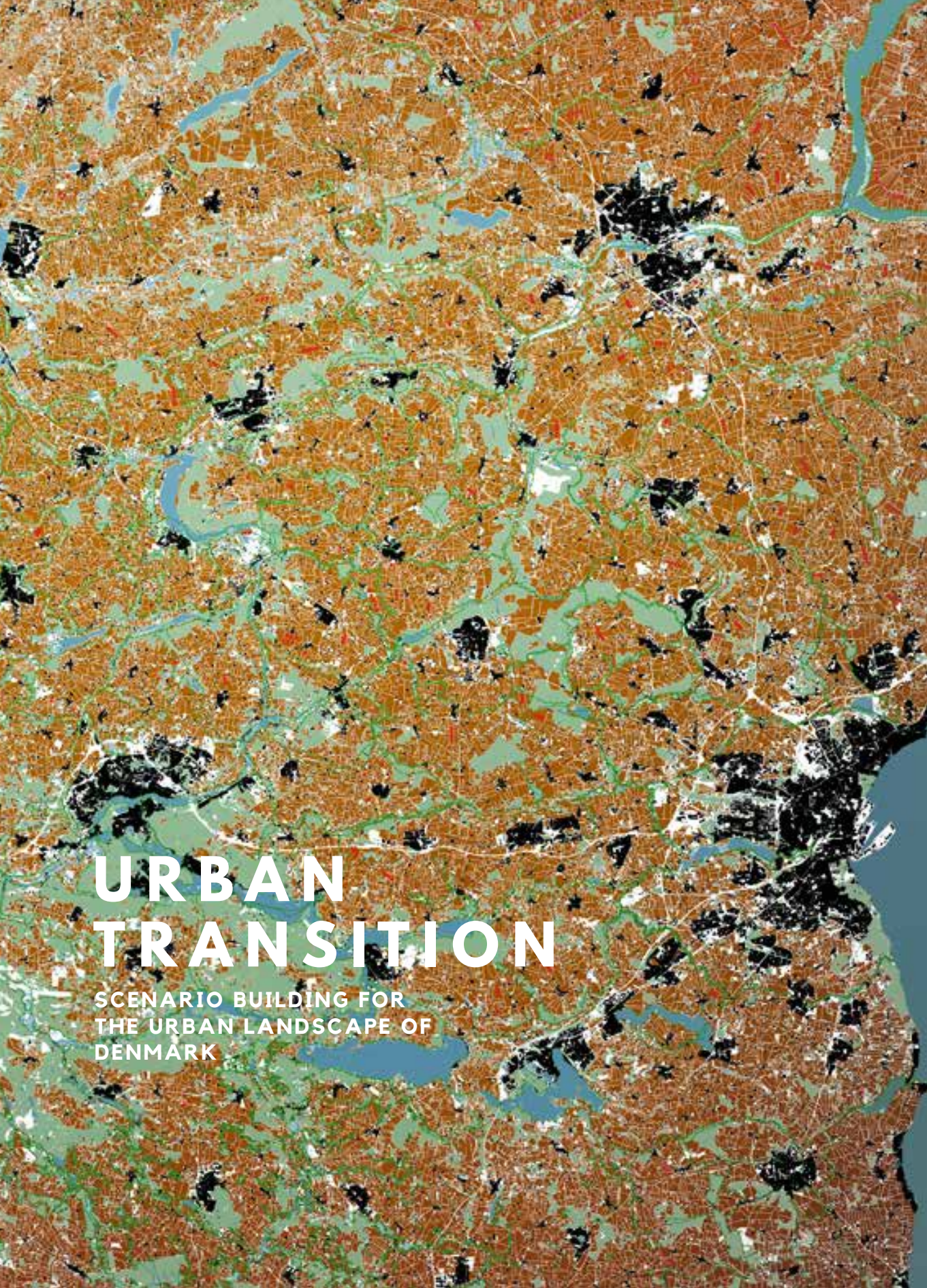

URBAN TRANSITION

SCENARIO BUILDING FOR THE URBAN LANDSCAPE OF DENMARK

Urban Transition
Scenario Building for the Urban Landscape of Denmark

Compiled working period
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Master Thesis
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Aalborg University

Authors
Kristian Mortensen
Søren Risdal Borg

Supervisor
Lea Louise Holst Laursen

Technical Supervisor
Niels Agerholm

Pages
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Copies
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Kristian Mortensen

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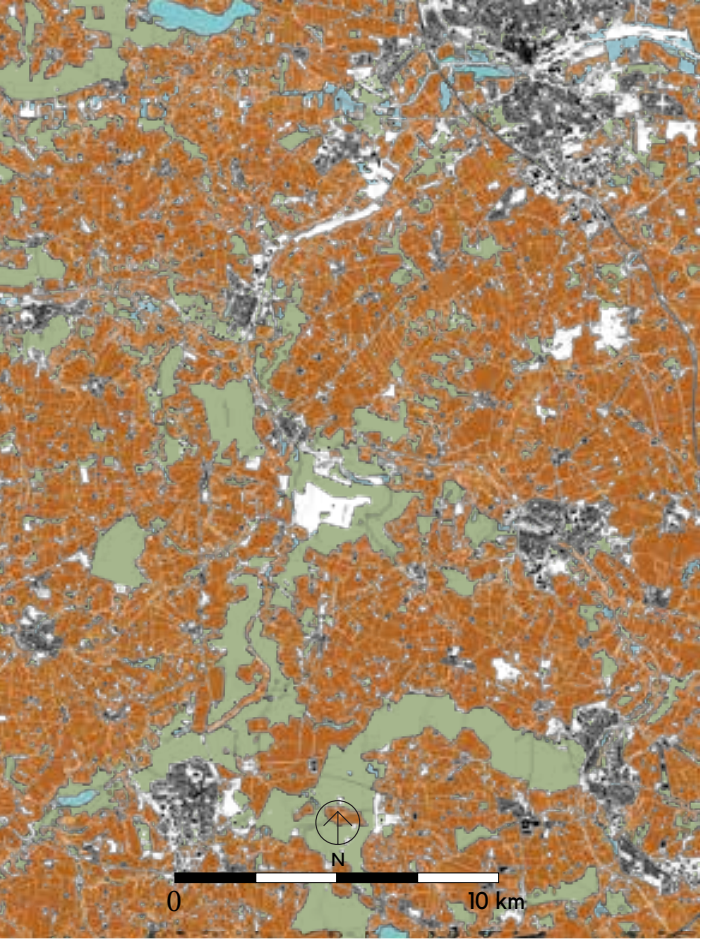
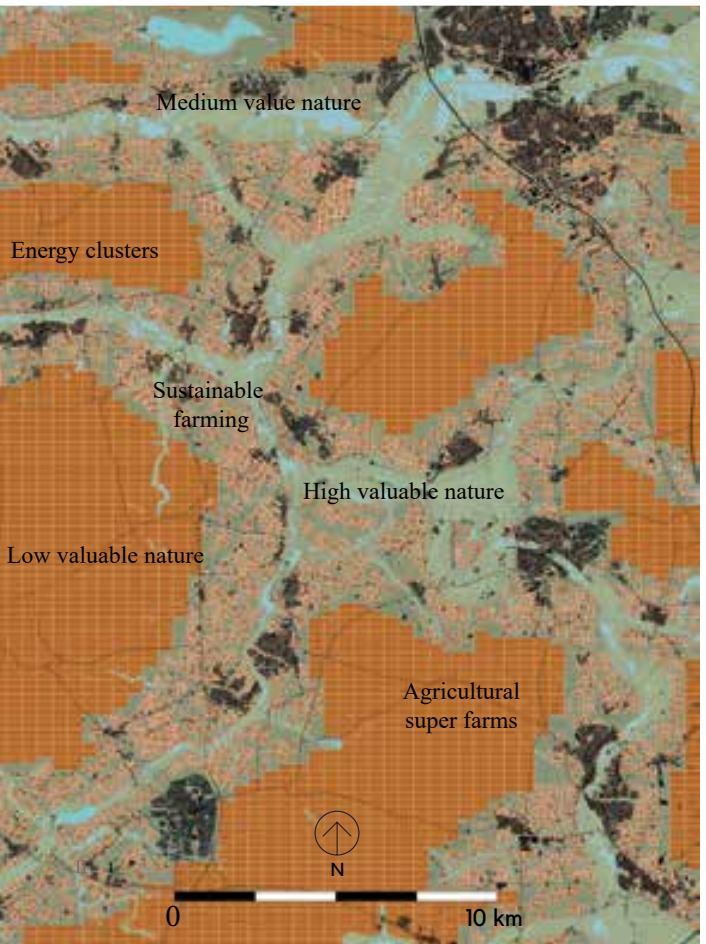
Søren Risdal Borg



Ill. II.1 - The current land application at the area south of Randers. The area is a mixture of farming, settlements, individual houses and scattered forestation, but what if this area could be transformed into an area with green cohesive corridors with space for both humans and animals, yet with room high productive agriculture?



Ill. II.2 - The new map is a coherent natural system where the most valuable natural environments is reserved for recreational purposes, ecological protection and wildlife. The areas up to is a mixture of sustainable farming, new settlements and attractive natural environments for both people and animals. The new restructuring creates space for large super farms and new energy clusters which will cover the growing need for energy and food, yet leaving highly attractive areas to biodiversity and inhabitants.

ABSTRACT

Denmark is faced with the obligation to handle a number of major future-influencing changes to the country's physique. The surplus growth of cities, allocation of the globalised population, technological advancements, the political landscape, the environment and the societal structures, challenge the way in which Denmark is designed, as well as the way in which the conditions for growth and human well-being is created.

Contemporary theory addresses cities, no longer as closed entities, but as networks. Networks where mobility is a central element. These changes challenge the division between land and city and forces a new approach to urban design, as the way people live, work and prioritise leisure is changing.

In brief, Denmark is to face major upheavals for its physique in the future, and the legislation and design should fit accordingly to the contemporary and future needs of society. Thus the contemporary discourses are conflicting, igniting geographical disunity and an unclear picture of what is profitable for the individual as well as the entire population.

Thus, this thesis sets out to reevaluation the land application- and designed layout. By defining Denmark as one coherent landscape, it illustrates a territorial wide strategy seeking local manifestation by taking place specific potentials into account. It illustrates a trajectory for landscape- and urban planning, which prioritizes and molds the landmass, in order to discuss an optimized land application.

Therefore, this thesis seeks to; recognise potentials of areas standing on the threshold of transformation. As the increasingly mobile society is not limited by immaterial borders, this requires working across region-, municipality- and city borders.

This is done based on a holistic approach to territorial design, accounting the many parameters and influential factors, seeing Denmark as intensities of different characters and not as a city/country contradiction. Instead, the country is a fine mesh of settlements, production, nature, landscape, actors, groups and individuals.

Through discourses and depicting ways of utilizing and improving the land application to accommodate society through a scenario, the thesis act as a tool for debating possible futures and challenge the contemporary trajectories.

CONTENTS


DENMARK

POINT OF DEPARTURE

MOTIVATION

This thesis originates in the fascinating complexity and the multiple facets which one needs to grasp when planning and designing for the contemporary challenges to society. The challenges creates opportunities for new and alternative answers to how a viable Denmark should be organized and planned for and calls for rethinking if Denmark is to develop appropriately.

The country of Denmark is faced with a puzzle yet to be solved. There exist many different wishes and agendas for the futural land use and if all desires are to be accommodated, there will be a need for additional land at the size of the island Funen (Jensen, 2016), or 40 percent more land area than there is available (Arler and Madsen, 2015) (for further elaboration see page 20).

Whether the issue is sought to be solved through new ways of utilizing the land or a prioritization of the land application, it is somewhat of a puzzle and can be troublesome in regards to the changing political trajectory and the redistribution of power. With a diminishing of state intervention and an increase of municipal influence, the focus on the further reaching agendas are likely to fall in favor of the adjacent issues.

The contemporary political trajectory is shifting from a 'welfare state' to a 'competition state' and the core objective of planning being reinvented to 'promoting appropriate development' rather than 'securing equal rights' (Carter et. al., 2015). Bear in mind that this of course does not mean that the 'model of welfare' is vanished, as new laws and regulations are build upon the existing and former trajectories (for further elaboration see page 22). This in turn influences the planning laws and regulations, towards a neo-liberal character which focuses on the entrepreneurial landscape (Arler, Jørgensen and Sørensen, 2017) and the predominant political agenda to bring Denmark out of the crisis is to create economic growth (Statens Kunstfond, 2013).

This change in scenery brings along a range of problems or opportunities such as; discourses concerning the structural distribution of land, living standards, segregation between bigger city regions and rural districts. Furthermore has a restructuring of the governance and liberalisation of municipal boundaries been implemented. The liberalisation of the administrative structure, creates an increased responsibility on municipalities (Olsen, 2010). In turn this strengthens the immaterial borders separating places as municipalities. Municipalities is given the task of securing own progress by attracting citizens, professions and seeking growth (Arler, Jørgensen and Sørensen, 2017). An example of this issue is the development of 'Den østjyske millionby'(The eastern Jutland metropolis)(Stensgaard, 2010).

'*Although in 2007 the inflow to start a coordinating planning of the Eastern Jutland metropolis this never started. This is partly because,*

with the municipal reform of the same year, we have seen a development where planning has become a tool in municipal efforts to attract investments and jobs. There is apparently no interest in planning and coordination across municipal boundaries. And the development in East Jutland shows that it might be a problem, even if it is not seen from the municipal policy' (own translation; Nielsen and Jensen, 2017;14).

This static boundary can create complications in the sense that, as Dan Ringgaard (own translation; 2010;85)argues; '*Placements are defined by the close links between points or elements, that formally can be described as series, bifurcations and networks. In other words, the place is to a much higher degree than before getting its identity from its relationship with other places, so one should avoid seeing the place in isolation and by itself*'.

This decontextualisation emanated in the wake of the 2007 reform. As a result, it is argued that; '*There is a need for more planning in Denmark. We need a better and more centralized control of the development..*'(own translation; Jensen, 2016). A grander perspective, securing strategies and avoiding the strive for growth which affords competitions for tourists, residents and investments.

The multidisciplinary profession of 'Urban Design' brings the potential of creating growth that extends well beyond the value of export commodities alone, this is not to argue that growth is the golden solution, which should be implemented in all cases. The profession draws on experiences of potentials in holistic societal solutions, as well as knowledge of opportunities embedded in the given challenges and the importance of local/regional potentials in association with the grander scheme.

This thesis is striving to debate a holistic approach to the physical framework of the country, accounting the aspects of land application and societal issues. What possible future that is to prefer and in turn how this can be unfolded. The outcome will contribute to the ongoing political debate of the future, as well as to the general discourses emanating in a range of projects and workings which utilizes media and design to visualise and discuss solutions to contemporary problems.

Visions for the future scenarios, presented through design, can be found in Charles Fourier's Phalansteries, Robert Owen's New Harmony, Ebenezer Howard's Garden Cities, Frank Lloyd Wright's Broadacre City as well as Le Corbusier's plans for Paris (territorium, 2016B). These grand schemes emanates planning as social utopianism from contemporary obstacles, as managing population- and economic growth concentrated in ever bigger cities due to the industrialization. Likewise can the workings of Archigram, creating a new reality, solely expressed through hypothetical projects, be inscribed.

In recent years projects like; 'Kan vi tegne et nyt land?' (Statens Kunstfond, 2013) seeks to visualize alternatives and solutions to the contemporary conditions and trajectories. This has resulted in a range of projects, each debating individual takes on what they find to be the central matter.

However, it is in the courage to jump into deep water, and in the quest to become wiser, that the future may be challenged and rethought. Only when one understands the world, only then can the dialogue of the country's physique occur (Statens Kunstfond, 2013). Therefore this thesis seeks to design images on how to organize the country and thus paint a visionary, yet undiscovered, portrait of the future Denmark.

DEBATING FUTURE TRAJECTORIES IS DIFFICULT, YET NECESSARY

A lot can change in the horizon of decades, or even years, but this does not lessen the relevance of the exercise. The exercise of course being; to explore the matter of the future, the future of Denmark in relation to society and the planned structure.

The future is a difficult topic, it is neither fully determined, nor empty and open (Urry, 2016). The future is influenced by the past and present, as Urry (2016;190) states; '*...knowing the future means that it is necessary to know various pasts and their system-dependent trajectories*'.

Jørgen Møller (2016) argues that a constraint for future change and development, is that the future is seldom perceived as anything but an extension of the present, a linear projection of what one knows. This criticism is directed towards the fact that people often concentrate on the most proximate challenges and opportunities rather than long-term changes. Møller (2016) address this in perspective by referring to election periods as being deadline for political trajectories.

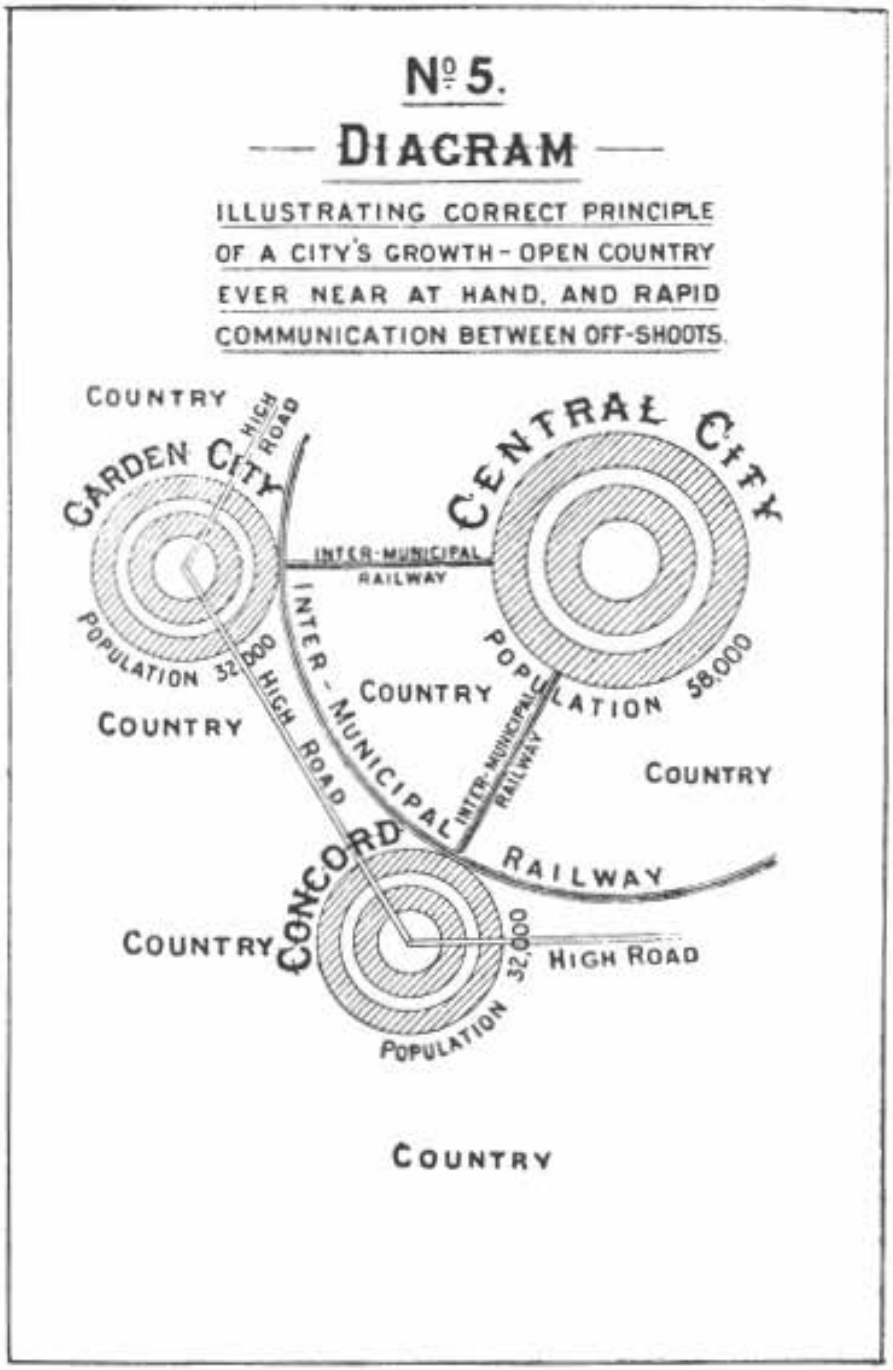
There exist multiple potentials of long-term strategic planning and reasons for investigating the future. One reason being that '*writing for and with future increases awareness of what it is now. It improves the capacity to deal with the fear of the unknown; not the one that is probable now, but rather the one that is to come— the one that can suspend its image from the present.*'(Massachusetts Institute of Technology, 2010;5)

A second reason for investigating the future is expressed in the report 'der bli'r et yndigt land' (Realdania Debat & Mandag Morgen, 2010), which argues that when seeking to revolutionise, or merely change, the societal situation, there must be a common understanding of the goal and a commonly accepted trajectory towards the wished future. A benchmark which all actors in society can navigate after.

These notions illustrate the importance of envisioning the future, and by utilizing discourses and design one can address the future. Furthermore Urry (2016;7) states '*...the terrain of future studies should be reclaimed for social science and, in a way, for people in their day-to-day lives.*' He continues to suggest a redistribution of power when thinking futures in the favor of states and civil society, when engaged with social disciplines regarding the future rather than limiting it to companies who develop technological advancements. The point here being, that the practice of the cross disciplinary profession of Urban design, social studies and so forth, delivers the opportunity to imagine preferable futures with tools of discourses and design.

As mentioned (on page 3), design has in the past been used to change the direction of a society and design is an evident mean for communication a possible future along with storytelling by for example books and movies. This thesis seeks to ignite a common goal and a common interest in an 'improved' future, thereupon building on the ideology of the future as being something shared, both by existing and future generations.

Kristoffer Weiss (2015) argues that the far future is now, he refers to the discourses of the direction of the evolution, which isn't something far out in the future, but already here. It requires that urban research updates its notions and discourses of the city to a more sophisticated understanding of reality. This should also apply to the planning guidelines and legislation which should be up to date with the times they are to be used in.



CORRECT PRINCIPLE OF A CITY'S GROWTH

▲

Ill. 6.1 - Ebenezer Howard's Garden City
A still image of the 'ideal city' according to Ebenezer Howard. A model that is independent of the concrete building tasks reality, yet not conceived without seriousness and with realization in mind (Nielsen, 2001).

FUTURE CHALLENGES

Thinking about the future requires as mentioned, knowledge of the past, the present and an understanding of what is to come. While the contemporary society gets older and older, and the number of inhabitants increases (Danmarks Statistik, 2016), it is facing a row of challenges which include an already ongoing debate about the wellbeing of nature (elaborated on page 47), a demand for rethinking agriculture (elaborated on page 67), a challenge to become independent of fossil fuels (elaborated on page 78) and increasing focus on the structure of settlements (elaborated on page 35)

Along with these four challenges exist a row of technological- and social trends which can influence people's behavioural patterns. Klaus Schwad (2016) argues that society is standing on the verge of a new technological revolution which will sweep through every aspect of the contemporary society.

'*We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another [...] It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships.*' (Schwab, 2016)

One of the strongly debated subjects with technology today is the self-driving car. A clear tendency is that the self-driving car will arrive within a foreseeable future, even though experts is unsure on the precise timeframe (Rasmussen, 2017). When the self-driving car enters into everyday life, it will most probably cause an increased mobility where people, across all age groups, is able to effortless and comfortably commute long distances.

Ford (2016) and Rasmussen (2017) highlights that with the self-driving car, the need to own a personal car will probably change considerable. People will to a larger degree order a pickup car through their smartphone, the car will then pick up and deliver them and drive away again. Furthermore it can be expected that shared cars will become increasingly popular.

Another consequence of the new industrialisation is a changing labour market: '*People do not take a job. They work on projects. And they work either from home or from established offices. They work form coworking spaces. And hotels. And the hammock on the beach in Thailand and by the fireplace in Norway. They just need Wifi.*' (own translation; Smarason, 2016; 20)

Smarason (2016) highlights that a study at the "The Global Leadership Summit" showed that 34 percent of company leaders expected that more than half of their workforce was stationed outside the company's office spaces before 2020. This evolution opens the door for many smaller cities, especially when looking at the fast growing trend of a balanced lifestyle where people weighs a good balance between work, leisure, family and a closer relationship to nature. (Smarason, 2016)

The influence of technology is far reaching. And something which is worth to unfold is the ubiquitous digital technology. As Ascher (Own translation; 2002;31) states; '*We are not heading for a virtual, immobile and inward-facing city, but towards a city that is mobile, telecommunicating and sensitive, created by new exchanges between relocation, telecommunication and delivery and generated by events, that require co-presence and in which the character of the place sets all the senses in movement*.'

Anthony Townsend (2014;3) describes how this digital technology, to a great extent, influences the urbanization; '*by freeing us to gather where we wish, our mobiles are a catalyst for density [...] but these same networks can be a substrate for sprawl, a metropolitan nervous system conveniently connecting our cars to the cloud. They may be our most critical infrastructure, and seem to be our highest priority.*' Townsend (2014) states that the influence of digital technology will continue to shape the world and the way people live. It has become a vital part of the daily infrastructure. '*The smart city is so different in essence to the 20th century city that the governance models and organisational frameworks themselves must evolve.*' (Townsend, 2014;32)

One of the social trends that has been ongoing in the last years is the shared economy, which is building on the foundation and hope that sharing personal belongings can be beneficial. There has been, in a sense, a setback in public discussions regarding the future role of shared economy in society, as large corporations like Uber and Airbnb has received substantial critique, but shared economy is much more than that, it is the believe that, by sharing, everybody gets access to more with less. There is no doubt that shared economy has come to stay, and that, in the coming years, there will be an increased focus on sharing material goods and labour. (Kjærsgaard, 2015)

But it is essential that these future changes are brought into consideration when talking about the future layout of Denmark, as the contemporary society will experience a row of challenges and changes, examples hereof has been elaborated and some will be clarified later.

AN EXTENSIVE STARTING POINT

This thesis seeks to discuss future potentials for residential, natural, agricultural and energy production. By illustrating a trajectory towards a cohesive, balanced and diverse country, affording individual and collective development, through optimization of living conditions and enhancing existing qualities.

In order to address these major topics of planning and urban design, the thesis seeks to challenge the contemporary trajectories through discourses and depicting a future scenario. By the means of a multidisciplinary profession, the thesis asks the question;

How can urban and landscape design be utilized to illustrate and discuss an alternative future to the contemporary trajectories?

Elaborating questions;

How should the land application be prioritized to accommodate nature, agriculture, energy production and settlements in the future?

What are the implications of a national trajectory for urban- and landscape planning at a regional scale?

How can a territorial wide strategy and place specific potentials be manifested locally?

APPLIED METHODS; APPROACHING THE FUTURE

Building the scenario
This thesis is, as mentioned, an exploration of the Danish territory, based on an empirical, theoretical, and analytical investigations. The scenario is delineated to the danish border, yet of course being influenced by the world around.

Apart from using quantitative and qualitative data to support and understand the subject, has a mix of mappings and excursions been utilized along with an investigative approach questioning, what if?

Explorative, What if?, questions
According to Urry (2016) there need to be laid out a distinction between the possible, the probable and the preferable future. This report seeks to debate the preferable future. This need derives from the reasoning that there is found multiple methods for thinking futures; learning from past visions of the future, studying failed futures or developing dystopic visions, envisaging utopias, extrapolation and scenario-building/backcasting (Urry, 2016). Many with different agendas, but all has a goal of investigating future scenarios. The idea of these visionings is a means for critical perspectives on the present, igniting intellectual debates and the idea that the future can transcend the present (Pinder, 2002; realdania & Mandag Morgen, 2012).

These thinkings emerge from a desire, a desire for a better way of being and living. The conceptualized utopian thinking creates an open and process-oriented base for discussing and questioning present social, political and spatial conditions (Pinder, 2002). Thus unfolding the future in an explorative manner, where one exert extremes to put focus on what might be ahead.

This has lead to the questioning, what if? and examples hereof is;

What if nobody needed to work?
Citizen's salary would be a possible tool in the future and people would not have a need to live in association with workplaces.

What if completely self driving cars existed?
One's relation to distance would change and the travel time could be utilized for different activities.

What if the sea level raised 14 meters, as argued by Al Gore?
Climate refugees would be a daily concern and the geographical layout of the country would be radically different.

What if houses were 3D-printable?
Houses could be printed in an unobtrusively short period of time, for a fraction of the price.

What if all these things were realised, how would the enacted life unfold?

By utilizing an exploratory approach and a knowledge-seeking path, the moulding of this thesis has led to the investigation of many tracks and usage of multiple methods. not everything has become directly implemented products, but has aided the creation of the overall project.

This has led to a holistic composition of knowledge regarding aspects, elements and structures of both material and immaterial character. This is based on the notions that, everything is interconnected crosswise and all influence each other. Thus multiple methods must be utilized.

Across scales and optics
Working with the entire territory of Denmark, is an extensive challenge. In order to comprehend the different parameters, it has shown to be fruitful to vary between the scale of the affected topic, this is materialised through the thesis. This also applies to the tools employed through the working period, such as mappings, excursions, empirical and theoretical investigations as well as previous and contemporary cases of utopian character (examples are mentioned on page 5), which stands as the backbone of the project.

In general, the methodological approach can be formulated as a duality. A duality also found in Tom Nielsen's (2001) book 'Formløs' which treats the city's surplus landscapes from two perspectives: the elevated, overview seeking and generalizing gaze, as well as the included analysis at eye level of material and interaction.

This approach can also be related to the work of Xaveer De Geyter (2002), who, in his book 'After-Sprawl' approaches his topic through visualising mappings where he separates layers in order to demonstrate individual parameters of the subject, supplemented with eye-level still images and visualisations.

Mapping
Firstly, mappings. Mappings '*entails processes of gathering, working, reworking, assembling, relating, revealing, shifting and speculating*.' (Corner, 1999;228)

James Corner (1999;228) articulates how mappings '*contains multiple modes of spatio-temporal description, mapping precipitates fresh insights and enables effective actions to be taken […] it entails searching, finding and unfolding complex and latent forces in the existing milieu rather than imposing a more-or-Iess idealized project from on high.'*

Robinson and Petchenik (Robinson and Petchenik in corner, 1999;228) claim that '*in mapping, one objective is to discover (by seeing) meaningful physical and intellectual shape organizations in the milieu, structures that are likely to remain hidden until they have been mapped ... plotting out or mapping is a method for searching for such meaningful designs*'.

In other words, mapping is design which unfolds what is and what is not yet. It gives visibility through representation rather than through direct experience. Furthermore, mapping highlights hidden relationships amongst different parts. (Corner, 1999)

Eksplorativ excursion
With an assignments concerning the entire landmass of a nation, How does one get a hold in the field which is subject to be read and interpreted? What is to be looked at when faced with an urban field of people who numerically counts mil-

lions, with countless physical, social, economical layers? Or standing in front of a territory, like Denmark, for professional contemplation?

The point of observation and beginning understanding of the complexity of the place can be many. For this thesis, the origin for eye-level exploration started with utilizing a mobile exploration, with a phenomenological approach inspired by the 'drift'.

James Corner (1999;231) describes how '*Guy Debord, a key Situationist theorist, made a series of maps, or 'psycho-geographic guides', of Paris. These were made after Debord had walked aimlessly around the streets and alleys of the city, turning here and there wherever the fancy took him. Recording these wanderings, Debord would cut up and reconfigure a standard Paris map as a series of turns and detours. The resultant map reflected subjective, street-level desires and perceptions rather than a synoptic totality of the city's fabric. [...] Such activity became known as the derive, or the dream-like drift through the city, mapping alternative itineraries and subverting dominant readings and authoritarian regimes'*

As Guy Debord started his assignment with paris, the excursions of this thesis, started with a set of points to reach or cross, leaving the gap unfilled and open for exploration. The excursions comprises; An empirical itinerary, scheduled with a mapped route. Exploring the landscape of northern Jutland. Secondly a mobile examination along highway E45, enacting as a mobile subject. Lastly a field investigation of central Djursland, experiencing the topography and landscape of built and unbuilt (see appendix 01).

Concluding remarks

This thesis uses spatial imagination in order to investigate the territory and the relation to law and power (Territorium, 2016B). One can obstruct or frustrate the other, but a combination can create a robust agenda. Thus this thesis seeks to ground the findings in a realistic conception of what is now, what is to become and how this should be implemented and utilized.

In recap, the project is grounded in an exploratory process, with offset in the wonders on the futural territory of Denmark. The exploratory process has been combined with an iterative process of a multitude of conceptualised perceptions of interest, with a flux of information and investigations. Combining the exploratory process and the iterative process, has resulted in a project which touches upon a wide range of aspects, yet still grounded in the question of how the future of Denmark should, and will unfold.

READING GUIDE

So far this thesis has been shaping the foundation of the focus, with a justification of its existence and unfold the delimitation and essential parameters underlying this thesis. Discussing the relevance of envisioning the future, in a tension field of planning and design with social aspects of society. Presenting the initial matter of concern and questionings of the thesis. Along with a review of the applied methods.

Forwardly, the layout of the country's physique, the factors seeking to mold it and the political layout will be unfolded. Focusing on the evolution of the planned structure of Denmark and presenting a critical evaluation of what the danish society is rushing towards based on the historical evolution and the contemporary trends of society along with a changing understanding of cities and countryside.

Chapter three is proposing an alternative direction for nature preservation, production and future location of settlements. The chapter is divided into three sections. The separation of each subject is done in order to clarify the individual subject, but they are not to be understood as separate elements but as intermingled elements which influences each other.

Fourthly the thesis investigates the implications of a national trajectory for urban- and landscape planning at a regional scale, with the case defined as 'the eastern Jutland metropolis'. This chapter will adjust the national trajectories to local conditions in a collaboration between the involved municipalities.

Fifthly discussing the manifestation of a territorial wide strategy and place specific potentials, at the case of 'Djursland', combining the municipalities of north- and south Djursland. Where the national and regional trajectories are implemented at a local scale.

Rounding of with evaluating the thesis as a conclusion and reflections.

Appendix will consist selected materials.

References are written using the Harvard method. And all quotes are written in English. If english is not the original language, it will be marked with 'own translation', with precaution for possible interpretation.

THE SPACE OF TRANSITION

This chapter takes departure in the conception of Denmark, where a reevaluation of the landmass will be presented as comprising multiple opportunities.

As the future development is enrolled in an already existing context, it gives reason to investigate that context and understand its locale. The country is prescribed in a global context where the conditions change, while internal forces seek to mold the land. This thesis investigates the existing landmass and the trajectories sought by different actors. Furthermore this relates to the political agenda and the political discourses, as these are factors greatly influential when discussing the layout of the land.

These subjects will be elaborated through the chapter along with notions on how the existing reality is perceived.

AN INTRODUCTION TO DENMARK

Denmark is a rather small country in the northern part of europe. It covers an area of approximately 43.000 square kilometers, which equals about ten percent of the area of Germany and twelve percent of Sweden, the two geographically closest countries (Danmarks statestik, 2016). Despite the small geographical area the coastline is 7300 kilometers, equal to one and a half meter per person. The long coastline has lead to a high number of harbors, and approximately 80 percent of the danish foreign trade goes through commercial ports (Danske Havne, 2017).

The geography in Denmark is dominated by a large number of islands, 391, where most of them is located in the Baltic sea. The three largest islands is Zealand, Funen and Bornholm. Jutland, including Vendsyssel-Thy, make up 69 percent of the total landmass (Danmarks statestik, 2016).

Distribution of the political structure
The political and administrative map of Denmark comprises 98 municipalities distributed over five regions, North Jutland, Central Jutland, South Jutland, Zealand and The Capital (Galland, Enemark, Møller, et. al. 2016). Central Jutland is the geographically largest of the five regions with an area of approximately 13.000 square kilometers and a person density of 99 persons per sq km. The least densely populated region is North Jutland with a density of only 74 people per sq km, which is approximately 1/9 the people density of the capital region which has a density of 700 people per sq km (Danmarks statestik, 2016).

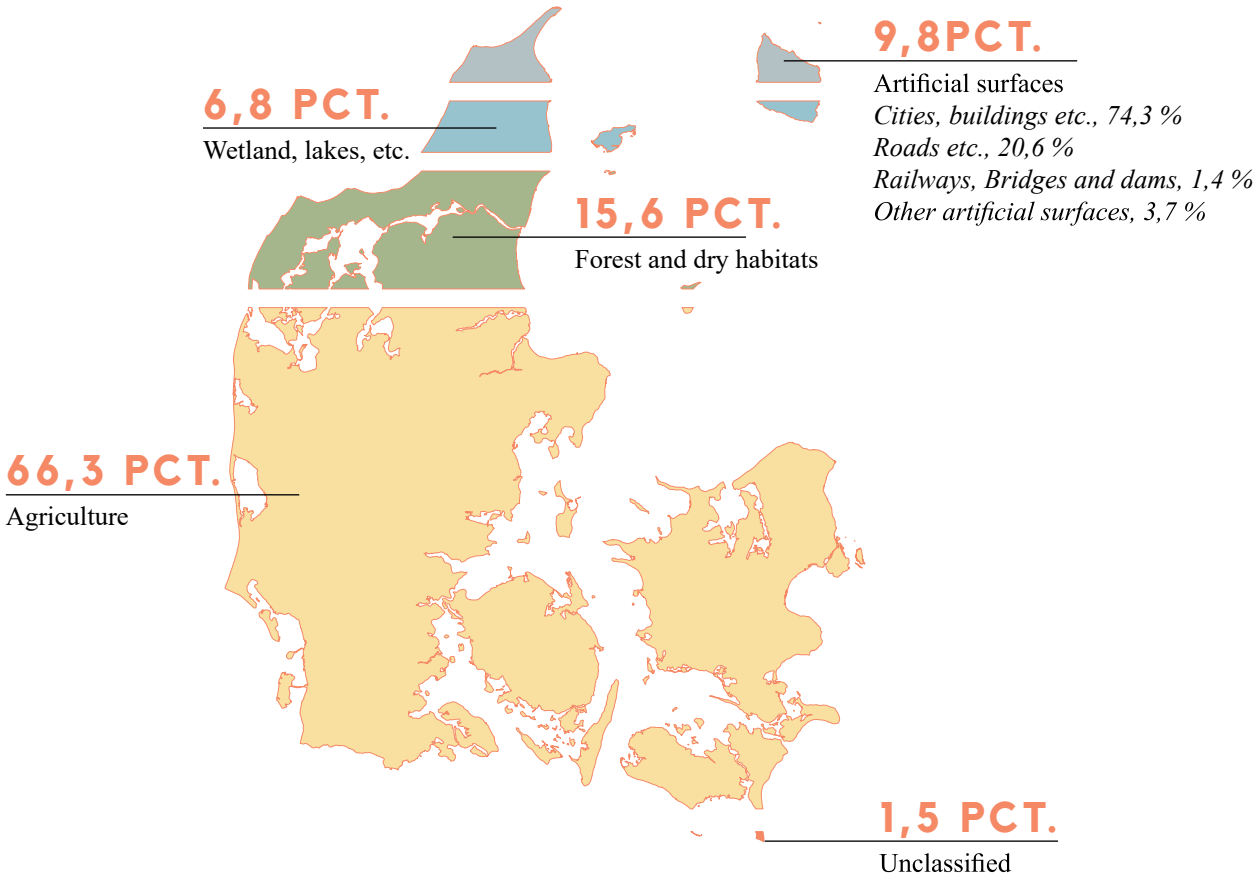
Settlements
Denmark is characterized by a small number of large cities where only four cities have more than 100.000 inhabitants and 45 cities with more than 15.000 inhabitants (Statistikbanken.dk, 2017).

In contemporary Denmark is rural life and urban life very close to the same, whether a person live in a residential neighborhood, a village or a compact city center, one's life is comprised by the same overall features. In other words, the difference between types of cities are disappearing little. Yet, the danish standard defines a distinction between villages (landsby), which is a collection of 200-999 people, with a maximum distance between buildings of 200 meters, excluding public institutions, parks, cemeteries etc., and cities which is more than 1000 inhabitants (Laursen, 2008).

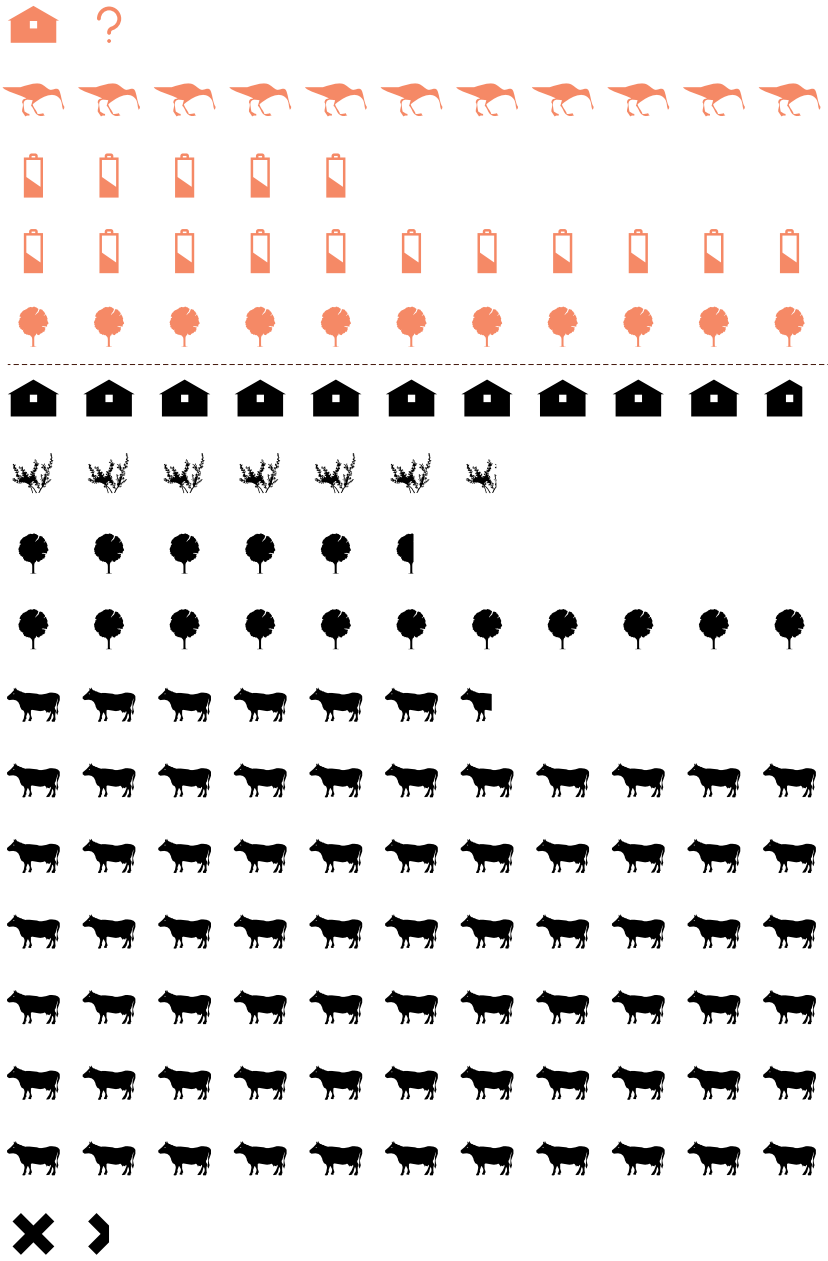
Instead of separating types of cities, should the understanding of the city be more open minded, not as a closed entity but as related to other areas (see page 35), this result in a territorial approach where Denmark can be seen as a whole. By this definition lives 87 percent of the danish population live in cities. The small amount of large cities combined with a large percent of the population living in cities implies that the country is scattered with smaller settlements.

Land application
The build structures in Denmark make up 9.8 % of the total area. Which is equal to 56 percent of Zealand. Those structures includes cities, roads, railway, bridges. 66.3 percent of the danish land masses is covered by agriculture, and 15 percent is covered by forest (Danmarks statestik, 2016) (see illustration 14.1). The large amount of agriculture suggest that most of the land is cultivated and it is close to impossible to find uncultivated areas in Denmark. The large amount of agriculture combined with the high numbers of small and scattered cities result in a rural area where the intervention of people is visible everywhere.

Denmark is a geographically small country where a high percentage of people live in cities, apart from inhabitants living in large cities, most live in smaller cities or villages scattered around the open countryside. The country is close to completely cultivated, leaving almost none areas uncultivated, this limits the possibility for further expansion of cities, infrastructure, agriculture and nature as all corners are utilized.



Ill. 18.1 - Current land application



X PCT.
Aditional artificial surfaces

10 PCT.
Aditional biodiversity

15 PCT.
Energy crops

5-10 PCT.
Aditional forestation

9,8PCT.
Artificial surfaces

6,8 PCT.
Wetland, lakes, etc.

15,6 PCT.
Forest and dry habitats

66,3 PCT.
Agriculture

1,5 PCT.
Unclassified

Ill. 19.1 - Wishes for land application

WISHES AND DEMANDS FOR FUTURE LAND APPLICATION

Even though Denmark is a completely cultivated land, there exist many conflicting wishes and demands for the futural use of the Danish landmass. If all desires are to be accommodated, there will be a need for additional land at the size of the island Funen (Jensen, 2016), or 40 percent more land area than currently available (Arler and Madsen, 2015).

'*The development of society and a number of uncoordinated decisions means that we today have objectives, plans and wishes to use areas that together are far greater than the 43,000 square kilometers Denmark already consists of. At the same time the current use of areas sometimes leads to conflict between different considerations*' (Own translation; Arler, Jørgensen and Sørensen, 2017).

As mentioned (on page 17), agriculture obtains, by far, the largest percentage of the landmass. But even with improvements to efficiency, and despite the problematic economy of agriculture, a restriction of the industry will be difficult as it still is of economical importance to the country, as the animal production in Denmark seeks to meet the growing demand of the worlds yet growing population (Arler and Madsen, 2015).

Some of the most notable wishes and demands include an increasing forestation, which aims at increasing the forest area from the current 15 percent to 20-25 percent. Along with this there is a political demand, focusing on renewable energy, which includes bioenergy. The new production of biomass will presumably take up approximately 15 percent of the landmass. Furthermore, there is demands from an european declaration of maintaining and increasing the biodiversity. This will most likely require a significantly larger areas for biodiversity and wild nature, perhaps a doubling of the current 10 percent (Arler and Madsen, 2015).

Finally, in these years, the country is experiencing an expansion of urban areas and transportation facilities, as well as the so-called recreational landscapes, including cottage areas and various activities, to satisfy the increased population and its increased demand for individual wealth and possession (Arler and Madsen, 2015).

'*Cities grow into the landscape, there is to be more roads and railways, while agriculture and nature demands space. More forests and wildlife have been decided, while the rising sea chews the Danish area less. In a densely populated country like the Danish, conflicts have arisen between many contradictory interests'* (own translation: Arler and Madsen, 2015;28).

The prioritizing of land application can be troublesome in regards to the changing political trajectory and the redistribution of power. As noted (on page 22) are the political trajectories often limited to a short periods of time focusing on the adjacent issues, but these wishes and demands require long-term planning.

The lack of long-term planning does not occur in the lack of interest or will from those involved. As Connie Hedegaard states in the 2006 national planning report 'The new map of Denmark', is there a general interest from municipalities for 'planning of high-quality surroundings'. She states; '*...there is a great support for the basic viewpoint that Denmark will only remain a beautiful and well-functioning country if it consciously and offensively makes use of planning.*

A beautiful country does not conserve itself'(Ministry of the environment, 2006;4). Yet these good intentions seem to lack when the border crossing municipal planning fall to controversies of who gets what etc.

Along the way, the many goals, plans, commitments, wishes and needs have been developed individually, without overall prioritization and planning. They must be added together (Arler, Jørgensen and Sørensen, 2017).

'*The burning platform is that the Danish landscape is under pressure because there is 'a battle for the space'. The Danish country is getting smaller and more people and actors claim space - the solitaire does not go up and priorities are therefore a necessity. There is a desire to expand the natural areas and make more coherent nature, agricultural production is desired to be maintained and in some places intensified. It is politically decided that the area of forest must be doubled during the generation of a tree, energy policy requires the production of biomass, wind turbines etc., infrastructure - especially for transport - is expanding, cities are spreading and settlements appear in the open country, climate change causes the sea eating into the coasts, and at the same time heavy rainfall floods areas in the country.*
In popular terms, we must avoid rummage of incompatible interests together within the same territory' (own translation; Møller, 2016;26).

In a densely populated country with many wishes, it is necessary to plan, manage and regulate development. Otherwise, one will have an unsatisfying overall result. Before conflicts grow and get stuck, must the Danish government and municipalities, weigh the many interests, make plans and create solutions that are firmly based on common goals and values (Arler, Jørgensen and Sørensen, 2017).

Choices must be taken, limits drawn, areas designated, laws and rules adjusted and improve the tools to control development. Nationwide strategies must be devised and reported clearly creating a strategic trajectory of the territorial design and planning across the danish municipalities. Working for an optimal distribution of settlements, natural habitats, energy- and agricultural production etc. Thus there is a need for an approach to planning and designing, where every area is processed as part of the holistic picture, yet containing own specific qualities which is dependent on- and influential to the overall image.

As the future wishes and demands for land application exceed the available landmass, it is either necessary to reduce areas, such as agriculture, or implementing hybrid relationship between areas which today are separated. One must ask questions as, can renewable energy be produced in a way which benefit wildlife?, can new settlements create attractive areas for people while affording biodiversity? Can a differentiated planning of the country create surplus value? It is important to do so in a time frame which is not limited by election periods and focus on long-term goals.

A CHANGING POLITICAL AGENDA

The political agenda and the shifting political trajectory has to a high degree a responsibility towards the physical layout of the country. Governmental decisions weigh in on the moving patterns of society, but the implications also affect how the land application is prioritised.

As mentioned (on page 3), is the predominant political agenda to bring Denmark forward, answered with creating growth (Statens Kunstfond, 2013) and the agenda of the 'welfare state' is replaced with the 'competition state' and the core objective of planning is being reinvented to 'promoting appropriate development' rather than 'securing equal rights' (Carter et. al., 2015).

Bear in mind that this of course does not mean that the 'model of welfare' is vanished, as new laws and regulations are build upon the existing and former trajectories. Spatial planning practices and discourses are in a continuous flux. In the article; 'A Planning Palimpsest: Neoliberal Planning in a Welfare State Tradition', Carter et. al. (2015) argues that the remnants of former regimes, whether it be the welfare state praksis or the neoliberal approach etc., continue to structure the present. Thereby arguing that to understand the current, as well as future transformations of the danish spatial planning, discourses and practices must be understood in context of past regimes discourses and practices, which have sedimented as layers of meaning and materiality.

Whether it be the welfare state build from a liberal approach to planning, or a neo-liberal agenda build upon the welfare state, the different approaches will influence the future trajectories, as is the Danish praksis of planning (Carter et. al., 2015).

A recap of the danish planning trajectories

The important characteristics of the first years with active planning of the danish territory, is the becoming of uneven socio-spatial development with different practical and ideological implications. An emerging trajectory was the liberalist political-institutional approach to state intervention, which brought upon an order where economic priorities took precedence. State interventions was mostly linked to infrastructural connections (Madsen, 2009).

With the international influence of industrialisation and the noticeable waves of growth to population and cities, characterised by Madsen (2009) as 'growth without plan', emanated an increased interest in political planning of danish cities. From around 1900, cautious measures of state intervention, slowly began to blend with the otherwise dominating liberal ideologies in the political trajectory. This process culminated in the welfare state, in the mid 20th-century (Carter et. al., 2015).

The discussion of growing cities and the planning of these, brought along a number of long overdue plans such as 'Fingerplanen' of 1947 (Gaardmand, 2016). This in turn ignited legislations of city planning.

'*In the remarks to the legislation, it is cut out that a still increasing spread of urban settlements is found unfortunate, regardless of it explained by*

the natural desire to live in a free and healthy environment. Urban dispersion is meant to give rise to a wide range of socio-economic disadvantages, including increased distances to mass transportation, business districts, schools and social institutions, the erosion of the economic basis for sewers, waterways and roads, unnecessary abandonment of agriculture and recess in the urban, recreational areas' (own translation; Gaardmand, 2016;39).

Post World War II, was the period where spatial planning emerged as an important policy field, when the social ideologies superseded the liberal agenda in the political-institutional trajectory. The welfare state project, brought with it an upscaling of the planning politics to account for the entire state territory. Furthermore this brought along discourses concerned with spatial inequality (Carter et. al., 2015). The continuation of changing conditions sparked discussions of a need for national spatial planning. The discussion brought along models such as Erik Kaufmann's star city model (illustration 24.1) which sought to address the uneven geographical development, as well as Humlum's who introduced the proposal 'Den midtjyske motorvej' (the central Jutland highway)(see appendix 02) (Gaardmand, 2016).

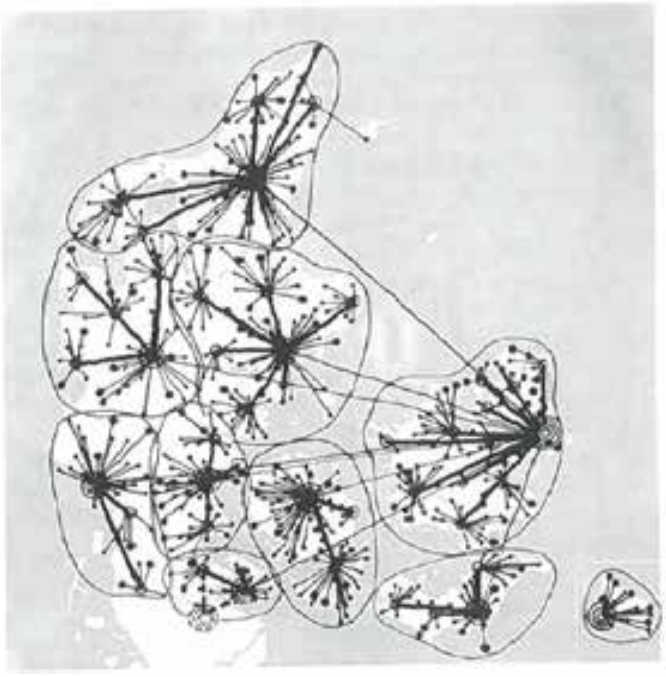
The economical recovery which commenced in the end of the 1950's brought along the demand for additional space for production, service, education, social- and cultural purposes etc furthermore the transportational need grew and demanded space for cars, both when driving and idle. Altogether these changes created a new quantitative basis for planning, which was seen as a precondition for progress in the social and cultural sphere (Gaardmand, 2016).

The government of Denmark introduced a model, known as the 'Big H' (illustration 24.2) which became a model for development in Denmark. the plan was constructed from the foundation of the two former mentioned plans, yet significantly more centralist than Kaufmann's. It was reasoned with the supporting of the habitational placement of the majority (Gaardmand, 2016).

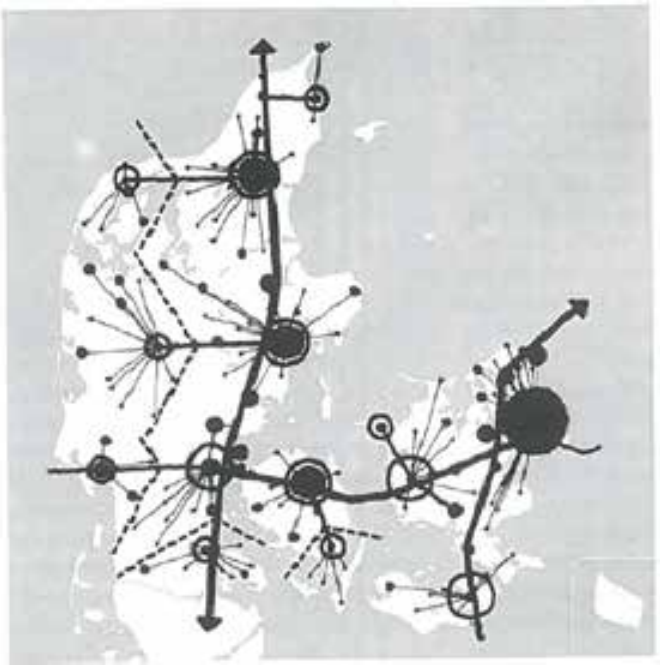
With a coherent and comprehensive planning system, came the ambitions of developing 'societal planning' (samfundsplanlægning), linking spatial and economic planning. Central to this thesis was the notion of growth in production and consumption as a means for overcoming societal problems. Planners sought to use city growth as a driving force for social progress, cultural activity and human happiness (Gaardmand, 2016).

The municipal reform in 1970 was the largest reform of the Danish municipal government so far, which reduced the number of municipalities from 1098 to 277 and the number of counties from 25 to 14. The total number of municipalities was further reduced in 1974, this time to 275, which remained unchanged until 2003, this was a means to adjust to the change of Denmark from an agricultural society to the contemporary industrial society (Dybvad, 2015).

The administrative structure was further reduced in 2007. A new structural reform of the local



Ill. 24.1 - Erik Kaufmann, Star city, 1959



Ill. 24.2 - the 'Big H'

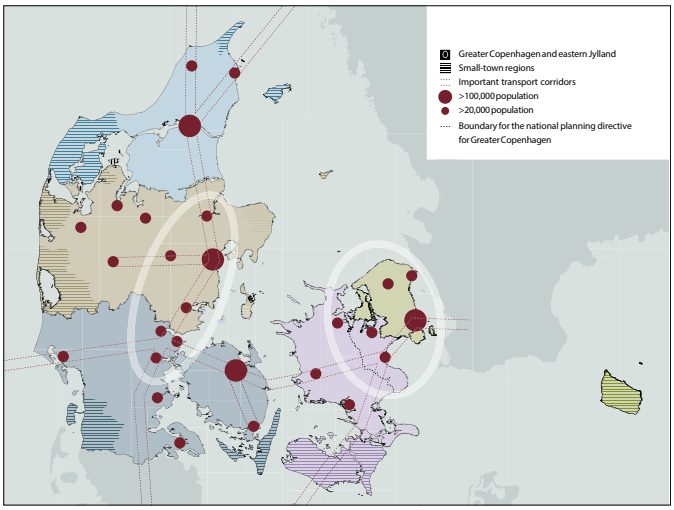
and regional government changed the territorial division once again, the political and administrative map of Denmark changed. The new reform merged the existing 14 counties into five regions, North Jutland, Central Jutland, South Jutland, Zealand and The Capital (Galland, Enemark, Møller, et. al. 2016). Furthermore the reform merged the municipalities down to 98. The merger of municipalities has led to an average number of people in each municipality which is much larger than the other Nordic countries and geographically much larger than previously, distancing the inhabitant from the administrative institutions as well as making it difficult for public employees to manage such a large geographical area (Dybvad, 2015).

At the national level, the workings of a nation wide urban pattern grew. The aim was to develop a hierarchy of cities. This was materialized in the 1978 governmental contributions to the debate 'Det fremtidige bymønster' (the futural city pattern)(illustration 26.1), which sought to lay out a fairly even distribution of jobs and service organs (Gaardmand, 2016). This brought along a long range of governmental investments which also affected the settlement structures, concentrating people around the new administration centers (Dybvad, 2015).

As described (on page 3), the political trajectory slowly shifted its focus from a 'welfare state' to a 'competition state' and the core objective of planning was changed from 'securing equal rights' to 'promoting appropriate development', yet still with the presence of the welfare model (Carter et. al., 2015). *'It was from the late 1980s that growing neoliberal effects on spatial planning became evident in Denmark. In this period, planning was being reinvented and 'geared towards creating growth' in an increasingly 'entrepreneurial' manner*' (Carter et. al., 2015;13).

Once again the focus was on the copenhagen-centric agenda. The focus on the capital was a means for securing Denmark's place in a globalized society and in turn was a driving force which led to the centralisation of socio-economic activity and the differentiated spatial planning seen today (Olesen, 2010). This approach spread to the development of the Aarhus region and 'Den østjyske millionby'(The eastern Jutland metropolis). It was believed that this approach would secure growth throughout the country (Gaardmand, 2016). This is depicted in the national planning report of 2006, 'The new map of Denmark - spatial planning under new conditions (Ministry of the environment, 2006) which deals with the spatial polarization (illustration 26.2). The report illustrates a sharpening of the discourse, by interpreting the polarization as an inevitable fact and seeks a differentiated regional growth. This report is also given the credit of being the first to articulate 'Den østjyske millionby' (Stensgaard, 2017).

Ill. 26.1 - Planstyrelsen, 1978



Ill. 26.2 - 'The New Map of Denmark' National Planning Report 2006 (Danish Ministry of the Environment)

THE CONTEMPORARY POLITICAL DISCOURSE

This change in politics has created the responding discourses concerning the structural distribution of land and living standards in bigger city regions versus small cities, which holds a great importance in the current movements and affords tensions as regional disunity.

This division of the danish society based on geography is very much present in contemporary discourses. Even though the geographical outline changes through time, the principle of segregation between which locations is perceived as attractive and undesirable prevails.

Madsen (2009) describes how this is no new phenomenon, as the Jutland peninsula had from the 18th-century till the 19th-century, been 'subject for discovering' or kolonization' from the cultivated eastern Denmark. An extensive ignorance of the geografi over Jutland was a ruling factor.

In recent years epithets were used indiscriminately. In the 1950ies the term 'unemployment Lakes' (Arbejdsløshedsøer) were used. This became 'regional development areas' (egnsudviklingsområder) and a decade later 'the rotten banana' (den rådne banan). Today outer- and rural municipalities (yder- og landkommuner) is referred to as 'water edge Denmark' (vandkantsdanmark) (Møller, 2016). This growth and development in city regions, is also a story which highlight that to have a winner there must also be a loser, for it brings with it decline and decay in other districts. The recent growth in danish society is characterised by an unequal allocation, which bring major effects to the population and urban growth (Laursen, 2008) (as elaborated on page 91).

Today the association with growth and development, is used as an argumentation for the liberalisation of the planning law. This is also stressed in the incentive brought by moving the laws and legislations from the 'ministry of environment' (miljøministeriet) to the 'ministry of business and growth' (erhvervs- og vækstministeriet) (Dansk Byplanlaboratorium, 2016). The periphery of denmark is thus disfavored due to the lack of infrastructural connection or human resources needed to cope with the new conditions of a knowledge driven economic development (Laursen, 2008).

The contemporary shift in settlements is of a highly nuanced manner and it creates discords between rural and city regions. This is answered with governmental consolidation such as relocation of facilities from the public sector(Politiken, 2015A), opening of construction in coastal zones (Politiken, 2015B) and an easing of legislations allowing summer cottages as permanent residence for elderly (Flensburg, 2017).

Greater freedom for development and growth in local areas can be part of the solution. But in a densely populated country like Denmark, the one's free expression will often go beyond the freedom of the other - or the common good (Arler, Jørgensen and Sørensen, 2017).

Rather than seeing growth as a singular minded manner of increased population and a thriving economy, it would be beneficial to use the term 'growth' in a holistic manner. This meaning, a differentiated approach, where the societal and place specific potentials are highlighted rather than focusing on the issue of decline. As a transformation where the places are changing, and therefore a able to offer something new.

This gives incentive to reevaluate the planning legislations as the Planning Act (planloven) which comprises the division of Denmark into urban zones (byzone), cottage areas (sommerhusområde) and rural zones (landzone). This division of Denmark is insufficient and the contemporary zoning belongs to a bygone time. The existing zoning policy should fit according to contemporary and future needs and to that which needs to be designed for.

This thesis supports the notion by 'Dansk Byplanlaboratorium' (2016), who argues that there is a lack of regional perspektive. They suggest for an authoritarian influence that secures strategies which concerns growth and development across municipal borders, in order to avoid competition over the same tourists, residents and investments. This competitive minded agenda, creates interest in looking into the potentials of planning in a grander scale, that concerns the future of the nation.

Ill. 29.1-10 - Pictures from an exploratory field excusion, depicting elements partly bound by- and partly defining their locale

A SENSE OF THE LOCALE

Place is not just a thing in the world, '*...but place is also a way of seeing, knowing and understanding the world. When we look at the world as a world of places, we see different things. We see attachments and connections between people and places. We see worlds of meaning and experience*' (Cresswell, 2015;18)

As Creswell (2015) shows, place is both simple and complicated, It is something which is utilized in order to understand and see the world. It is a term which can label an area, big or small, it can be a moving entity as well as immaterial, as well as being relational to time. A place defined as such, relates to the attributes of a palimpsest, a locale containing layer upon layer of meaning, which continuously is overwritten with new meaning (Ringgaard, 2010).

Places do not have boundaries

Defining a static boundary can create complications in the sense that '*places do not have boundaries in the sense of divisions which frame simple enclosures*' (Massey, 1994;155). Not neglecting that boundaries can be necessary in certain cases as studies etc., '*...but they are not necessary for the conceptualization of a place itself*' (Massey, 1994;155). '*Irrespective of whether rights to a limited development parcel are privately, publicly or jointly held, design actions in urban contexts have consequence beyond narrowly construed limits of legal metes and bounds*' (Kahn, 2005;293)

The molding of places, is always enrolled in an existing reality, a reality construed of the local parameters as well as its global context. Ringgaard (2010) argues that global and local are not contradictions but preconditions. Fundamentally the global is always expressed locally. He states that global phenomenons always has a point of departure, a place where it has its beginning, and this will always be used at a certain place.

'Placements are defined by the close relationships between points or elements which formally can be described as series, bifurcations and networks. In other words, the place retrieves to a much greater extent than previously its identity from the relationship to other places, therefore one should avoid looking at place isolated and of itself' (own translation; Ringgaard, 2010;85).

'*It is a sense of place, an understanding of 'its character', which can only be constructed by linking that place to places beyond. A progressive sense of place would recognize that, without being threatened by it. What we need, it seems to me, is a global sense of the local, a global sense of place.*' (Massey, 1994;156).

These notions emphasise how places are related and knows no boundary. It can be related to municipality borders, an immaterial border which affords a focus going inwards. It is necessary to account for the context,therefore it is relevant to work with trajectories that, in a sense, looks across immaterial borders.

Places of multiple identities

'*Places do not have single, unique 'identities'; they are full of internal conflicts*' (Massey, 1994;156).









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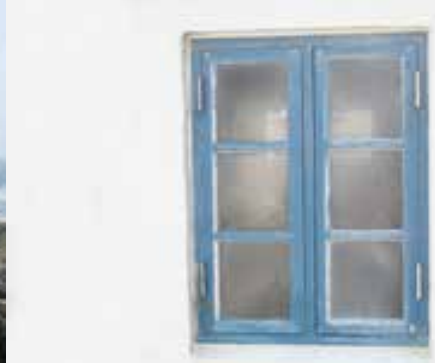


Ill. 31.1-10 - Pictures from an exploratory field excusion, depicting elements partly bound by- and partly defining their locale

In his book 'Den usynlige verden' (the invisible world) Henrik Dahl (2008) shows how there exists a row of norms and codes for which places and lokale that is estimable, as well as which is considered to be uninteresting or directly problematic. Dahl illustrates how there is a disdained transportational Denmark, where anonymous infrastructures is deemed unattractive, the same is illustrated for 'suburban Denmark'. In truth, all people carry an internal map over the world in which they have to relate to. Furthermore one must argue that, when relating to that world, it is the map they relate to and not the real reality These are created in a row of complex processes, which incorporates art, politics, economy and technology (Dahl, 2008). This also clearly illustrates how subjects perceive the same place, with different perspectives and tend to focus on different aspects.

The identity of places can change with a renewed enthusiasm of that place. An example of this is John Urry's (2007) reflection of the english landscape. He describes how land became landscape in the sense of people's consciousness, how something perceived as a means for producing crops and keeping livestock, became something picturesque and romantic through the eyes of poets, painters and photographers. Other examples is phrases as, vintage, up-cycling etc. which have changed the discourses of materialistic things which one was based on practicality, now is considerable popular, yearned to possess or have by the majority.

The same observation can be projected to the enthusiasm towards old buildings and districts of past industri, which during its peaking period was something people sought to distance themselves from. Today they experience a revival, as some of the most fashionable districts in the contemporary metropolitans. Although it is commendable that one does not just delete the physical traces of the past hundred years of industrial culture, the praksis of Denmark still has the habit of mythologize the unreal, rather than the real present (Dahl, 2008). Thereby it plays into an ongoing praksis of nostalgia, romanticising the past, or a mythological cultivation of past.

An important point to note, is that there can be many different pictures of the same thing or place. One can tend to focus on the hectic infrastructure, where another sees the small interactions and communication among subjects. This does not mean that they both aren't present.

Having these multiple layers can create tension or conflict, but it can also be an expression of opportunities. What people perceive as the truth, results in real consequences (Dahl, 2008), therefore the discourses and the way one perceives substances has great implications.

Places are inserted in an interconnected network, with many layers that interact. In order to understand the place one must understand its relational network and context.

Place is not static

As the former reflection of industrial buildings and districts, as well as the reflection upon the english landscape, indicate how places change










over time. It change according to the cultural associations to that place. Thereby place is not perceived as something fixed, rather it is something influences by the visiting subjects and the network which it is a part of (Ringgaard, 2010). As the industrial complex adapts with changing demands, the context which it is located within changes, whether it be time, physical surroundings or the social construction.

'*We live and work in an increasing number of places with ever greater distance, but we also find ourselves in several places at once in the sense that the place where we live is a mixed place, a place of goods, people, symbols and technology which comes from elsewhere and can lead us elsewhere. We have an increased external, but also increased internal mobility [...] Mobility leads to a new and increased feel for the places diversity, for a particular place's mix or negotiation of the meeting between global and local*.' (own translation; Ringgaard 2010;91).

As Dan Ringgaard (2010) illustrates, places are connected through subject who interact with different places, both simultaneously and separately. He also illustrates how the way subjects perceive places are changing with the way it is utilized or contextualized.

This is further argued by Doreen Massey (1994), advocating that places relates to social interactions and that '*If places can be conceptualized in terms of the social interactions which they tie together, then it is also the case that these interactions themselves are not motionless things, frozen in time. They are processes [...] places are processes.'* (Massey, 1994;155)

Thus, place is not static and changes over time by the means of discourses, planning and design. One must utilize goals and processes rather than a master plan.

Working with the locale

Its definition is not limited to physical structures, it also comprehends meaning. Urry (2007) argues that places is firstly constituted by people's actions through time, therefore place should not be limited to characteristics of a physical or visual manner.

This way of thinking places, sees place as a cultural construction, rather than a fixed entity, an unchangeable 'genius loci' as defined by Christian Norberg-Schultz (Hvattum, 2010).

What Christian Norberg-Schultz perceives as existential conditions; creating a meaningful world through the relation of place and architecture. He believes that '*architecture means to visualize the Genius Loci, and the task of the architect is to create meaningful places, whereby he helps man to dwell.*' (Norberg-Schultz, 1980). By giving form to the 'genius loci' he believes the world becomes understandable (Hvattum, 2010).

Standing as the opposite to Christian Norberg-Schultz, Rem Koolhaas describes this approach as the 'straitjacket of identity' (Hvattum, 2010). In between the former, Mari Hvattum (2010) argues for architecture as a means for the creation of place, as well as a means for

highlighting past and present foundations. Furthermore she argues that the obsession of place reduces architecture to an image of the existing world, instead of a means for challenging the existing with new development. If the development only answer to the existing environment, act as a repetition, there will be no profiting of the potentials.

Working on the presumption of a place's genius loci, searching for its soul, it gives reason to the search for that which is somehow unique, or as Urry (2007) would argue, culturally specific to that place. Uniqueness is a key word in the search for potentials, it is what separates the given places from each other. These potentials which is site specific are vital for that given space, therefore it is interesting to locate these specific potentials and in turn strengthen them.

In accordance with the former it can be argued that space is a dynamic room where one can act, a room to move, operate etc. rather than a static form. This approach does not exclude the presence of physical form, when considering the relation of social acts and the physical environment there is created conflicts and synergies.

What one decides to emphasize as important or decides to designate as unimportant is of great influence. The potentials of a space is defined by the glasses that one looks through. These can vary dependent on the scale at which is operated. By zooming in and out different potentials will emerge. With this approach different potentials can be associated with the relations and processes.

When working with a place, there must be an assessment of what is to be preserved and highlighted, and what is to be altered. As Koolhaas argues, to let the place be dictating factor will shield of progress and adjustments, yet as Norberg-schultz argues, places can improve, that which might become.

CITY / COUNTRYSIDE ANTAGONISM

The definition 'landscape' has shifted both on a practical level and on a theoretical level. On the practical level are the cities, which people inhabit becoming yet more open, where the primary linking element is the landscape. On a more theoretical level, scientists are recognizing that the separation between human-induced and nature, are far from a singular clear definition, but they are intertwined in a complex system. This result in a situation where culture and nature becomes a part of one another (Høyer, 2003).

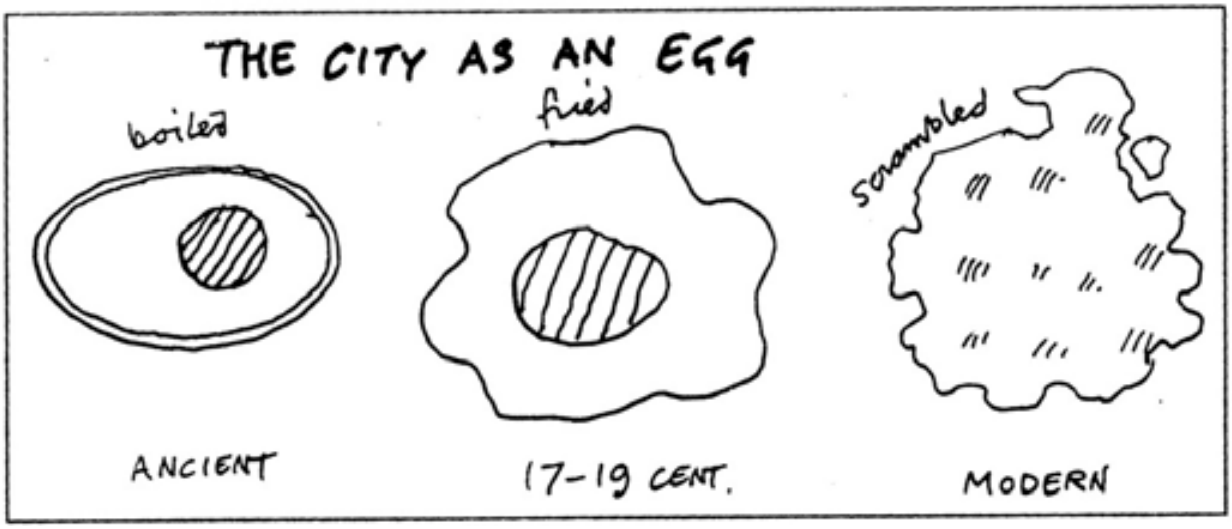
Steen A. B. Høyer (2003) argues that the city and the landscape generally is perceived as opposites. This notion originates from a time where the compact city had a clear border towards the open cultivated landscape. The border often consisted of city defenses such as walls for protection. The farm was located in the periphery as the production landscape with its open fields and hedgerows, further beyond ruled the wild nature which was associated with danger and uncertainty. Landscape was something that existed outside the city, with its scattered farms and large open spaces (høyer, 2003).

The role of the city has shifted, not only has the separation between landscape and city been distorted, the way people live and use the city as well as the countryside is changing with it. Niels Albertsen (2011) highlights that the small city which he grew up in back in the 1950ies, was characterized by a strong connection to the city, people lived and worked in the city and everybody knew each other. Everybody was part of the community, it was not self-imposed to be part of the community, rather it was just a condition. He describes how every person was embedded in the network of friendships, acquaintances of association relations and partly, a common history. The village functioned as a gathering place for the nearby farms who used the city for their daily activities.

Asher (2002) formulates this shift in social ties and bonds, not as a breach or a loss, but rather a change in the ways ties are formed and the character hereof.

'*There is, today, much talk of urban crisis and the breach in social ties, but one must distinguish between different phenomena. The first is that, in fact, there is no question of dissolving social ties, but about a shift. The society is increasingly moving from a few social tissues, unselected, but lasting and solid bonds to quite a few but weak bands of social tissue.*' (Own translation; Asher 2002; 32)

Today the border between city and countryside is blurry, just as the separation between city and city. The frequency of people commuting is becoming yet more common, people live in the countryside and work in the city, or they live in one city and work in another. This change has resulted in a different social structure and changed the ties to one's home city, people where once automatically part of the community they lived in, today people chose which communities they want to be part of Relations are not bound by geographical distance but by common interests (Albertsen, 2011).



Ill. 36.1 - '"The City as an Egg" (1982), shows the evolution of the city from a boiled egg (the ancient city) to a fried egg (the industrial city) and finally to the modern city depicted as a serving of scrambled eggs. 1 But what about the city of today? What could Price (1934–2003) have sketched to capture its essence? [...]Price's cartoonish diagram up to date, we need to zoom out and somehow convey megaregional urban networks—effectively all the egg dishes now linked into larger arrays. What is also missing from Price's egg cities, as regards our conception of contemporary urbanism, is any reference to the various natural and cultural environments in which the eggs exist.' (Weller, 2016)

'*The borderless cities are 'relatively large, scattered and diverse' (with regards to Wirth), and the tertiary relationships can include both the 'topographical neighbor' and the 'topological neighbor' in a discontinuous urban landscape*' (own translation, Albertsen, 2011: 34)

By removing the established understanding of the landscape and the build as two separate things, the underlying layers are exposed, processes, progresses, time and temporality becomes the new role model. The new changeable fragmented composition utilise the free plan and the gaps become the overall compositional elements. Grasp which create entirety and connection opposition to using a geometrical net, a pattern or a controlling central figure as composition princip (Høyer, 2003).

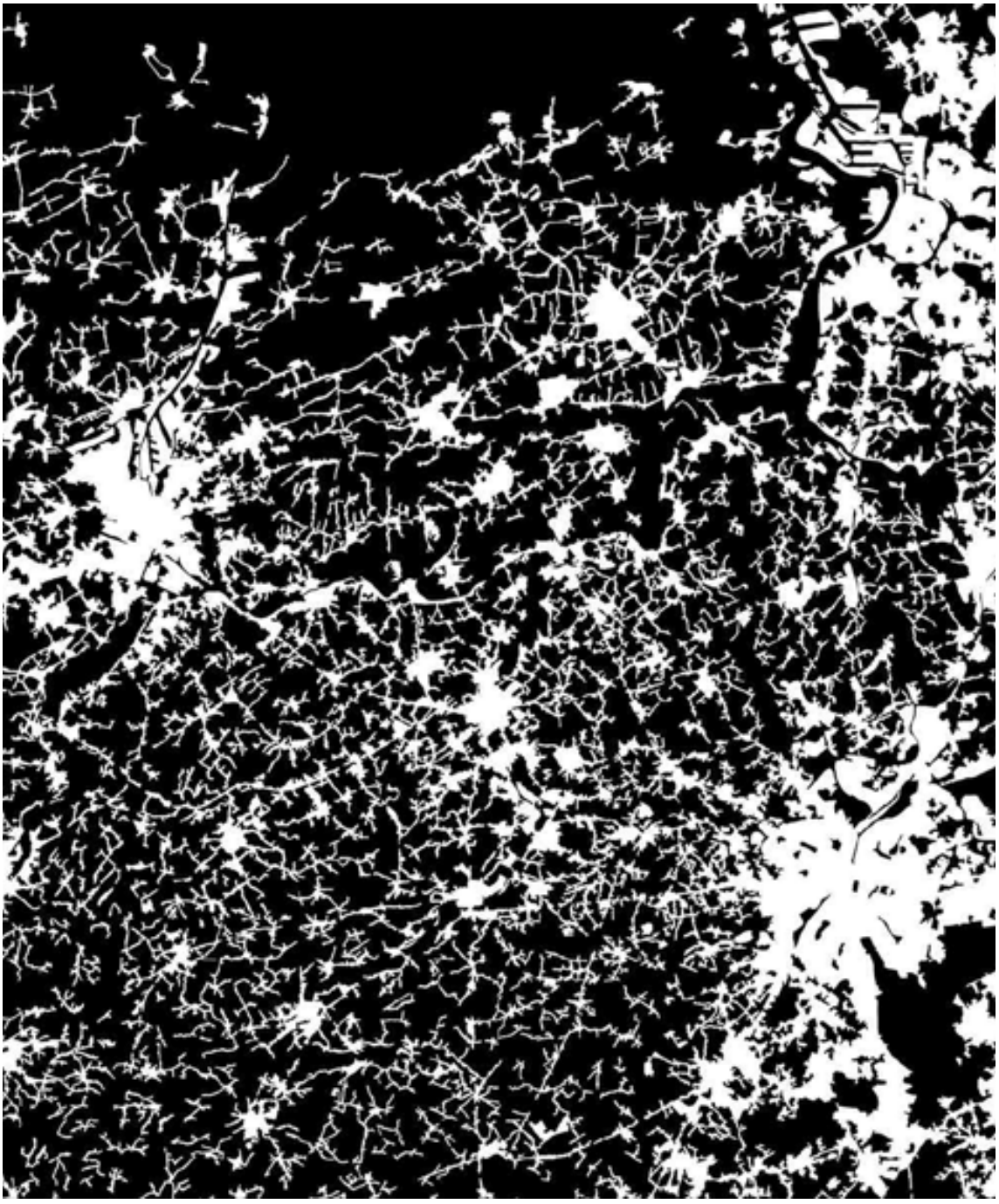
According to Bach (2011), the city is a fragmented extend with different densities, and in constant change. The city becomes a scattered layer of densities, which is connected through the landscape. Only by using the landscape as the lens which the urban is seen through can the future urban environments be sufficient and take into notion that the city is not a static element but a flux of networks interacting in a complex system that eliminates the possibility to foresee every possible outcome.

Back (2011) argues that the contemporary design of the urban environment should leave room for unforeseen developments in projects. That the contemporary approach should include open and process oriented approaches and concepts which take into consideration that the urban fabric is a complicated element which will change over time.

Laursen(2008) goes as far as arguing that the term city is no longer sufficient, that the fusion of the countryside and the city has induced a need to move away from the word city and instead use the notion posturban or urban landscape. This notion is further supported by Høyer (2003) who states that it is meaningless to talk about the city and the open countryside one must merely refer to as the landscape or the new nature. Where built-up and un-built areas are intermingling in a hybrid condition (Laursen, 2008). '*Thus, the traditional conception of the city as being a concentric city with a center and a periphery does not seem to reflect reality*' (Laursen, 2008;143).

This approach can be related to Xaveer De Geyter's (2002) work concerned with 'The Blue Banana', the european mega structure. He illustrates how the area from London to Italy, is an urban field of cohesive cities with no clear demarcation between.

The notions separating countryside and city are no longer sufficient, instead it is part of the same landscape, a landscape which binds together geographically distant areas into an entangled mesh of interactions across prehistoric borders. This notion address a central element in understanding the landscape, not as a static environment. This plays into the notion to work towards goals and processes, rather than a masterplan. Furthermore it can be argued that the clear division between countryside and city is a relic, still present in the danish planning legislation. As design and planning are enrolled in a context and should act as such, it should develop accordingly and be coherent with the contemporary reality.



Ill. 38.1 - An illustration from Xaveer De Geytor's (2002) book After Sprawl, depicting the urban field of Flandern.

CITIES BEYOND BORDERS

The cities are spreading out. People commute to work, education, health and leisure facilities, trade and shopping, culture and nature. The movement has become a basic condition in modern life. One rarely considers local and administrative boundaries when choosing work, education or place of business. Therefore, development strategies and planning that stop at the municipal sign on the highway are far too often inadequate and, in worst cases, completely flawed (Byregioner.dk, 2015). Movements have to be taken into account when seeking to understand the development of danish cities and distance is not only to be seen from the usual geographical point of view, but as a time factor. What can be far in geographical distance becomes close and near (Weiss, 2015).

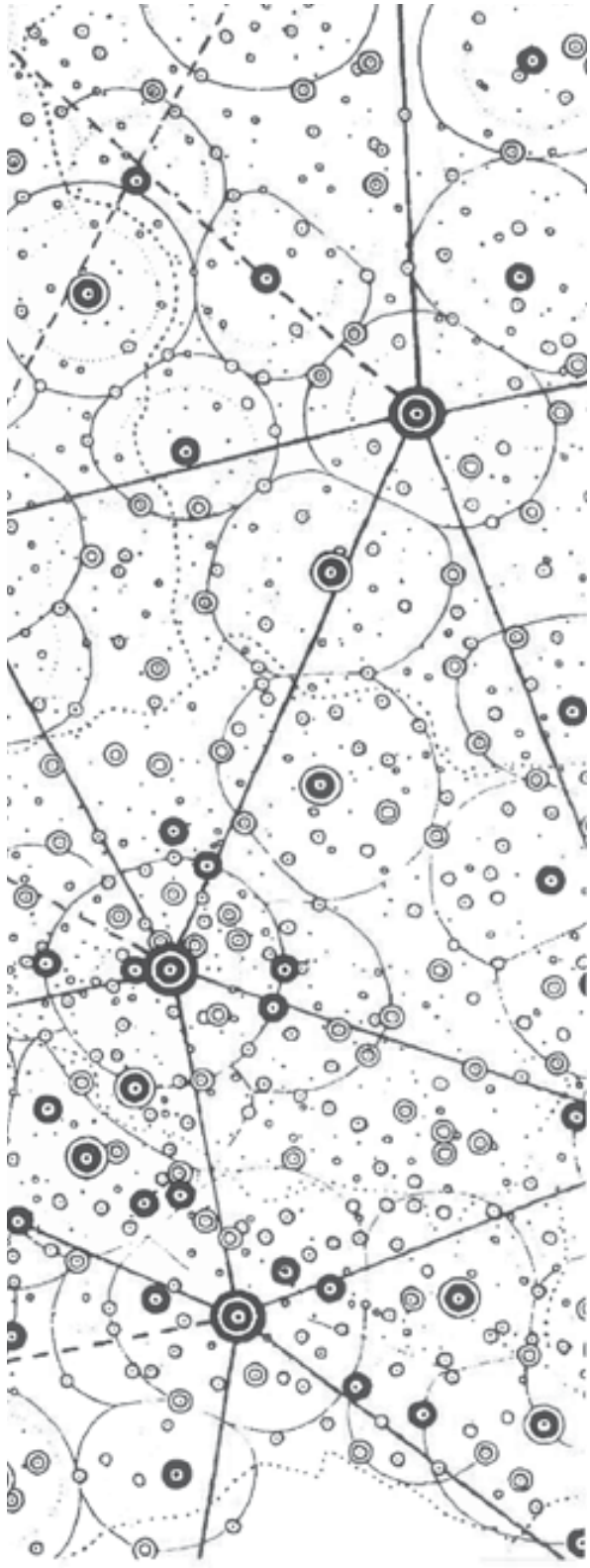
When trying to understand the hierarchy of the contemporary danish cities, these tendencies of an increased mobility are highly relevant. Metropolitan areas, or Urban regions, described as; '*Geographic area based on frequent movement patterns achieves the function of danish metropolitan area'* (own translation; Byregioner.dk, 2015; 5). Are coupled to smaller cities and these are in modern terms described as satellite cities or commuter cities, characterised by a high degree of settlements with people commuting to meet their daily chores.

'*To a large extent, we have already changed the cities: the majority of the urban population no longer live in close and continuous urban settlements, but in 'metapoles', that means extensive, discontinuous, heterogeneous and multipolarized urban territories; There are no longer clear borders between city and country*' (own translation; Asher 2002; 30)

In all regions there are large cities, which become more than just cities, they play a role which spans geographically beyond themselves. A network of cities can be defined as an urban region. A successful urban region is a region, in which there exist a coherence between city and country. Where there is no competition and suboptimization, but where each has found its own role in a web of cooperation (Byregioner.dk, 2015).

'*Whether we want it or not, the big danish cities benefit and affect areas far beyond the municipal- and regional borders. With a wide range of specialized knowledge and services. With traffic problems and pollution. It requires consideration and cooperation. It requires us to understand the movement that binds urban areas together*' (own translation; Byregioner.dk, 2015; 3).

Strong urban regions can exploit the strengths of each region and complement each other functionally. Byregioner.dk (2015) argues that the cities has the opportunity and ability for 'borrowing size' because each city in the urban region has more functions, more jobs and a greater workforce than what traditionally is found in a city with that volume. Furthermore they describe it as a win-win for citizens, businesses, municipalities and regions as well as the whole country.



Ill. 40.1 - Polynuclear city structure of southern germany. It can act as a diagram of the city on many different scales. As an urban field of villages and larger cities that are connected by roads. As a neighborhood in the city with its collection of larger and smaller systems and connections between them. The principle is recognized from Ebenezer Howard's 'Garden City', but without the clear hierarchy between a center and some suburbs.

'*We municipalities should not all be able to do the same, but we must complement each other much more. We are not competitors, and this way of seeing the world have we come far with in Esbjerg, Fanø, Tønder and Varde. We agree on the term that we should link our strategies to infrastructure, cultural services and industry/proffesions. Some are strong on food, others on tourism and others on energy. The focus on strengths, we must develop even more'* (own translation; Johnny Søstrup in Byregioner.dk, 2015; 7)

Understanding the danish urban regions and patterns of movement behind, means the ability to work targeted with development and planning strategies that support the good life and growth of the entire region, across administrative boundaries. It is important to recognize that cities are no longer a singular unit, but part of a greater context, both regional, national and global. This interconnection creates a demand for each area, city or region to identify their role. This demands new ways of defining areas, it is no longer defined by geographical restrictions such as municipality borders and city limits, or by the number of inhabitants, instead cities and regions are defined by the number of interactions between places. A region is not dependent on size, it can be geographically small or large, the number of inhabitants is of limited importance, instead the interaction between actors is what defines an urban region.

CHAPTER CONCLUSION

So far the thesis has introduced the densely populated Denmark as a small country in a globalised world, with its long coastline and many islands. The current land application of the 43.000 sqm of land, is far from sufficient if all wishes and demands are to be accommodated. therefore it is necessary to prioritize or investigate hybrid fusions accordingly. Yet this is difficult when reflecting upon the political structure and increasingly liberalised agenda. As articulated the danish pracsis is built so that the remnants of former regimes, continue to structure the present (Carter et. al., 2015), this means that coming political involvement most likely will be built upon the former and existing approaches.

Nevertheless it is argued that the conditions and the legislations are out of sync and that these should be in accordance with the subjects they are to mold. As the designed layout and the legislation controlling the former are highly intertwined and consist a great influence in the way the landscape is utilized. Thus it is demanded that a prioritisation will occur, where legislations and national strategies needs to be incorporated in order to meet to future demands.

The many demands for land application, calls for an understanding of a place and its context. Just as the separation between city and countryside has started to vanish so has the understanding of place as independent from others. It is not beneficial to see places as cut off from others, everything participates in a highly complex system of physical- and mental elements. Thus, this thesis argue that the concept of land and city, aren't sufficient and should be understood as an intertwined landscape.

As existing and potential land application is highly influenced by the eyes that see and the scale from which it is seen it is important to comprehend the overall image as well as the local, in establishing how a certain area will interact in the network which it finds itself part of. This notions also brings into play that every area do not necessarily need to offer everything, a differentiated approach to each area is necessary. One where the local potentials is seen in the greater context, where the danish landmass is seen as a land of opportunities.

A NATIONAL TRAJECTORY

This chapter is proposing a different direction to understanding the Danish landscape, it is an investigation of how the landscape, as the binding element, can influence the future layout of Denmark. By looking into nature, production and settlements, it will propose initiatives to political- and design oriented solutions.

As previously mentioned (see page 22) the Danish planning legislation are divided into three zones. With all the changing elements within the Danish society and a future that are going to be significantly different from the past, one might ask why is this the case?

At the contemporary state, the agricultural production, which is all lumped together as one entity and not defined by its scale or output, share space with forests, dry habitats, wetlands and lakes. This is separated from urban areas, located in the Urban zones and cottage zones (Kristensen and Primdahl, 2009).

It would be beneficial to distinguish between different types of agriculture so they are not naturally separated from urban areas. Furthermore, It could be an advantage to think the human presence into green structure to a higher degree. As Tom Nielsen argues (Nielsen in Steensgaard, 2010) settlements in association with nature, can be a means for saving set area, the same goes for other function where nature may play the role as a neighbor, mentally and actively. Thinking humans and animals together could benefit both parties. Whereas the agricultural production are increasingly distanced from natural habitats, in their presence and their needs and should be characterised, not by their profession, but by their characteristics, output and environmental impact.

Arler, Jørgensen and Sørensen (2017) argues that through municipal planning, the open country should be divided into areas where local targets and guidelines for land use and land administration are set for each area giving the municipality and its citizens a common basis for promoting a desired development.

It is proposed that the concept of the land zone is rethought so that it contains greater governance and clarity than today, where many different purposes are to be met in the same geographical area. For this reason, work in rural areas and the open country, could be divided into zones and areas for different purposes, to create investment security for high-productivity export, energy production, nature and recreation and various forms of settlement in a well-balanced system that will be incorporated into the future planning.

The chapter will as part of the overall question investigate and propose answers to the questions such as:

How and where should a continued expansion and investment in the capacity of large agricultural operations take place?

Where should the environment be adapted to the agricultural activity?

Where should agricultural land use be limited to create biodiverse and recreational nature?

Where should agriculture be suspended in vulnerable landscapes?

Where should the large energy landscapes of the future be located?

Where can the energy production be located in synergy with a biodiverse and recreational nature?

How and where should the politically motivated wishes for increased settlements and further business development be concentrated as well as transport facilities, in order to cope with an increased population and allocation of existing?

Where are buildings (housing, commercial buildings and farm buildings) and infrastructural facilities to be demolished to avoid further physical and visual deterioration and decay?

Efforts should be made for a future model with an additional number of different zones than practised today. One where conditions for residential and commercial development, in the long term, are differentiated. The main principles behind this idea are, first of all, to build investment security for future businesses and future homeowners. Secondly, more care must be taken for people living in the open country and in villages, and thirdly, more care must be taken for the development of nature.

In continuation of this priority task, decisions must be embedded in the physical planning and design, so that the development of the given locality can be defined through conservation zones and conversion zones.

The next section is divided into three main subjects, nature (Forests, dry habitats, Wetlands and lakes) (page 47), production (agriculture and renewable energy) (page 65) and settlements (page 89). It is important to stress that the separation is done to clarify each subject, but in reality, the three subjects are highly linked together.

Ill. 46.1 - GIS material depicting forestation, wetlands, streams, lakes agricultural field, wind turbines, roads, railways and buildings in central Jutland.

FORESTS, DRY HABITATS, WETLANDS AND LAKES

What does one mean when talking about nature? Nature can be defined in many ways and in the daily management of nature, nature is not only something where one stand on the outside. One is part of nature. Therefore it is important to be aware of the ideas which creates the basis for discussions on nature management (Fink, 2003). For the benefit of the reader, this thesis uses, when referring to nature, the understanding of nature as being the green elements, as described by Hans Fink (Own translation; 2003; 3);

'... we also understand nature from a contrast between the living, organic and the low technological on the one hand and the mechanical, synthetic and high technology on the other. Nature is still the world as it was originally, but now understood as being ahead of some industrial breakthrough. Nature's border also goes inside the city and inside the houses. Gardens, parks, plantations on roads and squares - even potted plants, race cats and aquarium fish can be seen as nature as opposed to cement, asphalt and plastic things.
Highlighted cultural products such as planed wood, bricks, butter, leather, paper, wool, cotton and silk, which in the perspective of nature in the first three scenarios must be considered to be the opposite of nature, have fallen back as - or advanced to - natural products in the last decades. Not because they have become less processed, but because even more synthetic products have emerged, such as Plywood, particle boards, concrete elements, eternite, margarine, nappa, plastic, nylon and acrylic. Natural paint is neither more or less pristine, wild or rural than other paint; But because it is non-toxic and biodegradable, it can rely on greater naturalness than both oil paint and plastic paint.'

Ill. 48.1 - GIS material depicting forestation, wetlands, streams and lakes in central Jutland.

NOT JUST ROMANCE BUT A NECESSITY

The danish landscape is characterised by its soft rolling hills, created by the forces of ice and water. It is an undramatic landscape, but a landscape where the variety is large (Høyer, 2003). The open views and scattered vegetation is dominating the experience when moving in the danish countryside, but the health of the danish nature is being challenged by an increasing urbanization and intensive agricultural production (Danmarks Naturfredningsforening, 2016a).

A healthy and well thriving nature has many potentials, it does not only benefit animals but humans as well. The nature has often been neglected compared to other agendas such as production or city expansion due to the difficulty of valuing the economic benefits of nature.

'*The failure of society to place a value on nature has resulted in the degradation of ecosystems, a consequent reduction in ecosystem services, has contributed to a significant decline in biodiversity*' (Jones-Walters and Mulder, 2009; 245)

The danish nature is today experiencing a decline in the number of animal species. An international report ranks Denmark as number 26 on a list of the 47 european countries, based on biological diversity (Danmarks Naturfredningsforening, 2009). Nature can play many roles in the sustainability of the danish society. A significant amount of research points towards mental benefits from being in contact with nature, and that being around free living animals increases happiness (Gilchrist, 2011). Research also points towards economic benefits of settlements being close to nature parks (Heagney et. al., 2015).

According to Heagney et. al. (2015) areas adjacent to new nature parks experiences an increased demand for new settlements, which increased both the municipality tax revenues, tourism and the demand for new physical structures such as buildings and infrastructure. The implementation of new protected nature parks also attracted business, both national and international companies, which then again attracted inhabitants and so on (Heagney et. al., 2015). Economic considerations play an important role. Not all biological and landscape values can be valued in money, but in some cases it has been found that the economic gains on nature improving projects are greater than the economic losses (Arler, Jørgensen and Sørensen, 2017).

A well-known example is the recovery of Skjern Å's river meanders, which is the most expensive nature restoration project conducted in Denmark. A cost-benefit analysis from the Agricultural College (Landbohø-

jskolen) showed in 2001 that the costs would be redeemed in less than 20 years (Arler, Jørgensen and Sørensen, 2017).

'*... protected areas presented new opportunities for regional growth and development: protected areas led to increased local housing demand, stimulated local business investment, and improved local financing*' (Heagney et. al., 2015; 1656).

The european Union has a goal of stopping the decline in species of animals and plants. This makes Denmark obligated to insure that the decline is stopped by 2020 (Danmarks Naturfredningsforening, 2016A). To achieve this goal, the european Union has appointed a list of areas which feature special species of animals or plants which is to be protected, they are called Natura 2000 areas (Svana.dk, n.d.). In line with this, Denmark has appointed five nature parks (Nationalparkthy.dk, n.d.)(see illustration 51.1).

The protection of wildlife habitats is primarily done to insure that wildlife will continue to maintain a certain degree of diversity. Biodiversity is crucial to the welfare of the ecosystem, extinction of animal species can potentially lead to unforeseen changes in the ecological system and when a species is extinct it is not possible to revive it. A healthy and well thriving ecological systems grants many benefits such as protection of water resources, pollution breakdown and absorption, food production, medical resources and pharmaceutical drugs, recreation, tourism and cultural values. (Shah, 2014)

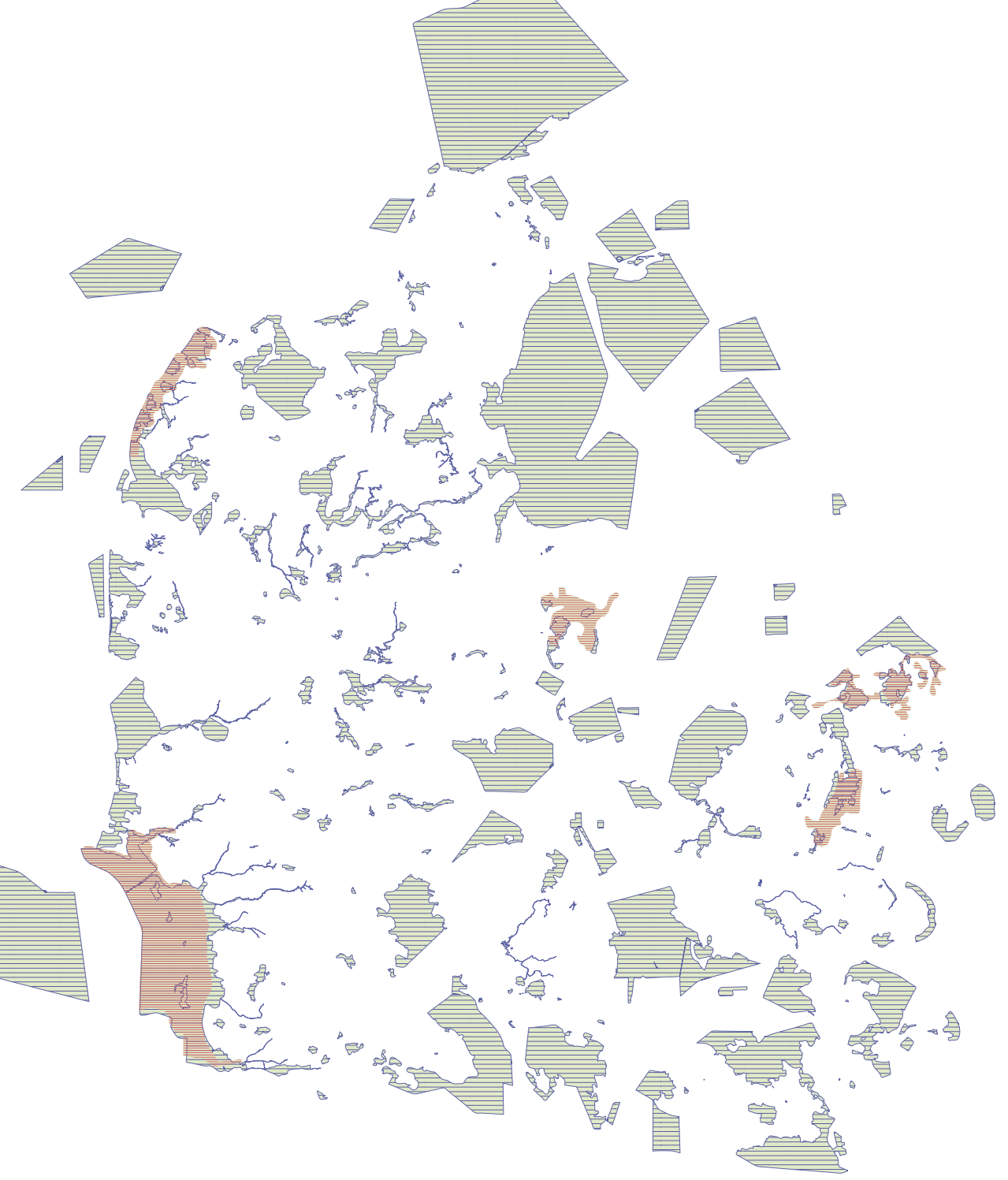
With the fusion of city and countryside (see page 35) there is, according to Nielsen (2011), created a situation where areas, which before were perceived as non-urban, are increasingly becoming urban. He argues that the increased mobility has transformed forests into a park, that people are starting to use the forest for activities that normally were restricted to urban environments, for example illegal rave parties. This also illustrates an increased awareness of the value of nature, with the increased access to places, natural environment will attract people that normally would not spend time in natural environments.

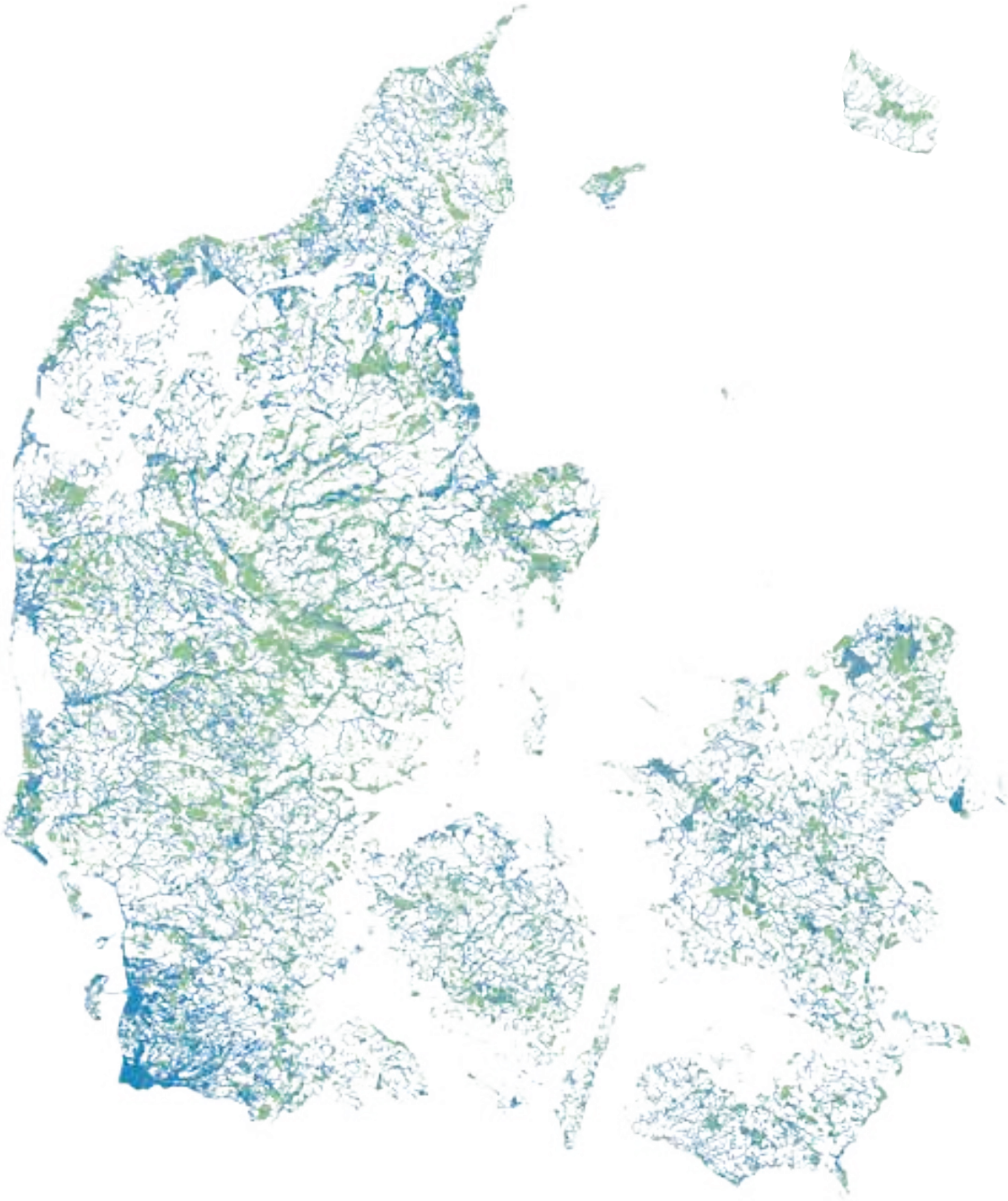
A well thriving and healthy nature is not only a romantic demand but have economic benefits, ethical obligation and will be an important factor in the future wellbeing of the population. Therefore it is important that Denmark, at a national level, addresses the problem on how to insure further well being of the natural environment. This raises the question: What if the landscape could offer a well thriving nature as well as spaces for production?

Ill. 51.1 - Natura 2000 and national reservations.
Denmark has, as of 2017, five national parks and a number of natura 2000 areas. The protected areas are selected due to a high value, both national and international, with some of the most special types of nature within Denmark. The areas provide possibility for people to experience the rare nature scenery with rare animals, plants and topography. The demarcation as a national park or Natura 2000 does not necessarily eliminate the possibility to conduct agricultural activities as long as they are conducted in a environmentally friendly fashion.

Ill. 51.2 - Lakes, ponds, wetlands and forest.

Ill. 51.3 - Elevation curves for each 20 meter. The danish topography can roughly be divided into two areas, one west of the segregation line, which is a flat sandy landscape and one to the east of the segregation line, where sub glacial formations is dominating, creating a hilly landscape with rolling hills. The subglacial formations are often conducting streams and containing wetlands creating attractive environments for many species of animals and plants.






National park
Natura 2000
Main stationary line
N
1:2.000.000
0
25
50
75
100 km

A PHOTO INVESTIGATION OF THE LANDSCAPE IN NORTH JUTLAND

Ill. 57.1-12

The pictures on this page is taken during the field trip across North Jutland the 21 (see appendix 01). of February 2017. The pictures are selected on the basis that they represent a wide range of the experienced landscape during the trip. Worth noticing is the soft rolling hills, the high degree of cultivation and presence of water. These are all elements which is dominating in the landscape, and a part of the danish identity. The danish landscape is often open with vast views above the cultivated fields, making the horizon and the surface the two dominant elements when experiencing the landscape. As seen on the pictures is the danish landscape an interesting scenery, not because of the big differences but because of the small details as the meeting between water and land and the edges between forest and cultivated fields.








THE GREEN CORRIDOR STRATEGY

When seeking to increase the biodiversity, an important element is to provide a basis for creating more coherent nature with a rich animal and plant life. The designated areas must develop core areas and improve and connect the livelihoods of the animals. Both rare and endangered species must be taken into account, better living conditions for the common species and improvement of the value of nature to improve people's experiences, recreation and outdoor life (Arler, Jørgensen and Sørensen, 2017).

The borders created by large infrastructural systems must be avoided. By elevating the infrastructure allowing both animals and humans to connect with the opposite side (see illustration 60.1). Furthermore, the green corridor strategy can be a framework for new super bike path and natural trails.

These green corridors should stretch across the landscape and connect important biodiverse patches. The coherent green corridors protects important ecological areas as well as allowing wildlife to move unrestricted across the danish territory.

These green corridors could often be located at the bottom of the subglacial formations which is created during the last ice-age, a map of the subglacial formations can be seen on illustration 51.3, these areas are often used for agricultural purposes, but as Arler, Jørgensen and Sørensen, (2017) highlights has these areas often very little economic output for the farms, and they would presumably be interested in swapping these areas with more economic beneficially.

'*'Lavbundsjorde' often only has a marginal economic value for agriculture, while recreational activities after a nature restoration can have great economic value for the local community*'. (own translation; Arler, Jørgensen and Sørensen, 2017; 30)

Ill. 60.1 - Infrastructure complementing biodiversity and pedestrians. By raising certain streches of highway, the barrier is abolished and the animals and people can roam free beneath the highway.

Ill. 60.2 - Windturbines in natural habitats. A means for securing biodiverse habitats, could be to bond it with fields of windturbines.
A reference could be the test center for wind turbines in 'Østerild Klitplantage' (Gram, 2017).

NATURE IN RELATION TO ZONING

Increasing the size of the nature is not a simple task and reserving new areas in addition to existing areas for wild nature will force other activities to limit their space. Especially the agricultural sector will be forced to rethink production if the output should maintain the current level. The reshaping of the rural landscape demands collaboration between many different interest groups and affords experimental and new initiatives across different sectors. It has to be a cross-disciplinary action between environmentalist, farmers, planners, politicians and citizens, when working towards a common good where production, settlements and nature is accommodated.

Means for securing preserved and thriving nature, can be of many solutions. An important point here, is that the solution is not to be found in one singular trajectory, but in a variety of well thought out schemes.

It can be something as heavy handed as regulating conservation of an area, as with the case of 'natura 2000', national parks etc. It can be by thinking settlements in with the nature as a synergic relationship, improving quality of both. It can be in relation to infrastructural connections and recreational routes, as a means for improving the mobile situation. Finally it can also be wild habitats roaming the ground of a farm of wind turbines (see illustration 60.2). The solutions are many and it is in the many that the quality is found.

Utilization of land in relation to nature

As a mean to maintain and enhance the wellbeing of the nature it is beneficial to distinguish between different degrees of land utilization. By defining the landscape in accordance with its significance and characteristics, one can begin to discuss its utilization and relations to other functions.

Illustration 62.1-3, depicts three scenarios with different degrees of utilization. Dividing the landscape into multiple zones will greatly benefit the environment, as well as creating forward security for investments with long time goals.

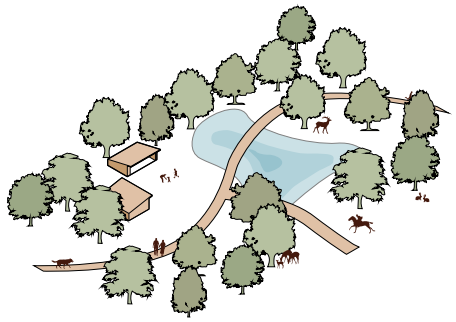
Highly valuable areas (illustration 62.1) will be areas that includes elements such as wetlands, swamps, sand dunes or low lying areas where the groundwater level is high. Those areas are often found in the bottom of the subglacial formations or low lying areas. High valuable areas will have limited possibility for future production as it will risk the wellbeing of the ecological systems. Instead of production those areas would be optimal for nature trails, outdoor life and wildlife. The high valuable areas will increase the value of nearby areas and attract new inhabitants and companies.

Areas in close proximity to highly valuable areas can functions as a transfer zone (illustration 62.2) between high- and low value areas. In these areas the possible to conduct sustainable farming can occur (as elaborated on page 75), as long as it is done in respect of the natural habitats and settlements. The areas should be easily accessible for both humans and animals with well developed pathway systems. The possibility for free-range livestock and sustainable

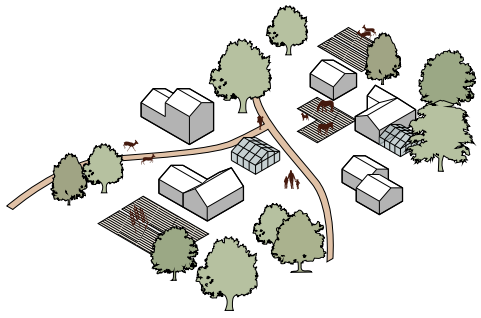
forestation will be possible, in order to maintain a certain degree of production and to maintain natural habitats. These areas will be ideal for developing new settlements as they provide a mixture of production, mobility and nature.

Low value (see illustration 62.3) areas are often rather flat and high ground, with low groundwater, low biodiversity and monotonous fields stretching as far as the eye can see. These areas will often include very little to no forestation or wetlands and will provide opportunities for large scale agriculture and production (see page 75 for elaboration). The areas of a low value, will have less inhabitants as they provide very limited positive elements, such as access to nature, public maintenance of roads and very limited public transportation. Instead they will be highly productive environments where energy (as elaborated on page 83) and large scale agriculture farms (as elaborated on page 75) can increase their productivity at the expense of the experienced environment.

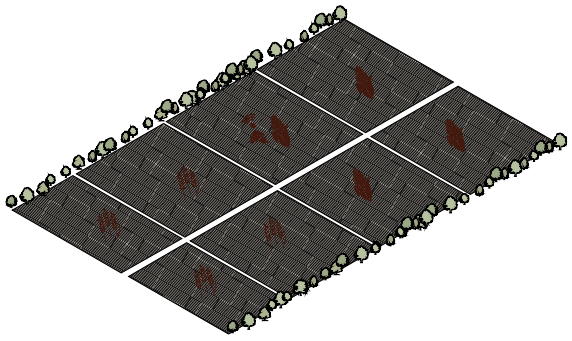
A tool to recognize the value of the landscape could thus be implemented as a three zoned division ranking areas according to the degree of utilization versus the sensitive natural habitats. It will be up to the government, the regions and each municipality to appoint which areas are suitable for what type of value.



Ill. 62.1 - High value



Ill. 62.2 - Medium value



Ill. 62.3 - Low value

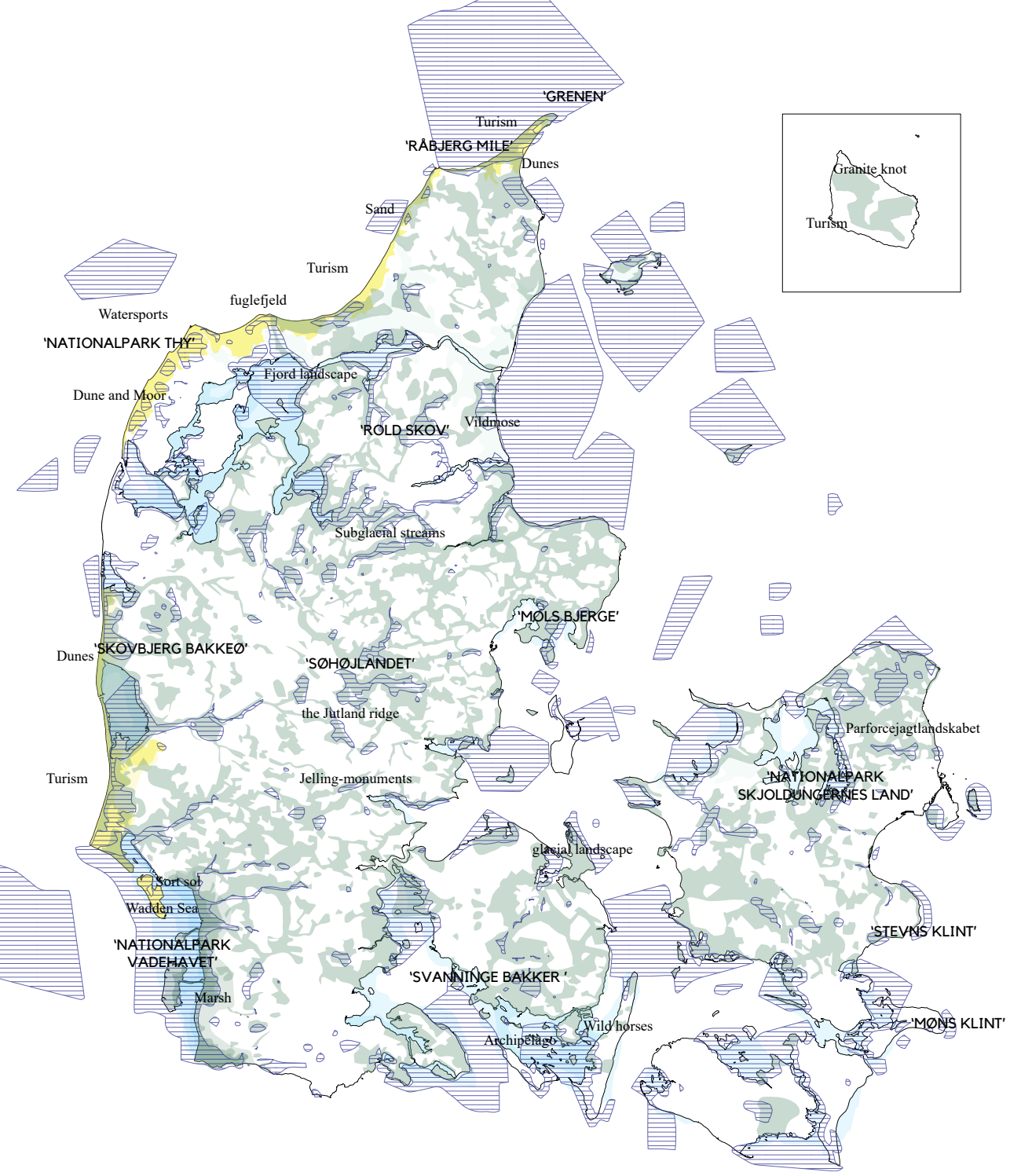
CONCLUSION OF FORESTS, DRY HABITATS, WETLANDS AND LAKES

The map to the right (illustration 64.1) shows an overall approach to the Danish territory where the topography, nature parks, existing forest and lakes (see page 51.1-3), geological important areas, soil types (see appendix 03 and 04) has been used to create a foundation for coherent green corridors which stretches across the landscape. The coherent green corridors protects important ecological areas as well allowing wildlife to move unrestricted across the danish territory.

The new ecological connections will be made up of high and medium valuable nature types (see page 61). These areas will enter into the future layout of the country, not as protected areas but as areas where there needs to be an increased focus on maintaining and improve the quality of the nature. This means that the areas can, to some extent, work as hybrid environments where production and settlements can take place as long as it in coherence with the natural habitats.

The map is an overall guideline which establish a foundation for discussing the future of Denmark and will function as a guideline for further work as the precise location and character of the different areas needs to be made in an interdisciplinary collaboration between many different scales, with each location seen in a greater context.

With a unified collaboration between national and local interest, the trajectory for- and the discourse of the territorial distribution can begin. A trajectory where the attractive landscape can become the linking element, giving people the opportunity to move in contiguous green areas with unrestricted access to the common property, Denmark.


'GRENEN'
Turism
'RÅBJERG MILE'
Dunes
Sand
Turism
fuglefjeld
Watersports
'NATIONALPARK THY'
Fjord landscape
Dune and Moor
'ROLD SKOV'
Vildmose
Subglacial streams
'MOLS BJERGE'
Dunes
'SKOVBJERG BAKKEØ'
'SØHØJLANDET'
the Jutland ridge
Turism
Jelling-monuments
Parforcejagtlandskabet
'NATIONALPARK SKJOLDUNGERNES LAND'
glacial landscape
Sort sol
Wadden Sea
'NATIONALPARK VADEHAVET'
'STEVNS KLINT'
'SVANNINGE BAKKER '
Marsh
Wild horses
Archipelago
'MØNS KLINT'
Granite knot
Turism
National park
Natura 2000
Ecological connections
N
1:2.000.000
0
25
50
75
100 km

Ill. 64.1

PRODUCTION AND PROFESSIONS

In the section of production and professions this thesis will mainly focus on the most of all space requiring facilities; agriculture which make up 66,3 percent of the danish territory (as mentioned on page 17) (Danmarks statestik, 2016), and energy production, which is to be 100 percent renewable by 2050 (see page 78), and therefore is predicted to require 15 percent of the land mass (Arler and Madsen, 2015).

People tend to shift between workplaces multiple times during their lifetime (Sennett, 1999), this affords settlements in association with certain areas. On illustration 66.1, it is visualized how the largest amount of workplaces within an one hour drive can be found close relation to the larger cities and along the highway. This illustrates a link between the infrastructure and the amount of available jobs. Jesper Bo Jensen (2016) argues that work and the geography of work and its infrastructural location is important factors. Generally people move according to their everyday life. Additionally to this, there is also an interest from the employers to locate office spaces and facilities in association with the potential workforce.

'*The factories are closing down, the workplaces are being moved and the young people are looking for something completely different than the (rural located) city can offer. Although they are happy about their hometown, they do not see a future or exciting job opportunities when they come fresh, excited and energetic back from their studies. The modern world - the future - lives somewhere else. In the big city*' (Smarason, 2016;17)

Despite of the job density concentrated in urban regions, 'Danmark på Vippen' (2015) argues that production in Denmark is not limited to the large cities, in fact, much of the revenue is generated outside the large cities. Especially agriculture, industrial production and movement of goods happen outside the large cities and make up the primary income in Denmark (Danmark på Vippen, 2015)

'*When we look at which professions actually brings money home to the country and thus generate a surplus on the balance of payments abroad, we live in a Denmark of industry, agriculture and shipping as well as servicing of industrial plants in the form of mines, wind turbines, cement factories, etc. As well as retail abroad, especially in the form of Net, Jysk, Bestseller and others'* (Hvidbog, 2015; 130).

Dybvad (2015) contradicts the belief of Copenhagen as a 'dynamo for growth' necessary to attract international interest for investing in Denmark. He argues that the financial capacity of the province is larger than normally depicted, in fact he states that the metropolis' is dependent on the province.

These notions lay basis for understanding that there exist mutual dependence between the rural areas and the metropolitan areas, there exists a symbiotic relationship where one needs the other and vice versa.

The increasing automatization of work, due to the increasing knowledge and implementation of robots into a variety of jobs (as introduced on

page 7), creates a situation where, on one hand, the production in the rural areas will increasingly be done with minimum interference by people and on the other hand it will require people to maintain and develop the automated production which result in a continued need for people on the countryside to maintain economic profit, but a decreasing number compared to today.

As Denmark is not only a knowledge based society, will the demand and necessity to maintain some production in the rural areas remain in proximate future. The difficult question is which types of production and under which conditions. To a certain degree, much of the production which today happens in the rural areas is located there, not because they are physically restricted to the location, but because that is the location where they happen to be. One of the only types of productions that is physically restricted to certain rural areas are the agricultural sector.

This argumentation of economically dependency on production, creates a situation where it is necessary to maintain some production in rural areas, mainly agriculture and renewable energy. This leaves little space for nature and settlements, yet it is of utmost importance that all these elements are present.

As argued (on page 20) there is a need to increase the area for renewable energy sources like biomass while maintaining large agricultural production, if these are to be implemented a prioritization must take place.

Ill. 66.1 - Accessibility to workplaces, 2015 (Region Syddanmark, 2015)
The colors on the map show how many full-time jobs that are found within an hour's drive by car from the concerned area by 2015. German jobs (2014) are included. The measurement are made At. 08.00.

A DIVERSE AGRICULTURAL PRODUCTION

A changing agricultural scenery

Agriculture has historically speaking been the leading force in the Danish economy, and Denmark has defined itself as being an agricultural country where farming is a central part of the identity (Nord, 2004). The intense cultivation of the landscape has, as mentioned on page 17, created a situation where 66,3 percent of the Danish landscape is covered by cultivated fields (Danmarks statestik, 2016).

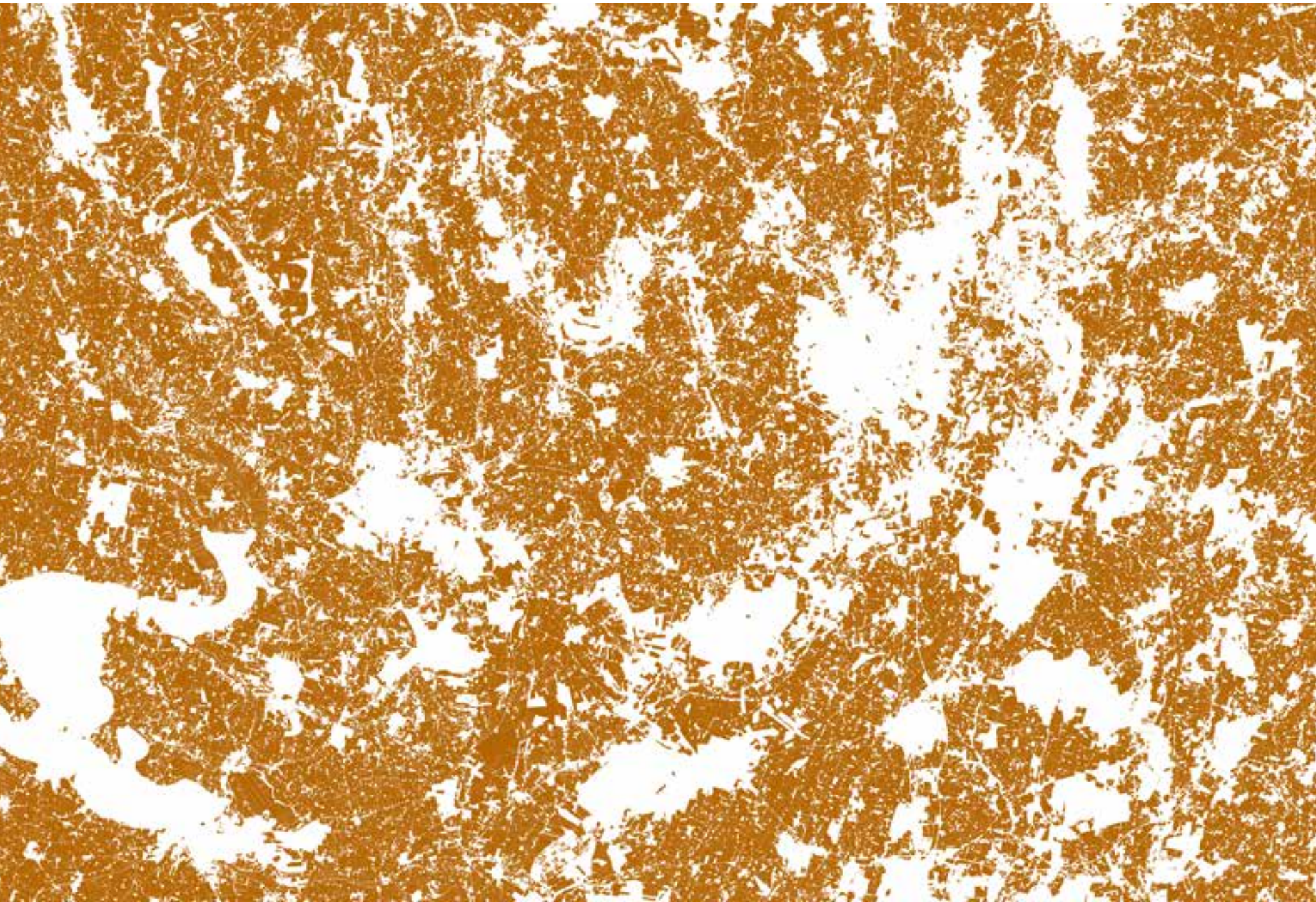
The agricultural sector is experiencing large structural changes, the number of individual farms is decreasing and the size of the remaining continue to increase. In recent years, the numbers of farms above 400 ha, has grown exponentially (Danmarks Naturfredningsforening, 2016b; Caspersen and Nyed, 2017).

furthermore, the size of the individual field is rising, creating large monotonous areas with little diversity and limited access to people (Aagaard, 2017). The larger and more efficient agriculture has changed the experience of the Danish landscape where one of the most eye-catching developments is the presence of abandoned farms scattered throughout the Danish countryside, while the still functioning farms is increasing in scale, with larger stables, silo etc. (Caspersen and Nyed, 2017).

Gravel roads between the fields, which creates a unique possibility to experience the landscape first hand, is being demolished when small fields are consolidated, obstructing both movements of people and animals. (Aagaard, 2017). The romantic view of the Danish farms as being a small family farm has vanished and instead the farms work as large corporations with few employees, specialised, autonomous and monotonous (Nord, 2004)

The is little reason to believe that the current trajectories within agriculture is brought to a stop, instead, the farms and the fields will most like continue to increase in size along with the larger and large machines. The number of people working within agriculture is already dropping and this can only be assumed to continue as the introduction of modern technologies will outmatch human labour in price and speed.

Ill. 68.1 - GIS material depicting agricultural fields.



Revenue and environment in antagonism

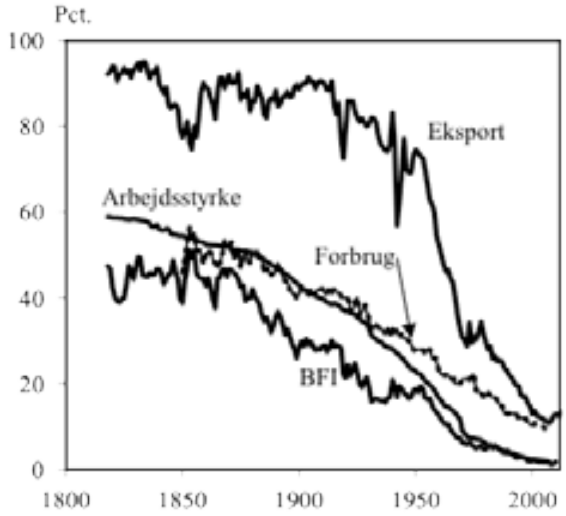
The Danish agriculture produces three times as much food as it takes to feed the Danish population, which results in a large export to other countries, generating a high profit for the Danish society (Danmarks Naturfredningsforening, 2016b). Each year the Danish agricultural sector generates approximately 70 billion Danish crowns, which makes agriculture the highest earning sector in Denmark (Danmark på Vippen, 2015). The economic benefit is in great contrast to the environmental consequences which are high groundwater pollution, lessening of biodiversity and limited access to natural environments for people. Yet, statistics show that the economical importance of agriculture is decreasing in Denmark (see illustration 70.1), which is a general development worldwide as the economical welfare raises (see illustration 70.2). It can therefore be assumed that the development will continue as long as there is economic growth, thereby creating the opportunity to transform some part of the cultivated land for different purposes. On the other hand, this is still uncertain, as the climate changes may pressurises the global food production, there is a possibility for an increased importance of the danish food production.

These contradicting elements have for many years fostered the foundation for an ongoing battle between environmentalists and farmers (Nord, 2004). Where one side is arguing that the larger and larger fields are diminishing the biodiversity and limiting the access to the nature while the other side argues that the society needs a well functioning agricultural sector as it generates revenue to the danish society. A way to overcome this tendency could be to introduce smaller fields which utilise hedgerows and ecological connections to shelter biodiversity and create pathways for animals. On the other hand, this would limit the large-scale benefits of large fields, which yield more beneficial production conditions, and thereby increasing the cost to production ratio.

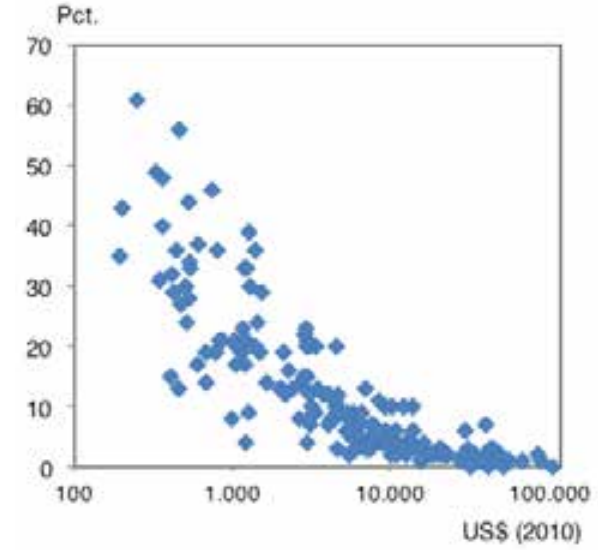
Another approach could be to use production animals in preserving valuable natural areas such as moors, woods and pastures which need to be maintained to sustain optimal conditions and not be overgrown. ‘Danmarks Naturfredsningsforening’ (2016a) highlight that there is a need for 10.000 animals to sustain the current high valuable natural areas, in the future these could be production animals held in a way which allowed visitors to cross the fields.

Agricultural production are increasingly distanced from natural habitats, in their presence and their needs and should be characterised, not by their profession, but by their characteristics, output and environmental impact

In the future there will be a need for producing large quantities of food, for the local- and global market so this raises the question: What if agriculture could be conducted in a way which generates economic income, as well as provide opportunities for people and animals to experience the landscape unobstructed?



Ill. 70.1 - The importance of agriculture in the long term in Denmark.
The declining importance of agriculture over time is far from a unique phenomenon in the danish context. On the contrary, there is a clear international pattern in the sense that agriculture's share of production, employment and value creation fall due to increasing economic welfare. (Hansen, 2016)



Ill. 70.2 - Agriculture's share of the country's total BFI as a function of GDP per capita. inhabitant.
The figure shows the correlation between each country's economic development level (GDP / capita shown on logarithmic scale) and agricultural value creation (BFI) as a proportion of the country's total BFI. Each dot marks one country. As seen, there are, despite major differences in the countries, a clear tendency for agricultural decline in relation to increasing economic development. (Hansen, 2016)

A PHOTO INVESTIGATION OF AGRICULTURE IN NORTH JUTLAND

Ill. 71.1-12

The pictures on this page is taken during a field trip across North Jutland the 21. of February 2017 (see appendix 01). The pictures show a selection of danish farms along the route. It is worth noticing the size of the farms, where the largest of them is also the ones in best condition, many of the farms on the pictures are worn down and left as relics of a distant time. The farms are often located along a main road with fields that stretches all the way up to the buildings. The scattered farms are, along with the vast fields (see page 57), a distinctive element in the danish countryside and plays a central role in the danish identities (see page 67).

MORE THAN JUST FOOD

While farms are closing and fewer farmers manage their own production, yet more young people are entering the agricultural schools. Jørgen Møller Nielsen (2016B) sees this as a signal of new breakthroughs and that new thoughts are on the way in a pressured profession.

What is interesting for the young people are the values attached to it, the green, sustainability, production of food, working with animals and a sense of being 'grounded' in relation to smaller farms (Nielsen, 2016B).

This, and the tendency of self-sufficient food production or urban farming, testifies that the future food production is not limited to the highly effective production landscape, if the right measures permit it. It lays a basis that challenge the assumption of antagonism between the city and agriculture in all cases, as one could image a possibility for this sort of food production being in harmony with settlements and nature.

The interest for self-sufficient food production, can also be projected to the project Regen-village by EFFEKT (EFFEKT, n.d.), a model striving for local community-based farming, ensuring supply and sustainability on site.

Ill. 74.1 - Regen Village An example of a Self-sufficient community drawn by Effekt (EFFEKT, n.d.)

Ill. 74.2 - Japanese architect Kisho Kurokawa designed in 1960 the "Agricultural City". Kurokawa challenged the assumption of antagonism between the city and the country (ArchEyes, 2016). This ideology can be portrayed to the concept of small agricultural activity, either self-sufficient or hobby farming.

AGRICULTURAL PRODUCTION OF THE FUTURE

This section proposes a different direction for agriculture in Denmark, one where there is room for economic profit, thriving nature and unobstructed access for people. By dividing the agricultural sector into three subcategories,large scale industrial farms, small sustainable farms and self-sufficient production (see illustration 76.3) this will be possible to achieve.

The large scale agro-companies will mainly focus on highly technological based production, and often be large international companies where the quantity of the production is in focus. The sustainable farming focuses on environmental, economic and social sustainability, and will be beneficially located in areas where people and animals have their daily routines. The self-sufficient production will mainly take place in cities at a local scale, where inhabitants can grow their own food as a supplement to commercial bought food. The three diagrams to the right show the conceptualized distinction of the three typologies.

Super Agriculture - highly productive and specialised environments.
As formerly stated (see page 67), the number of farms is decreasing and the size of the individual farms increasing. The drive for efficiency to production are not showing signs of diminishing or stagnation.

The agricultural superclusters of the future (see illustration 76.1) are of an economical interest for society, they are difficult to escape, if not impossible. Therefore this thesis suggests for a controlled amount of high efficient agricultural clusters, located in areas that is of little ecological importance (see page 61 for further explanation). The fields will be highly optimised for large scale production with vast fields stretching as far as the eye can reach. The farms will not only focus on producing traditional crops as corn but through a close collaboration between farmers and biologist, the opportunities of developing new sources of income will be utilized. Those sources will be reutilisation and refinement of crops and waste from animal production. One example could be the production of biogas from slurry, chemical processes to produce plastic and other thing of value from the waste products such as straw. Lastly this does not supersede the sustainable farming and ecological food which also is economically viable.

Sustainable farming - attractive environments for both people and wildlife.
As the superclusters will primarily focus on large scale agriculture, which is not attractive to either humans or animals, there is a need to define a second typology (see illustration 76.2), which will supplement the food production with a focus on creating interesting and diverse experiences for visitors. The main goal of these farms will be to cultivate the fields in a way that does not exclude visitors. This include incorporating natural trails, focus on small fields with a high variety in crops, creating diverse landscapes and the focus on environmental benefits.

Another example of the use of these farms could include research and education, both at university level as well as educating youngsters. As there always will be an interest in researching for improvement of quality, quantity, efficiency etc. as well as a search for knowledge.

furthermore there exist a potential for a sub-category to farming, specializing with handmade goods and qualitative products. These examples are neither conflicting with the interest of grander efficient agriculture, nor amongst each other.

Sustainable farms can be located in closer association with settlements and areas of greater ecological importance. Placing agriculture in eco-

logical important areas, will require restrictions associated with the management of the farm.

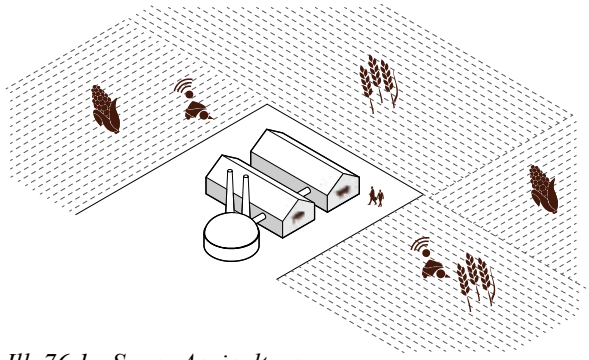
Where the large scale farms primarily focuses on the national and global marked, these small farms will produce products to local shops and consumers.

Self-sufficient or Urban farming, it's not just about food.
Self-sufficient or Urban farming (see illustration 76.3) is a contemporary trend. It can be a means for improving life quality, a means for improving one's spare time, or social constructions. It can be utilized as a community creator.

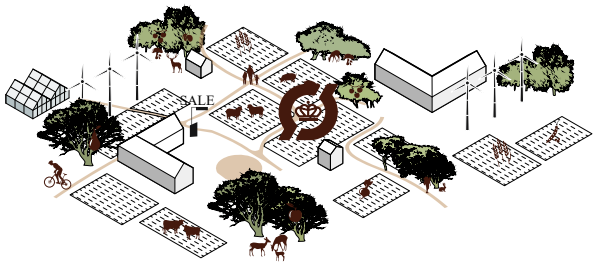
This will mainly take place at a local scale, often in small communities where community gardens create spaces for inhabitants to grow their own food. The community gardens would be shared and provide a foundation for people who normally doesn't have the space needed to grow their food. Community farming will not only allow for personal growing of food but will also be able to create a stronger relation between the inhabitants living and using the area.

The Self-sufficient production will take place on privately owned land, but also with an increased focus from large cities to offer common growing areas.

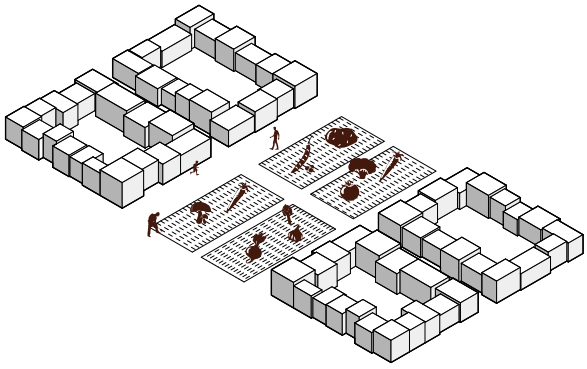
This project proposes a differentiated approach to understanding food production, where the food production is divided into three typologies, Super farms, Sustainable farms and the Self-sufficient which each has their attributes and qualities. This tripartition will enable planners and designers to locate different types of food production in different zones and thereby secure a well functioning and beneficial food production.



Ill. 76.1 - Super Agriculture



Ill. 76.2 - Sustainable farming



Ill. 76.3 - Self-sufficient or Urban farming

Ill. 77.1 - Illustration of the 5.851 existing windturbines scattered across the country.

A SUSTAINABLE AND ECONOMICALLY VIABLE ENERGY PRODUCTION

The danish government has adopted the objective to become independent of fossil fuels by 2050 (Energistyrelsen, n.d.). The trajectory is favourable in terms of the climate, as renewable energy doesn't have the same negative effects as burning coal, oil or gas. furthermore it is an advantage for the national security of supply, as Denmark will be less dependent on the international market for coal, oil and gas (Energistyrelsen, n.d.).

With the contemporary technologies, it is indicated that the road towards a sole dependency on renewable energy depends upon a base of electricity and the ways of producing this electricity as well as storing it (Energi-, forsynings- og klimaministeriet, 2016). The production of renewable energy will primarily arise from wind power, biogas and biomasses (Energinet.dk, 2014).

As mentioned (on page 20) may the out phasing of fossil fuels lead to a need of 15% of the land area for growing energy crops (Arler and Madsen, 2015). The political agenda towards renewable energy creates the complication of finding the needed space, as well as the aesthetic qualities, as the elements for producing renewable energy are of a visibly dominating character. As Stræde (2017) highlights;

'*We are used to the energy flowing to us from dark caves of the earth's interior. The only pictures of energy around us are technology in the form of refineries, the tankers we overhaul on the highway and the many service stations where every sense of the materiality of energy has been removed [...] We have gotten used to energy as ubiquitous, invisible and almost metaphysical [...] Different with the renewable energy. It is visible and audible in the landscape*' (own translation; Stræde, 2017;39).

The installation of visible energy elements, transforms the landscape from an agricultural or natural landscape into an energy landscape (Nielsen, et al., 2007).

'*Throughout the country, large and small wind turbines have been set up since the 1970s in an uneven but finely grounded network covering both land and coasts, and often crossing the horizon in the most sensitive places. At first it was beautiful because the idea of self-sufficiency and green*

energy is beautiful. Now that wind turbines are no longer just symbols of the dream of a pure future, but a regular industry, the picture has changed' (own translation; Gram, 2017;24).

As bioenergy and wind power will be of an increased importance for the energy production, and as they change the experience of the landscape there is a need to consider the spaces and landscapes where these are to be of influence. As both windmills and biomasses will have a significant impact on its locale and the inhabitants in proximity.

Basic information of the most common renewable energy sources
Biomasses are primarily constituted by straw, woodchips, biogas and garbage. Whereas straw has the biggest potential for future energy production (Energistyrelsen, 2014)

Biogases are organic waste from animal production. Today most of these waste products are spread at the fields, and thereby creates the foundation for next year's crop production without extraction of the gasses that happens in a chemical process. Slurry release methane and carbon dioxide which either can be burned in a gas furnace or be transformed into electricity by using a gas generator. After the extraction of methane and carbon dioxide the slurry can be delivered back to the farm and used as fertiliser at the fields (affald.dk, 2013). Today less than 10 per cent of the potential of biogases are being used. By extracting the full potential of energy from biogases in the future it will be a considerable addition to covering the energy demand of the future.

Wind turbines at shore are cheaper per energy unit compared to wind turbines at sea (Energistyrelsen, 2014). When working with wind turbines at shore, it is important to notice that they are a technical element that, with its behaviour and relation to the surroundings, changes the experience of the landscape (Nielsen, et al., 2007).

According to Nielsen, et al. (2007) the height of the wind turbines is of small relevance compared to being there or not. In their studies, they show that the difference between 100- and 150-meter-tall wind turbines has a little influence in the experienced landscape. Studies show that the houses in close proximity to wind turbines decrease in value, this is within a three kilometer radius of the wind turbine. (COWI, 2016).

Renewable energy is here to stay, but it changes the experience of the Danish landscape, it is consequently important that Denmark in the future start to develop some guidelines for implementing energy resources into the landscape, the next pages is going to deliver a proposal to how renewable energy can be included in planning, as the question are raised; what if the visible renewable energy wasn't an annoyance in the entire landscape, but could bring people together in new communities?

Ill. 80.1 - Visible energy production

VISIBLE ENERGY IN THE DANISH LANDSCAPE

Ill. 81.1-12

The pictures on this page are taken during a field trip across North Jutland the 21 (see appendix 01). of February 2017. The pictures are chosen as they show how energy has become a highly visible element in the danish landscape. Energy is no longer limited to holes in the ground or elements in the city in form of petrol stations but is now also constantly visible when traveling the country. The size of the new energy installations is a challenge against the dominating surface and horizon which is traditionally dominating the experience of the danish land (see page 57). Further is the installations changing the experience of the landscape to a technological landscape where the presence of the new energy is a constant reminder of the modern world.


STATOIL
STATOIL

PROPOSALS FOR FUTURE ENERGY PRODUCTION

Energy clusters – Merging experiences, knowledge and energy production
The green transition creates, as mentioned, a more visible energy supply. Today those energy sources are scattered across vast areas and adversely affect large parts of Denmark. Instead an innovative approach should be taken, one where the renewable energy sources are gathered in larger unpopulated areas. Those areas would gather the future energy production to great benefits.

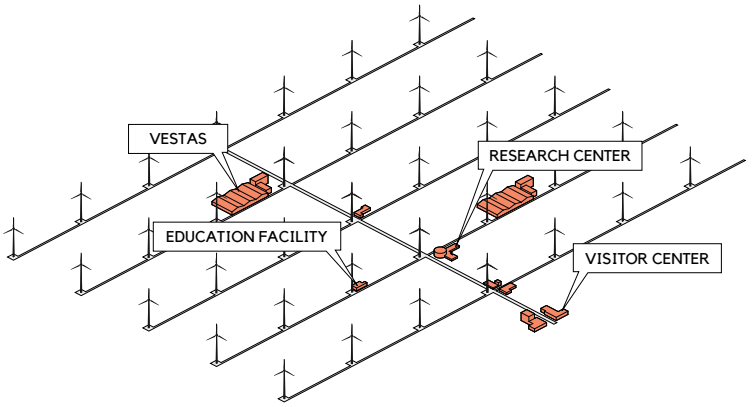
The energy clusters (see illustration 84.1 and 85.1-2) can include test facilities, creating a synergy between research and practical aspects of energy production, they can be inviting through visitor centres and include hybrid energy facilities as BIG's Amager resource center (a hybrid of waste incinerator and a ski slope) or Østerild (Test center for large wind turbines + nature park). Some clusters can contain all the different elements of energy production, as wind turbines, bio combustion and biogases etc. other clusters might be limited to a few energy sources due to the potential of their locale.

The energy clusters will not only clear up the landscape in parts of Denmark but will in themselves be highly attractive areas for visitors, both national and international. The possibility to create experiences and energy can become a central element in the conversion towards an independence of fossil fuels.

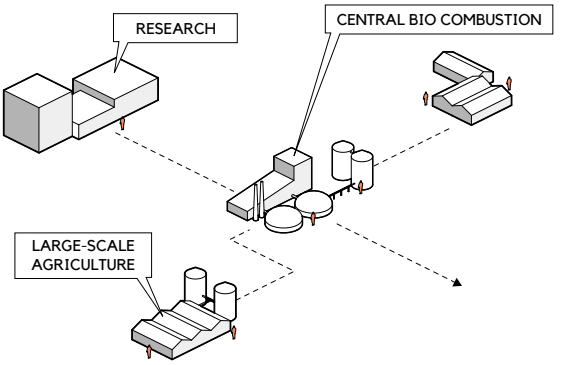
As with the case of Østerild (Gram, 2017), it can be a merger of a biodiverse nature, and a park for wind turbines in association of energy storage facilities, as with the case of GreenLab Skive (Energibyen Skive, 2015). Other renewable energy sources can cooperate. Wind turbines can stand among fields of energy crops used in the bio combustion centres, also situated closely. Lastly, facilities can benefit from the biogases produced in the surrounding farms.

Central bio combustion
Central bio combustions (illustration 84.2) Which collects residual products and energy rich crops and transform it into energy. An advantageous number of large combustion plants can be placed around Denmark. The plants must receive material from the surrounding farms. In order to minimize the distance from the facilities to farmers, it may be advantageous to gather large farms geographically close to each other in aggregate units. This creates a new form of large agricultural clusters, thus utilizing the surrounding agricultural areas for food production, animal feed and energy crops.

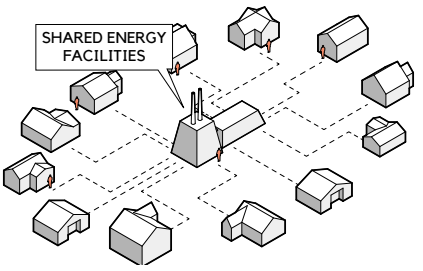
Energy community
Energy communities (illustration 84.3) in smaller cities, it can be beneficial to cooperate in order to secure renewable energy based on waste incineration, biomass and electricity production. Many of the technological installations are expensive in construction and operation and can therefore be an insurmountable investment for the individual, but by collaborating across the settlement, investments can be made to ensure future independence of fossil fuels. This approach requires a great deal of commitment from the local community, but at the same time ensures that the public can focus more on providing the parts of society where self-production is not possible.



Ill. 84.1 - Energy clusters



Ill. 84.2 - Central bio combustion



Ill. 84.3 - Energy community

Ill. 85.1 - Energy clusters of the future.

THE ENERGY CLUSTER OF TOMORROW

Illustration 85.1 and 85.2 visualises a conceptualised energy cluster. Its location is in Tønder municipality, where the population is low and settlements are scattered. Furthermore the area consist of many spaces which are almost uninhabited (see appendix 05) and therefore suitable. As well as taking settlements into account, does the placement also consider the marshes placed to the north and south of the energy cluster, as well as the national park, the wadden sea, which stretches along the coastline, which it stays clear of. Being close to the western coastline also secures the optimal conditions of wind (see appendix 06).

Ill. 85.2 - Energy Cluster, conceptual masterplan.

The energy clusters will (as mentioned on page 83) include test facilities, research and practical aspects, visitor centres and include energy facilities. The clusters can contain different elements of energy production, such as wind turbines, bio combustion and biogases etc. other clusters might be limited to a few energy sources due to the potential of their locale.

While being a highly efficient construction, its implementation can secure an allocation of the most troublesome of energy production facilities throughout the danish landscape. As with the case of tønder municipality, which has many existing windmills scattered around the landscape.


Research center
Test facilities
Visitor center
Biogas
Wind turbines
Wingspan: 150m
C/C: 400m
Total: 420
N
1:50.000

CONCLUSION OF PRODUCTION AND PROFESSIONS

The map to the right (illustration 88.1), shows a proposal for the future layout of energy production and agriculture. It is important to notice that the map is not to be understood as a precise plan but an approximate thematic map of a future with space for both small sustainable farms, agricultural super farms, energy clusters and central located bioenergy refineries.

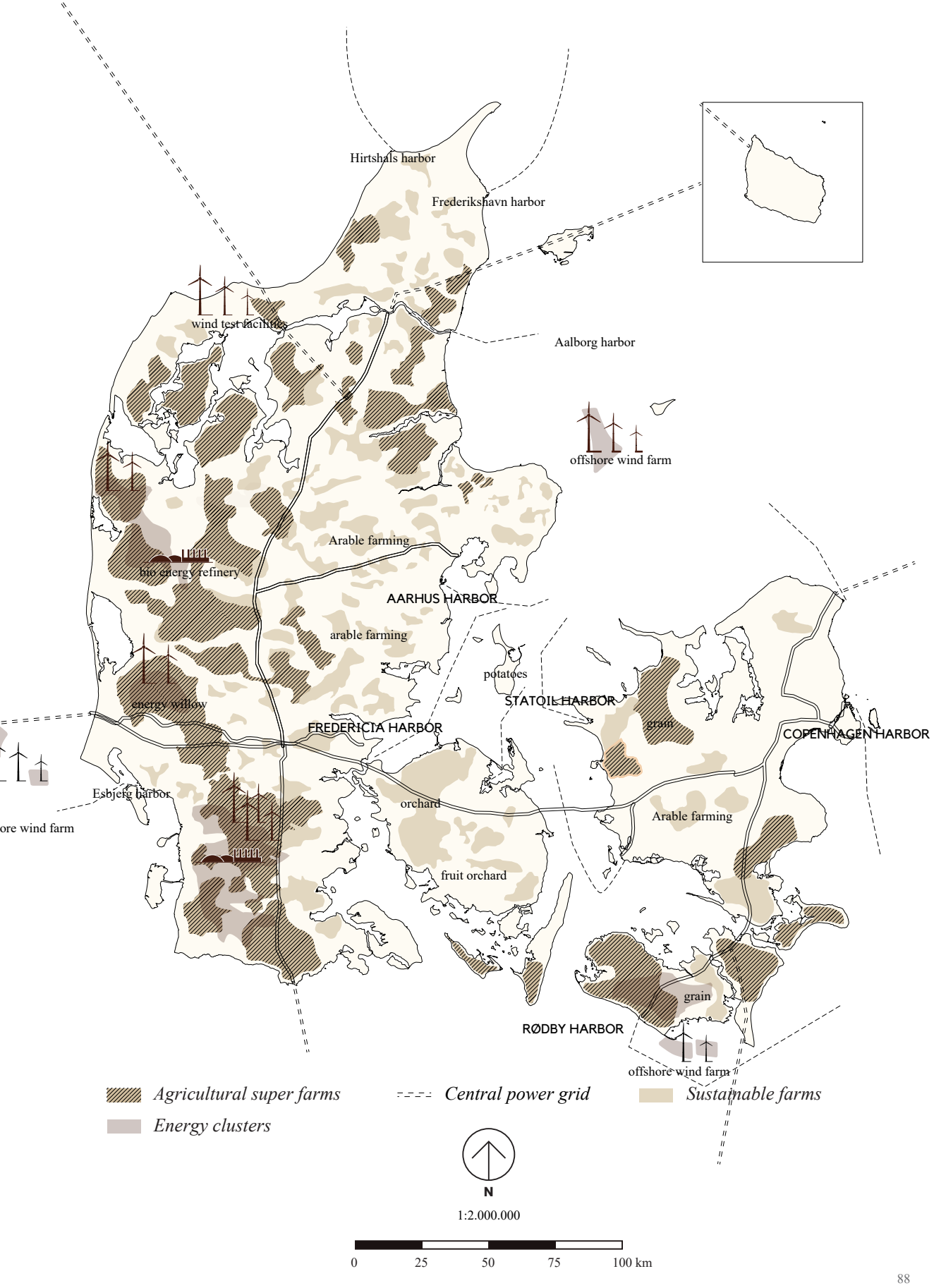
A tripartition of agriculture as well as energy production creates the foundation for a differentiated approach to the future layout of Denmark at a national scale. It is worth noticing that the Agricultural super farms and the Energy clusters are mainly scattered west of the central power grid running from Aalborg to Germany. This is done as these areas have litle natural value (see page 61), and because they in the future will have a limited amount of inhabitants (see page 107). East to the central grid line consist mainly of Sustainable farming (see page 75) where it is of high importance that the farming is done with respect for humans and animals.

By discussing the agricultural production based on its implication to the surroundings, it gives reason to evaluate the local potentials, to create certain areas which is highly productive and focus on large scale farming, and other areas which focus on food production in synergy with nature or humans settlements.

One of the most important tools for realizing local area plans and multilateral land use is according to Arler, Jørgensen and Sørensen (2017) land allocation. The large farms usually consist of widely scattered fields that were bought or leased. The smaller part-time businesses are often only located where there was a farm for sale. Many of the nature conservation areas are scattered as stamps in the landscape. By making land allocation agreements, more cohesive farms can be created with fewer environmental and traffic problems.

The tool of land allocation can also be relevant when considering the energy production. As the energy becomes yet more visible in the landscape, the new technological installations transforms the landscape into what can be called an energy landscape where wind turbines and energy crops dominate. Instead of scattering the new visible energy production throughout the country it is beneficial to create energy clusters, which can function as energy production, but also experience and research parks.

The new map of Denmark is one where the local qualities is seen in the relation to the overall needs of a future Denmark.


Hirtshals harbor
Frederikshavn harbor
wind test facilities
Aalborg harbor
offshore wind farm
Arable farming
bio energy refinery
AARHUS HARBOR
arable farming
potatoes
energy willow
STATOIL HARBOR
grain
FREDERICIA HARBOR
COPENHAGEN HARBOR
Esbjerg harbor
orchard
Arable farming
fruit orchard
grain
RØDBY HARBOR
offshore wind farm
Agricultural super farms
Central power grid
Sustainable farms
Energy clusters
N
1:2.000.000
0
25
50
75
100 km

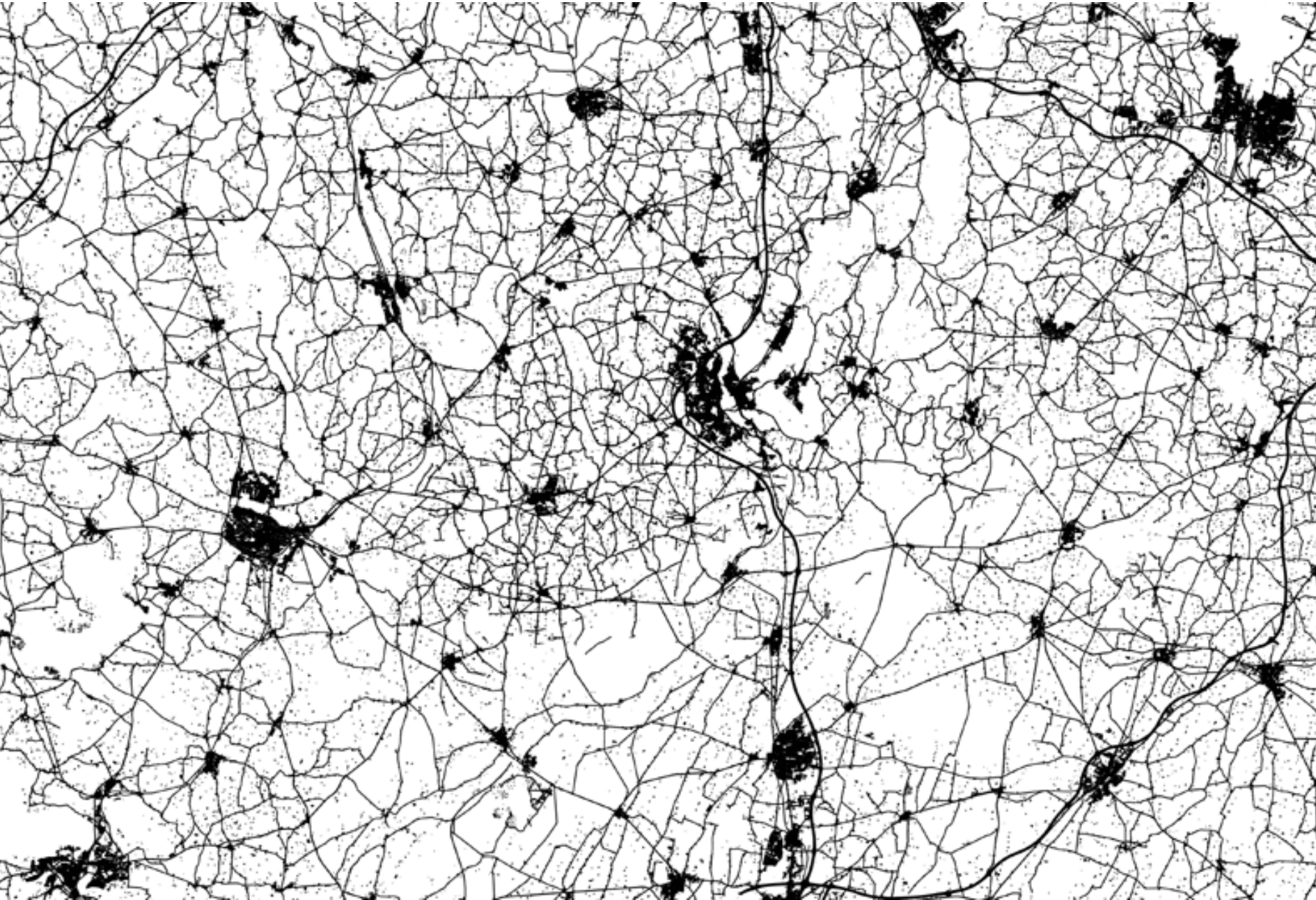
Ill. 88.1

POPULATION AND LIVING CONDITIONS

Since the early 1970s there have lived more than 5 million inhabitants in Denmark. Apart from the early 1980s, where population numbers fell due to very low birth rates, the population's size has been slow, but steadily rising since 1970 and as of January 1, 2016 the population reached 5.7 million (Danmarks Statistik, 2016).
More births than deaths, a greater immigration than emigration and an increase of the average age means that, the population is predicted to reach 6.482.769 inhabitants in the year 2060 (see appendix 07).

This section will address the current situation for the population and the demographic movement (see page 91) seeking to underline the conception of growth and decline, with aspects such as the struggling rural areas. This illustrates a need for pointing out which cities is to be further developed, or transformed into other activities (see page 97). further it will highlight the need for developing new settlements with increased focus on diversity and its local characteristics (page 103) and lastly it will investigate new areas favourable for new settlements (see page 110).

Ill. 90.1 - GIS material depicting roads, railways and buildings in central Jutland.



A CENTRALISING POPULATION

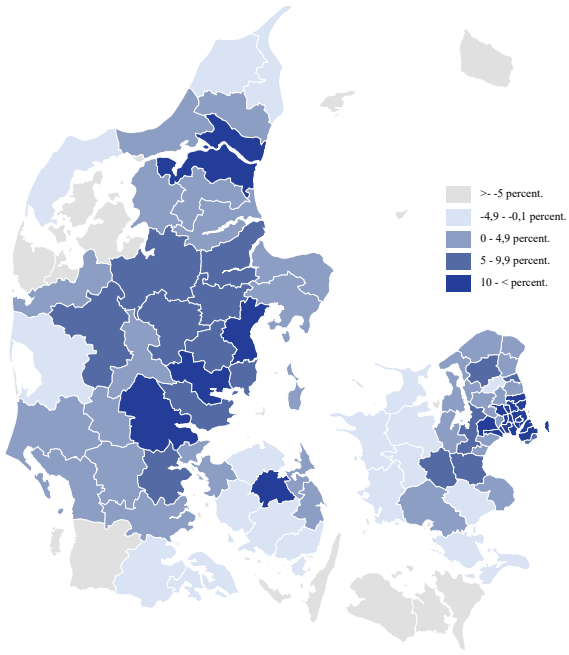
Meanwhile the danish population increases on a national level, it also settle in yet closer proximity to bigger cities and urban areas. The phenomenon of centralisation is of a highly nuanced manner and the general picture of centralisation comprises the migration towards main cities, along with migration from rural districts towards local town centers. The phenomenon is explained as 'double urbanization' (dobbelt urbanisering) (KL, 2014, Christensen, 2016). This is characterised as the migration from rural- and remote municipalities, towards the urbanized municipalities (see illustration 92.1)this is also reflected in the number of uninhabited building (see illustration 92.2), while the municipalities simultaneously experience dislocations internally. This meaning that some municipalities experience a general decline in inhabitants, yet some internal cities experience a growth in population (see illustration 98.1 and 100.1).

In general the population growth is higher the closer one is to a large city or metropolitan area (Jacobsen, 2015). 'Commuter towns' (pendler byer) has experienced the greatest increases, while 'rural districts' (landdistriktsbyerne) have experienced slight increases or even decreases (Christensen, 2016), which also is visible on illustration xx, which shows how the growth according to city size varies. This goes in line with the notion of urban region being able to offer more, due to its network of cities (as mentioned on page 39).

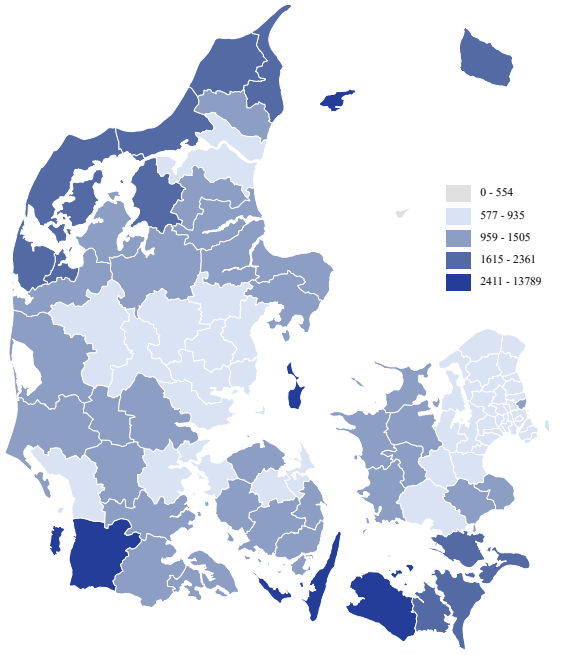
'*It is along 'det østjyske bybånd' (the eastern Jutland region) that there in particular is many cities with progress. In the southwestern and northwestern Jutland, however, there are some places with many cities that have lost residents, and on Lolland and South Zealand, development is also limited. The towns near Horsens are close to the highway, while others are close to railway stations. This is trafficaly good places, and that is a fairly important point. It is about the labor market and the possibilities for getting around*' (own translation; Jakobsen, 2016).

Moving towards cities is not a new fenomen and centralising of society has been increasing steadily since the midst of the 19th-century, it is characterised by three waves of urbanization which brought major changes in the character of how and where people live. This is to a high degree coincided with the industrialization (Territorium, 2016A) and the implementation of technologies as railways and motorized vehicles (Madsen, 2009; Gaardmand, 2016), as well as the change in the distribution of professions, from farming towards industri. These factors accelerated the movement, or migration, of people from rural areas towards cities where they could participate in the new growing job markets (Territorium, 2016A). This was also a factor which created a situation where the village (landsbyen) had to yield its ranking as the city of most importance, turning into a secluded and tattered small settlement (seen from a certain point of view) in the global metropolis (Frandsen, 2016).

Furthermore has the presence of globalisation been a factor in changing cities. With a change from manufacturing to service society and a rising demand for qualified labor as well as the liberalisation of commerce, trade and migration



Ill. 92.1 - Population projection in municipalities Development from 2015 to 2035 (Danmarks Statistik, 2016)



Ill. 92.2 - uninhabited buildings (Danmarks Statistik, 2016)

of workforce (Nordregio, 2008), there has been an impact on the urban concentration (Laursen, 2008). With an increased need for connectivity to hubs, as airports and global marketplaces.

'*For thousands of years, we've migrated to cities to connect. Cities accelerate time by compressing space, and let us do more with less of both. They are where jobs, wealth, and ideas are created. They exert a powerful gravitational pull on the young and the ambitious, and we are drawn to them by the millions, in search of opportunities to work, live, and socialize with each other*.' (Townsend, 2014;1)

The historical centralisation of people is explained as a result of a changing societal structure adapting to changing conditions as the industrialisation, globalisation and so on. But when stating that the rapid urbanization is a movement that can't be stopped, Kaare Dybvad (2015) disagrees, he argues that the urbanization is a political choice and therefore it is not an unstoppable parameter, but rather a choice, that the urbanization in danish context, is caused by the centralization of functions by municipal reforms, education and judiciary systems. This belief is supported by the organisation 'Danmark på Vippen'(2015) (Denmark on the seesaw) who contradicts the belief that centralizations is a 'law of nature', instead they relate the criticism of segregation to structural reforms, launched in the 00s.

When questioning why people are moving, Kaare Dybvad (2015) argues that employment and education is the main reason for moving, based on research. He states that there can be found a direct link between the political centralization of workplaces and the moving patterns.

Furthermore the tendencies show that people does not move according to which municipalities they find attractive, thereby superseding the work put in by municipalities seeking to brand themselves as 'a good place to live'. Subjects seek to settle in certain areas, districts or cities (Jensen, 2016)

Jesper Bo Jensen (2016) argues that work and the geography of work and its infrastructural location is important factors. The geography of family, is also a ruling factor, especially for young children families and seniors. Furthermore the connectivity to an attractive city center is of importance. Generally people move according to their everyday life, which in the contemporary age is perceived as dependent on the city. Settling are furthermore concerned with house prices, especially when considering families, just as school opportunities and the service level, so one can have a family life (Christensen, 2016). People seek attractions, things and places which, from a certain point of view, is of importance to the given person and therefore are worthy to be seen (Dahl, 2008). Illustration 94.1 shows the average growth in number of inhabitants distributed according to the cities size, there seems to be a tendency for people to move towards cities with more than 1000 inhabitants, as these often provide the above mentioned services.

Population decline, school closures, dilapidated dwellings and redundant agricultural buildings, etc. are mainly due to a large number of factors such as the structural development of agriculture, the municipal reform in 2007, the localization of the services sector in major cities, urbanization, the loss of industrial sites in the smaller provincial cities, the death of the small shops in villages as a result of the new closure legislation (lukkeloven), e-commerce and development of commuting on the basis of limited routes in rural areas, public transport and a wide range of similar themes (Møller, 2015).

'*The comfortable and 'good' life is lived, for a large part of the middle class in a small or medium-sized danish city, with good access to infrastructure (motorway, highway, train) with access to the medium-sized convenience store (Netto, Rema, Fakta) With a good selection of the most normal groceries. The city should be in the H-city (i.e. within 10 km distance to the infrastructural H), and most preferably in one of the two regional hubs: the capital area or the East Jutland million city*' (Nielsen, 2016)

Ill. 94.1 - Population growth distributed on city sizes. The cities are categorised by their size as of 2016, and the development in population is comprised to the period 2006-2016 (Jakobsen, 2016). It is worth noticing that the cities which growth is greater than the average are 2.000-9.999 and those above 20.000 inhabitants.

THE DANISH CITIES: A PHOTO INVESTIGATION OF RURAL AREAS IN NORTH JUTLAND

Ill. 95.1-12

The pictures on this page is taken during the field trip across North Jutland the 21. of February 2017 (see appendix 01). The photos show an excerpt of the cities along the route with focus on the relationship between the traveller and the city. Many of the photos is taken along the main road which goes through the city, and it is noticeable that the one floor houses is dominating the smaller danish cities. A clear pattern is that the city has evolved around the road and therefore the main road often goes directly through the city centre, creating an environment with much traffic. Many of the small cities is experienced in a fast pace and is only noticed by the traffic bump when entering and exiting the city.

NOTIONS ON GROWTH OR DECLINE

The increasing depopulation of some cities demand more focus on the cities which has a future potential according to Jørgen Møller (Møller in Jacobsen, 2015). These cities are often cities which still has a school, shops and a sustainable associational life (Foreningsliv)(cities of growth are indicated on illustration 100.1).

'*Politicians must report which villages (landsbyer) they are betting on and which villages they do not focus on. The communities that are not viable should be emptied of residents as soon as possible, [...] the municipalities must push actively on the development'* (own translation; Jacobsen, 2015).

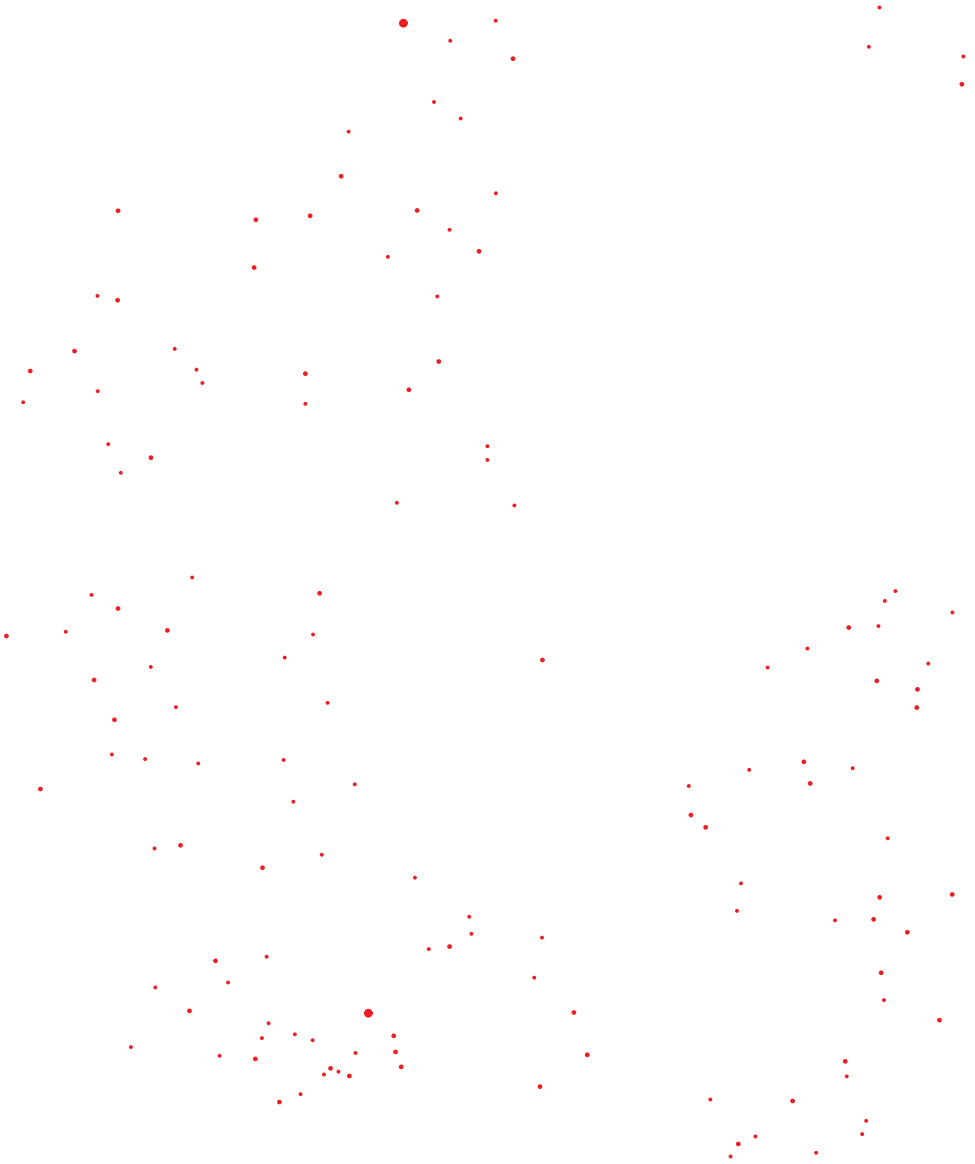
It is some major strategic choices that are needed. If nothing is done, all cities will be hollowed out and less desirable than they potentially could be. Therefore, with some cities, one might say that they had their time and acknowledge that they slowly will get smaller. But, according to Jacobsen (2015), it has to be done in such a way that those individuals who live there can endure the process.

'*I could also imagine, that the villages in a planning- and prioritization process could be divided into three categories. A) Villages that the municipality designates for a future, growth and investments, and where investments are done in the necessary municipal service, so it is also available in 10-15 years. B) Other villages can act as villages where development is monitored in particular and which may also have room for modest growth or a status quo situation in the future, and C) finally, there will be villages that are so run down, That they should be dismantled over a (longer) series of years, to eventually be closed down or noticeably scaled down*' (own translation; Møller, 2016;28)

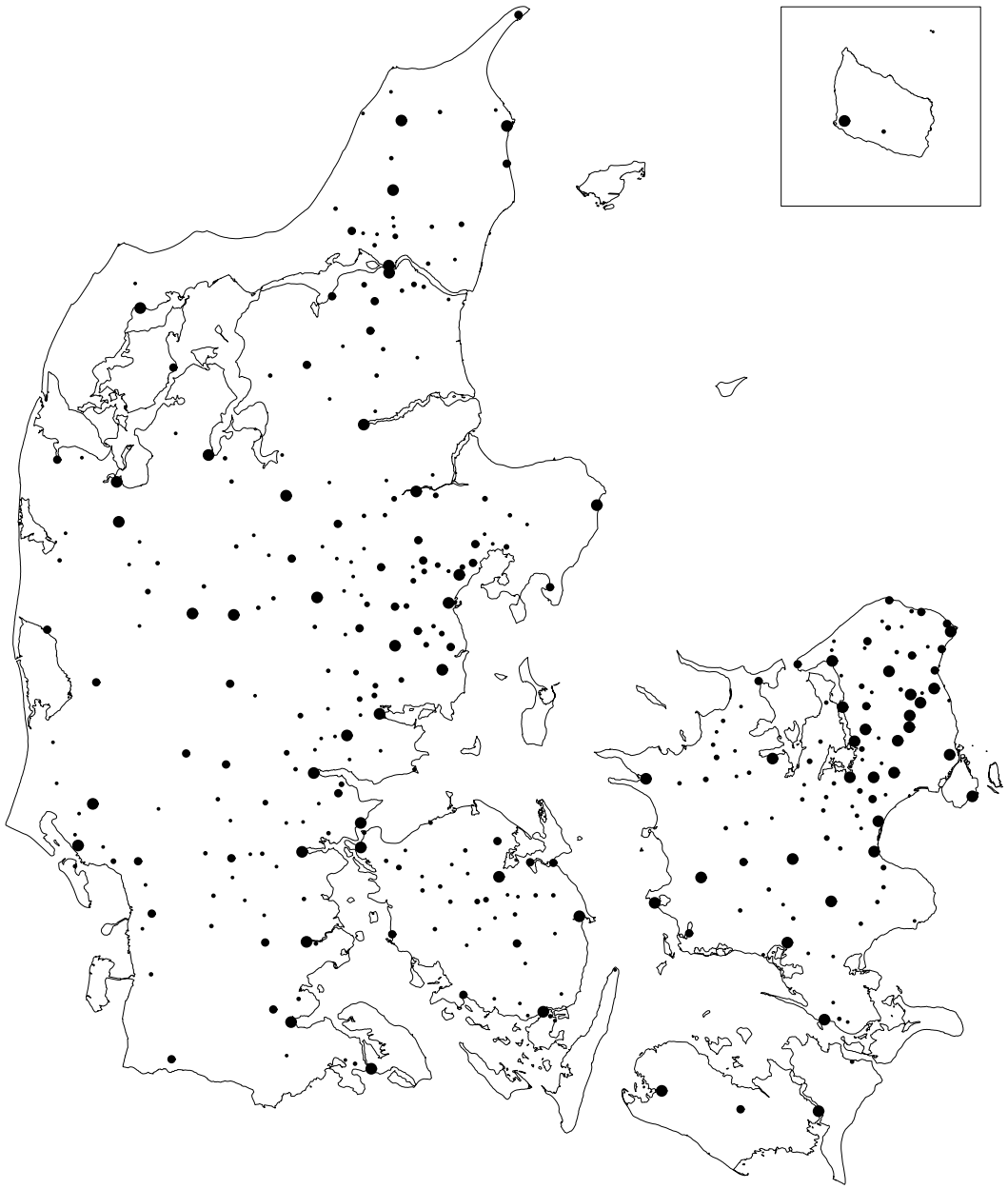
These notions lay basis for the argumentation of a holistic perception of the relationship between the different scales of towns and cities. Rather than taking a stand on one of the opposites, claiming it as the only viable settlement structure of the future, as many have before, there exist a symbiotic relationship, a network of codependency. As presented in illustration 94.1 and 100.1, there exist a quite varied interest in settlements of different sizes.

Returning to the notions represented by Dybvad (2015), he points towards certain aspects which metropolitan areas as Copenhagen delivers to the economy and diversity of the country. Certain functions which would be downgraded if they were to be solved in the province. For example CPH airport and certain research environments. Furthermore Copenhagen stands for an extensive cultural environment which probably would not be possible. Where other labour markets, cultural heritage and qualities are to be founds in rural denmark.

This discussion of centralisation, is basically related to the discussion of what the society lives on, which kind of society that is desirable. The discussion should be elevated from the question of alms-giving to certain areas. The answer lies partly in the economical aspect, but substantially also in the social.



Ill. 98.1 - Cities of at least 1000 inhabitants, with population decline
Development from 2010 to 2017



Ill. 100.1 - Cities of at least 1000 inhabitants, with population growth Development from 2010 to 2017

INDUCTION OF THE INDIVIDUAL IN THE FUTURE SOCIETY

As mentioned (on page 7), there exist a row of technological- and social trends, along with the moving patterns of society (see page 91), which can influence people's behavioural patterns in the future. Much have already changed, and one aspect which delivers a broad influence, is the shifting labor market (see page 7). The consequences hereof is that many people live a life, where there is no clear distinction between civil life and professional life. Henrik Dahl (2008) argues that one, to a great extent, gets his or hers own identity from his or her profession. The profession or education of a person weigh heavily on the perception of who the given individual is as a person.

Richard Sennett (1999) argues that personal character is especially connected with the long-term aspects of subjects emotional life. The personal character of subjects is what they treasure most and desire appreciated by others, and in turn seek to accentuate those values (Sennett, 1999). Most people prefer to emphasize the recognition received in association with their profession, it is related to the way whereas esteem and recognition is distributed in a bourgeois society (Dahl, 2008).

The flexible labour market, which focuses less on the classical pyramid structure, is built upon a complex system of points and lines. Points referring to groups of people working on a specific task and lines connecting the different departments (sennett, 1999). A flexible [fragmented] labour market is built upon the belief that people should be able to change their skillset multiple times during their carrier and allow a higher frequency of shifts between jobs. Perfection through practice is increasingly less seen as a quality, no longer is seniority a goal but instead the quantity of different experiences is valued (Sennett, 1999).

Furthermore, Smarason (2016) argues, as mentioned (on page 7), that yet more people work on projects rather than taking a traditional job. That they work either from home, coworking spaces, hotels or mobile places as trains, etc.

The flexible labour market creates a society where many people, across economic and social classes, lack the sense of direction towards developing a personal character. Therefore it is necessary to investigate different ways of creating a sense of purpose and means for identifying one's own identity.

People should be able to construct their identity from the places where their daily stay is and the activities conducted. Whether it be a material, mobile or immaterial, or even a global place it should be places worthy to be regarded with esteem.

The esteem of a place can pass dignity to residents of that place (Dahl, 2008) and acknowledgement can bring satisfaction to subjects and motivate a renewed courage. As with the case of Klitmøller, a small city in the periphery of Jutland, which experience positive recognition for their brand, 'Cold Hawaii'. Or the city of Aarhus which experience a positive international publicity by travel guides and magazines, or the status 'european cultural capital' of 2017.

As argued (on page 29), places have multiple identities and these are coupled with one's experiences of any given place. One arrives at a lokale and begin to live on it. One creates the daily routines and makes own lessons of set lokale. Suddenly the lokale is changed. It has become part of one's recollections. A part of one's daily life for a period and a part of the bigger projects, which one has set out to accomplish.

Yet , not neglecting the relation to a person's history. Karl Marx argued that people produce their own past, present and future, but not based on the circumstances of their own choosing since the '*tradition of the dead generations weighs like a nightmare on the minds of the living'* (Marx 1973[1852] cited in Urry, 2016;58). In continuation of this line of thought, Dan Ringgaard (2010) argues for an intersection of identity and place. He refers to the relationship between father and son, where the son is free to go where he chose, but he does so with the heritage of his father and their relationship. He walks in the footsteps of others.

In conclusion, it can be argued that, no longer should the personal character be earned mainly through work but through other aspects of life. Where a large part of the creation of personal identity historically has occurred in the cities which one grew up in. Today when subjects have an increased mobility (see page 7) and are enrolled in a much larger context, this element often lacks. One defines relationships increasingly more based on interests, companions and locations which one choose to take part of, and less dependent on a locale based community, as with the reflection of Niels Albertsen (2011) small city which he grew up in (see page 91).

What if settlements in the urban network could provide a foundation for character building, by providing alternative experiences and a sense of belonging?

SETTLEMENTS IN COHERENCE WITH NEW TIMES

'*The winner will be the one who understands what this future looks like and are able to exploit the knowledge of the city's future growth. What infrastructure should future employees have access to? What is the role of the municipality in this development? What trends really benefit your village? How do you grab all those who have moved away but still can be an important resource for the city's future?*' (Smarason, 2016; 20)

As Smarason (2016) argues, settlement will flourish if they understand and work with the futural aspects. The future settlements must evolve according to the changing living patterns, which are dominated by increasing allocation towards the larger urban regions (see page 39 and 91), entailed by the need to be close to work, day care, schools, public institutions, leisure activities, associational life etc. The increasing mobility is forcing an innovative approach to designing cities where it is recognizes the fact that many people commute between cities to reach the daily chores (see page 39). as Jonas Kroustrup (own translation; 2016;65) asks; '*But what if it was different? Could one imagine that the future villages were the new high-tech, self-sufficient and sustainable micro-community, where inclusive communities characterized the way of life?'*

Nielsen (2011) argues that the increased mobility results in a rising number of places and cultural offers which can be reached by the individual. '*This [increased mobility] however does not in itself result in larger specialisation, but can just as well lead to more of the same'*. (own translation; Nielsen, 2011; 45)

The cities of today are very similar. The terms such as village, commuter city, satellite city, suburb, station city etc. are no longer sufficient, when one can barely tell the difference. Contemporary planning is widely based on calculated standards for the number of residences, open spaces and distance to noisy areas. These standards should guarantee a certain level of quality, but unlike the sociological viewpoints, does legislation generalise everyday life to standards and norms rather than everyday life as an individual project (Bille, 2011).

'*It is important for each society to figure out where its strengths lies. What is it with the city's history, culture and location which makes it something*

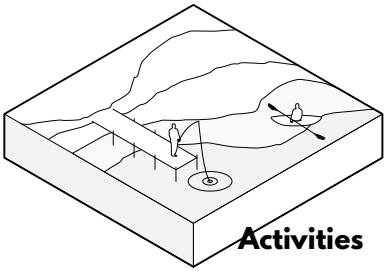
special.' (own translation; Smarason, 2016; 20). This can be troublesome, since, as Tom Nielsen argues (Nielsen in Steensgaard, 2010), are the danish planning, to some degree, stuck in the spirit of the 1950s, it is locked in a time without the mobile society which exist today. With the current prohibition of construction in the open country, the praksis of today is to expand the villages and provincial cities outwards, at the expense of the existing residences. He describes how '*Many villages get clasped a bunch of detached houses around themselves and completely lose the close relationship with the landscape that they have enjoyed for centuries. Nielsen thinks if it would not be more accurate to assemble all the new detached houses somehow, somewhere - inside a new forest or at by a new lake.'* (Own translation; Stensgaard, 2017)

These notions force designers, architects and municipalities to rethink which functions a modern city needs to offer. An important task in future development is to define what each settlement should and can offer. They must be able to handle the needs of the population, both social and practical, as well as business and leisure activities.

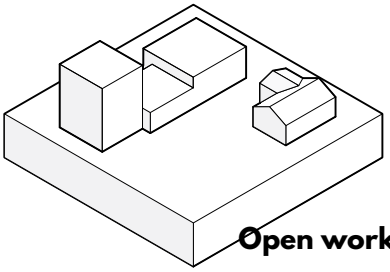
Instead of limiting new developments next to already developed areas, it should be possible to establish completely new settlements if other areas are abolished. This will allow a clean-up of the cities which is not worth preserving (see page 97) and instead raise new and highly attractive cities.

To make new settlements attractive it is important to think of each area as an individual project. Kristensen and Andersen (2009) argues that access to nature, good social conditions, public transportation and public services like schools and day-care facilities are highlighted as crucial factors when choosing residential location. Further it is argued that personal ownership is an important parameter (see appendix 08 for full result of the answers).

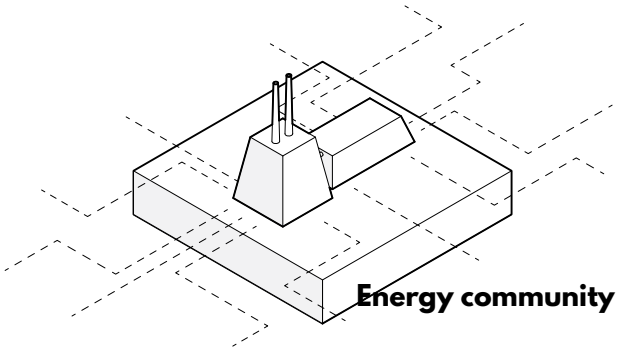
New settlements can, with advantage, experiment with alternative types of dwellings. For example by merging already known types of dwellings such as senior housing and youth housing, social housing and detached housing. There should also be an increased focus on diversity, so each new development provides activities that is special for that location. In order to create a sense of belonging for inhabitants it could be beneficial to include



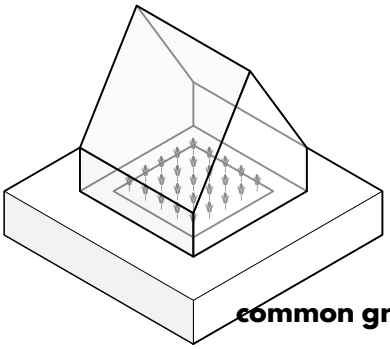
Activities



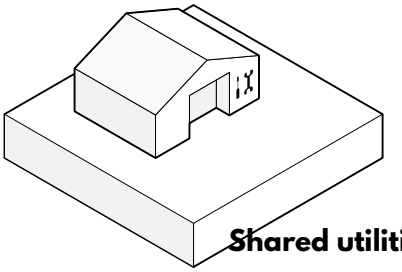
Open workspace



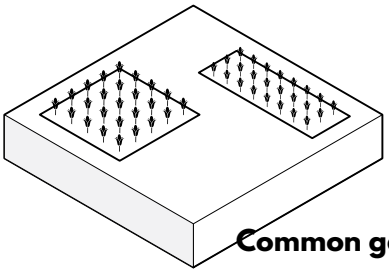
Energy community



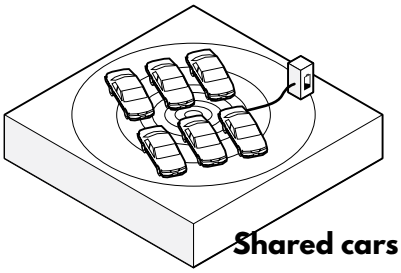
common greenhouse



Shared utilities



Common gardens



Shared cars

them early in the design, this would increase attachment and foster mutual respect and unity between residents.

Furthermore could upcoming trends such as shared economy (see page 7) be utilized. Communities can be founded on the concept of sharing. Common food production, open workspaces, energy production (see page 73, 7, 83), sharing of autonomous cars (see page 7) or sharing of common utilities such as gardening tool, other tools and the like. (see illustration 106.1)

Most crucial to the new settlements is that they do not focus on a single user group but instead aims
towards attracting a variety of people which would foster mutual respect between different segments in the society. The new settlements should work with the local potentials, and enhance diversity in order to avoid monotony is future urban regions. A key word is specialisation in relation to diversity where each settlement should evaluate what characteristics is most crucial to them. Establishments of such character, can benefit on the network which a given settlements is part of (see page 39), as the network can multiply its potentials.

◀

Ill. 106.1 - Sharing is caring

CONCLUSION OF POPULATION AND LIVING CONDITIONS

The distortion of the demographic location is of a complex manner where changing living patterns and governmental initiative has created a movement towards certain areas in Denmark and left others in decline. The allocation is also a consequence of structural changes in production, especially within agriculture and production of goods (see page 65).

The situation is getting exacerbated by the uncertainty and impartiality to report which areas is to be preserved and improved and which are to be transformed, this creates a situation where the economic capital and efforts are scattered in an unsustainable manner. There needs to be a clear picture of what and where the investments are to lie, which areas has a future for habitation and which areas can be transformed into other activities. Funds should be concentrated where it matters most, in a principle of quality over quantity.

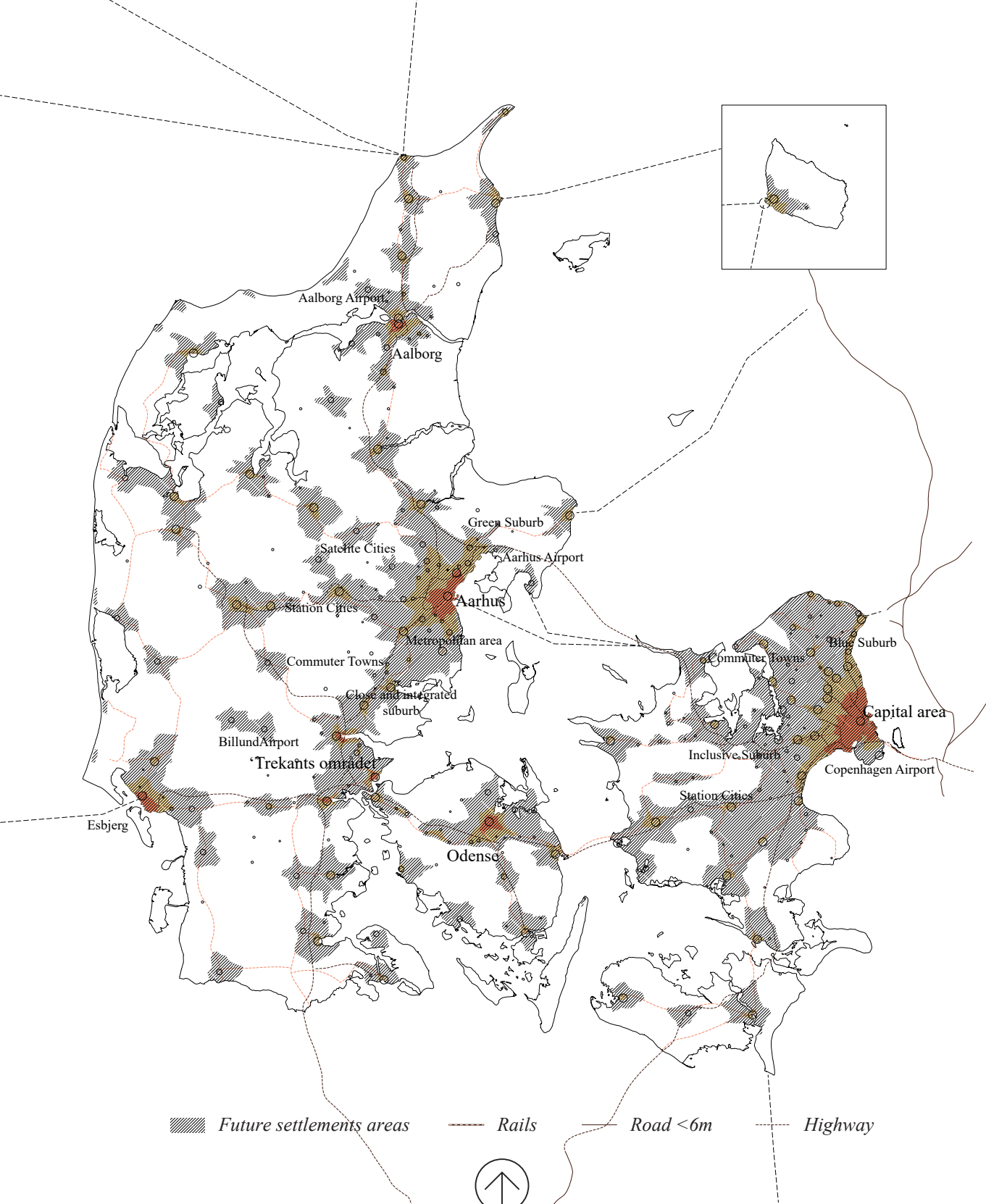
Many monotonous settlements scattered around Denmark that no longer offer qualities should be down prioritised and a process of transformation should be initiated. This is to add value in prioritised settlements based on its locale, existing qualities and potentials. Do the cities offer service functions, the state of the city, Worn or well maintained, cultural life, opportunities, joint activities, are citizens interested in taking responsibility for the city's further development.

The map (see illustration 108.1) illustrates a relatively location of future settlements, drawn in relation to contemporary tendencies as well as expected future settlement patterns. The basic idea is that urban development will take place in a network stretching across the danish territory, but also in association to the local understanding of minor enclaves occurring within the future settlements, this being a group of settlements in a network. By collecting settlements in approximately coherent structures, is a partnership afforded between settlements. Furthermore, an important notion is that many of highlighted areas for settlements are located in close proximity to existing- infrastructure and urban regions.

These settlements should offer a degree of diversity. As formerly stated, there is a need for a symbiotic relationship with a dependency on the urban network which the singular settlement is joint within (see page 39). One where the mobile society has the ability to adapt their professional and social lives. This combines the opportunity to live at a consistent locale, to some extent, and still allocate different activities. Where some settlements offer, jobs, culture and knowledge in a condensed manner. other offers living with nature, jobs within production, agriculture and other sectors. They are intertwined along with a long range of other parameters as the specific locale, qualities of nature, tourism, beautiful scenery or coastal qualities etc.

The existing settlements should be densified, rather than new parcelings reaching out and expanding city borders, or merging existing cities. As well as establishing new allocated settlements cohesive with the present and future needs. This it to Maintain and enhance distinctive qualities and identities of cities. The problem is not found in the villa neighborhood or the suburb in itself, after all, that is where the majority of people wants to live, but perhaps one should focus on the fact that these can offer different things while at the same time trying to reduce the footprint and the segregation to the surroundings.

A cohesion of interests is necessary and a great deal of care must be taken for people living in the areas designated for transformation. It is the responsibility of the municipalities in association with the inhabitants to make a real assessment of whether a settlement has a future and what that future is. The process can be helped through new aid schemes, villages without future potential can be bought if the citizens are interested in selling at market prices and being demolished and redirected to other tasks. Other possibilities can lie in parties of interest for a given area can aid in a buyout. There will be a need to clean up and clear out of old disused artificial surfaces and building volumes.


Aalborg Airport
Aalborg
Green Suburb
Satelite Cities
Aarhus Airport
Aarhus
Station Cities
Metropolitan area
Commuter Towns
Close and integrated suburb
Commuter Towns
Blue Suburb
Capital area
Billund Airport
'Trekants området'
Inclusive Suburb
Copenhagen Airport
Station Cities
Esbjerg
Odense
Future settlements areas
Rails
Road <6m
Highway
N
1:2.000.000
0
25
50
75
100 km

Ill. 108.1

CHAPTER CONCLUSION

The danish territorium is a complex mixture of many different actors and interest groups. When designing for the future it is of great importance acknowledge the historical evolution, the contemporary movements, and the future needs.

As presented, an approach of combining multiple functions within the same area can solve some of the problems. However, it is necessary to address this area by area. Some needs can be combined with advantage, in other cases, it should be avoided (Arler, Jørgensen and Sørensen, 2017). The structural changes in the agricultural sector, the demographic shift towards urban regions and a decreasing well being of nature is all elements that needs to be handled as a cross-scale discipline combining levels of national and local. This should complement the needs that are to be designed and planned for.

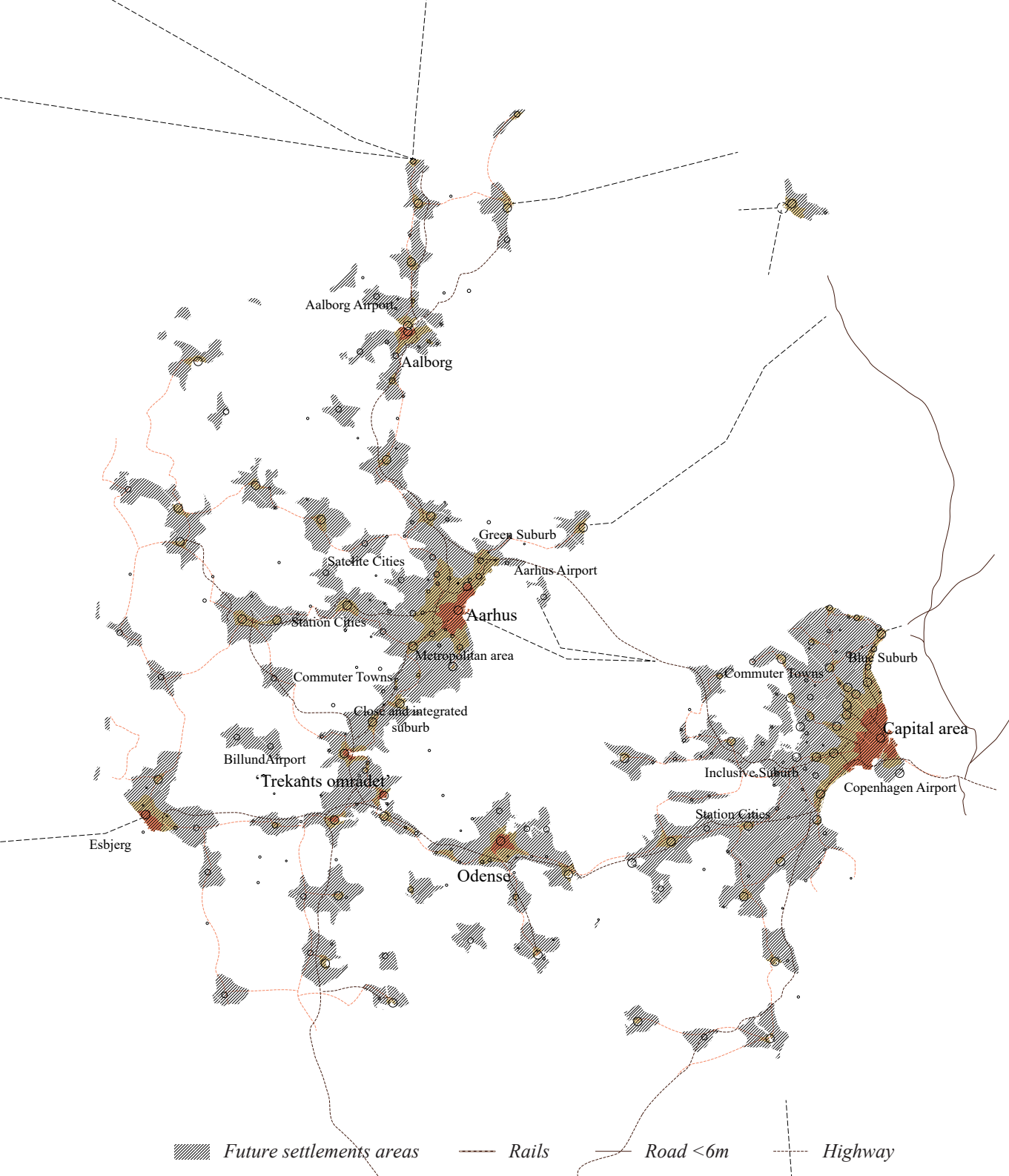
The project propose an increasing differentiated approach to the overall planning of Denmark. As previously shown, certain areas are more fit to focus on certain elements. The overall planning of Denmark has transformed into a list of goals (as mentioned on page 20) which do not take the local qualities into consideration. An alternative direction is proposed, where the state takes a larger responsibility in pinpointing which areas are well suited for what activities.

The findings also indicates that the future will need an increased differentiation within the already existing zoning policy. In addition to the three existing zones there is a need for implementing additionally differentiating zones, an energy zone for example, where the future energy production needs to take place. The land zone needs reevaluation and could be exchanged for an additional number of zones, according to the potential and existing qualities of the nature. A reevaluation of the zoning policy will aid planners, designers and politicians actively shape and transform the challenged rural areas.

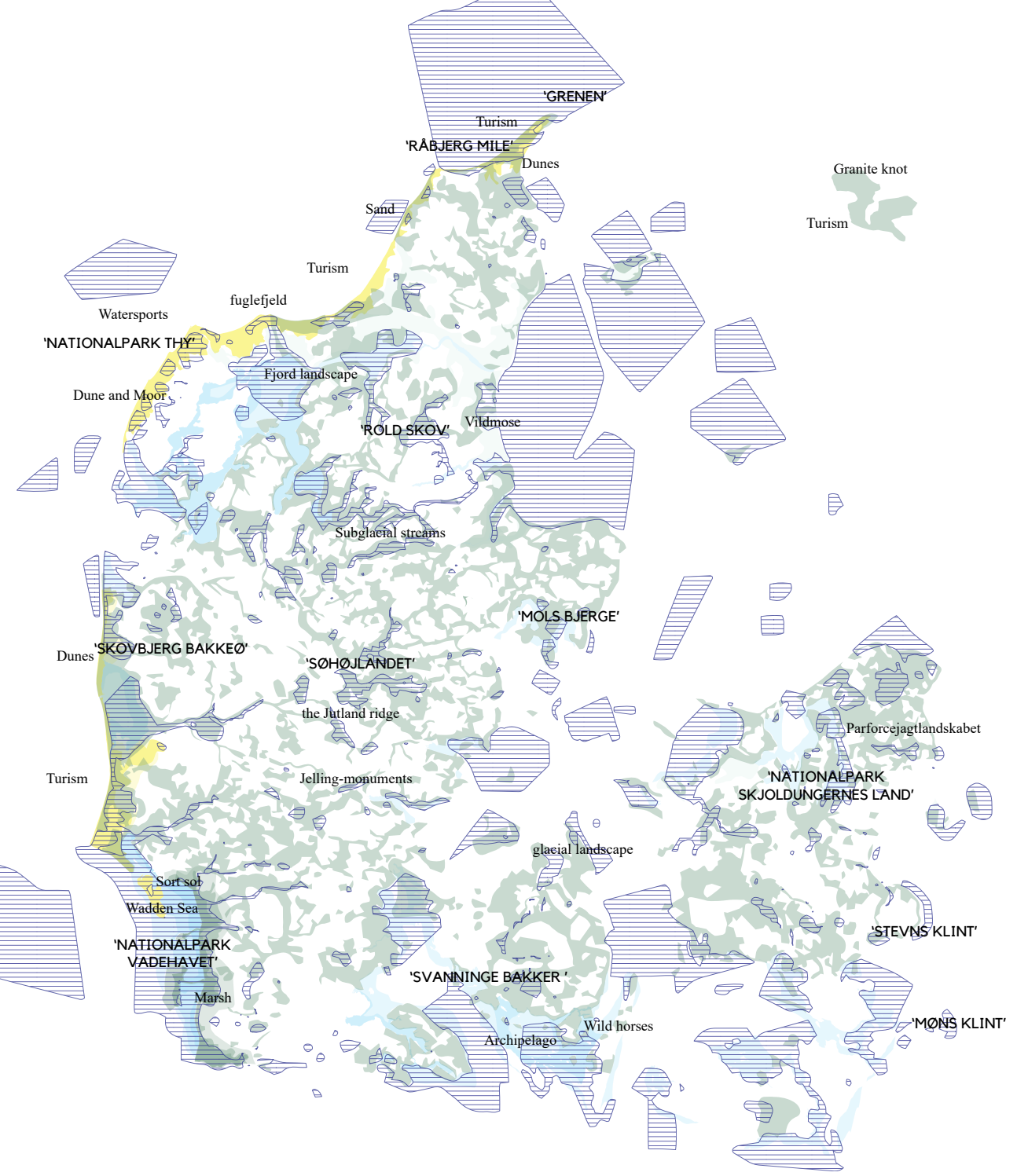
The purpose of planning is to reconcile the societal interests (Arler, Jørgensen and Sørensen, 2017). The existing prohibition against building new settlements in areas that is not directly connected to already existing settlements creates a situation where new residential areas are located in unattractive environments, instead a different approach could be allow new settlements as long as other areas are demolished. This notion can be applied to multiple functions and the optimal utilization can not be done if only focusing on what can't be done in different areas, as is with the existing regulations. A differentiated planning, i.e. designation of areas that have different development goals and different conditions for the use of the areas can open new possibilities for development of the site's values.

In the layout of Denmark there will be room for large industrial agriculture, thriving nature, diverse settlements and renewable energy production but it demands a new way of looking at the country, one where the overall goals are differentiated according to the local qualities, it demands working across scales, where the local qualities and potentials is taken into consideration, an increased cooperation across different actors such as the state, the regions and the municipalities.

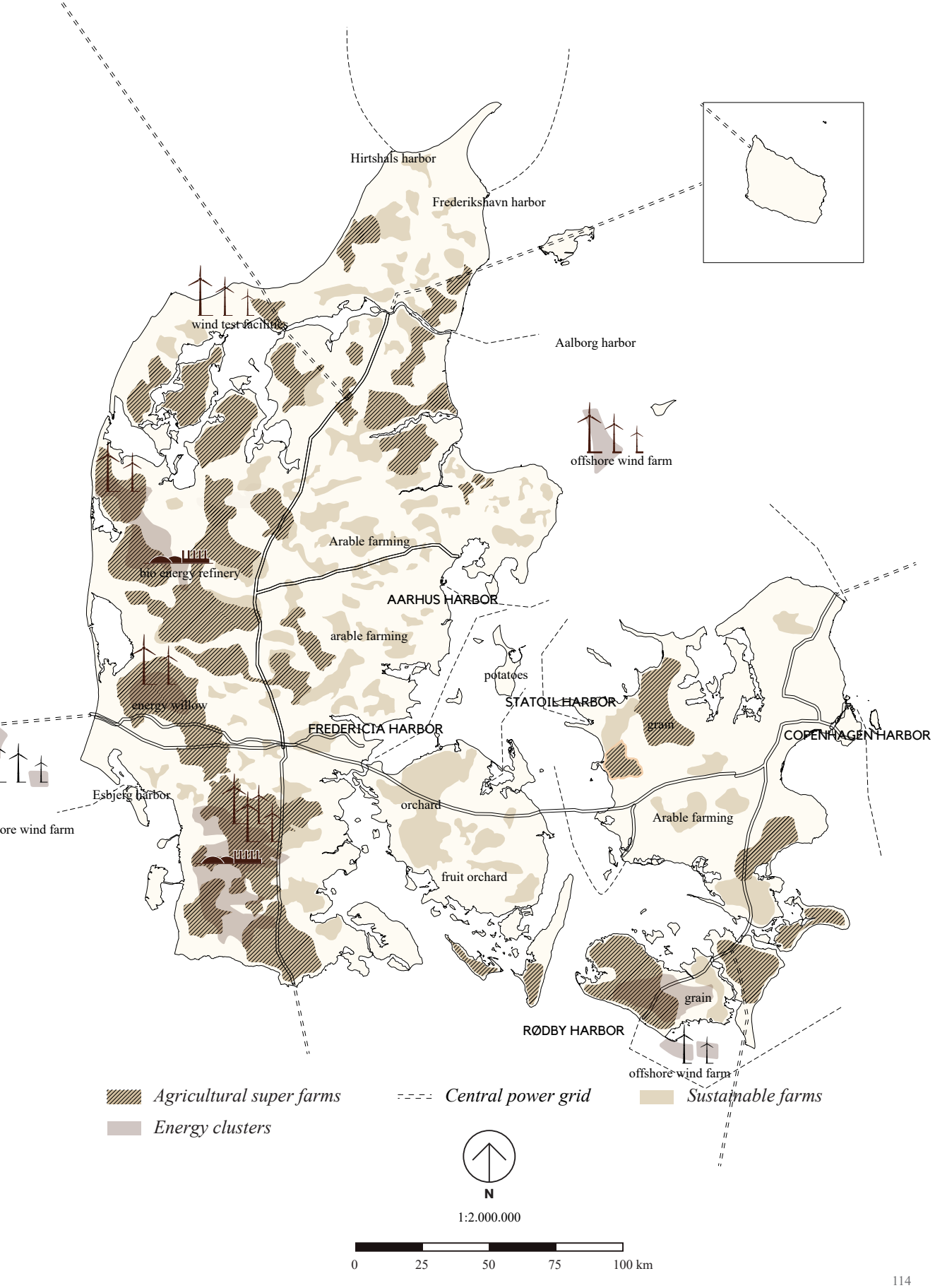
Many different layers interact on any given location and it is important to take every aspect into consideration when develop the danish territorium. By neglecting some of the layers, important knowledge is overlooked, which will create a vision of Denmark, not substantial enough to cope with all the actors and parameters included. The transformation of Denmark is comprehensive and many actors will need to be heard and taken into consideration, the many wishes and demands will naturally create conflicts, it is therefore important to stress that not every design solution can be solely managed at a distant scale. Therefore, the next chapter will give a proposal to how the national goals and guidelines can be implemented at a regional scale in the area between Randers and Vejle, which is experiencing a rapid growing population with expense to both the quality of nature and the agricultural sector.


Aalborg Airport
Aalborg
Green Suburb
Satelite Cities
Aarhus Airport
Aarhus
Station Cities
Metropolitan area
Commuter Towns
Close and integrated suburb
Billund Airport
'Trekants området'
Esbjerg
Odense
Commuter Towns
Blue Suburb
Capital area
Inclusive Suburb
Copenhagen Airport
Station Cities
Future settlements areas
Rails
Road <6m
Highway

Ill. 110.1


'GRENEN'
Turism
'RÅBJERG MILE'
Dunes
Granite knot
Sand
Turism
Turism
fuglefjeld
Watersports
'NATIONALPARK THY'
Fjord landscape
Dune and Moor
'ROLD SKOV'
Vildmose
Subglacial streams
'MOLS BJERGE'
Dunes
'SKOVBJERG BAKKEØ'
'SØHØJLANDET'
the Jutland ridge
Parforcejagtlandskabet
Turism
Jelling-monuments
'NATIONALPARK SKJOLDUNGERNES LAND'
glacial landscape
Sort sol
Wadden Sea
'STEVNS KLINT'
'NATIONALPARK VADEHAVET'
'SVANNINGE BAKKER '
Marsh
Wild horses
'MØNS KLINT'
Archipelago
National park
Natura 2000
Ecological connections

Ill. 112.1


Hirtshals harbor
Frederikshavn harbor
wind test facilities
Aalborg harbor
offshore wind farm
Arable farming
bio energy refinery
AARHUS HARBOR
arable farming
potatoes
energy willow
STATOIL HARBOR
grain
FREDERICIA HARBOR
COPENHAGEN HARBOR
Esbjerg harbor
orchard
Arable farming
fruit orchard
grain
RØDBY HARBOR
offshore wind farm
Agricultural super farms
Central power grid
Sustainable farms
Energy clusters
N
1:2.000.000
0
25
50
75
100 km

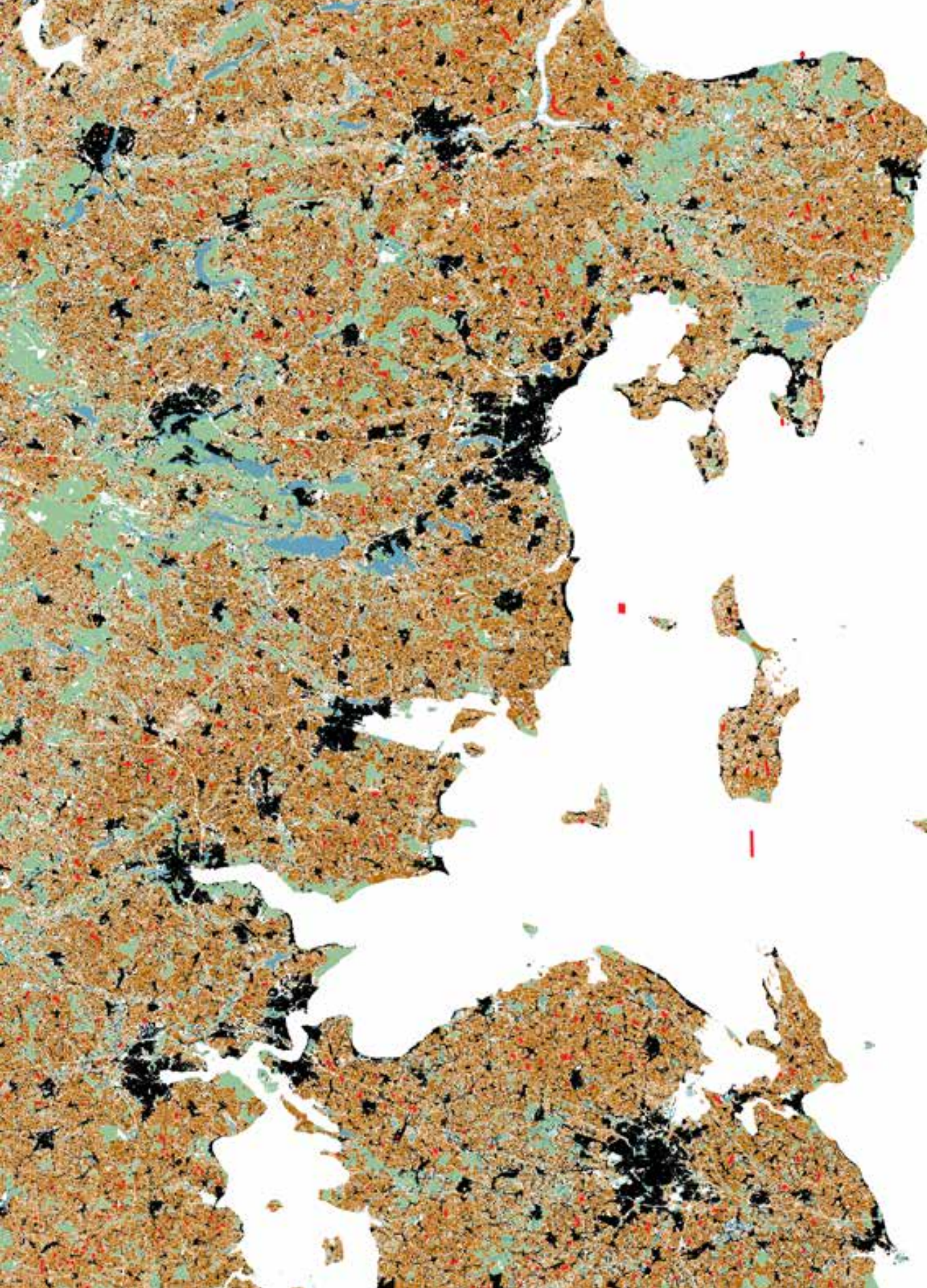
Ill. 114.1

URBAN METABOLISM IN EASTERN JUTLAND

So far the report has sought to outline the basic factors of the national scale. This chapter investigates the implications of a national trajectory for urban- and landscape planning at a regional scale, with the case defined as 'the eastern Jutland metropolis' (den østjyske millionby).

With the title 'Urban Metabolism in Eastern Jutland', it is sought to underline how the region is entangle by flows of material and immaterial character and the countless interactions of natural and human systems. Not to claim that the tendencies of 'The Eastern Jutland Region' only takes place exactly here, as the tendencies is spread mainly through out the 'H City' (as mentioned on page 22), yet the area is perceived as a junction, experiencing rapid transformations. (Nielsen and Hemmersam, 2004)

Ill. 115.1 - GIS material depicting forestation, wetlands, streams, lakes agricultural field, wind turbines, roads, railways and buildings of 'the Eastern Jutland Metropolis'.



'THE EASTERN JUTLAND METROPOLIS'

So far the report has sought to outline the basic factors of the national scale. This chapter investigates the implications of a national trajectory for urban- and landscape planning at a regional scale, with the case defined as 'the eastern Jutland metropolis' (den østjyske millionby).

The area is difficult to define, as the area consist of a number of large attracting elements which cause a ripple effect to the surroundings. it was not until Connie Hedegaard, based on the work of Bue Nielsen, in 2006 published the national planning report, 'The New Map of Denmark - spatial planning under new conditions', that the notion of a contiguous urban area occurred. Up until this point there existed no metropolitan area outside Copenhagen, mentally. Yet Denmark got its second metropolitan area with more than one million inhabitants. (Stensgaard, 2017)

Jensen and steensgaard (2008) describes the new metropolitan area as: '*Life in DØM [The East Jutlandic metropolis] is about the endless, efficient transportation of people, services and goods. The one million city [The East Jutlandic metropolis] is a sleepless organism where diesel and gasoline flows through the veins*' (own translation, Jensen and Stensgaard, 2008; 7)

An organism which is not bound by the traditional city limits, not even municipal or regional borders. It is an organism where movement, is in focus. Where the increasing number of inhabitants pressurise infrastructure, nature and agriculture (Stensgaard, 2017). An organism that is expanding uncontrolled and with no overall plan, only individual wishes and agendas from municipal trajectories. Tom Nielsen argues (Nielsen in Andersen, 2013) that it is necessary to break with the 'mayor mindset' (borgmestertankegange) in order to handle the problems at hand. Nielsen and Brorman (2017) highlights how there the past has been influenced by an approach to cooperation between the municipalities, but that this fell apart quickly, now the planning continues in small bits where each participant follows own economic or political logic.

Boris Brorman address, (Brorman in Stensgaard, 2017), that this individualistic approach results in a situation where the nature and landscape is not protected with an overall approach leading to fragmentation of landscape elements such as river valleys. Further he argues that the non organised approach can have negative economic consequences, as scattering the funds may not be the best approach.

Jensen and Stensgaard (2008) address in their article the existing battles within the area and highlights how there historically has been conflicts, both social and political between areas, between the areas that today has melted together, these conflicts creates a disorganized development, where different cities compete against each other in the search for growth.

When looking at the previously shown maps of the future settlement pattern (see page 107) it can be seen that the area is located in the center of the future living area, illustrating the area as favourable for development of new infrastructure, public services and new residential areas. Further it can be seen (on page 63) how nature has the potential to be well integrated into a regional plan, with the possibility to benefit inhabitants and the ecosystem. Lastly it is illustrated, from the national trajectory regarding agriculture and energy production (see page 87), that the area is not suited for large energy clusters, yet renewable energy should be produced at a local scale. The future agriculture in the area will primarily consist of small environmentally friendly farms which allows animals and inhabitants to access the countryside (see page 73).

This raises the question; What if the 'The eastern Jutland metropolis' had a cohesive plan for nature and a cohesive plan for settlements?

Ill. 118.1 - The amount of commuter traffic which is crossing municipality borders each day. It is worth noticing that only three municipalities, Aarhus, Fredericia and Vejle, experience more incoming commuters than outgoing. This indicates that many of the surrounding municipalities has a high degree of outgoing commuters, thus they are municipalities where many people live but do not work, roughly said.

LOCAL CONDITIONS AND NATIONAL TRAJECTORIES

The urban region is a conflicting zone between many different oriented agendas where the strategic development of the region will be influenced by the regional conditions, growing number of inhabitants, the need for developing new infrastructural systems (see page 107), the national trajectories aiming towards an increased overall health of nature (see page 63), provide new hybrids of production (see page 87) and create new and attractive settlements (see page 103).

Illustration 128.1 shows the topography of the area, it is worth noticing the sub glacial formations which cuts through the landscape in an east-west direction forming soft rolling hills (see page 57) in large parts of the area. Illustration 126.1 shows the current layout of forest, lakes, streams and wetlands. It is worth noticing the high concentration of forest in the area around Silkeborg and on Djursland another observation is that the forest is scattered throughout the area with low coherence. By comparing the two maps it becomes visible that many of the streams and lakes lies in the bottom of the subglacial formations. This indicates that these areas are crucial for a well thriving wildlife and biodiversity.

Illustration 124.1 is the current artificial surfaces including both roads and building. Small settlements is scattered throughout the urban region and combined with a vast number of small roads and individual buildings are the man made objects all-pervading. When comparing the artificial surfaces with nature and the topography it becomes apparent that the highways (motorvej), often crosses the subglacial formations in a diagonal direction, resulting in shattered ecological connections which limits the important movement for animals (see page 59). Further the large cities are often located close to the subglacial formations while the forests are often located apart from the subglacial formations.

Illustration 122.1 is a cut out of the national trajectories of 'Future settlement areas', much of the area is not yet developed. Many developed areas are located outside the 'Future Settlement area', this indicates that there needs to be evaluated if some of the buildings outside should be removed. It can also be seen that the proposed settlement area only includes a limited number of local potentials. It is therefore relevant to adjust the 'future settlement areas' according to local conditions such as infrastructure, settlements, green corridors, production and topography.

Illustration 120.1 is a cut out of the national trajectory of a coherent network of nature which stretches across the country. The natural connections are proposing a connected nature which is located along the subglacial formations and the most interesting natural areas. The detailing of the natural connections is limited to either high or low valuable areas (as seen on page 61), is it beneficially to work with a trisection, further detailing the degrees of value, which should be done at a minor scale than the national.

It can be concluded that the area is a mixture of local conditions, which needs to be coherent with the national trajectories and changing living patterns (see page 7). The local conditions are difficult to account for, when proposing a national trajectory, therefore it is important to adjust the national outlines to the regional conditions.

Ill. 120.1 - National green corridor strategy

Ill. 122.1 - National settlement areas

Ill. 124.1 - Artificial surfaces

Ill. 126.1 - Forests, wetlands, lakes, ponds

Ill. 128.1 - Topography

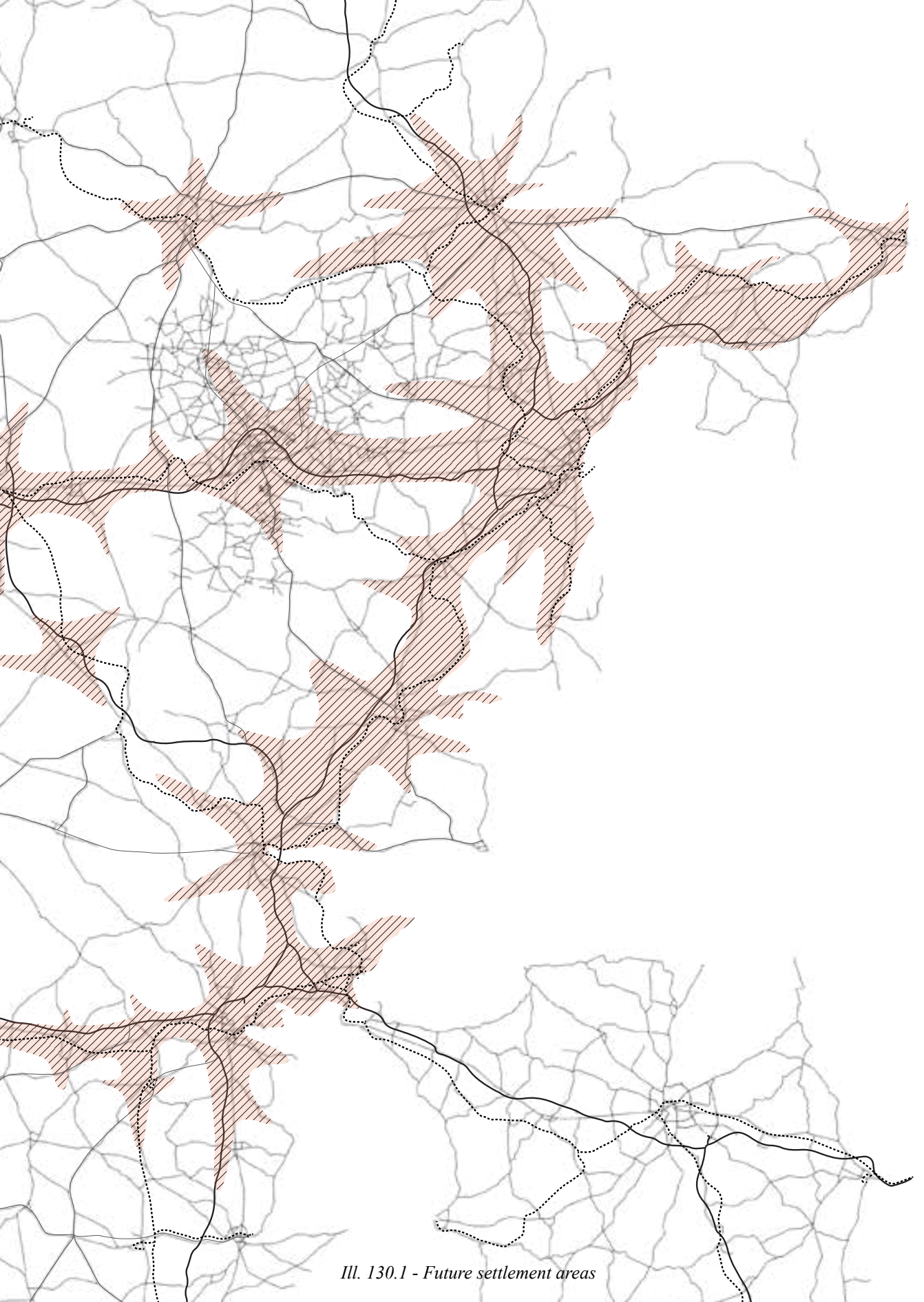
ADJUSTING THE NATIONAL TRAJECTORIES

The two maps on the right adjusts the national guidelines to fit with regional conditions. The green corridors (illustration 132.1) has been expanded and adjusted so they take local elements such as streams, small subglacial formations, wetlands and detailed topography into consideration. Further is there distinguished between high, medium and low value natural areas which will function as a guideline for the actions which can and will take place (see page 63).

The 'Future settlement areas' has been further developed as well, and by using the new green corridors it has been possible to create a more precise proposal for the locations which has potential to be developed as settlements.

It can be argued that the national trajectories have been beneficial, when proposing new land applications at the regional scale. Using the national goals as outline for a regional strategy secures that the overall planning fits into the context of the country. It is worth noticing that even though the changes to the national trajectories are limited, it is an important step to adjust the trajectory according to local conditions as the potentials vary according to the scale and context which they are seen in (see page 29).

To ensure a flourishing strategy at a regional level it is important that the municipalities, which are affected, collaborate in the process, this will secure that each municipality can provide crucial knowledge in shaping the future strategy of the area. The plans to the right are not a precise strategic evaluation of precise locations for further settlements and layout of the natural connections, but once again, it will function as a guideline which each municipality can use as support in planning the future.

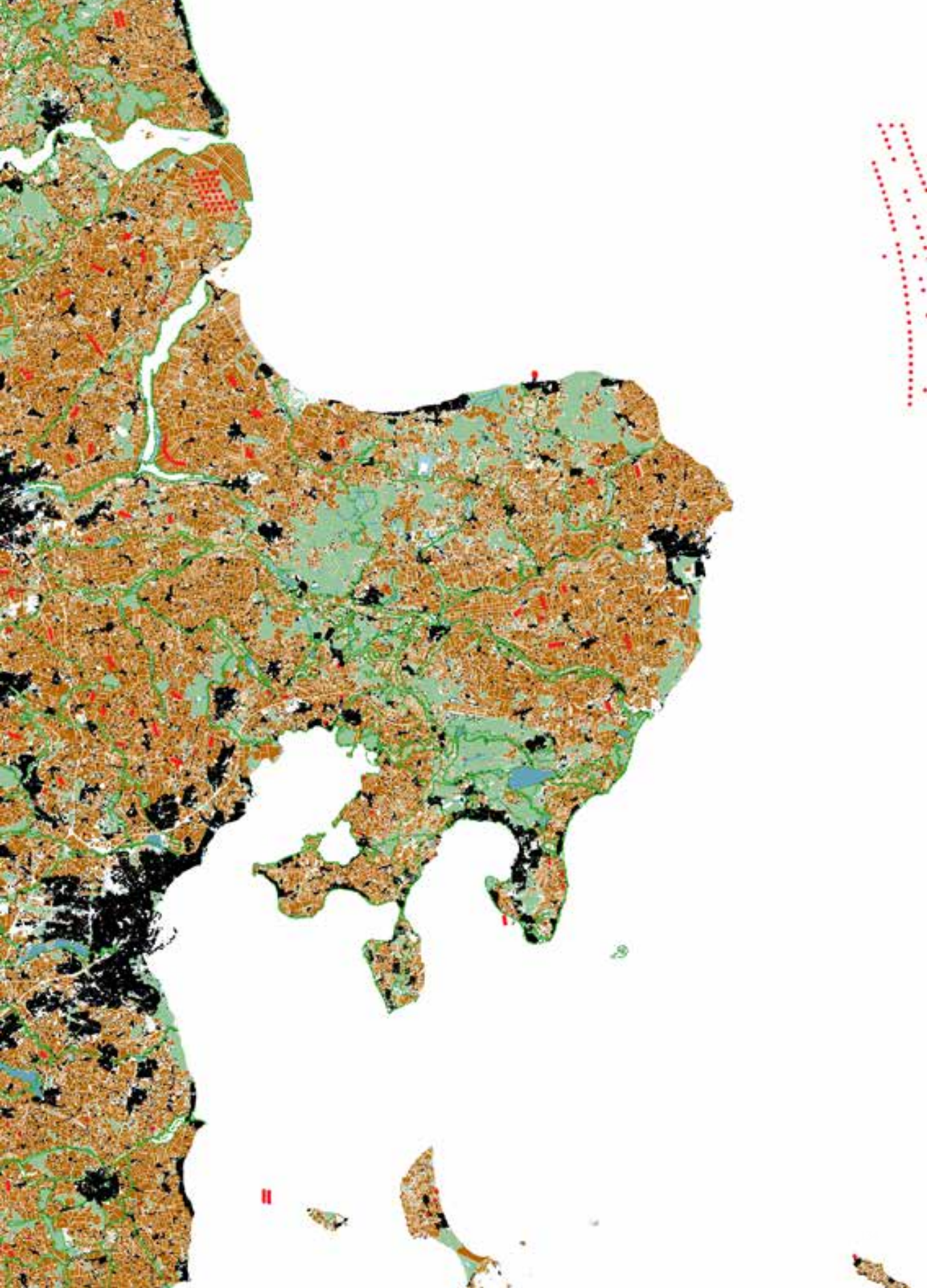


Ill. 130.1 - Future settlement areas

Ill. 132.1 - Nature connections

LAND APPLICATION WITH LOCAL POTENTIALS

Ill. 133.1 - GIS material depicting forestation, wetlands, streams, lakes agricultural field, wind turbines, roads, railways and buildings of 'the Eastern Jutland Metropolis'. 1:400.000



Ill. 135.1 - Kolindsund, 1787

Ill. 135.2 - Kolindsund, 1984

DJURSLAND

The coming pages discusses the situation at Djursland. Djursland is located in the North east corner of the 'Eastern Jutlandic metropolis' (see page 117). This chapter will focus on how the regional strategy can be incorporated at a territorium comprising two municipalities. The chapter builds upon the concepts for settlements (page 103), agriculture (page 75) and nature (page 61) which has been presented earlier in the thesis.

In the regional prospect (see page 129) it is illustrated how the area roughly is divided into two areas, an area to the south which is going to experience new developments of residences and an area to the north where the primary focus will be on agriculture. The green corridor strategy is to be implemented throughout the demarcated area.

Further is the regional strategy used as a guiding element in allocating the current functions as well as highlighting areas of interest for transformation and/or development. The regional trajectory points towards an increasing interest in smaller settlements in the eastern parts of the area, along the light rail, and the main road (hovedvej) between Grenaa and Aarhus, as well as the central city (center by) Grenaa (see illustration 130.1).

As many of the existing settlements are not located within the future growth area, a need for deciding which areas is worth preserving and which is to be transformed will arise. The regional trajectory depicts a future situation where the northern parts is primarily left for other activities than living, yet still with room for tourism in the form of summer cottages, this increases the demand for an enhanced monitoring of the cities which is located furthest from the roughly demarcated growth area, not to say that every settlement outside the growth area should be cleared out and converted into other activities, but instead, there should be a careful evaluation of each settlement according to the parameters proposed on page 103.

The regional trajectory aims towards the implementation of the green corridor strategy, stretching across the region, and in doing so, the topography should be used as a guiding element. It is worth to mention a specific conflict in the area, namely 'Kolindsund'. The regional strategy aims for creating new green corridors, which includes the area of kolindsund. This is mainly argued, as the area today is below sea level, and therefore needs artificial drainage in order to ensure the agricultural production in the area, the drainage dates back to the year 1842, where the was the second largest lake in the danish territory (Hansen, n.d.).

The artificially drained area is experiencing a number of negative consequences. An continually increase of the necessary pumping depth, from an originally 2,6 meters to 5 meters. This is due to the methane gases which lais below water, when these reaches the surface, they slowly evaporates from the soil. Furthermore this also has economic implications, as new pumps and maintenance is needed and the CO2 emission raises, creating a european quota cost of approx. 4 mill. DKK per year, this quota is expected to increase to the vicinity of 40 mill. The negative CO2 emission from the drainage amounts to approximately the energy use from 28.000 household. Lastly the salty groundwater is likely threatening the base for agricultural cultivation as well as the regional groundwater supplying settlements. (Hansen, n.d.)

It is of great importance that the growing regions contain a clear plan, as it is an opportunity to better the life of the inhabitants rather than continuing the reluctance of intervenance due to fear of being the one who slowed the process of growth. By implementing and tailoring the regional planning to the local qualities, a new plan can be drawn which will adjust to the futural needs of the local perspective in interaction with the national trajectory.

SHIFTING DEMOGRAPHICS

As described (on page 91), are the demographic movement of the population a highly nuanced manner. Djursland is a clear example of how inhabitants settle in yet a varied manner, although the attraction mainly is concentrated as commuter towns or satellite towns, in close association to the biggest cities of the region, Århus and Randers.

As illustrated (on illustration 138.1), the cities furthest from Aarhus and Randers are declining in the number of inhabitants, while those closest to Aarhus and Randers thrive, this is of course a generalised picture, as some opposes this claim. The population of Grenaa increases, yet without rubbing of on the surrounding cities, which are in decline. This reflects the principle of double urbanization, as some cities, within a municipality, experience growth yet others dont (described on page 91).

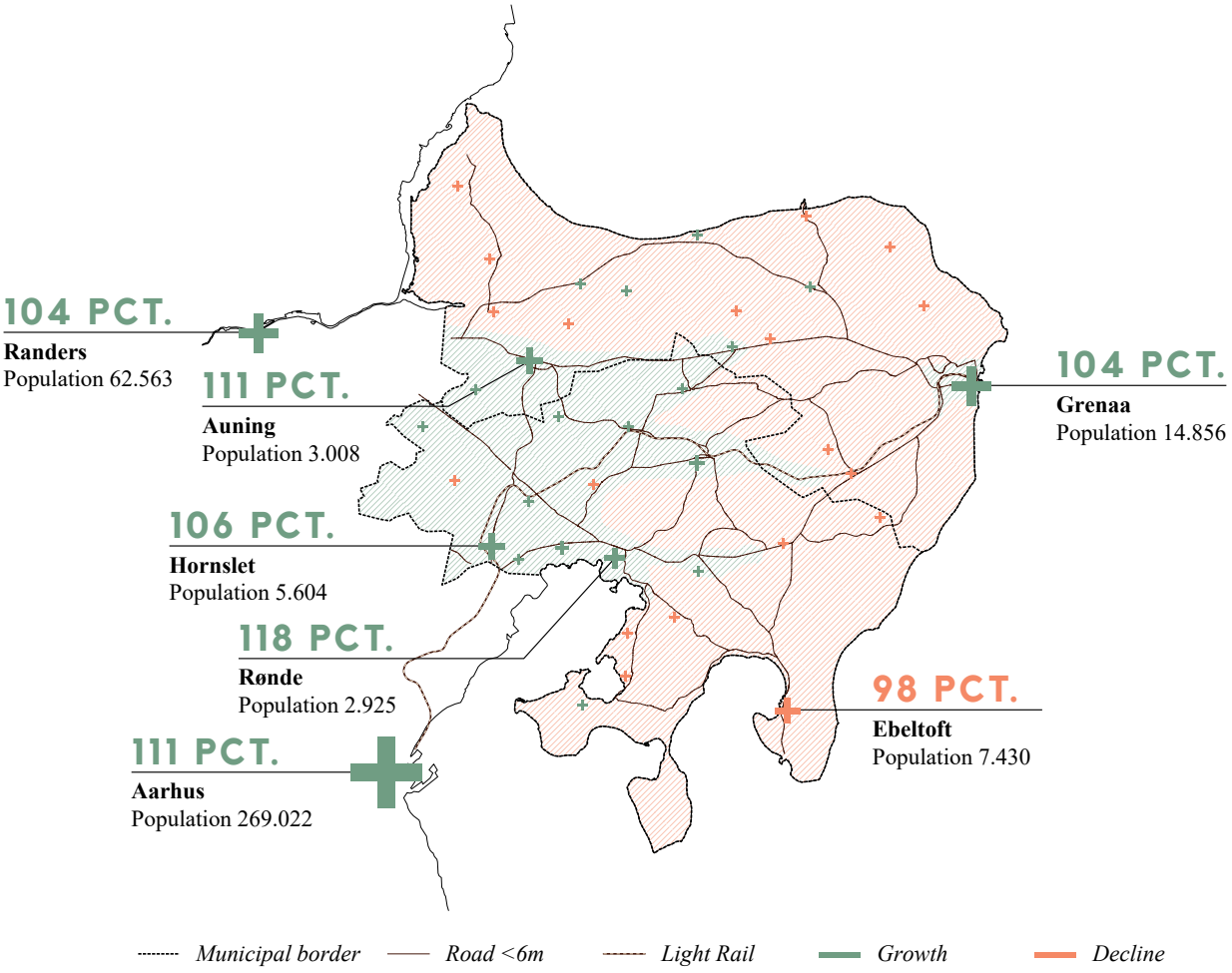
Another point to notice is the relation to infrastructure, as many of the cities experiencing growth are located in association with infrastructure, light rail and bigger roads, which connects the given cities to Aarhus and Randers. As mentioned, in the regional plan, the areas close to existing infrastructure are highly attractive locations for new settlements.

In addition to the migration, the general prognosis for the two municipalities illustrate how the population is to reach 84.720 in the year 2045 (80.120 as of 2017) (statestikbanken.dk n.d). This in turn will result in a denser, more concentrated and increased population.

There are two aspects in this tendency which are worth highlighting, not to neglect the remaining aspect, but to highlight the main concerns. These are the questions of, what is to be done to the areas of depopulation, and how do one work with the areas of increased population in coherence with existing facilities, villages, agriculture etc. combined with the additionally needed facilities.

Firstly (as argued on page 97), will the persistent depopulation of some cities demand more focus on the cities which have potential to thrive in the future (Møller, 2016; Jacobsen, 2015). It is some major strategic choices and a clear distinction of what the future is for a given area, that are needed. If not, all cities will be hollowed out and less attractive. Therefore, with some cities, one might acknowledge that they slowly will get smaller. But still in such a way, that includes the inhabitants in the process (Jacobsen, 2015). A distinction could be as Jørgen Møller (2016) argues, growth, status quo and decline. Which building and settlements are to be dismantled or transformed and which should contain public facilities and further investments.

Only when one dares to challenge the existing layout, with the difficult decisions can a real transformation begin. As mentioned (on page 103), it could be necessary to rethink the settlement structure and move away from the notion that every new settlements needs to be placed adjacent to already built areas.



2010-2017

102 PCT.
Syddjurs municipality
Population 42.021

Rural districts 98 pct.
Population 12.294

100 PCT.
Norddjurs municipality
Population 38.099

Rural districts 96 pct.
Population 9.803

2017-2045

105 PCT.
Syddjurs municipality
Population 43.966

107 PCT.
Norddjurs municipality
Population 40.754

Ill. 138.1 - Growth and decline

Ill. 140.1-16 - Pictures from a field trip to Djursland

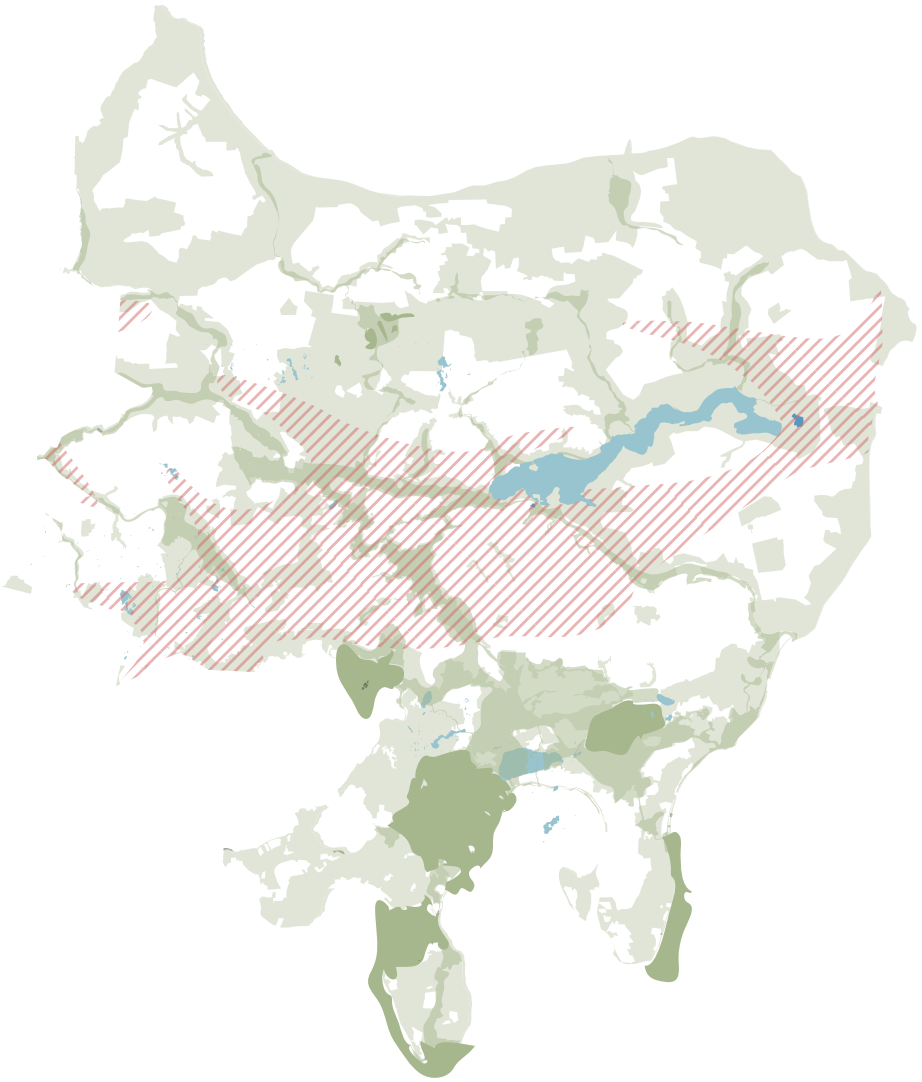
LOCAL VALUES IN A REGIONAL CONTEXT

The current land application (see illustration 146.1) is a mixture, mainly of agriculture, forests, large and small settlements. The current area can roughly be divided into three areas, yet with settlements scattered across all three, where the area to the left and right is dominated by a high percent of agriculture. The central area is where most of the current forests are found and also includes large parts of national park Mols Bjerge which is a big tourist attraction to the area. Looking at illustration 144.1 it can be seen that the topography of the area is, during the last ice age, intensively shaped and the main subglacial formation runs in a east west direction between Rander and Greenå. Further it can be seen that the subglacial formations are creating a contiguous structure which cut through the landscape. The topography additionally shows that the lowest area is located in the center of Kolindsund, an artificial drained lake as mentioned on page 136, used for cultivated agriculture.

When combining the two illustrations it can be seen that the structure of the subglacial formations are utilized for cultivated fields, as argued on page 59 are these areas rarely the most economically profitable for farmers and the high cultivation challenge the establishment of the green corridor strategy that stretches throughout the area, which utilizes the advantages of subglacial formations for biodiversity, as they often contain a diversity of wet- and dry land (see page 51).

Illustration 142.1 contains the regional trajectories regarding future settlement areas and the green corridor strategy. It can be see that the regional trajectories regarding nature is proposing a reopening of the former lake at Kolindsund as well as transforming the subglacial formations into natural areas for both recreative purposes and enhancement of the quality of nature, to ensure well being of wildlife. The national trajectory for settlements divides the area into two, where the southern part along the light rail in the future will be the primary locations for settlements and thereby leaving open spaces to the north for both natural enhancement and optimising the production which is going to be maintained in the area.

The regional trajectories will be used as a guiding element in the future layout of the area. By using the regional plan as a guiding element it becomes possible to adapt the future land application into the regional and national plan.



Ill. 142.1

max. elevation: 125 m min. elevation: - 4 m

Ill. 144.1


N
1:400.000
0
5
10
15
20 km
Fields
Artificial surface
Water
Forest

Ill. 146.1

TRANSFORMING WITH LOCAL POTENTIALS

The illustrations to the right, illustration 148.1, 150.1 and 152.1, is a proposal for a restructuring of Djursland with focus on the green corridor strategy, attractive settlements and areas for new super farms. In the development of this plan has the regional trajectory been used as a guiding element and the local conditions has been used to adjust the regional plan.

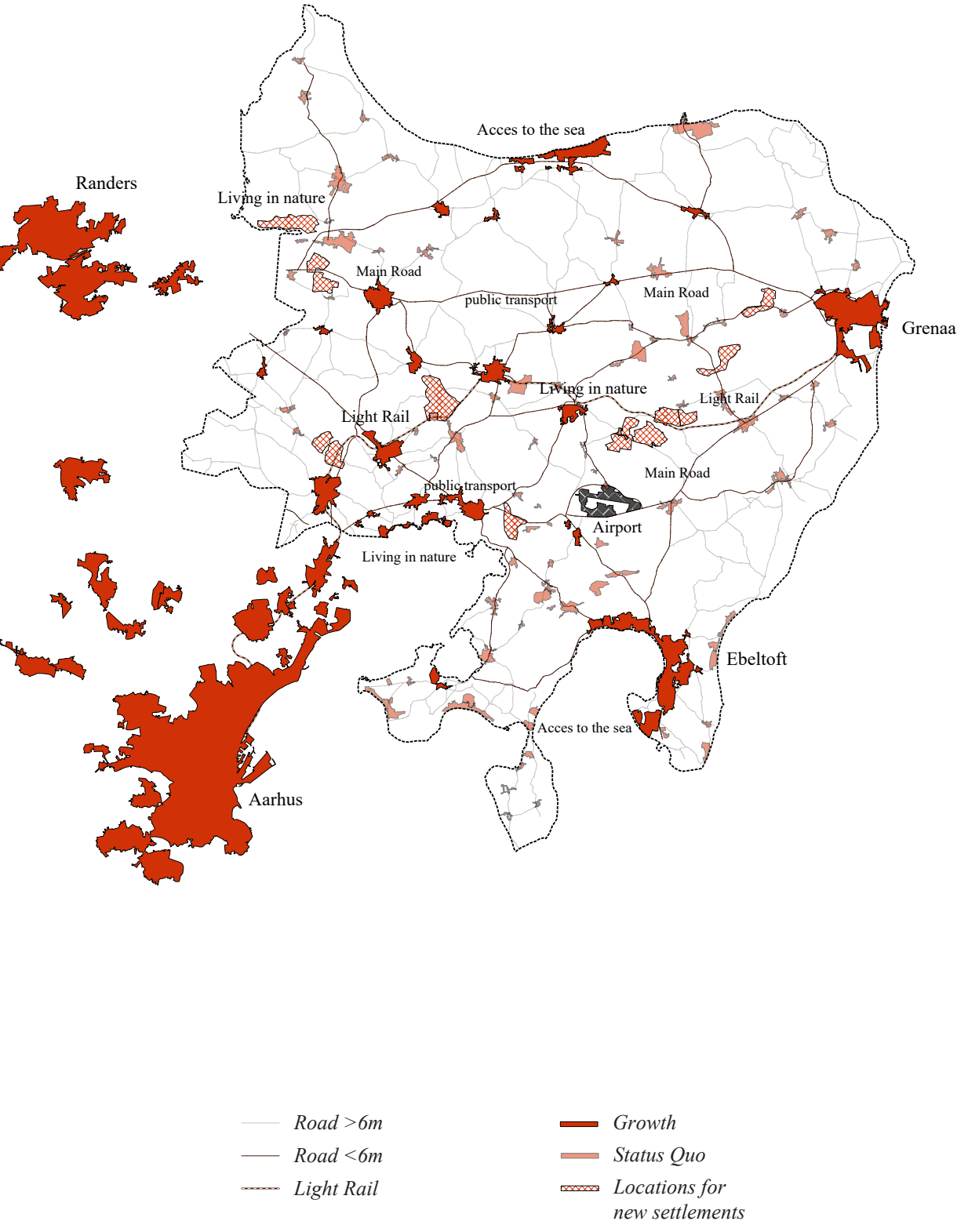
Drained wetlands and lakes should be reopened in cohesive green corridors to connect the highly attractive areas such as 'nationalpark Mols' and the river valleys, in accordance with the green corridor strategy.

The layout of the green corridors is based on the regional trajectories, the typography, existing streams and wetlands. As mentioned (on page 49) is there substantial benefits of preserving and enhancing the quality of the nature, this should be taken advantage of in the screening of new locations for settlements.

Settlements, both existing and new, should avoid the characterization as anonymous residential areas or suburban area, it should find its place within the network of cities (see page 39). They should contain individual qualities of architecture, spare time facilities, sustainable associational life (Foreningsliv) (as the examples on page 105). Means for this could also be found in place specific qualities, as offered by the landscape.

With the introduction of agricultural superclusters (as introduced on page 75), the need for large contiguous spaces raises. This in turn adds fuel to the need for adjusting a few areas towards this highly efficient production and can be a factor in the dismantlement of certain settlements, removing artificial surfaces as roads, houses etc. taking up space. The new agricultural clusters will mainly be located in the northern part of the area as there is good soil conditions, a flat topography and limited amount of inhabitants.

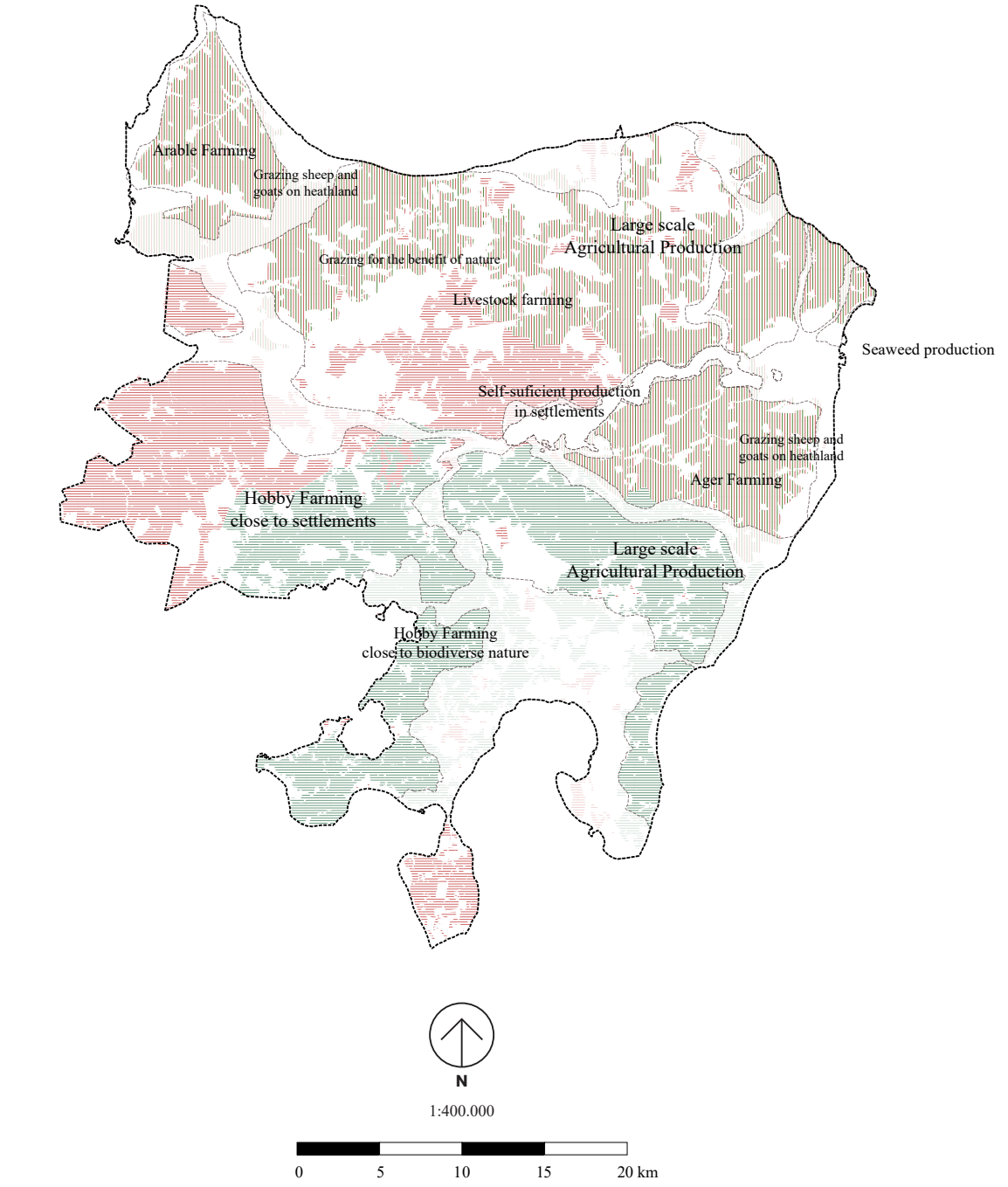
It is possible to create a varied landscape with space for strictly planned and intensively cultivated landscapes in one place and varied nature elsewhere. This can form the basis for an improved experiential landscaping. Both for the local residents and those visiting the place from time to time. More well-functioning production areas, where productivity can be increased, is a key to freeing space elsewhere for settlement, nature and tourism.


Randers
Living in nature
Acces to the sea
Main Road
public transport
Main Road
Grenaa
Living in nature
Light Rail
Light Rail
Main Road
public transport
Airport
Living in nature
Ebeltoft
Acces to the sea
Aarhus
Road >6m
Road <6m
Light Rail
Growth
Status Quo
Locations for new settlements

Ill. 148.1


salt marshes
Randers Fjord
salt marshes
Heathland
Beach
River Delta
Streams
lakes and ponds
Klintekysten
Marsh
Subglacial formations
Kolindsund
River Valley
Heathland
Beach
Streams
River Delta
'Dødishuller'
Stubbe Sø
Kalø Vig
Nationalpark Mols Bjerge
Ebeltoft Vig
Nationalpark Mols Bjerge
Subglacial formation
Preserved Landscape
Nature conservation area
Plasystem

Ill. 150.1

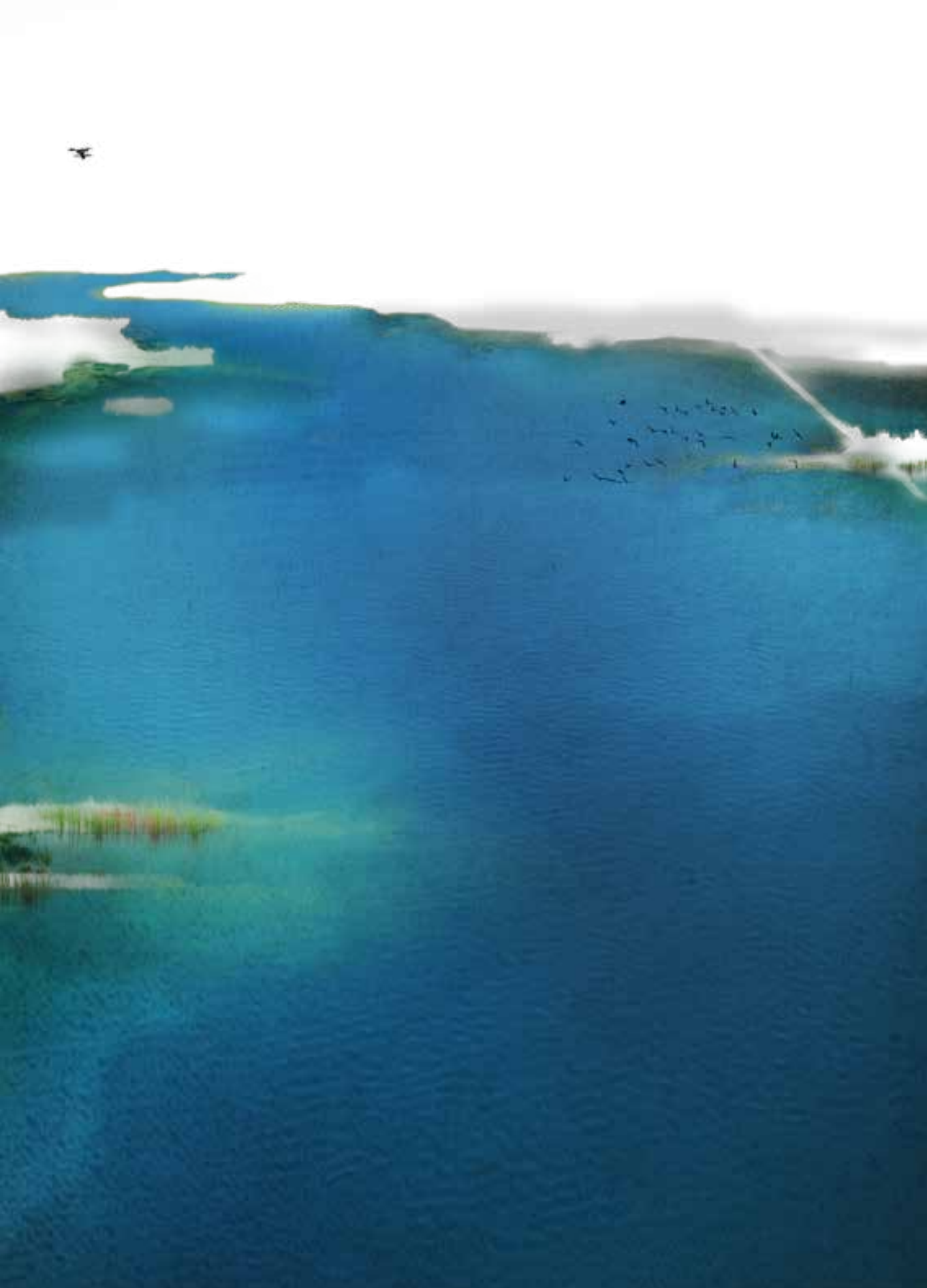

Arable Farming
Grazing sheep and goats on heathland
Grazing for the benefit of nature
Large scale Agricultural Production
Livestock farming
Seaweed production
Self-suficient production in settlements
Grazing sheep and goats on heathland
Ager Farming
Hobby Farming close to settlements
Large scale Agricultural Production
Hobby Farming close to biodiverse nature
N
1:400.000
0
5
10
15
20 km
Super Agriculture
Sustainable agriculture
Sustainable agriculture and Self-sufficient agriculture

Ill. 152.1

Ill. 153.1-2 - A reopening of the former lake Kolindsund will create an attractive recreational area where biodiversity can flourish and settlements can increase their value, both existing and potential settlements. The new lake will in combination with the already established national park, Mols bjerge, be two highly attractive environments which has the potential to attract visitors, both local and national.

In order to make the new lake a gathering space for inhabitants from all over Djursland it will be favorable to create a recreational path along the edge of the lake. The recreational path could function as a transit corridor where, for example, an activity path for recreational purposes or a new super bike path could be introduced between Greenå and Aarhus, this would greatly enhance the possibility for commuting over long distances by bike.

Activities such as rowing, fishing, outdoor life, nature playgrounds and sports activities could be located along the path to make it highly attractive. One could imagine a list of activities to take place along the route in order to make it more than just a natural trail. By incorporating the natural trail into a network, along the subglacial formations, it could connect many parts of Djursland.



Ill. 157.1-2 - Settlements along the reopened lake Kolindsund, can emerge and thrive, as the recreational value is high and the infrastructural connections, in the form of Light Rail, main roads and possibly a new bicycle highway, establishes a security as the settlements are linked to the growing network comprising Aarhus, Randers and Grenaa along with a number of other growing settlements of different sizes and shapes.

The new settlements could be of varying sizes and offer different types of living possibilities and activities. By working with heterogeneity between the different settlements along the edge of the new lake it will be possible to attract a wide range of users to the whole area. One could imagine that some villages would focus on growing their own crops in communities, other could focus on alternative living possibilities and some on entrepreneurship. It is important that each village and its activities is created in collaboration with current inhabitants, making the planning of new settlements highly influenced by people who will live there in the future. By using the landscape as a guiding element in both locating the settlement and the location of the individual building it will be possible to create new cities in synergy with the existing conditions.

CHAPTER CONCLUSION

It can be argued that the regional goals and trajectories has influenced the future land application of Djursland, but they have not been the only controlling element as the local conditions, which is impossible to include in a substantial manner on a regional scale, has influenced the specific layout of the area. when evaluating the local conditions it is important to exercise a close collaboration between citizens, local government and regional government where each player influences the plans in order to ensure that the best possible outcome can be established.

The role of the regional planning is to ensure that an area is developing as part of a network, which stretches beyond the municipality borders, but it is impossible to take every local condition into consideration when creating a plan for an urban region, such as the east Jutlandic metropolis (see page 117). therefore it is important that the local governments uses the regional plan as a guideline and starting point, but make individual assessment of each area based on an array of parameters such as current conditions, access to infrastructural systems, access to natural attractive environment, daycare facilities, schools and if there is a well working associational life.

As this is mainly a strategic proposal for a general layout of the area, the next step would be to implement a holistic collaboration between interest groups, with focus on the precise locations and layout of areas for new inhabitants, in this process there should be aimed to improve the existing cities which has attractive potentials (as mentioned on page xx). Further there should, if sufficient potentials is found, be made an in depth analyses for developing new settlement areas. This would include public involvement from the first stage of the design process, one could maybe imagine an online collaboration where interested people could provide input and ideas for which qualities the future settlements should provide, the answers could then form basis for the future layout of new settlements.

When evaluating which settlements are to either be developed, improved and/or expanded it is highly relevant that there is made thorough investigations of the qualities which makes each specific city interesting and special compared to other settlements in the area, and that these qualities are utilized as a dominant factor in the development/redevelopment of the city, in order to avoid monotonous and unattractive settlements.

In conclusion it can be said that the immersion into Djursland has proposed an adjustment to the regional strategies based on the local conditions, this results in site specific proposals for which settlements are to either be down prioritised or transformed, which is to be maintained and possibly further improved along with some new areas which in the future could be developed into new settlements.

CONCLUSION

The starting point for making this thesis is the problems raised by the discrepancy found between the contemporary trajectories, the real reality and the projection of future development to society. The discrepancy affords a range of divergent trajectories with implication to the shared landmass.

This thesis has set of to answer some of the many questions which arise when imagining the future layout of Denmark. Discuss future potentials for residential, natural, agricultural and energy production, in the perspective of a cohesive, balanced and diverse country, affording both individual and collective development, through optimization of living conditions and enhancing existing qualities.

The approach has been to define Denmark as one coherent landscape, free of immaterial borders, accounting the many parameters and influential factors which arises through the different scales. Here it is important to emphasize the holistic glance, seeing Denmark as intensities of different character and not as a city/country contradiction. Instead it is a tethering of settlements, production, nature, landscape, actors, groups- and individuals of interest.

Through discourses and depicting a future scenario based on goals and processes, the thesis challenge the contemporary trajectories. It illustrates a territorial wide strategy which takes place specific potentials into account, so the strategy can be manifested locally. The thesis illustrates a trajectory for landscape- and urban planning, which prioritizes and molds the landmass, in order to discuss an optimized land application.

The findings show how there exist many uncertain elements and identities within the same locale. This complexity of the task highlights that a traditional masterplan is not a possibility, as places are not static. It is therefore more favourable to work with a goal- and process oriented approach. Yet the establishment of the existing place must not solely dictate the outcome.

The danish territorium is a geographically small country, yet it consists of many differentiated qualities and potentials. Rather than focusing on growth or decline, one should focus on the transformation, as the leaving of some utilizations to places makes room for new.

The thesis proposes a specific planning approach, comprising the aforementioned, with a division of the country into vaguely defined areas. The specific border is not to be perceived as the main priority, rather it is the conceptualised aspects they present, a trajectory for optimized land application.

As potentials vary with the scale, it is important to approach the subject with a differentiation of scales. By dividing the project into three sections (the entire country, 'den østjyske millionby' and Djursland), has a cohesion of the national trajectory, its implications at a regional scale, and the implementation adjusted to local values, been illustrated.

This has shown how the specificity of a national trajectory needs to account for regional and local values, thus arguing for a holistic approach, moulding national and local values and goals into a common trajectory.

The thesis proposes a reevaluation of the zoning policy. One that is adjusted to the contemporary reality and the designed future. One settle, work and lives in new ways and it must be part of the way the country is built. There must be room for prioritization of land application and for hybrids where it can be applied. Hybrids which affords biodiversity in a grid which is in coherence with existing and coming settlements and its corresponding infrastructure, not to forget agriculture and energy production in an environmentally sound manner.

One should not be afraid to reorganize, change and mold the country's layout, because, in fact, much can be gained. The utilization can be optimized and molded to the contemporary needs of society. As shown through the thesis, a redistribution of the land application can secure optimized agricultural production in pinpointed areas, thus create space for the much needed green corridors and biodiverse patches. It can secure a qualitative infrastructure rather than quantitative. Settlements can utilize place specific potential to enhance community based activities. And lastly, the implementation of hybrid utilization can optimise and enhance values, where it is found suitable.

REFLECTIONS ON THE NEXT CHAPTER

This project does not stop here. As mentioned, the challenges to the danish land application can not be solved by a master plan, but by goals and processes, which this thesis illustrates through scenario building. The world is ever changing, so this will never be a closed chapter, where one can lean back with satisfaction and utter that now the work is done.

Legislation and design must be adapted to the time for which it is to be used and the cohesion of legislation and design must be strengthened in the future. This project provides some perspective on which measures must be sought, both physical, but also in relation to the discourse.

This thesis has worked towards illustrating and discussing the given topic with the knowledge currently available. This also means that the basis for this thesis might be insufficient tomorrow and therefore needs reevaluation once more.

Many elaborating questions can be raised and it is necessary to prioritize and coordinate the interests as far as possible. But who should decide what to be where? How do the solutions tie a broad connection and democratic legitimacy so that they can last for several generations? What are the most sustainable solutions? Can there be flexible solutions so society can adjust goals and values if needed? How is the many interests maximized as far as possible? What priorities must necessarily be nationwide? What can be left to each municipality, individual community or individual landowner?

All these questions and more, must be answered in a cohesion between national, regional, municipal and local. It is necessary to continuously debate and discuss the distribution of land and the designed layout, preferably with a goal or process in mind.

The future work will also create the need to expand the directory of methods. As this project has focused on the initial framework and review of the basic issues, the combination of mappings and the inspection of local elements has been useful. It has created a greater sense for local relations and an overview of the relationship between local and national. However, the actual implementation and the final decisions needs dialogue and cooperation. If not, it will fall to the ground and the implementation will fail.

Working with a holistic glance, accounting for all the parameters and elements, gives, to some extent, a distance from immersion into the individual elements. Therefore, future work must ensure that actors and experts dive deeper into the matter on each field, thereby enhancing the overall image through further processing. They must account for the wishes and suggestions of citizens. There must be negotiated with the concerned owners, so that the solutions will be rooted in a local dialogue with as much support as possible. New opportunities to develop places of values can be opened if it is possible to balance the many interests and interactions between the many functions and activities. The principle of scenario building and exemplifying maps can in these dialogues between different interests be utilized, as those applied through this thesis.

LIST OF LITERATURE

Books:
Albertsen, N. (2011). Landsby, storby, grænseløs by. In: T. Clemmensen, ed., Grænseløse byer, 1st ed. Aarhus: Arkitektsskolens Forlag.

Bille, P. (2011). Konkurrencen om det gode hverdagsliv. In: T. Clemmensen, ed., Grænseløse byer, 1st ed. Aarhus: Arkitektsskolens Forlag.

Cresswell, T. (2015). PLACE - an introduction. 2nd ed. Wiley Blackwell.

Corner, J. (1999) The Agency of Mapping, in: Cosgrove, D. ed. (1999). Mappings. 1st ed. London: Reaktion, pp.213-300.

Dahl, H. (2008). Den usynlige verden. 1st ed. København: Gyldendal.

Dybvad, K. (2015). Udkantsmyten. 1st ed. Copenhagen: People's Press.

Fink, H., (2003). Et mangfoldigt naturbegreb. In Agger, P., ed 2003: Naturens værdi. Vinkler på danskernes forhold til naturen. København Gads forlag

Gaardmand, A. (2016). DANSK BYPLANLÆGNING 1938-1992 - Plan over land. 2nd ed. Copenhagen: Bogværket.

Geyter, X. (2002). After Sprawl. 1st ed. Rotterdam: NAi Publishers.

Høyer, S., (2003). Landskabets elementer og elementernes landskaber. In I. A. Olsen, ed 2003. Landskab og landskabsarkitektur. Frederiksberg C: Biofolia Ch. 2.

Kahn, A. (2005). Defining Urban Sites. In: C. Burns and A. Kahn, ed., Site Matters, 1st ed. New York and Oxon: Routledge, pp.281-296.

Laursen, L. (2008). Shrinking cities or urban transformation!. 1st ed. Institut for Arkitektur og Medieteknologi.

Madsen, H. (2009). Dansk byplanlægning - bind 1 - skæv og national 1830-1938. 1st ed. Copenhagen: Bogværket.

Massey, D. (1994). A Global Sense of Place. In: D. Massey, ed., Space, Place and Gender, 1st ed. Minneapolis: University of Minnesota Press.

Nielsen, T. (2001). Formløs. 1st ed. Aarhus: Arkitektskolens Forlag.

Nielsen, T and Hemmersam, P. (2004). Imagining the H-city: Denmark as an urban field. In Nielsen, T., Albertsen, N. and Hemmersam, P., ed., Urban Mutation, 1st ed. Aarhus: Arkitektskolens Forlag.

Ringgaard, D. (2010). Stedssans. 1st ed. Aarhus: Aarhus Universitetsforlag.

Sennett, R. (1999). Det fleksible menneske eller Arbejdets forvandling og personlighedens nedsmeltning. 1st ed. Højbjerg: Hovedland.

Townsend, A. (2014). Smart cities. 1st ed. New York: W.W. Norton & Company.

Urry, J. (2007), the place of emotions within place. In: Davidson, J., Bondi, L. and Smith, M. eds. (2007). Emotional geographies. 1st ed. London: Routledge.

Urry, J. (2016). What is the future?. 1st ed. Cambridge, Malden: Polity Press.

Weller, R. 2016. The City Is Not an Egg. In Frederick R. Steiner, George F. Thompson and Armando Carbonell, ed. 2016 Nature and Cities: The Ecological Imperative in Urban Design and Planning. Lincoln Institute of Land Policy

Publikationer:

Aagaard, L. (2017). Hist hvor ingen vej slår en bugt. Berlinske, 12 feb. p.6.

Arler, F. and Madsen, J. (2015). Kampen om areal: Danmark er 40 procent for lille…. 1st ed. [ebook] Aalborg Universitet. Available at: http://mo.infomedia.dk [Accessed 5 Apr. 2017].

Arler, F., Jørgensen, M. and Sørensen, E. (2017). Prioritering af Danmarks areal i fremtiden. [online] Fonden Teknologirådet,. Available at: http://www.tekno.dk [Accessed 3 May 2017].

Ascher, F (2002) Urbanismen og den nye urbane revolution, Distinktion:
Journal of Social Theory, 3:1, 29-36.

Caspersen, O. and Nyed, P. (2017). Udvikling i Agerlandet 1954-2025. Københavns Universitet.

Carter, H., Larsen, H.G. & Olesen, K. (2015), A Planning Palimpsest: Neoliberal Planning in a Welfare State Tradition, Refereed Article No. 58, June 2015, European Journal of Spatial Development, URL: http://www.nordregio.se/Global/EJSD/Refereed articles/refereed58.pdf
Online publication date: June 2015

Christensen, J. (2016). Udviklingen i byernes folketal. [online] kommunernes landsforening. Available at: https://www.kl.dk/ImageVaultFiles/id_78494/cf_202/Udviklinger_i_byernes_folketal_fra_2006_til_2016.PDF [Accessed 2 Apr. 2017].

Dansk Byplanlaboratorium, (2016). NY PLANLOV - Det mener Dansk Byplanlaboratorium: Kommunerne får mere magt - det forpligter. BYPLAN NYT, (4).

Danmark på Vippen (2015). Hvidbog: Et danmark i balance er et rigere Danmark. Danmark på Vippen.

Danmarks Naturfredningsforening, (2009). Fremtidens natur Danmarks natur i vækst. Danmarks Naturfredningsforening.

Danmarks Naturfredningsforening, (2016A). Sådan ligger landet - Tal om naturen 2016. Danmarks Naturfredningsforening.

Danmarks Naturfredningsforening, (2016B). Sådan ligger landet - tal om landbruget 2016. Danmarks Naturfredningsforening.

Danmarks Statistik, (2016). Statistisk årbog. 1st ed. Copenhagen.

COWI A/S (2016). Analyse af vindmøllers påvirkning af huspriserne på beboelsesejendomme. COWI A/S, pp.7-9.

Energinet.dk (2014). Danmark 2025, 2035 og 2050. Strategisk energiplanlægning. Energinet.dk.

Energi-, forsynings- og klimaministeriet, (2016). Klimapolitisk redegørelse 2016. Energi-, forsynings- og klimaministeriet.

Frandsen, J. (2016). Fortids fremtid for landsbyen. Futuriblerne, 44(5-7), pp.10-13.

Galland, D., Enemark, S., Møller, J., Sørensen, E. M., Hvingel, L. T., & Schrøder, L. (2016). International Manual of Planning Practice: Denmark. In J. Ryser, & T. Francine (Eds.), International Manual of Planning Practice. (6 ed.). The Netherlands: The International Society of City and Regional Planners.

Gilchrist, k. (2011). Promoting wellbeing through environment: the role of urban forestry. In: Trees, people and the built environment. Institute of Chartered Foresters, pp.84-93.

Hansen, H. (2016). Landbrugets mulige roller i fremtidens landsbyer. Futuriblerne, 44(5-7), pp.43-48.

Heagney, E., Kovac, M., Fountain, J. and Conner, N. (2015). Socio-economic benefits from protected areas in southeastern Australia. In: Conservation Biology, 29(6), pp.1647-1657.

Hvattum, Mari (2010) Stedets tyranni, I Arkitekten nr.2, februar 2010, København, Arkitektens Forlag. 34-43

Jakobsen, R. (2016). Lund og Borup har knækket tilflytterkoden. Momentum. [online] Available at: http://www.kl.dk/Momentum/momentum2016122id206327/? n=0 [Accessed 4 Apr. 2017].

Jensen, J., and Stensgaard, P. (2008) Den fede Pølse 1: Hundredminutterbyen. Weekendsavise, 18. juli p. 7

Jensen, J. (2016A). Fremtidens landsbyer formes af tidsånden, en ny decentralisering og ændrede flyttemønstre. Futuriblerne, 44(5-7), pp.38-42.

Jensen, U. (2016B). Danmark til Eideren!. BYPLAN NYT, (2), pp.16-17.

Jones-Walters, L. and Mulder, I. (2009). Valuing nature: The economics of biodiversity. Journal for Nature Conservation, 17(4), pp.245-247.

KL, (2014). Dobbelturbanisering – overordnet trend og lokale befolkningsforskydninger. Copenhagen S.

Kristensen, H. and Andersen, H. (2009). Befolkningens boligønsker. Center for Bolig og Velfærd – Realdania Forskning.

Kroustrup, K. (2016).Fremtidens resiliente landsbyer. Futuriblerne, 44(5-7), pp. 63-68.

Kristensen, L. and Primdahl, J. (2009). Planlovens zonebestemmelser. Momentum, 2009(4), pp.24-27.

Massachusetts Institute of Technology, (2010). Future Thresholds 38. 1st ed. Cambridge: Massachusetts Institute of Technology, Department of Architecture.

Ministry of the environment (2006). The new map of Denmark - spatial planning under new conditions. ministry of the environment, Denmark.

Møller, J. (2016). Udfordringer og mulige løsninger for fremtidens landsbyer. Futuriblerne, 44(5-7), pp.21-31.

Nielsen, F., Pouplier, J., Achermann, C. and Dalmer, C. (2007). Store vindmøller i det åbne land. [online] Miljøministeriet, Skov- og Naturstyrelsen, Landsplanområdet. Available at: http://naturstyrelsen.dk/publikationer/2007/jan/store-vindmoeller-i-det-aabne-land/ [Accessed 7 Mar. 2017].

Nielsen, T. (2016A). 'THE LIVEABLE CITY' OG DENS LANGE SKYGGE. Arkitekten. [online] Available at: https://apps.infomedia.dk/mediearkiv/link?articles=e6099b3b [Accessed 15 Apr. 2017].

Nielsen, T., Jensen, B. (2017). Den østjyske millionby – stadig uden plan. BYPLAN NYT, (15. årgang, nr.1), pp.14-17.

Nordregio, (2008). The Three Waves of Globalisation. Journal of Nordregio, 2008(1), pp.8-9.

Olesen, K. (2010). Danish 'strategic spatial planning' in transition. Paper presented at 24th AESOP Annual Conference 2010, Helsinki, Finland.

Pinder, D. (2002). In defense of utopian urbanism: imagining cities after the ‘end of utopia’. Geogr. Ann., 84 B (3–4): 229–241.

Rasmussen, S. (2017). Selvkørende biler: Den rullende revolution. Motor, 22 Feb.

Realdania Debat og Mandag Morgen, (2012). Der bli'r et yndigt land. Copenhagen V: Realdania Debat.

Smarason, h. (2016). Den tabte generation. Futuriblerne, 44(5-7), pp.17-20.

Statens Kunstfond, (2013). Kan vi tegne et nyt land?. [online] Statens Kunstfond. Available at: https://www.arkitektforeningen.dk [Accessed 8 Mar. 2017].

Stensgaard, P. (2017). Dømt til undergang. Weekendavisen. [online] Available at: https://apps.infomedia.dk/mediearkiv/link?articles=e6385089 [Accessed 2 May 2017].

Stensgaard, P. (2010). Ny på kortet: Skabt i pendlerstatistikkens skarpe lys. Weekendavisen. [online] Available at: https://apps.infomedia.dk/mediearkiv/link?articles=e1dceb56 [Accessed 18 Apr. 2017].

Unterrainer, W. (2016). Det er dumt ikke at være forberedt. Interviewed by Ehlers, A. [Journal] BYPLAN NYT, 2016(1), pp.7-9.

Weiss, K. (2015). Den fjerne fremtid er NU. BYPLAN NYT, 2015(1), pp.16-17.

Webpages:

ArchEyes. (2016). Agricultural City, 1960 / Kisho Kurokawa + ArchEyes. [online] Available at: http://archeyes.com/agricultural-city-kurokawa-kisho/ [Accessed 19 Apr. 2017].

Danmarks Statistik (2017). Statistikbanken. [online] Statistikbanken.dk. Available at: http://www.statistikbanken.dk/ [Accessed 21 Apr. 2017].

Danske Havne. (2017). Danske Havne - Brancheorganisation for erhvervshavne DK. [online] Available at: http://www.danskehavne.dk/ [Accessed 11 Feb. 2017].

EFFEKT. (n.d.). work. [online] Available at: http://www.effekt.dk/work#/regenvillages/ [Accessed 7 May 2017].

Energibyen Skive (2015). GreenLab Skive Masterplan. [online] Energibyen Skive. Available at: https://issuu.com/energibyenskive/docs/masterplan3.1 [Accessed 29 Mar. 2017].

Energistyrelsen, (n.d.). NY ENERGI. [online] NY ENERGI. Available at: http://nyenergi.nu/ [Accessed 20 Feb. 2017].

Erhvervsstyrelsen (n.d.). PlansystemDK. [online] Kort.plansystem.dk. Available at: http://kort.plansystem.dk/spatialmap [Accessed 3 Mar. 2017].

Flensburg, T. (2017). Sommerhuse er blevet populære som helårsboliger for pensionister. [online] Politiken. Available at: http://politiken.dk/oekonomi/privatoekonomi/art5906989/Sommerhuse-er-blevet-popul%C3%A6re-som-hel%C3%A5rsboliger-for-pensionister [Accessed 10 Mar. 2017].

Geus (n.d.). Maps of Denmark. [online] Data.geus.dk. Available at: http://data.geus.dk/geusmap/?mapname=denmark#zoom=5.96950169755422&lat=6225000&lon=557500&visiblelayers=Topographic&filter=&layers=jordartskort_200000&mapname=denmark&filter=&epsg=25832&mode=map&map_imagetype=png&wkt= [Accessed 13 Feb. 2017].

Hansen, K. (n.d.). Lokalt kom ingen til at »skumme fløde« på Kolindsund. 1st ed. [ebook] Available at: http://www.dettabteland.dk/midtjylland/kolindsund.pdf [Accessed 5 Apr. 2017].

Jakobsen, R. (2015). Større og større landsbyer taber indbyggere. [online] Kl.dk. Available at: http://www.kl.dk/Momentum/momentum2015-20-2-id193303/ [Accessed 21 Mar. 2017].

Kortforsyningen (n.d.). Kortforsyningen - download. [online] Download.kortforsyningen.dk. Available at: https://download.kortforsyningen.dk/ [Accessed 10 Feb. 2017].

Møller, J. (2015). Lektor: Drop Morten Korch-idyllen. [online] Altinget: by og bolig. Available at: http://www.altinget.dk/by/artikel/lektor-drop-morten-korch-idyllen [Accessed 12 Apr. 2017].

Nationalparkthy.dk. (n.d.). Nationalpark Thy. [online] Available at: http://nationalparkthy.dk/om-nationalpark-thy/ [Accessed 30 Apr. 2017].

Nielsen, J. (2016B). Unge landmænd vil gentænke dansk landbrug. [online] Information. Available at: https://www.information.dk/indland/2016/10/unge-landmaend-gentaenke-dansk-landbrug?rel [Accessed 11 Mar. 2017].

Politiken. (2015A). Udflytning af statslige jobs er en lappeløsning. [online] Available at: http://politiken.dk/debat/ledere/art5592848/Udflytning-af-statslige-jobs-er-en-lappel%C3%B8sning [Accessed 9 Mar. 2017].

Politiken. (2015B). Venstre vil lempe reglerne for byggeri ved kysten. [online] Available at: http://politiken.dk/indland/politik/art5566740/Venstre-vil-lempe-reglerne-for-byggeri-ved-kysten [Accessed 10 Mar. 2017].

Svana.dk. (n.d.). Naturbeskyttelsesdirektiver. [online] Available at: http://svana.dk/natur/international-naturbeskyttelse/eu-direktiver/naturbeskyttelsesdirektiver/ [Accessed 27 Apr. 2017].

Schwab, K. (2016). The Fourth Industrial Revolution: what it means and how to respond. [online] World Economic Forum. Available at: https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/ [Accessed 24 Feb. 2017].

Shah, A. (2014). Why Is Biodiversity Important? Who Cares? — Global Issues. [online] Globalissues.org. Available at: http://www.globalissues.org/article/170/why-is-biodiversity-important-who-cares [Accessed 15 Apr. 2017].

Statistikbanken.dk, (n.d.). Statistikbanken. [online] Available at: http://www.statistikbanken.dk/statbank5a/default.asp?w=1920 [Accessed 08 Feb. 2017].

Territorium, (2016A). Den tredje urbaniseringsbølge - Territorium. [online] Territorium. Available at: http://territorium.nu/generelt/den-tredje-urbaniseringsboelge/ [Accessed 9 Feb. 2017].

Territorium, (2016B). Her skal fremtiden ligge. [online] Territorium. Available at: http://territorium.nu/generelt/skal-fremtiden-ligge/ [Accessed 10 Feb. 2017].

LIST OF ILLUSTRATIONS

All illustrations not listed here, are by the authors.

Ill. 74.1 - Regen Village
Source: EFFEKT. (n.d.). work. [online] Available at: http://www.effekt.dk/work#/regenvillages/ [Accessed 7 May 2017].

Ill. 74.2 - Kisho Kurokawa's "Agricultural City"
Source: ArchEyes. (2016). Agricultural City, 1960 / Kisho Kurokawa + ArchEyes. [online] Available at: http://archeyes.com/agricultural-city-kurokawa-kisho/ [Accessed 19 Apr. 2017].

Ill. 77.1 - Illustration of the 5.851 existing windturbines scattered across the country.
Own illustration based on Erhvervsstyrelsen (n.dA.). PlansystemDK. [online] Kort.plansystem.dk. Available at: http://kort.plansystem.dk/spatialmap [Accessed 3 Mar. 2017].

Ill. 80.1 - Visible energy production
Source: Vestas (2017). www.vestas.com. [online] Vestas.com. Available at: https://www.vestas.com/~/media/vestas/media/image%20download/highress%20images%20for%20download/v112_macarthur_aus_3.jpg [Accessed 10 May 2017].

Ill. 92.1 - Population projection in municipalities
Own illustration based on Danmarks Statistik, (2016). Statistisk årbog. 1st ed. Copenhagen.

Ill. 92.2 - uninhabited buildings
Own illustration based on Danmarks Statistik, (2016). Statistisk årbog. 1st ed. Copenhagen.

Ill. 94.1 - Population growth distributed on city sizes.
Own illustration based on Jakobsen, R. (2016). Lund og Borup har knækket tilflytterkoden. Momentum. [online] Available at: http://www.kl.dk/Momentum/momentum2016122id206327/? n=0 [Accessed 4 Apr. 2017].

Ill. 98.1 - Cities of at least 1000 inhabitants, with population decline
Own illustration based on Danmarks Statistik (2017). Statistikbanken. [online] Statistikbanken.dk. Available at: http://www.statistikbanken.dk/ [Accessed 21 Apr. 2017].

Ill. 100.1 - Cities of at least 1000 inhabitants, with population growth
Own illustration based on Danmarks Statistik (2017). Statistikbanken. [online] Statistikbanken.dk. Available at: http://www.statistikbanken.dk/ [Accessed 21 Apr. 2017].

Ill. 118.1 - The amount of commuter traffic which is crossing municipality borders each day.
Own illustration based on Danmarks Statistik (2017). Statistikbanken. [online] Statistikbanken.dk. Available at: http://www.statistikbanken.dk/ [Accessed 21 Apr. 2017].

Ill. 135.1 - Kolindsund, 1787
Source: Hansen, K. (n.d.). Lokalt kom ingen til at »skumme fløde« på Kolindsund. 1st ed. [ebook] Available at: http://www.dettabteland.dk/midtjylland/kolindsund.pdf [Accessed 5 Apr. 2017].

Ill. 135.2 - Kolindsund, 1984
Source: Hansen, K. (n.d.). Lokalt kom ingen til at »skumme fløde« på Kolindsund. 1st ed. [ebook] Available at: http://www.dettabteland.dk/midtjylland/kolindsund.pdf [Accessed 5 Apr. 2017].

Ill. 178.1 - Johannes Humlum, Den midtjyske motorvej, 1960 - Gaardmand, A. (2016). DANSK BYPLANLÆGNING 1938-1992 - Plan over land. 2nd ed. Copenhagen: Bogværket.

Ill. 179.1 - Important geological areas
Own illustration based on Erhvervsstyrelsen (n.d.A). PlansystemDK. [online] Kort.plansystem.dk. Available at: http://kort.plansystem.dk/spatialmap [Accessed 3 Mar. 2017].

Ill. 180.1 - Clay content in the soil
own illustration based on Geus (n.d.). Maps of Denmark. [online] Data.geus.dk. Available at: http://data.geus.dk/geusmap/?mapname=denmark#zoom=5.96950169755422&lat=6225000&lon=557500&visiblelayers=Topographic&filter=&layers=jordartskort_200000&mapname=denmark&filter=&epsg=25832&mode=map&map_imagetype=png&wkt= [Accessed 13 Feb. 2017].

Ill. 181.1 - Soil types
own illustration based on Geus (n.d.). Maps of Denmark. [online] Data.geus.dk. Available at: http://data.geus.dk/geusmap/?mapname=denmark#zoom=5.96950169755422&lat=6225000&lon=557500&visiblelayers=Topographic&filter=&layers=jordartskort_200000&mapname=denmark&filter=&epsg=25832&mode=map&map_imagetype=png&wkt= [Accessed 13 Feb. 2017].

Ill. 182.1 - Potential areas for new wind turbines (areas of 100m^2 with a minimum of 600m to nearest housing) and main transmission grid
Own illustration based on Erhvervsstyrelsen (n.d.A). PlansystemDK. [online] Kort.plansystem.dk. Available at: http://kort.plansystem.dk/spatialmap [Accessed 3 Mar. 2017].

Ill 183.1 - Wind resource map - 100 m above terrain based.
Source: Erhversstyrelsen (n.d.B). erhvervsstyrelsen.dk. [online] erhvervsstyrelsen.dk. Available at: https://erhvervsstyrelsen.dk/ [Accessed 7 Feb. 2017].

Ill 184.1 - Populations protection for the whole country
Source: Danmarks Statistik (2017). Statistikbanken. [online] Statistikbanken.dk. Available at: http://www.statistikbanken.dk/ [Accessed 21 Apr. 2017].

Ill.185.1 - Preference for qualities with housing
Source: Kristensen, H. and Andersen, H. (2009). Befolkningens boligønsker. Center for Bolig og Velfærd – Realdania Forskning.

Ill. 186.1 - Fields
Own illustration based on Kortforsyningen (n.d.). Kortforsyningen - download. [online] Download. kortforsyningen.dk. Available at: https://download.kortforsyningen.dk/ [Accessed 10 Feb. 2017].

Ill. 187.1 - Valuable agricultural areas
Own illustration based on Own illustration based on Erhvervsstyrelsen (n.d.A). PlansystemDK. [online] Kort.plansystem.dk. Available at: http://kort.plansystem.dk/spatialmap [Accessed 3 Mar. 2017].

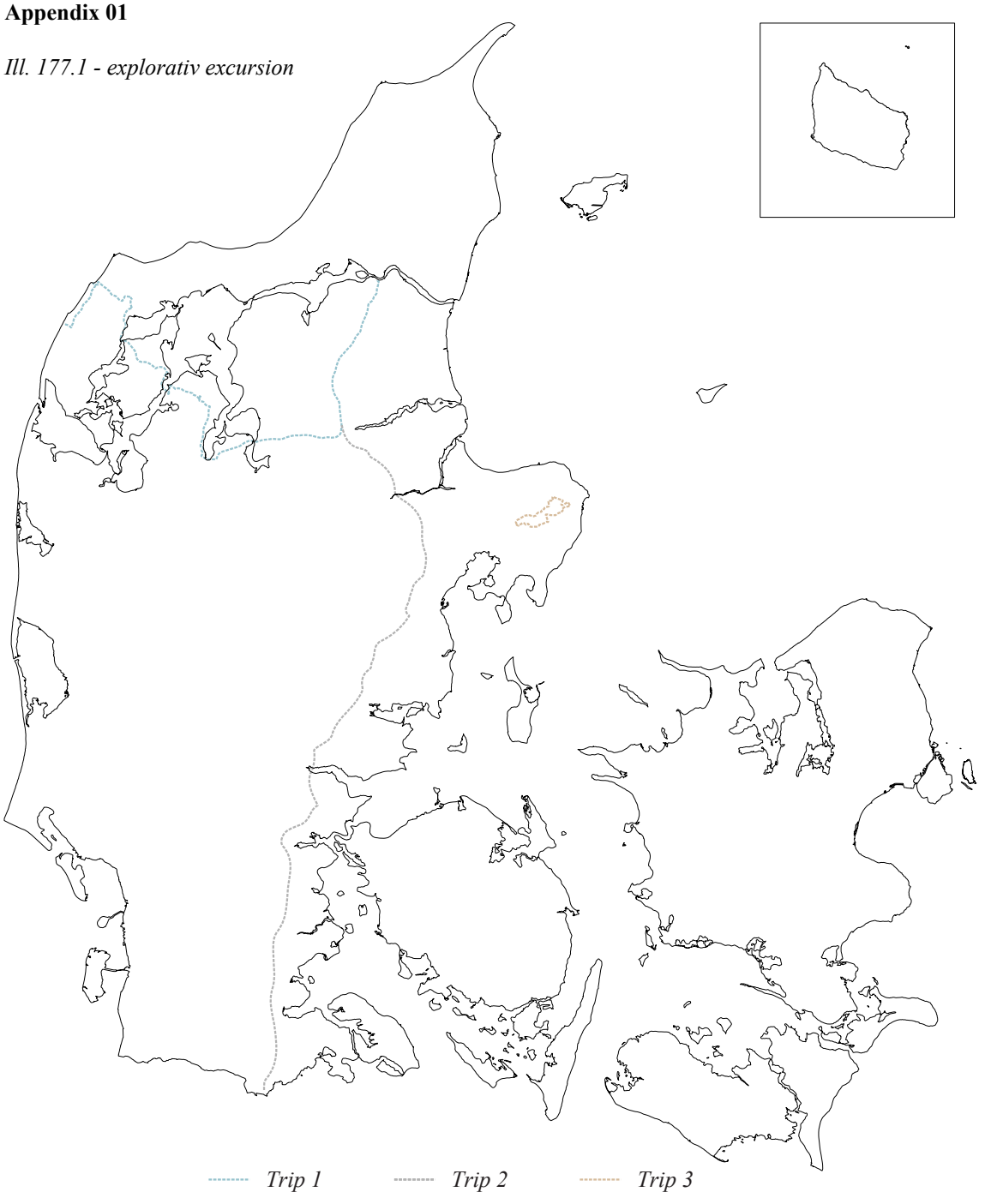
Ill. 189.1 - Infrastructual systems
Own illustration based on Kortforsyningen - download. [online] Download.kortforsyningen.dk. Available at: https://download.kortforsyningen.dk/ [Accessed 10 Feb. 2017].

Ill. 190.1 - Artificial surfaces
Own illustration based on Kortforsyningen - download. [online] Download.kortforsyningen.dk. Available at: https://download.kortforsyningen.dk/ [Accessed 10 Feb. 2017].

APPENDIX

Appendix 01

Ill. 177.1 - explorativ excursion

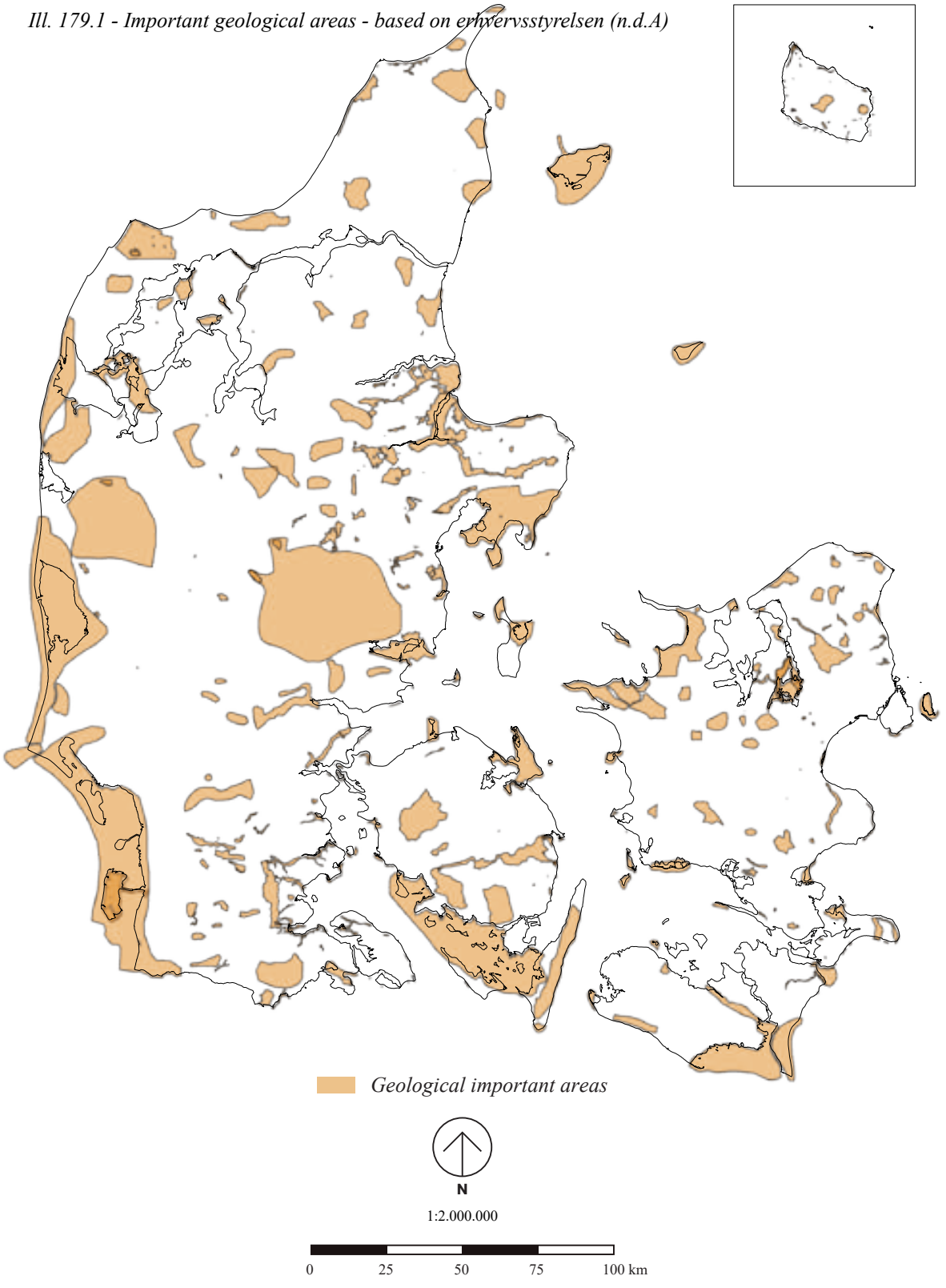


Appendix 02

Ill. 178.1 - Johannes Humlum, Den midtjyske motorvej, 1960

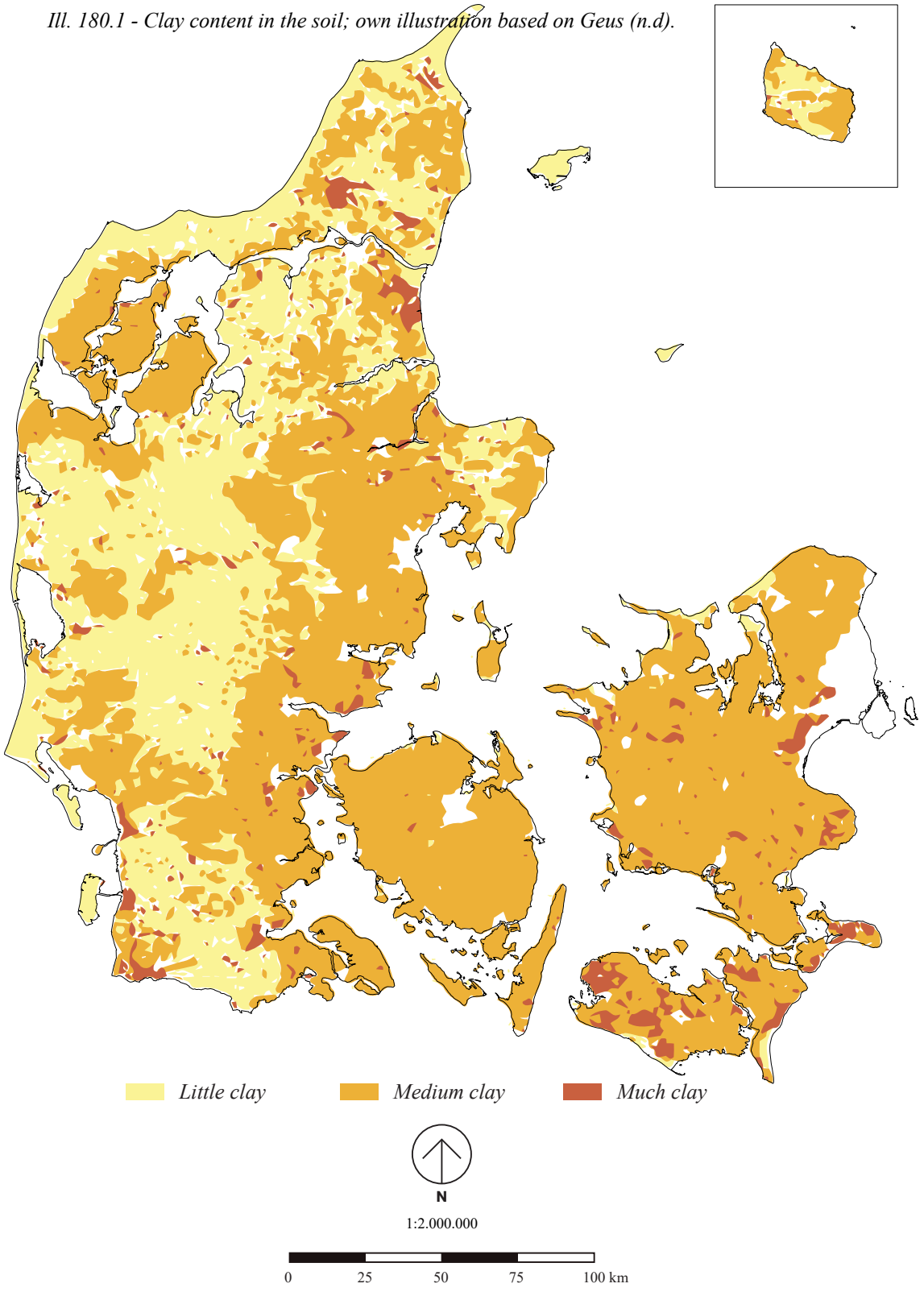
Appendix 03

Ill. 179.1 - Important geological areas - based on erhvervsstyrelsen (n.d.A)



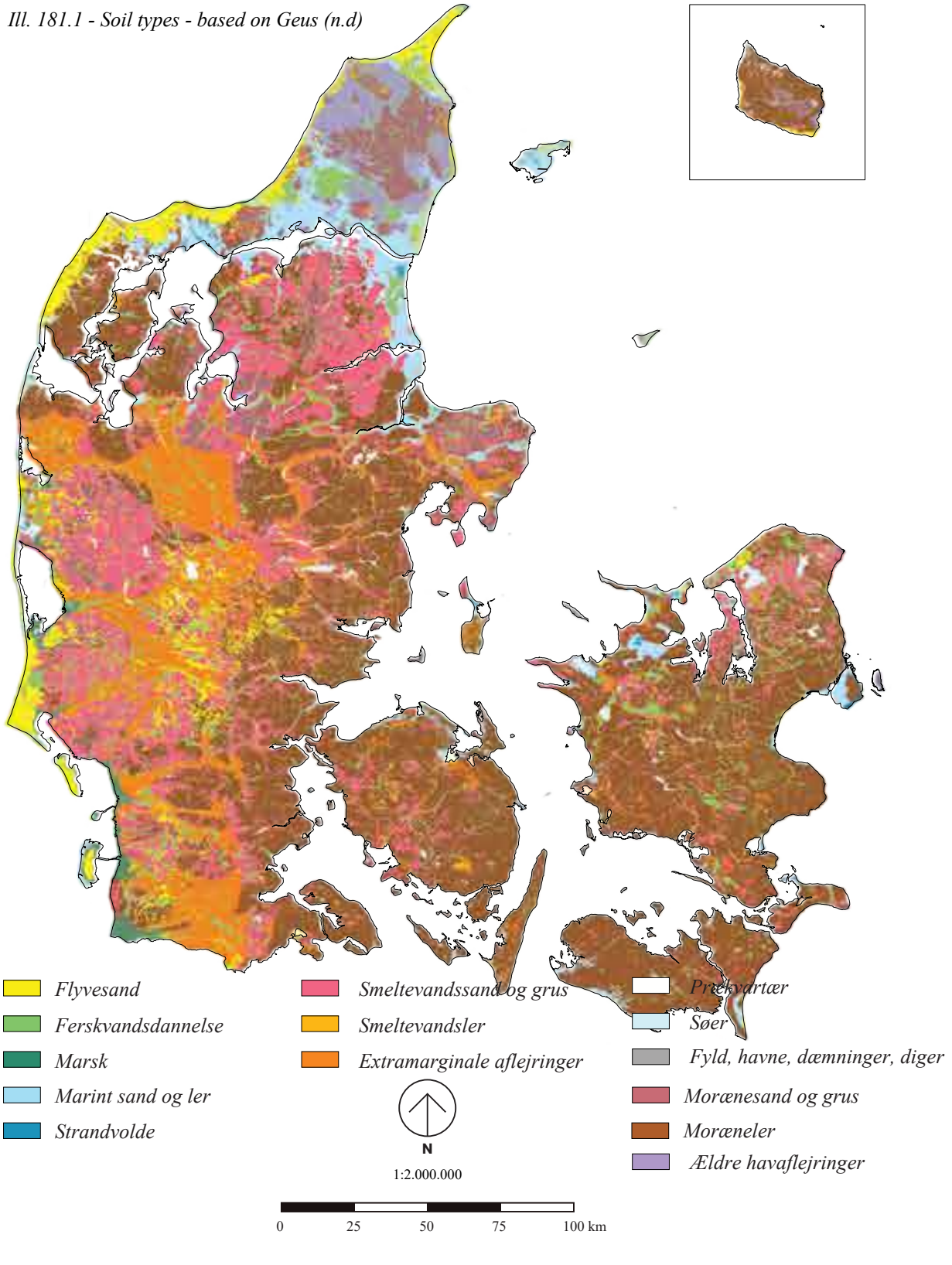
Appendix 04.1

Ill. 180.1 - Clay content in the soil; own illustration based on Geus (n.d).



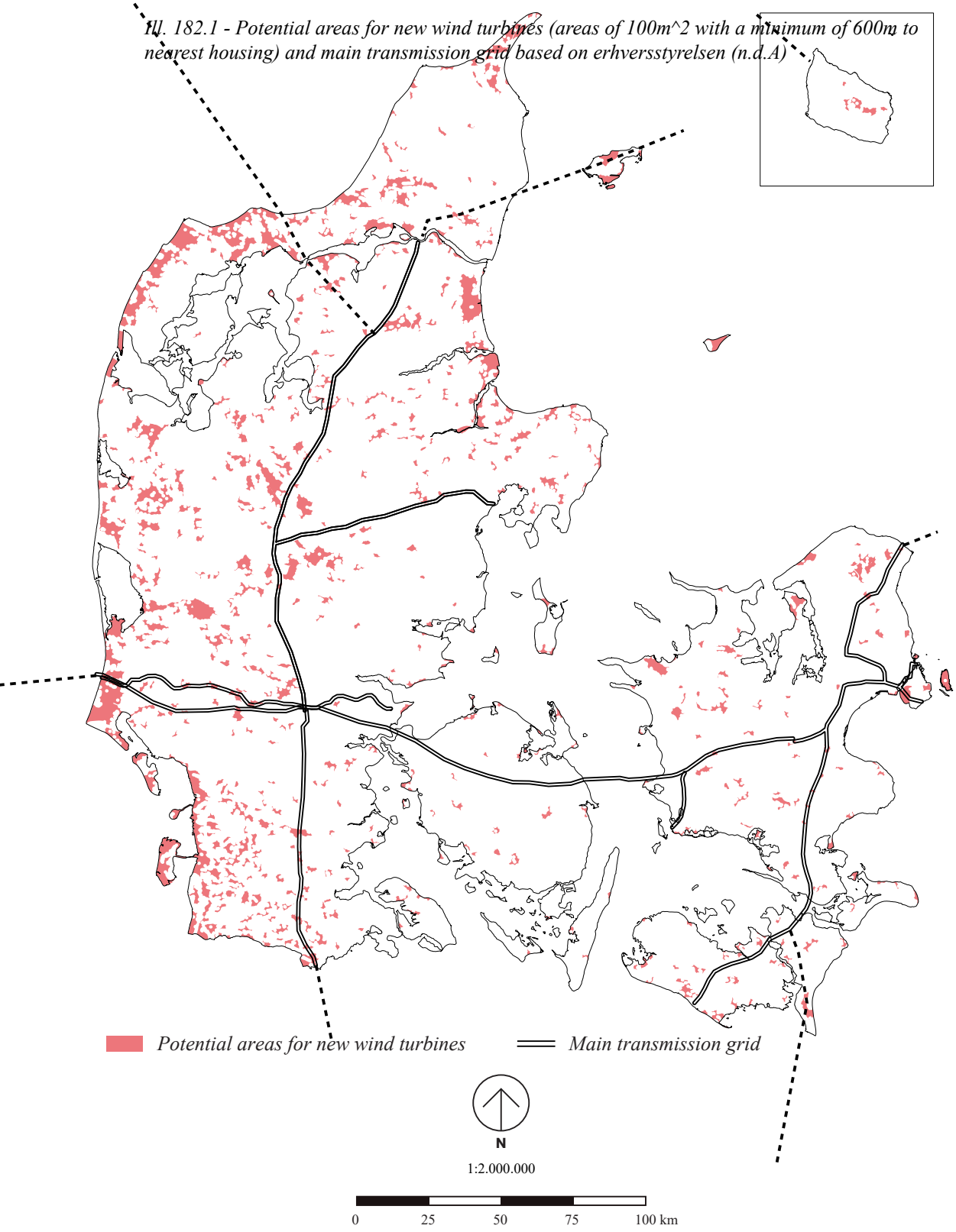
Appendix 04.2

Ill. 181.1 - Soil types - based on Geus (n.d)



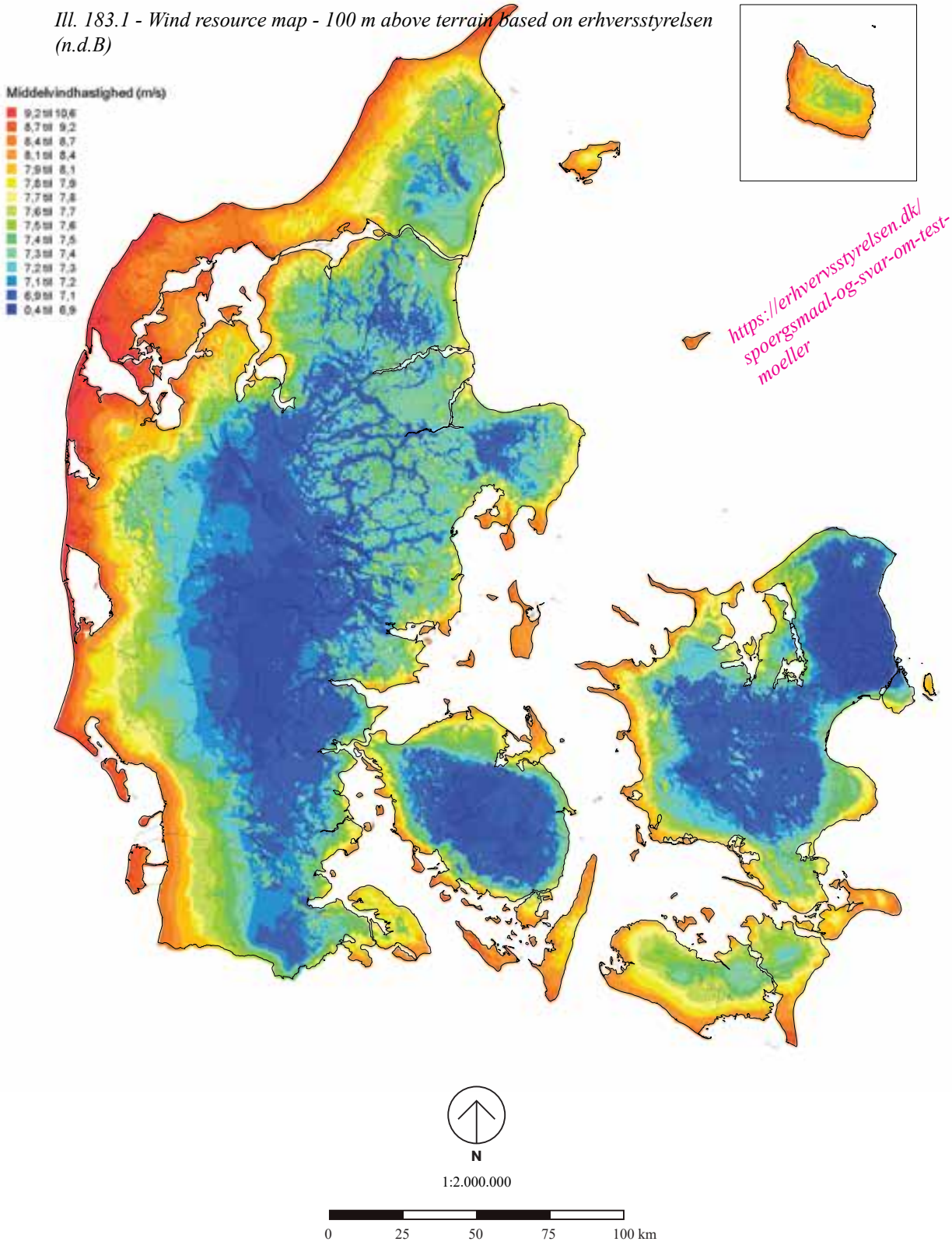
Appendix 5

Ill. 182.1 - Potential areas for new wind turbines (areas of 100m^2 with a minimum of 600m to nearest housing) and main transmission grid based on erhversstyrelsen (n.d.A)



Appendix 06

Ill. 183.1 - Wind resource map - 100 m above terrain based on erhversstyrelsen (n.d.B)



Appendix 07

*Ill. 184.1 - Population projection for the whole country (*Danmarks Statistik, n.d).

Enhed: antal

	2017	2020	2030	2040	2050
	5.755.000	5.865.810	6.110.215	6.260.127	6.352.995
0-9 år	625.110	623.419	721.749	706.079	677.141
10-19 år	684.875	686.145	640.980	739.740	724.345
20-29 år	768.937	794.478	750.668	702.704	803.663
30-39 år	676.721	698.384	803.102	768.079	721.923
40-49 år	782.457	759.843	687.683	793.033	762.456
50-59 år	781.554	799.200	739.505	662.195	769.613
60-69 år	672.558	665.178	753.156	701.021	629.634
70-79 år	513.248	566.034	579.945	675.655	641.196
80-89 år	205.327	227.242	369.643	398.058	489.034
90-99 år	43.110	44.743	62.133	110.761	128.490
100-109 år	1.103	1.144	1.651	2.802	5.500
110 år +	0	0	0	0	0

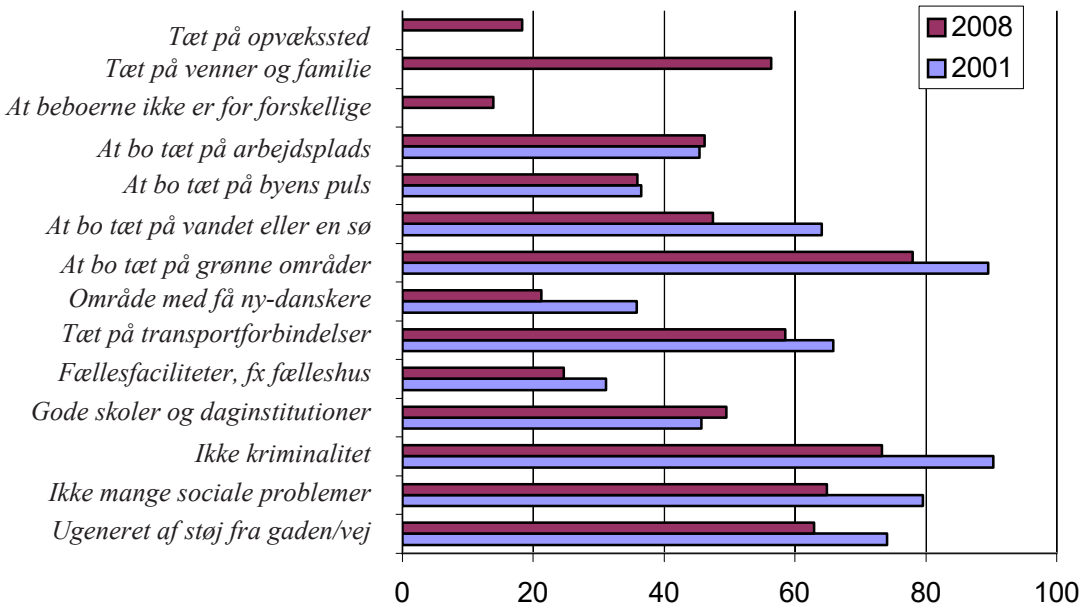
Befolkningsfremskrivning 2016 for hele landet efter herkomst og tid

Enhed: antal

	2017	2020	2030	2040	2050
dansk oprindelse	5.005.930	5.018.274	5.109.412	5.140.749	5.127.753
Indvandrere					
vestlige lande	235.178	254.017	289.104	312.024	329.131
ikke-vestlige lande	343.805	400.372	441.899	471.802	495.203
Efterkommere					
vestlige lande	26.873	31.982	53.655	75.314	98.295
ikke-vestlige lande	143.214	161.165	216.145	260.238	302.613

Appendix 08

Ill. 185.1 - Preference for qualities with housing (Kristiansen and Andersen, 2009)

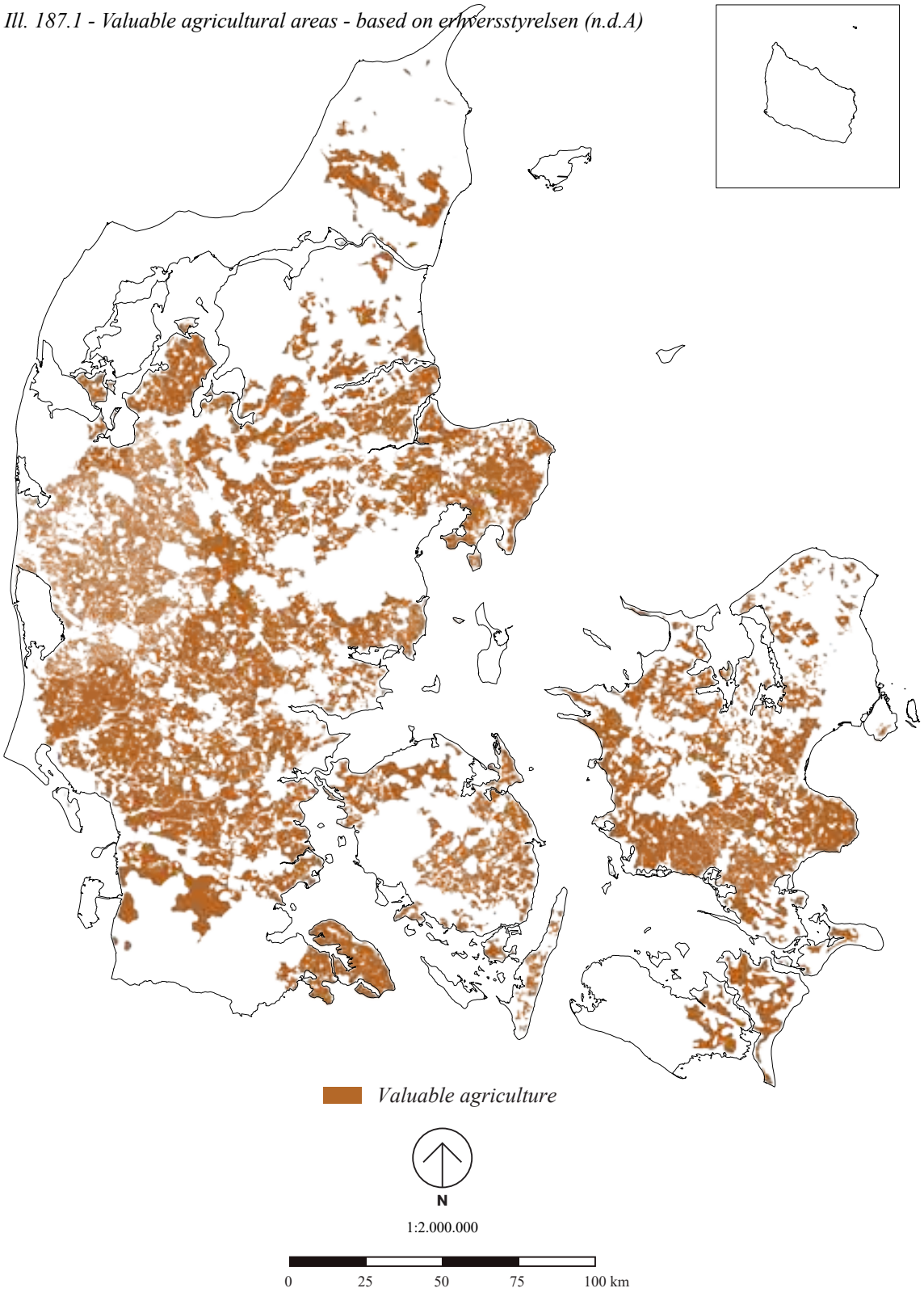


Appendix 09

Ill. 186.1 - Fields; based on kortforsygningen (n.d).

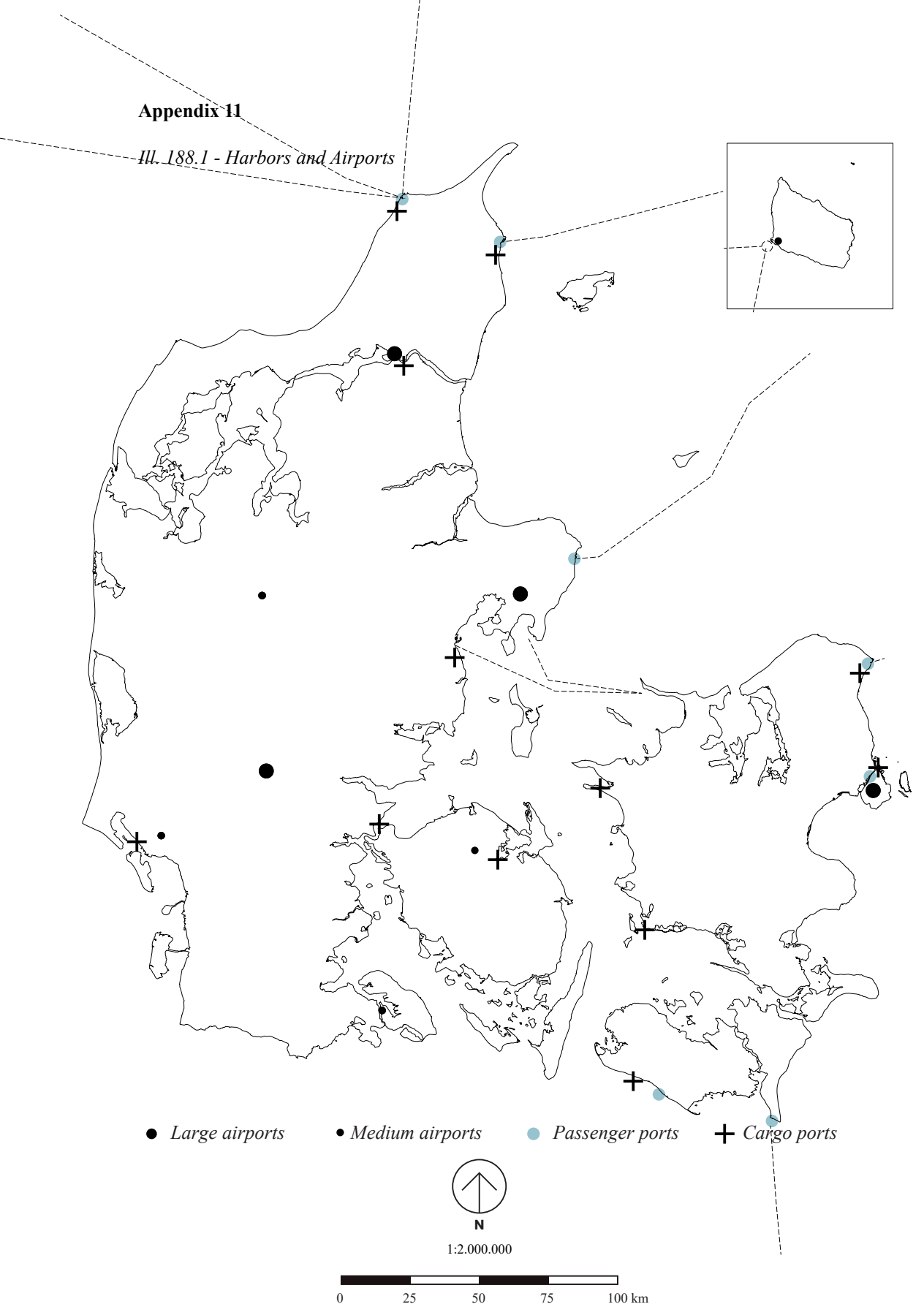
Appendix 10

Ill. 187.1 - Valuable agricultural areas - based on erhversstyrelsen (n.d.A)



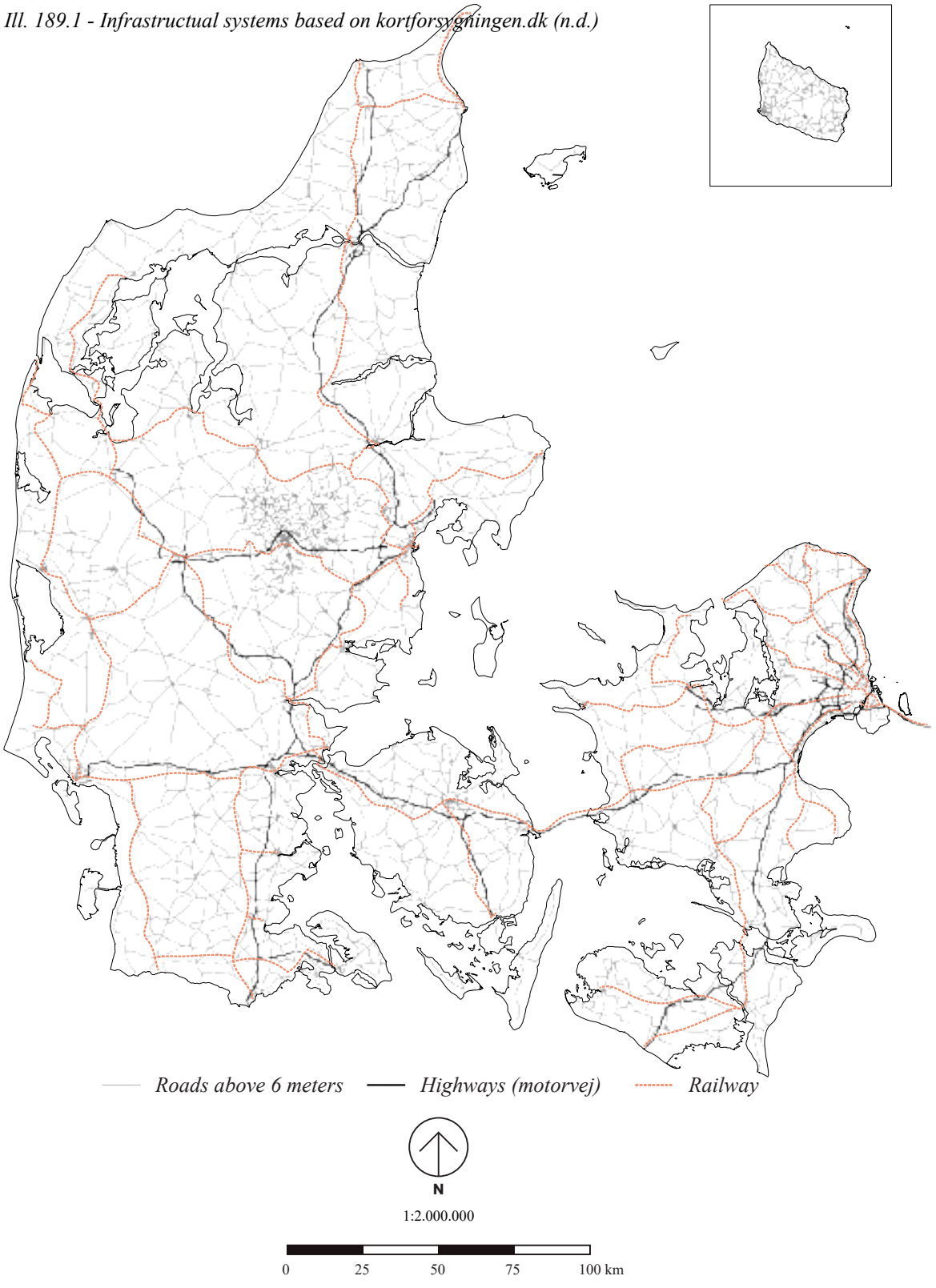
Appendix 11

Ill. 188.1 - Harbors and Airports



Appendix 12

Ill. 189.1 - Infrastructual systems based on kortforsyningen.dk (n.d.)



Appendix 13

Ill. 190.1 - Artificial surfaces based on kortforsyningen.dk (n.d.)

Appendix 14

Ill. 191.1 - Building density - 500 meter radius (Own calculation)