2000s, spaces near highways and former port areas became focal points of new developments. These developments have had a large



Urban agriculture Rotterdam
PHOTOGRAPHY: UITJEEIGENSTAD

RDM campus Rotterdam
PHOTOGRAPHY: GEMEENTE ROTTERDAM

Bicycle flat Amsterdam
FLICKR @ BY RYAN TAYLOR



Hofwijk de Vliet (Voorburg)
ANTONIA GANGOSZ, XINXIN WANG AND MARIEKE OOSTVEEN

effect on the Deltametropolis, which developed from a constellation of compact cities in a wide agricultural landscape towards an almost continuous urban field interwoven with patches of agriculture land and green space. Larger green entities also comprise this region, including the 'Green Heart', the central agricultural area between Amsterdam, Rotterdam, The Hague and Utrecht, as well as protected landscapes such as the national park the Hoge Veluwe. In some areas, even agricultur has taken on a semi-urban nature in the shape of large greenhouse and agro-logistic complexes. With its high yields, both indoor and outdoor, the Deltametropolis is regarded worldwide as one of the main players in the agro-food sector.

The rural parts of the Deltametropolis have witnessed a dynamic change as well. After WWII, the Marshall Program and policy concerning the national land consolidation changed the Dutch countryside forever. Small-scale farms, which used to rely on manual work across many dispersed parcels, became mechanized, while efficient road infrastructure facilitated the access of tractors and trucks. In half a century, the total area used for agriculture in the Netherlands has not decreased much – it still compromises about 65% of the Dutch territory (CBS, 2015) – yet the number of farmers is a fraction of what it used to be. Directly around the cities, considerable agricultural land has been urbanized since the 1970s. As the Netherlands transformed from a farming and manufacturing society to a service economy, the way people used the urban fabric likewise changed. Today, the daily experience for many inhabitants of the Deltametropolis, especially those who are highly educated, includes a variety of places and networks complete with urban and rural elements, similar to the Rhein-Ruhr area in Germany.

KNOWLEDGE HABITAT

Acknowledging the polycentric layout of the Deltametropolis, It is not surprising that the network of university campuses and research centers is also scattered. There are however hotspots for certain fields of study, often related to local industries and other economic activities. In short, a concentration of media design and communication can be found in Amsterdam and Utrecht, while Leiden is renowned for natural and biosciences, Rotterdam for economics and Enschede for materials engineering. Water technology and civil engineering is concentrated primarily in Delft, while in Eindhoven electronics and nanotechnology can be found and in Wageningen, food and bio-based engineering are strong. North from the Deltametropolis, the region of Groningen focuses on energy innovation. Crossovers between those areas are becoming more and more important. To compete on an international scale with top universities, Dutch institutes have teamed up around certain themes and courses. The Amsterdam Institute for Advanced Metropolitan Solutions (AMS), for example, is a recently founded collaboration between Delft University of Technology, Wageningen University and MIT in Boston. Spatial economist Frank van Oort believes such a strengthening of the networks of the polycentric Deltametropolis is the best way to remain internationally competitive (Van Oort, 2015).

In general, the quality of life found within the cities in the Deltametropolis is quite high and attractive for highly-skilled workers (Lagas et al., 2015). The historical centers offer a wide range of cultural activities and heritage. At the same time, open landscapes and green areas are always nearby. Even so, the Dutch remain critical and reflective, as other metropolises continue to rapidly increase the quality of their cities and knowledge networks. While the cycling network of the Deltametropolis is outstanding, improvements have developed quite slowly in comparison to other regions (CRA, 2015). For example, in terms of innovative, fast lane cycling infrastructure, the Dutch head start in cycling infrastructure turns out to be a disadvantage. A similar problem can be traced in regards to the protection of landscape areas. Where other regions, such as the San Francisco Bay area and Rhein-Ruhr have developed a user-based approach and public-private funding mechanisms, many Dutch conservation organizations are only halfway in the transition from a centralized system to one based on participation.

METROPOLITAN LANDSCAPE POLICIES

In the Netherlands, spatial planning constituted a strong discipline during the post-war period. Interestingly, a great deal of effort was spent on avoiding the emergence of a single, metropolitan center, the likes of which had already occurred in Paris and London. The Dutch fear of the 'big city' and the fact that the cities of the Randstad had already started to clutter together (Nota Westen des Lands, 1958), led to several strategies aimed at spreading development over the national territory and keep the central area green and open. Many recreational green belts were realized in the decades after the war in the form of newly planted forests due to their benefits and capacity for recreational users. Today, some of these belts are poorly used and serve only as separators between the city dweller and the countryside. New landscape concepts for these areas are needed.

Over the last decade the national landscape policies have undergone change, either being decentralized or abolished. The "National Buffer Zones" and "National Landscapes" for example were cancelled as national planning tools. In several cases, however, provincial governments reinstated them in their own plans. The same is true for the "Ecological Main Structure" (EHS) or former national green grid of the country, which is now being redeveloped by the provinces. In terms of nature protection however, key decisions continue to be made collectively at the European level, including "Natura2000" conservation areas and meadow bird sanctuaries. Spectacular nature areas, such as the Oostvaardersplassen, were developed in those programs. However, human access is sometimes restricted. National institutions such as Staatsbosbeheer (National Nature and Forest Service) are currently reinventing their role and reorganizing, focusing more on the (urban) users of landscapes and the role landscapes play in quality of life (Green Metropolis Program, Staatsbosbeheer, 2015).

River landscape
ARTIST: VAN RUYSDAEL, 1649

Defence line of Amsterdam
FLICKR © BY HANNO LANS

The policies aimed at developing the Netherlands into a full-grown knowledge economy feature few links to landscape policies developed at the same time. The “Top Sector policy” of 2011 for instance (topsectoren.nl), is focused on financial incentives and infrastructure for key sectors of the economy. And the “National Policy Strategy for Infrastructure and Spatial Planning” (SVIR, 2012) focuses on strengthening the so-called ‘mainports’, ‘greenports’ and ‘brainport’ to contribute to the main economic structure of the country, rather than enhancing the quality of the living environment. Moreover, Dutch water boards primarily deal with safety and focus less on landscape development. Changes in this perspective are however, occurring quite rapidly. In new dike reinforcement projects, the quality of the public space and the relation with heritage and other elements in the surrounding are increasingly taken into account.

Since the latest planning memorandum (VINEX, 1990) came to an end in 2015, a large public debate and consultation has taken place: the “Year of Spatial Planning”. Governments and stakeholders concluded that new challenges and forms of collaboration will determine future policies (Maak Ruimte, Manifest2040, 2015). A healthy and attractive living environment and its relation with heritage, identity and economic competitiveness is now a top priority on the agenda for the Deltametropolis.

METROPOLITAN LANDSCAPE INITIATIVES

The variety of landscape types in the Netherlands are in reality not always easy to distinguish. The “National Bicycle Route Network” with its 4,500 kilometers of cycling paths (from 1989, nederlandfietsland.nl/lf-routes) provides a way to experience those landscape types and acquire a mental map of the landscape of the Deltametropolis without being disturbed by barriers and obstacles. Besides the development of routes, phone and GPS applications and maps, the project encompasses the physical improvement of the actual bicycle paths and signs. Similar initiatives, such as “Randstad Waterbaan” (randstadwaterbaan.nl) aim to create continuous recreational watersport networks, with as few locks and other physical barriers as possible. Cycling and boating are closely linked to the landscape, history and identity of the Deltametropolis.

The “Defense Line of Amsterdam” (Unesco World Heritage since 1996), as well as the “New Dutch Waterline” (to be nominated in 2018 for Unesco World Heritage), are unique military landscape structures built between the 17th and 20th centuries (stellingvanamsterdam.nl). The defense line consists of large, open inundation fields and a line of fortresses. A great challenge for this heritage is to find proper use for the enormous area and fortresses, which are expensive to maintain. The inundation fields are to remain open, which means no construction is allowed in the future. Culture, art, recreation and tourism functions have occupied many of the fortresses and studies are being conducted to implement biomass (and other energy) production at the New Dutch Waterline. With this example, heritage will play a role in the Dutch energy transition.

Top 10 touristic sites by Rough Guide

1. Amsterdam
2. The Elfstedentocht
3. Delta Project and Expo
4. Maastricht
5. Anne Frankhuis, Amsterdam
6. The Biesbosch
7. Van Gogh Museum, Amsterdam
8. ‘s Hertogenbosch
9. Hoge Veluwe National Park
10. The Hague

Our top 5 sites for highly skilled workers

1. National cycling network
2. Historic water city centers of Amsterdam, Leiden, Gouda etc.
3. Defense Line of Amsterdam, New Dutch Waterline
4. Creative hotspots in Rotterdam (RDM Wharf, Katendrecht), Eindhoven (Strijp) and Amsterdam (NDSM Wharf, Tolhuis)
5. Peat meadow landscape of the ‘Green Heart’, painted by the Dutch masters

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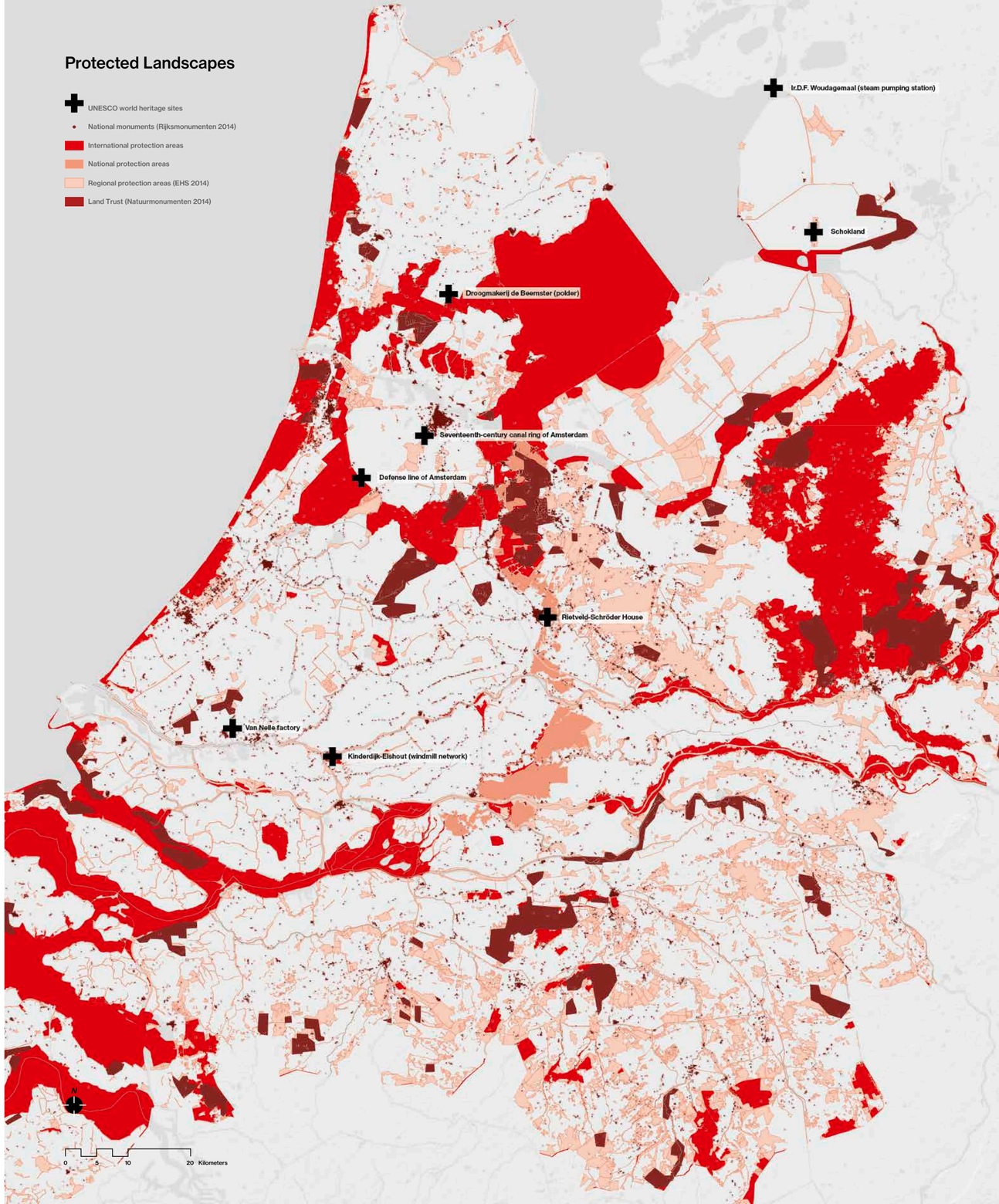

COLOPHON

INITIATIVE
Henk Baas (Cultural Heritage Agency of The Netherlands)
Harry Boeschoten (Staatsbosbeheer)
Paul Gerretsen (Deltametropolis Association)
Adriaan Geuze (Wageningen UR)
Hans Rutten (Dutch Ministry of Economic Affairs)

EDITOR AND PROJECT MANAGER
Merten Nefs (Deltametropolis Association)

DESIGN AND IMAGE EDITING
75B, Rotterdam

RESEARCH
Jeroen Bootsma (Cultural Heritage Agency of The Netherlands)
Ernst Bos (LEI Wageningen UR)
Riëtte Bosch (West8)
Anastasia Chranioti (Deltametropolis Association)
Mariana Faver Linhares (Deltametropolis Association)
Alexandru Matei (Deltametropolis Association)
Ana Luisa Moura (Deltametropolis Association)
Elisabeth de Nooijer (Dutch Ministry of Economic Affairs)
Katherine VanHoose (Deltametropolis Association)

ILLUSTRATIONS
Maps and diagrams are made by Deltametropolis Association, 2016
We have done our best to retrieve author information of the used illustrations and photographs.

PAPER
Maxigloss, 135 gr.
Munken Polar, 120 gr.

printed and bound in the Netherlands
Rotterdam, 2016

ISBN: 9789076630182

DUTCH SUMMARY

PART I | PART III – QUOTES

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ISBN 978-90-76630-18-2

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