URBAN AGRICULTURE CASABLANCA

DESIGN AS AN INTEGRATIVE FACTOR OF RESEARCH

Edited by Undine Giseke

SPONSORED BY THE

Federal Ministry
of Education
and Research

This publication is funded by the Federal Ministry of Education and Research within the research project "Urban Agriculture as an Integrative Factor of Climate-Optimised Urban Development, Casablanca / Morocco" (grant number 01 LG 0504 A1).

Impressum

Publisher and Copyright
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Distribution
Topos – The International Review of Landscape Architecture and Urban Design, Issue 74
Georg D.W. Callwey GmbH & Co. KG, Munich, *www.topos.de, www.callwey.de*

Printing and Binding
Kessler Druck und Medien, Michael-Schäffer-Straße 1, 86399 Bobingen

Bibliographical information by the German National Library
The German National Library lists this publication in the Deutsche Nationalbibliografie; detailed bibliographical data is available at: *http://dnb.d-nb.de*

ISBN 978-3-7667-1896-9

Printed in Germany 2011

Figure Credits Cover
Photos: Feng Gang, Christoph Kasper / Drawings: Christine Guérard / SPOT Image-Processing: Dieter Scherer, TU Berlin 2009

Preface

One of the most powerful drivers of global change is urbanisation, including socio-economic transformation and the complex interactions between urban areas and their physical environment. With this in mind, the German Federal Ministry of Education and Research (BMBF) established a research program on Future Megacities in 2005 in order to develop energy- and climate-efficient structures in urban growth centres in industrialising and less developed countries. Within this context, ten inter- and transdisciplinary research projects were initiated world-wide to work on concepts for the sustainable future of expanding megacities. One of the projects is located in Casablanca: Urban Agriculture as an Integrative Factor of Urban Development.

Casablanca, a rapidly growing North African port city, can also be classified as an "emerging megacity". Its population grew substantially during the 20th century and continues to do so today. Megacities are growing dynamically, and they may have many different futures. Today's urban research into urban growth centres therefore has to investigate different mechanisms of spatial production and has to deal with complex phenomena including informality as one of the big challenges. This describes the path from "simple" to "complex" in real urban life as well as in sustainability research.

For the past five years a bi-national research team of approximately 65 people in science, administration, and civil society have worked together on the question of how much urban agriculture can contribute to sustainable, climate-optimised urban development. The focus here is on the integration of the existing agricultural use in Grand Casablanca into urban development and on its transformation from a classic rural land use category into a multifunctional green infrastructure.

In addition to intensive basic research, the project uses four large-scale pilot projects to create its own platform for the generation of knowledge in the sense of reflexive action research. Scenario-writing and developing common visions in future search workshops have been important elements of the work as well, in order to meet assumptions about future developments.

Using these methods, the theoretical concept of urban agriculture as a productive green infrastructure for the future city, as well as a creator of synergetic rural-urban linkages and new livelihoods in peri-urban areas, has been increasingly sharpened more and more and partially tested in pilot projects. By 2013 we want to answer questions about the extent to which urban agriculture can contribute to climate-optimised urban development and to the city's nutrition.

This project publication actually has a very special focus, however. Research through design is the core issue. The integration of different design formats has become one of many innovate components of the project. The design approaches have helped us to generate new spatial solutions within the given framework of uncertainty and complexity in urban development. The creative impulse of design and designing has thus been included in research as an essential contribution to the answering of research questions.

Several of these design contributions are presented in the following pages. The focus here is on the results of the international research competition that the project initiated and carried out in autumn 2010 as part of the research. In addition to this, designs created by the next generation of designers in studios and an international summer school dealing with questions raised by research carried out between 2006 and 2010 will be presented.

Design combines a search for new knowledge with artistic solutions and with the desire for renewal. Through the involvement with research, the process of design in this project phase contributed greatly to the intercultural and interdisciplinary integration of work and to the generation of new cross-disciplinary solutions.

Berlin and Casablanca, March 2011

Undine Giseke

Grand Casablanca

Grand Casablanca and the four UAC pilot projects

The region of Grand Casablanca (in Arabic “Dar el Beida”) is the largest and most densely populated area in the Kingdom of Morocco. At the beginning of the 20th century a small urban settlement of approximately 20,000 inhabitants was marked on the map, whilst a century later the picture has changed completely. By 1994, 22 per cent of the country’s urban population lived in the region. Having the largest port in North Africa, 60 per of Morocco’s industry is based here. Casablanca is the country’s economic motor and transport hub. The region extends across an area of 1.214 square kilometers. It presently has a population of almost four million (3.62 million inhabitants in 2004). Due to an accelerated demographic change that has led to slower population growth, the five million population mark will probably not be met until 2025.

Location of Casablanca

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Landscape on the Edge

Christian Werthmann

One could argue that the capabilities of a discipline can be more accurately judged over its periphery than its centre. As in real life, only by going to the extreme can one find out about one's own limitations, and more importantly discover unknown capacities. More than ever, the discipline of landscape architecture has been testing its boundaries, and more than ever it is in need of expanding even further.

In the late 1980s the profession successfully laid claim to the abandoned and contaminated wastelands of a post-industrial society. Peter Latz' seminal Landschaftspark Duisburg-Nord was the flagship project of a blossoming brownfield reclamation movement led by landscape architects. Later, in the early 1990s, landscape architecture aspired to be the premier design discipline in the vast territories that were neither landscape nor city, the semi-urban conditions whose rapid proliferation resulted in numerous neologisms such as *Zwischenstadt, the Rurban or Drosscapes*. The realisation that these territories are not an anomaly but the future majority of urban agglomerations quickly revealed the shortcomings of the German differentiation between *Landscape Architects* and *Landscape Planners* (a schism of the 1980s that the North American scene never formally executed). The historically false choice between ecological literacy and cultural relevance eventually left both, landscape architects and landscape planners, stranded in territories where the deep integration of their particular knowledge was the only way to progress, – especially in the face of the crisis of other competing disciplines such as architecture, urban planning, and engineering. The activities of the few successful landscape architects in the metro regions was characterised by systems and ecologically derived multi-scalar thought processes that felt equally at home in artistic or in ecological spheres. These practices were then congregated under the now-historic term "landscape urbanism" ingenuously coined by Charles Waldheim. One may consider James Corner's Fresh Kills competition entry as the flagship of this movement.

At this point, one may assume that landscape architecture / planning / urbanism has now reached a new high point, where its core competency of enmeshing art, ecology, technology, and culture is efficiently used for the complex challenges of contemporary urbanism. Obviously, one would have to question this assumption.

While landscape urbanism is staking out a global claim, the geographical range of its prime examples is still limited to the fairly stable planning regimes of North America and Europe. As the populations of North America will only modestly grow and the populations of Europe will stagnate and shrink over the next fifty years, the fastest growing and most volatile urban regions of the global South have been largely untouched (China might be the exception). This is partly due to the fact that landscape architects in South America, Africa, and South East Asia despite individual aberrations figure less prominently in the design and planning disciplines than their European and North American counterparts, and partially to the fact that landscape, urban, and regional planning are still young disciplines in themselves. But, if landscape architecture was to truly engage the full spectrum of the urban condition, it would have to show its competency in the complex city patterns where the majority of our future urban population on this planet will live in the future, i.e., the cities of the southern hemisphere. There the confrontation with multifaceted political regimes, social customs, and massive informal urbanisation quickly exceed the current design competency of trained North American and European trained landscape architects while the often disproportionally smaller local design communities remain largely overwhelmed. Today it is not only a question of how landscape thinking can effectively operate in the cities of the global south, but also who is doing the thinking. From a global perspective it is hurtful that hundreds of designers can compete for a small plaza in Europe, while in other parts of the world a few architects can create plans for millions of social housing units. Several questions arise: How can the global

imbalance of designer density be mitigated without establishing new forms of design imperialism? And, how can a respectful and effective two-way exchange of knowledge be staged between a shrinking country with a high designer density and a country with a relatively low designer density, but whose population is exploding?

In the current situation where the nature of global population growth challenges the relevancy of our profession, landscape architecture is forced to leave its comfort zone and venture into much less secure planning contexts. For this departure, Undine Giseke's urban agriculture research project in Casablanca / Morocco (UAC) delivers much needed clues.

Its most striking aspect is the unusually long horizon of eight years. The extensive time frame (it can easily occupy one-third of the tenured life of a professor) allows up sensitive and meaningful alliances to be developed and a deeper cultural immersion that by far transcends the typical one-week field trip. Its focus on local food production as an instrument for managing the growth of a metropolitan region is specific enough to avoid more generalised speculations, while being still broad enough to engage a whole critical range of entangled issues of soils, water, climate, poverty, and social networks. The decision to let other designers enter the stage before four years of solid research was very wise, since the UAC research group provided sufficient fertile ground and lucid direction to let the four invited teams come up with innovative proposals in the short time frame of only two weeks. Not that their task was easy. The teams had to develop tactical strategies that had to engage an underappreciated population of informal urban pioneers, complicated land ownership conditions, and a general scepticism towards small-scale agriculture. Their results strike a clever balance between specificity and flexibility, revealing a cultural understanding without being too context-obedient. In the end, the greatest value of this type of exchanges lies less in the concrete feasibility of the individual proposals, but rather in the fact that the views outsiders can be safely discussed in an environment of trust. It is a matter of delicate and steady design diplomacy to establish an atmosphere that allows both parties to progress. It appears that the Berlin researchers where able to established this trust, which is arguably the foundation of entering a truly global design exchange.

When the Old Becomes the New: Agriculture as a Multifunctional Urban Landscape in Tomorrow's Megacities

Undine Giseke, Abdelaziz Adidi

In light of strong, dynamic, and partially speculative urban growth, reflecting on the integration of agriculture into the city at first appears to be anachronistic. The more broadly held conventional view is that rural areas will be absorbed by urban development and will then develop into more valuable forms of land use.

During the 20th century diverse urban planning models that focused on the integration of urban and rural areas were developed. Ebenezer Howard's Garden Cities of Tomorrow and Frank Lloyd Wright's Broadacre City are among the more well-known examples. They were not only urban design concepts, but models of living that remained utopias.

The Casablanca project Urban Agriculture as an Integrative Factor of Climate-Optimised Urban Development is not an alternative model of the city or a utopia. The project is also not concerned with the design of a completely new city and the landscape surrounding it, such as at Masdar-City. Instead, the project addresses the question of how a new green infrastructure can be integrated into an existing and at the same time dynamically expanding city. Urban agriculture as an integrative factor of urban development is used as an example of thinking about a broader approach to open space systems in the sense of multifunctional urban landscapes that react to the specific challenges of the megacities of tomorrow. In the following paragraphs we want to discuss just some of today's complex green requirements.

Size and shape as a challenge

For a start, one of the challenges is the size of the city and the extent of its surface area. Mega-urban areas, agglomerations which will have more than five million residents in the future, are spread out over a huge surface area. The classic approach of providing open space in the form of parks – if space exists – reveals its limitations when confronted with urban agglomerations of this magnitude.

On a larger scale, the European open space model of green belts of forests and pastures that surround cities in large-scale radial ring systems and serve as an organising element is well known. The more network-oriented regional park concepts developed in many metropolitan areas are a contemporary extension of this concept. Of the concepts presently being discussed, few of them – for example the concept of CPULs – include the idea of productive open space. Arab cities, however, are different in this regard. The development of irrigated agricultural belts around cities is an old tradition in this part of the world. The largest and most famous of these areas is the Ghouta that used to surround Damascus. These current and historic approaches may serve as references to show how agricultural land can shape the city and become part of its iconic body in the future.

Informal space production and flexibility as a challenge

On the other hand, the process of urban spatial production is characterised by a certain amount of volatility, disintegration, and fragmentation. The future range of spatial patterns will be more dependent on the speed of growth and the degree to which it can be controlled through planning. The enormous size of the cities and their mechanisms of spatial production, including intense land speculation, lead to more heterogeneous structures and a multi-scaled interweaving of urban and rural structures so that hierarchical concepts based on strongly concentrated urban models will no longer give satisfying answers how to integrate open space systems. In many places these processes lead to the cessation of agricultural practices in peri-urban areas due to speculation. This certainly does not affect all agricultural uses, however. It raises the question of whether, through its ability to modularly add units, agriculture has the flexibility to adapt, in a positive sense, to such spatial volatility. Taking this one step further, such an approach requires the development of attractive business models as an incentive for the continuation of agriculture.

Sustainable and climate-optimised urban development as a challenge

The demands placed on sustainable and climate-optimised urban development make today's green requirements more complex. If, agricultural land use is to remain more than a relict that is constantly under threat of being absorbed in speculative land use processes and a qualitative element in urban development is to be created from this, then new synergies and win-win situations between the urban and the rural should be created. How can urban agriculture be systematically developed into a new green infrastructure in cities? These questions are also addressed by the project.

In order to contribute to sustainable and climate-optimised urban development an open-space system should be as multifunctional as possible. To do so, the Casablanca concept of urban agriculture encompasses a number of different subsidiary concepts. Urban agriculture

- should contribute to the supply of urban food,
- should provide recreational and leisure opportunities,
- should contribute to resource efficiency and urban recycling management,
- should contribute to ecosystem services,
- should integrate residential space functions,
- and should be beautiful.

Dual-track-urbanism: Developing the city and its landscape

With regard to mega-urban structures, agriculture or more general "the rural" will then become a component of the urban; within the sense of dual-track urbanism both components could be developed parallel to one another as they will co-exist for a fairly long time. Urban agriculture as an open space concept is fundamentally different from parks in two ways: it is productive and it is inhabited, which means that it is both a business entity and a public asset. This relationship and this interplay of individual and urban social forces are to be investigated and then supported. Two questions must therefore always be asked with regards to urban agriculture: What makes it attractive to an operator and what effect does it have on the city? What is the possible additional value for the city and its residents? In the sense of dual-track urbanism, however, another question also needs to be raised: How can agriculture profit by being part to the city, by its proximity to producers, consumers, and urban resources such as waste and wastewater? This kind of approach generates many questions about suitable open space, planning tools, and economic concepts, on both a management and urban economics level.

The parallel development of theory, basic research, and applied research characterises the project. With its four large-scale pilot projects, which address some of the possible synergies in completely different ways – Urban Agriculture and Industrial Wastewater Reuse, Urban Agriculture and Informal Settlements, Urban Agriculture and Peri-urban Tourism, Urban Agriculture and Healthy Food Production – the project has created a platform for a generation of knowledge as a result of reflexive action research. Integrating an interdisciplinary planning competition into research is important and innovative – not only because we consider the generation of alternative solutions from an "outside perspective" to be very enriching, but also because this is a step towards the inclusion of design and designing in research work and an acceptance of it as an important and essential contribution to the answering of research questions.

The Emerging Megacity Casablanca – Urban Agriculture as a Concept for Sustainable Urban-Rural Linkages

Christoph Kasper, Mohamed Mdafai

In the last 100 years the emerging megacity Casablanca has experienced substantial growth in its population and therefore in its spatial growth. As such, it exhibits developments that are specific to emerging megacities.

In order to understand the diversity of this metropolis and its urban development it is necessary to take a short look at its history. The city was founded on the repeatedly destroyed town of Anfa and had an oriental-Islamic urban structure until the early 20th century. During the period of the French Protectorate (1912–1956), Casablanca underwent a process of westernisation and modernisation that lead to a dual urban structure typical of the oriental-Islamic world at the time, with contrasting old and new towns. Casablanca's further urban spatial development was shaped by various generations of urban planners. It was formed by a strong discrepancy between planning and reality, and a continually changing planning objective. As a consequence Casablanca became a compact but heterogeneous construct, similar to an "urban puzzle"[1]. The period following national independence was characterised on the one hand by an immense growth in population accompanied by immense land consumption, and on the other hand by increasing industrialisation. In terms of the distribution pattern of land consumption, until the 1990s Casablanca mainly expanded concentrically. Since the discontinuation of the enlargement area, i.e., the coastal area between Casablanca and Mohammedia, the pressure of urbanisation has shifted more to the urban fringe. A closer examination of the pattern of urbanisation reveals that, besides the areas on the edge of Casablanca and its "initial" cores, the current prevailing pattern is highly dispersed[2]. In spatial terms, the urban-rural relationship continues to be of central significance – from an urban-rural antithesis to an urban-rural continuum. An impressive example of such a development areas is the Douar Ouled Ahmed. Here, urban cores that were originally informal have embedded themselves in the existing agricultural structure, mainly because of the ever-growing real estate speculation in the inner city. At this point the question arises whether these kinds of urban-rural linkages are only a transitional stage in development or whether they should be regarded as a permanent phenomenon of the megacities of tomorrow, If this is the case, how should they be designed in a sustainable fashion and be transformed from a random occurrence to a high-quality green infrastructure.
In geography traditional urban-rural linkages are described as follows: "At the broad theoretical level it suggests that there are economic, social, political and ideological linkages between urban and rural places. These find their physical expression in measurable flows of, for example, people, money and budgetary allocation. These flows are associated with interactions between people, places and objects, but do not in themselves actually embody those interactions."[3]

One approach within the project to better understanding and describing current urban-rural linkages are integrated case studies (qualitative and quantitative interviews and mapping), that investigate the practices and the socio-spatial situation in peri-urban areas, one of them in Ouled Ahmed. The results of this case study concerning the origin and the migrational background of residents, the duration and reasons to live in Ouled Ahmed, the characteristics of housing, income, and household expenditures, the situation concerning education and work, and questions about workplace geography and transport, as well as additional information about nutrition and agriculture in Ouled Ahmed all formed the basis of the Research Competition.

The analysis made on the regional scale showed that Casablanca, a dynamically developing megacity, is being transformed into a polycentric structure while spreading immensely and that it no longer forms a coherent built-up space. These new patterns of urbanisation have been considered in the new master plan (2009), which has replaced the plan from 1984. The new plan shows a polycentric type of development and makes statements about an integrated green network. This type of development also makes

A spatial model for nine different multifunctional categories of urban agriculture.

new spatial and organisational approaches to the relationship between the city and its environment, built and un-built areas, necessary[4]. Urban-rural linkages are not merely a case of two distinct spheres dovetailing in a new manner, but also define the future relation between the city and its integrated landscape. The development of tomorrow's megacities according to these two points of view is what we refer as dual-track urbanism. Sustainable and qualified urban development requires the formulation of conceptual responses to this in order to orient, structure, and guide the transformation process for today's periurban space, thus offering a new understanding of this interaction between urban and landscape development.

The basic approach of the UAC project is that a viable response to these changed spatial patterns in urban growth centres could be the active integration of agricultural areas into urban development and the conceptualisation of urban agriculture as a multifunctional open space system. We assume that helpful synergies between the city and agriculture regarding food production, wastewater- and flood management, and leisure can be developed. Agriculture could thus be understood as a constructive urban element.

A spatial model for the systematic integration of forms of agricultural use in urban development as a new category for the creation of rural-urban linkages was drawn up at the macro level of the urban region. This model is based on various factors, including analyses of existing settlement and agricultural structures, settlement history, natural spatial elements, and the quality of the soil for agriculture. In addition, these analyses were superimposed over development plans for the urban region (SDAU, Plan Vert, SOFA). The spatial model distinguishes between nine different categories of multifunctional spatial systems. The categories range from inner-city micro areas and districts to expansive areas of intense production on the urban periphery.

Thinking in terms of a future integration and transformation of agriculture in the city, a new green urban infrastructure is being created, which is – contrary to a traditional green infrastructure like parks – inhabited. Here, the perspective of the inquiry is directed towards the transformation of agricultural areas into living space. It implies that some of a megacity's inhabitants live and work in a rural sphere within the urban area. The previous rural form of living therefore becomes an integrated factor in urban development, generating "the rurban" as a new urban milieu (with specific spatial, functional, economic, and social interconnections) and – perhaps – the "rurbanite" as a new form of living. In this sense, qualifying rural-urban linkages within the urban region will create new forms of coexistence and allow for new synergies, values, living strategies, and spatial structures to emerge over the long term.

1 COHEN Jean-Luis, ELEB Monique (2002): Casablanca: Colonial Myth and Architectural Ventures, Monacelli Press, New York.
2 ROYAUME DU MAROC (2008): SDAU Rapport Justificatif, Juillet 2008.
3 UNWIN Tim(1989): "Urban-rural Interaction in Developing Countries: a Theoretical Perspective", in POTTER and UNWIN (eds.): The Geography of Urban-rural Interaction in Developing Countries: Essays for Alan B. Mountjoy, Routledge, London.
4 BMBF (2003) – and further: AGUILIAR, WARD: Globalization, regional development, and mega-city expansion in Latin America, a.a.O., page 4.

Ouled Ahmed Research Competition – Designing and Defining a New Essential Infrastructure

Andre Viljoen

The Casablanca project and research competition come at an important time in the development of theory and practice supporting our understanding of how urban agriculture, and more generally productive urban landscapes, can be integrated into cities as essential elements of a climate-optimised sustainable infrastructure.

As I write this, for the second time this decade, the rising cost of food is in the news. Driven by population growth, bio-fuel cultivation, and increasing affluence in emerging economies, we can expect this trend to continue as pressure is put on finite resources. Assessments of how much land is available for food production vary, some believe that the earth does not have enough fertile soil to feed projected future population numbers, while others argue that land is available but water is not. Whereever the truth lies, increasing affluence and population growth, mean that a lot of land and water will be required to achieve food security. Higher costs for fossil fuels suggest that the energy used for producing, transporting, and processing food should be reduced. It is in this context that designers, planners, policy makers, and politicians are all beginning to consider urban agriculture's potential contribution to food security and urban design as one neglected component of a city of short distances.

In short, food security is back on the agenda, and as all nations converge towards more equal standards of living maximising the energy-efficient production and processing of food locally provides a rational answer to feeding cities and minimizing the potential for conflict. The support of local administrations for this research competition in Casablanca is a measure of how significantly world cities view this problem. Casablanca, alongside diverse cites such as Toronto, Berlin, and London, to name just a few, are all seeking to explore and evaluate the contribution that productive urban landscapes can make to more resilient and liveable cities.

So, what can we learn from the Casablanca Research Competition? Firstly one is struck by the ambition of the brief, and realises that it asked competitors to consider a new urbanism. There are two points that I would like to explore in relation to the participants' propositions, one is about design strategies, and the other about the economic benefits of productive urban landscapes.

The entries provide overwhelming evidence of a consensus that a networked spatial strategy is appropriate for accommodating useful areas of urban agriculture, capable of supplying a significant proportion of city dwellers' fruit and vegetable requirements. The advantages of a networked approach relate to the coherence given to landscape within the city, the provision of ecological corridors, and the ease with which productive landscapes and sustainable transport networks for walking and cycling may be integrated. The risk with the networked approach comes with its potential to shift the urban towards the suburban by diluting urban vibrancy. For informal, although permanent settlements like Ouled Ahmed, where the scale of self constructed dwellings and demographics ensure a frontier village-like dynamic, this may not seem to be a pressing issue. However, it is not difficult to envisage the future expansion of Ouled Ahmed into a settlement similar in scale and dimension to Casablanca's much larger and denser officially sanctioned new housing projects. In this scenario the dimensions of urban agricultural fields will be crucial if the urban is not to become suburban. Therefore, while we can conclude that the networked model promoting continuity of productive urban landscapes is now recognised as a preferred strategy, we can also say that the "right dimension" for this urban landscape has still to be tested and defined.

Discussions about schemes raised an important question about urban agriculture's potential contribution to Casablanca's "leisure landscape" and the limited way in which we think about economic

viability. In one of the competition's entries it was noted that Ouled Ahmed could become a destination for visitors from central Casablanca, drawn to it by its unique urban agriculture, making it something like an agricultural "theme park" with associated economic benefits. While there is little doubt that during the initial stages of implementing urban agriculture, this might happen, it would be a mistake to assume that districts could rely on this phenomenon in the long term. Assuming the necessary widespread adoption of urban agriculture, the benefits would be spread across the city as people used these new networks of productive landscapes as spaces for "leisure escape". There will be financial opportunities for businesses supporting the needs and desires of commuters and recreational users, but the largest benefits will arise from public health gains associated with outdoor activity, fresh fruit and vegetable consumption, closed loop waste systems, and the attraction of a greener and more diverse city.

This discussion brings us to the critical question about how productive urban landscapes can compete in economic terms with traditional developer-led urban development. Urban agriculture needs to be compared to other types of infrastructure, such as roads, rail, water, and electricity supply, and these all come with costs attached. Urban agriculture is one of the new sustainable types of infrastructure like wind or solar power that recognize the reality of finite resources, but then literally generate a return. Of course roads etc. facilitate economic activity, but food does as well, including personal health benefits associated with productive landscapes! Factoring in these benefits and those associated with urban agriculture's potential to utilize organic waste from food preparation and recycling sewage for irrigation and nutrition locally can furthermore reduce the significant costs associated with waste disposal. We already see similar radical change in economic thinking in the energy sector, where providers are now promoting the reduction of energy use amongst consumers. And if the city aligns itself with local communities and a city-wide food security programme in order, to better facilitate individual development, as evident in Ouled Ahmed, what would that cost the city compared to traditional development?

The distinct focus of each entry, namely, components (IND), water (SMAQ), stakeholder involvement (Bureau E.A.S.T.) and staged / incremental development (KDI), provides us with a clear agenda for advancing theory and practice. These themes, set within the common networked open space strategy, point to the knowledge required by a new generation of professional planners and designers capable of implementing a resilient, sustainable, and desirable type of urbanism.

Casablanca's planners have had the foresight to define territories for rural agriculture. Advancing this strategy to maximise the contribution urban agriculture can make to a greener city, while enhancing food security and well-being is a logical next step. If the city takes these plans forward, the lessons learnt and expertise gained will be sought far beyond the borders of Morocco.

Douar Ouled Ahmed – A Future Urban Landscape as a Framework for Traditions, Aspirations, and Business Opportunities

Jörg Stollmann

My Father's Land

Immediately after landing in Morocco, some of us jury members not yet familiar with the specific urban landscape of Casablanca were taken on a tour. We got a glimpse of vast modernist housing projects, beach resorts and recent urban development at the urban edge only to finally find ourselves in the middle of the reaped agricultural fields of Ouled Ahmed. Bordering on a row of two-storey self-built houses, the fields were neatly tilled. Only at a second glance were we able to see plastic waste in the field's cactus enclosure and along the deserted streets. In the distance newly built housing developments came into sight: a meretriciously benevolent vanguard, expanding the urban fringe into the agricultural landscape.

After half an hour walk we met the first farmer, a man in his sixties. When asked if he was about to sell his land to one of the encroaching housing projects he was quick to answer that this was the land he inherited from his father and that it was out of question that it would be sold, and anyhow: he would not give up farming. While the conversation went on he mentioned the incredible prises that had been paid lately for neighbouring properties per hectare. When we asked him at the end of our conversation if he would keep on farming if his land was surrounded by housing estates, he answered half-smiling that he might reconsider and that it was a question of negotiation. We understood that we were taken as potential buyers.

The Whole City

The economic pressure of a growing metropolis is a force much too strong for current local agriculture to withstand. Existing informal settlements tell their own story about how farming land has been turned into building land without planning or infrastructual inprovements, just by farmers selling their land. And yet, incoming settlers have created intelligible patterns and secured roads and pathways preconceiving a possible future city to come. This existing structure can provide the basis for the dramatic urban development of Casablanca as long as the settlements' growth is coordinated by an overall strategy. The research competition Ouled Ahmed aimed at nothing less than this big picture: to envision a landscape structure plan that is developed from the existing potentials that will help to preserve farmable multi-use land while providing the city with locations for the necessary densification.

There are many good reasons for urban agriculture to be at the heart of any urbanisation strategy for Casablanca. In a long-term perspective the climate controlling function is the strongest argument for preserving open land within the densification process. But many medium short-term benefits have to support this goal: agricultural land can become a resource for water, leisure space, and urban food supply. It can support the introduction of technical and social infrastructures. But in order to have any chance to be implemented, all the strategies for this multi-purpose urban landscape have to ensure income generation for existing or future farmers. One still has to be able to make a living by working the land.

Responsibility and Profit for All

Each of the proposed entries reacts to a basic questions: How can micro-actors be empowered to help build a macro landscape? What is their profit and what are their responsibilities? The projects not only have to come up with structural and functional proposals, but they have to reflect how far those are supported by a different kind of urban governance. They have to "think" the city differently.

Thus, the following project proposals should not be understood as singular solutions, but as each containing components that can add up to a much larger project concerning not only the city of Casablanca and it's region. They relate micro and the macro actors in order for both of them to aim at the same target of sustainable development.

If proposals are based on a local plant or species, which can increase the added value of agricultural products, they strongly rely on a global or at least tourist markets able to pay the prices. This is taking advantage of the close interdependence of the very local and the global economy. Another proposal will provide a book of patterns and prototypical solutions for urban agricultural production, thinking urban development from the cell of a specifically laid-out individual plot. Thus, bottom-up development and economy are recognised and integrated into a top-down planning scheme. Another team projects a community infrastructure composed of an eco-mosque, schools, agricultural training centres, and trading facilities at the heart of each farming community and settlement. In future cites, neighbourhoods will act as agents of civil society and engage in co-organizing and supporting common and social facilities. And the most ambitious proposal in terms of scale envisions a sustainable water cycle on a regional level, which is based on the smallest self-sufficient unit of combined housing and farmland that is independent of any additional water supply.

In all of these proposals, the role of the farmer, his symbiosis with the urban economy, and his partaking within the organization of urban governance are redefined. The main challenge of the all-over research project will very likely be to develop this future role of the farmers with the farmers themselves – in a participatory and emancipating way in order to preserve our urban future.

Competition Teams

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RESEARCH COMPETITION OULED AHMED

Designing Multifunctional Spatial Systems

Christoph Kasper

The Challenge

In september 2010 the UAC-Project hosted a research competition. What does the concept of urban agriculture as a productive green infrastructure for an urban area and as a new form of urban-rural linkage within a city actually mean?

The goal of the research competition was to present options for this kind of integrated urban-rural development and to envision exciting examples of a productive green infrastructure for sustainable urban neighbourhoods in coexistence with new productive landscapes.

The research project aims to develop modules for multifunctional spatial systems that can act as prototypes and be transferred to other areas. The competition results were expected to contribute to this, in that concrete, context-oriented approaches should always be conceived as systemic solutions. That is why the area of the second pilot project – Informal Settlement and Urban Agriculture – was chosen as the site for the competition.

The Site

The site is on the southwestern periphery of Casablanca between two arterial roads that are undergoing rapid urbanisation. The core area to be studied is Douar Ouled Ahmed – Douar means "settlement" or "village" – and is a partly informal settlement that has come into existence during the last fifteen years. In view of the pending urbanisation of peri-urban spaces within Grand Casablanca, Douar Ouled Ahmed and its agricultural surroundings need to be brought together and integrated into further urban planning and development efforts. Ouled Ahmed is on the southwestern edge of Casablanca at a junction between urban and rural space called a peri-urban or rurban area. The area is currently subject to considerable transformation pressure. Migration to Ouled Ahmed is driven by affordable housing that is close to the city. This rapid increase in population is accompanied by an absence of infrastructure, or rather an infrastructure that is unable to keep pace with this increase. This has led to, among other things, high levels of unemployment, high numbers of school children in inadequately large classes, as well as the pollution of agricultural land due to waste. However, parallel to the informal growth of Ouled Ahmed, i.e. self-built one and two-storey houses for multiple generations, planned growth is occurring as well, partially as replacement housing for the inhabitants of Dar Bouazza's bidonvilles.

The Task

Based upon the results of the research to date, the task was to develop visionary development concepts in the form of scenarios for 2025 as well as spatial solutions for the further urban development of portions of peri-urban space, including the participatory transformation of mostly informal settlements within Grand Casablanca.

In order to do this, the existing structure of the settlement, the buildings, and housing arrangements already in place were studied in view of creating resource-efficient closed-loop systems. Proposals for improvements were then developed. In particular, the competition identified development potentials for integrating urban agriculture in residents' future settlement structures and lifestyles, and also showed how possible barriers can be overcome.

The main questions addressed by the competition were: What do multifunctional systems look like when they integrate the requirements of climate optimisation and resource efficiency and when they are supposed to be both productive and beautiful? What practical impacts will the concept of urban agriculture have on the transformation of existing urban quarters such as Douar Ouled Ahmed and on the creation of new urban quarters in the vicinity? What could the area's contribution to the urban food supply be?

The entries will be examined and evaluated in more detail in the further course of the research process in qualitative and quantitative terms relating to their specific contribution to the approach to multifunctional spatial systems.

Photo: Feng Gang

Welcome to Ouled Ahmed – Home to Snails'n Cactus Pears Co-ops

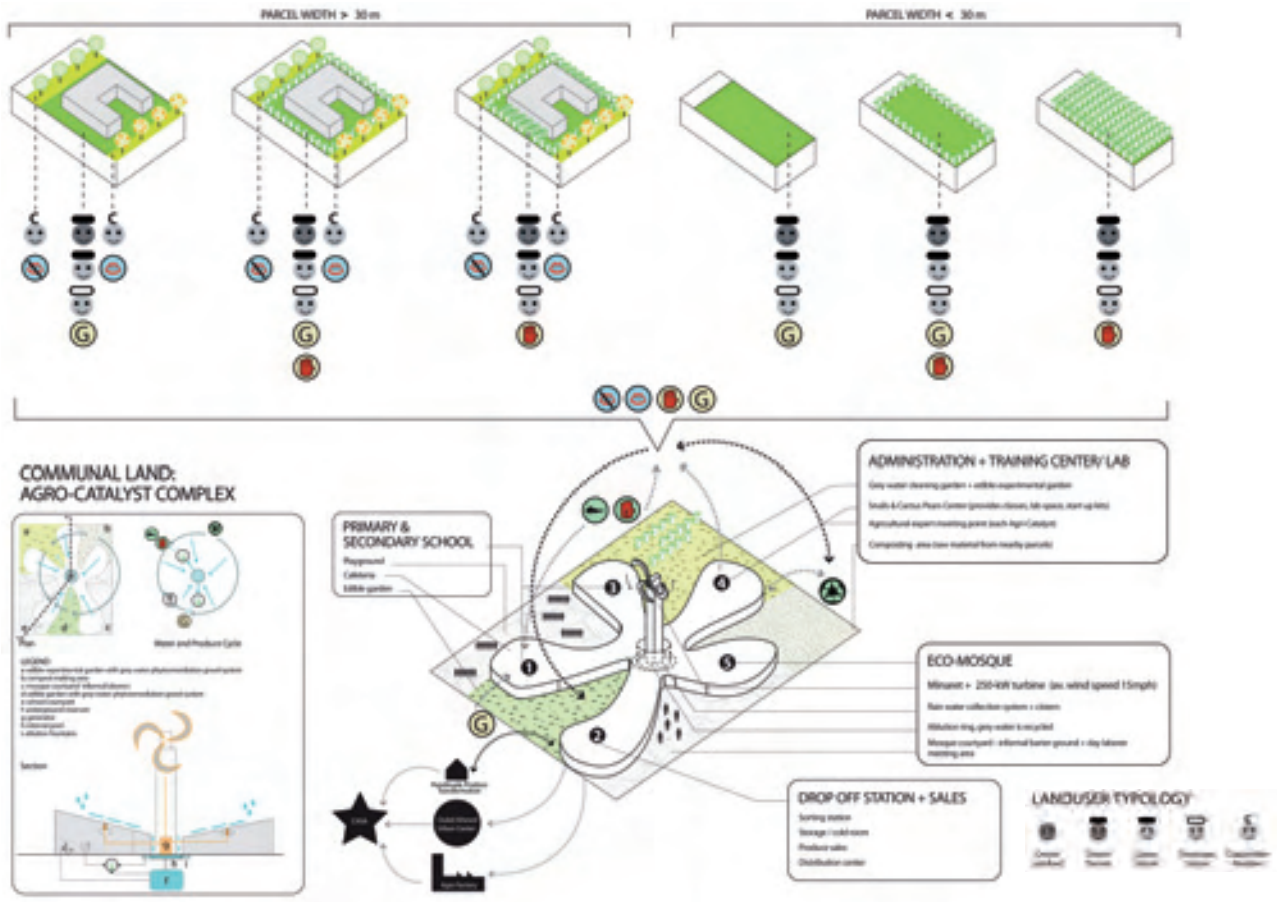
Team Bureau E.A.S.T.

As in any region undergoing rapid urbanisation, there is an unprecedented demand for new housing in the areas surrounding Casablanca; in that context farming is permanently giving way to commercial development. In an urbanism defined solely by developers, the maxim of "highest and best use" contradicts the diversity of land use. As a consequence, there is no understanding of complexity and certainly no space for agriculture.

If urbanisation is inevitable, what are the alternatives to an urbanism driven by the aforementioned understanding of a developer's point of view and interest? Can agriculture and urbanisation coexist and create a synergetic space where a multispheric outcome is generated? Can the rhythm of a city be based less on diurnal routines and more on harvests and growing seasons? In order to encourage a urbanism based on agricultural production while discouraging large-scale developer-driven urban developments, Bureau E.A.S.T. proposes a new set of Rurban Zoning Guidelines and the formation of a Rurban Cooperative.

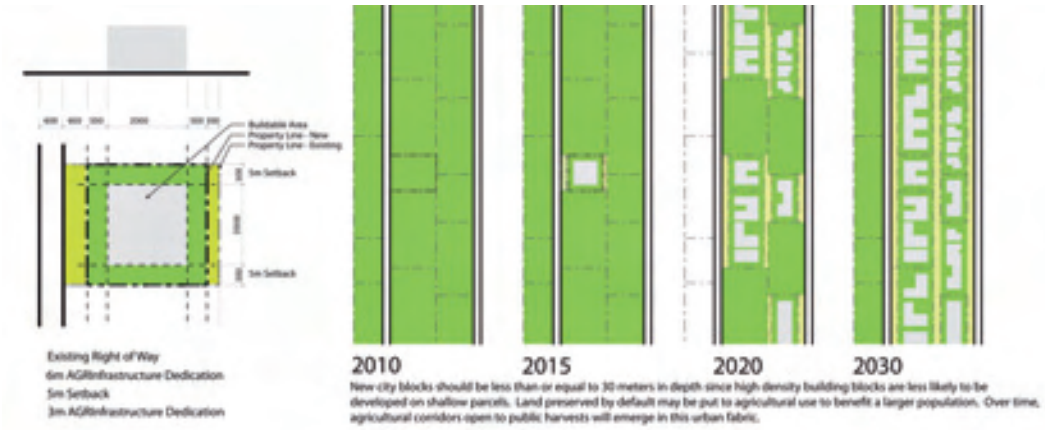
The Rurban Zoning Guidelines are a set of form- and performance-based regulations that champion the preservation of productive lands. The Zoning Guidelines will steer the development of two types of corridors. The larger type corridor will integrate parts of the existing agriculture. Here some of the Ouled Ahmed farmers will continue to operate as they have done for generations and so they will build up a productive green net between the city's

Site plan

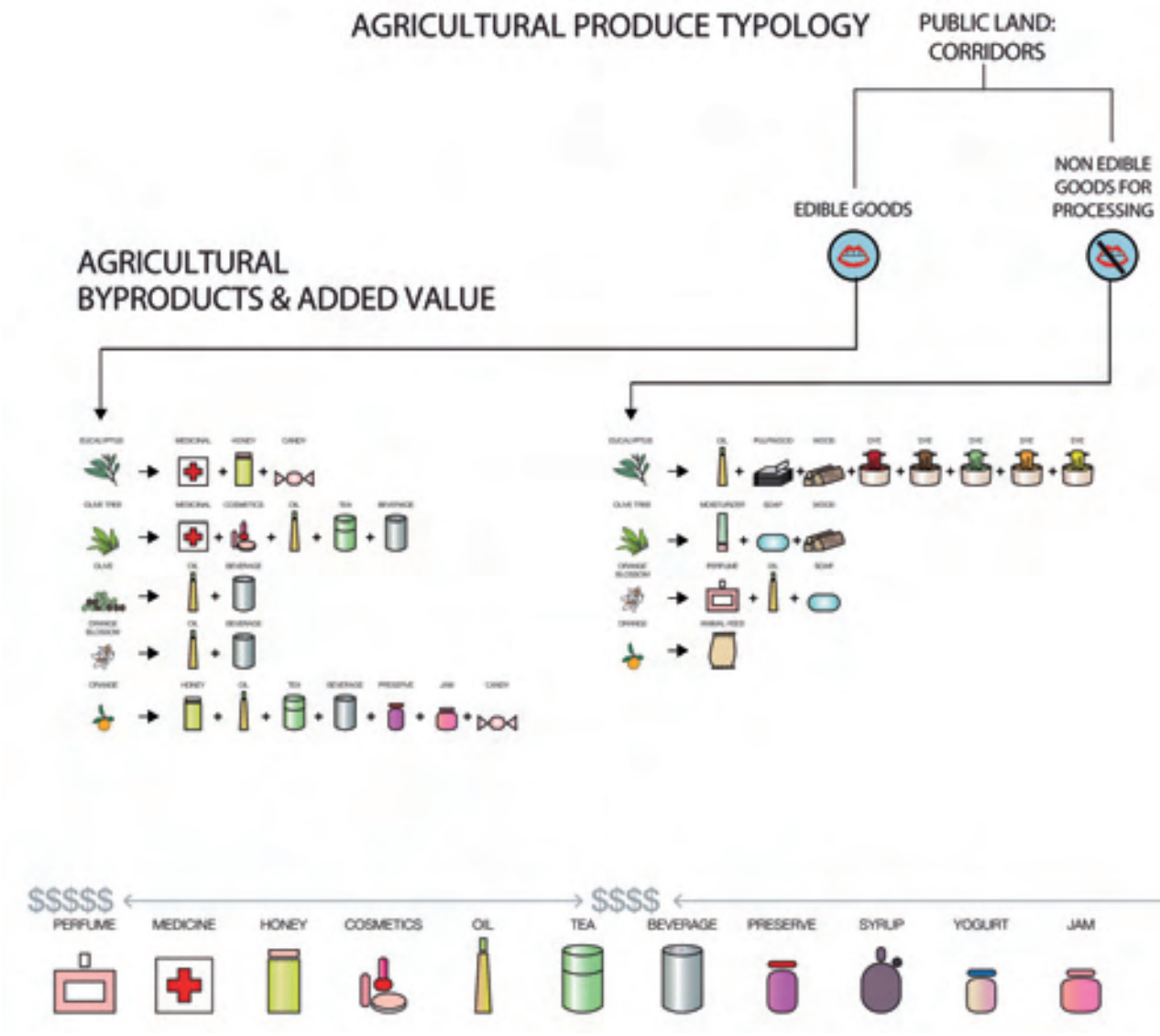


Parcel scenarios and communal land: agro-catalyst complex

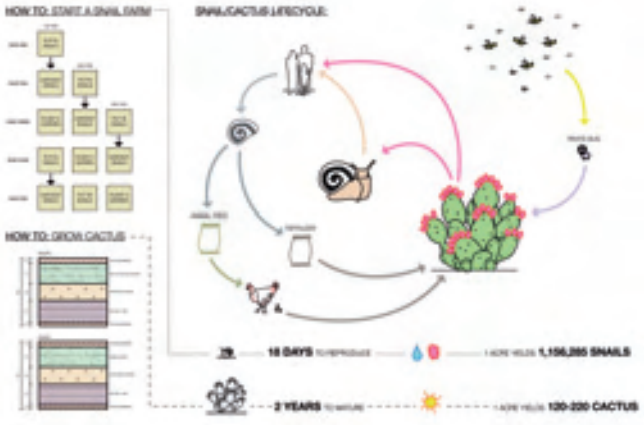
various quarters. Within the built-up areas smaller types of green corridors will be integrated by constraining parcel depths to dimensions unfavourable to developer pro formas, and minimum setbacks ranging from three to six meters will create generous planting areas that can be utilised for agricultural production. Residents are encouraged to cultivate the setbacks themselves or to lease the land to willing farmers. Over time, corridors that support crop cultivation and accommodate livestock will emerge as the dominant infrastructural framework within Ouled Ahmed. The Rurban Cooperative would oversee the social and physical infrastructure needed to sustain agricultural production within and around Ouled Ahmed. The Rurban Cooperative is comprised of private citizens including Ouled Ahmed's farmers, but the services that it would provide are for the public good. The Cooperative would manage public planting areas in rights-of-way and for residents who would prefer to lease their land. The responsibilities of the Rurban Cooperative include but are not limited to the coordination of land tenure arrangements. They determine which areas are fit for food production, enforce the delineation between areas for edible harvests and non-edible harvests, control pesticide use, and



Rurban Zoning Guidelines

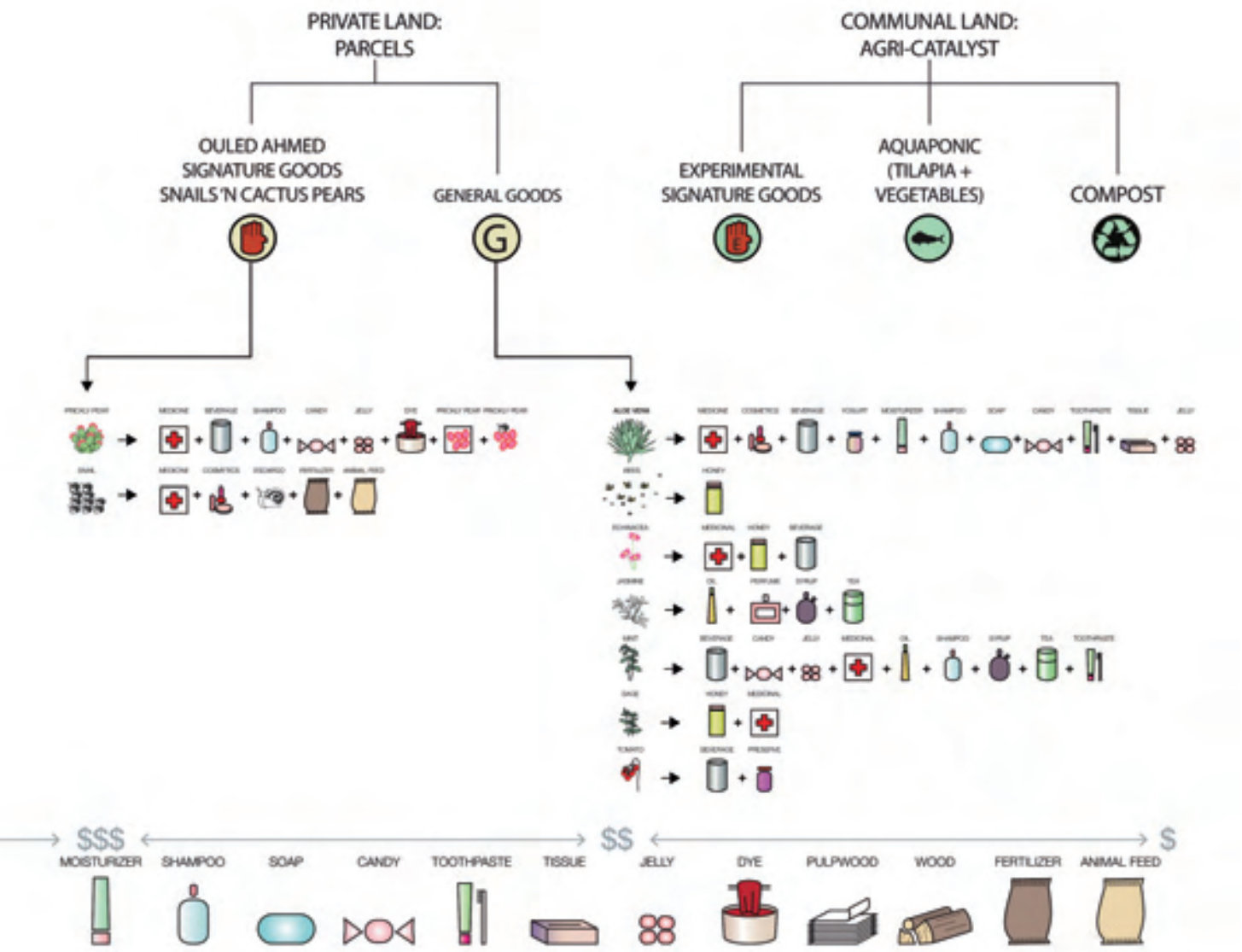


Agricultural produce typology and agricultural byproducts & added Value



Macro-scale farming diagram

Micro-scale farming diagram



certify products cultivated locally by independent growers to be sold under a unified Ouled Ahmed brand.

The regional climate can support a variety of edible goods, but Bureau E.A.S.T. envisions Ouled Ahmed focusing on the development of a regionally known brand for its snails and cactus pears. Snails are known to inhabit the cacti that produce cactus pears and both do well in the region. Snails and cactus pears are extremely popular amongst Moroccans and are thus ensured a robust market.

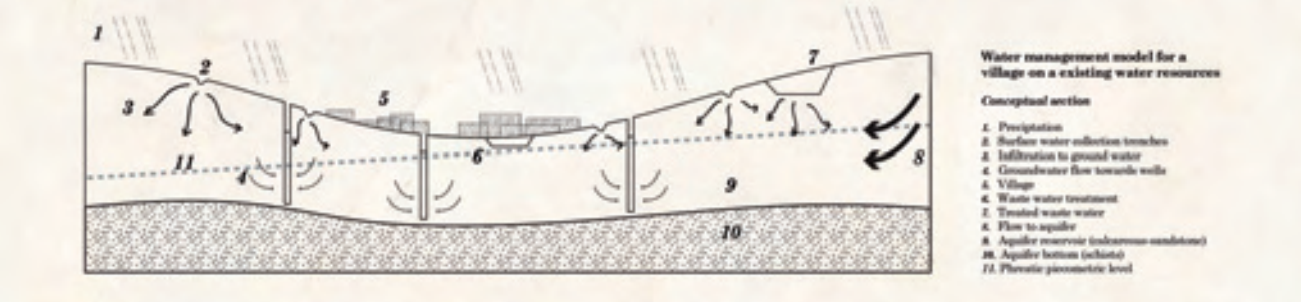
Together with the municipality of Ouled Ahmed, the Rurban Cooperative would also be responsible for maintaining and operating the Agro-Catalyst Complex. Positioned strategically throughout Ouled Ahmed, Agro-Catalyst Complexes will form an important network for Ouled Ahmed's emerging urbanism. Like the mosque that historically served as a place not only for worship but also for education, socializing, and business transactions, the Agro-Catalyst Complex is a multi-functional community complex. Through the strategic aggregation of community services, resources such as space, labour, and energy may be used more effectively. The overall effect is a way of life that will give Ouled Ahmed a identity unique. The Rurban Zoning Guidelines and the Rurban Cooperative facilitates are a new model of urbanism that addresses not only the basic needs of a burgeoning community but supports the continuation of a livelihood based on agriculture that is both profitable and fulfilling.

View of a rurban zone

Ideas for Rurban Living

Team IND

When you travel from the centre of Casablanca to its outskirts you can clearly feel that this city is growing differently than many other cities in emerging countries. Driving towards the periphery, the most common sight in such fast growing cities is an endlessly loose arrangement of buildings next to the highway that progressively disappears the further one gets away from the centre. In Casablanca this experience is quite different; the city has a clear perimeter that is as dense as many areas in the inner city. Outside this perimeter (consisting mostly of multi-level apartment blocks) there is pastureland. The exception to this dominant



Integrated Water Resource Management

This proposal offers solutions that take three major systems into consideration:

1. Surface water management system
2. Groundwater management system
3. Wastewater treatment system

1. Surface water management system

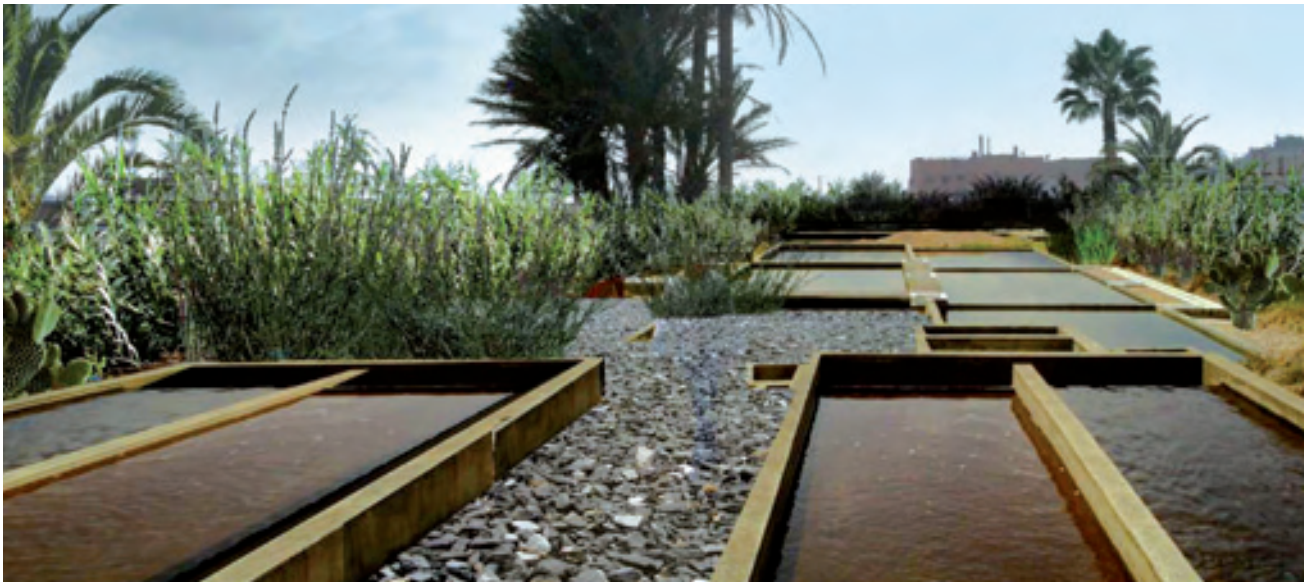
This system will protect the village from floods and contribute to recharging the aquifer. This will be done through trench systems that allow water to infiltrate into the aquifer.

2. Groundwater management system

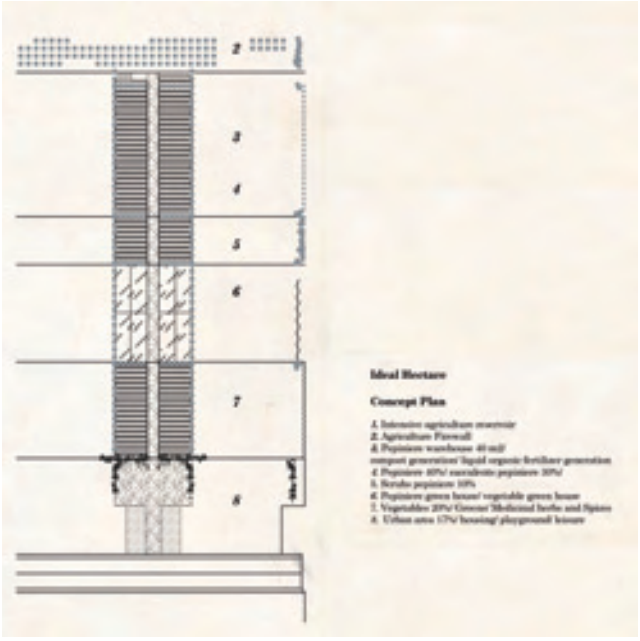
Groundwater is the only source for agricultural irrigation. Groundwater is currently being pumped to the surface at 2–4 litres per second. This quantity will be ensured by surface water recharge and wastewater treatment recharge.

3. Wastewater treatment

Wastewater should be collected from villages and sent to a water treatment plant. After treatment water will be distributed to recharging ponds at selected locations that are based on the direction of groundwater flow. Wastewater treatment will also prevent the aquifer from being polluted from existing septic tanks, which will be removed from the villages.



Visualisation of the wastewater treatment system



The Ideal Hectare

Concept Plan
Based on existing local and regional production practices, the Ideal Hectare is being developed to meet the demands of future diversification. Existing plots can be transformed and create new ones. They will serve as:

- Fruit tree gardens. A typical feature for leisure and family food production
- Vegetable gardens. Rotating processes of various greens
- Green houses for plant and seed germination (trees, shrubs, and vegetables)
- Nurseries to grow shrubs and succulents that need little water
- An arboretum: a nursery for larger trees

All of the plots will interact with one another, resulting in a healthy and balanced productive module. The production of local, low maintenance vegetation will secure easy-to-maintain nurseries as well as city gardens and public spaces. At the same time Casablanca's green storage is linking urban agriculture to the city itself and will secure both commercial and social interaction as a productive rurban landscape.

Scenario visualisation

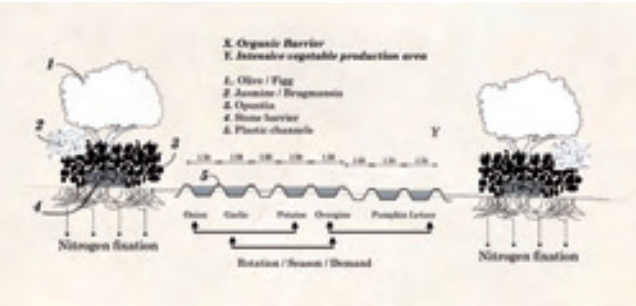
panorama is the slow and progressive appearance of the Douars in some areas of the periphery. The Douars are rather young settlements that mainly attract inhabitants from the congested and increasingly expensive city of Casablanca.

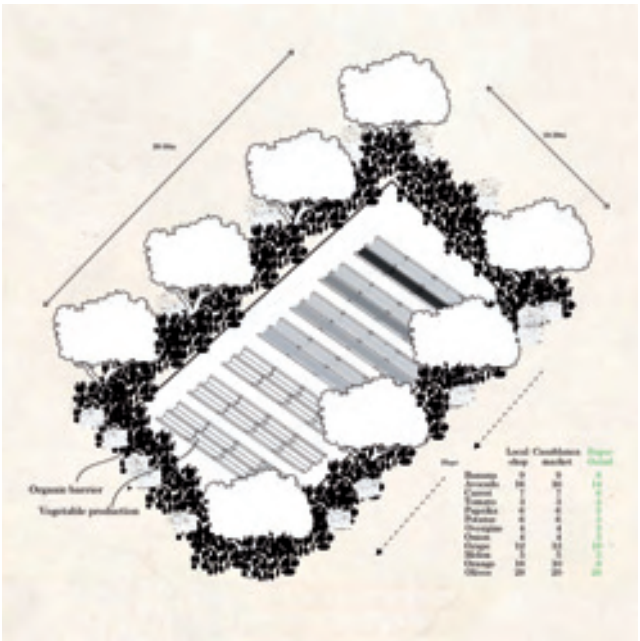
The Douar is also an interesting place to settle due to its affordable land price. Here a majority of the dwellers see the possibility of building and financing a affortable homes. Nevertheless, the growing Douar Ouled Ahmed faces many challenges like missing technical and social infrastructure as well as a certain connectivity to the existing city. The surrounding agricultural land is under pressure, being affected by a fragmentation of ownership, which results in the creation of smaller and disconnected arable pieces of land and the pollution of underground water due to the absence of a proper sewage system for the Douar. Despite the advantages of being close to the city, people in the Douar suffer from low incomes. Commuting to the city is costly and their daily food requirements consume up to half of their incomes. This proposal will result in the immediate and progressive reduction of food costs through the introduction of adequate techniques for agriculture in a context of the progressive urbanisation of the rural landscape as a priority. The ideas presented are not intended to preserve existing agricultural practices on the periphery of Casablanca. Instead they advocate the adaptation of specific techniques that are more compatible with highly fragmented and small-scale properties. In the view of IND, urban agriculture is not one of the community's priorities, but nonetheless has a great potential to become the main driving force in strengthening its economy and overall healthy development. It can serve as a tool for preventing and diminishing the impacts of real estate speculation, reducing damage to the existing biodiversity, and contributing to the preservation of open space. This can serve multiple purposes such as recreation, recycling, and the cultivation of food.

A list of ideas is not a master plan

The proposal is not intended to be a master plan. Rather, it should be understood as a collection of ideas that could be used to encourage discussions between the parties involved.

According to a large-scale densification strategy, bands of built-up areas that are oriented to the regional topography will be constructed around Ouled Ahmed. These consist of patches of different development projects. Proposals that have a variety of scales and a reference to different actors will be developed with regard to the transformation of existing developments and the





Bioproduction Module

Current practice
As a point of departure we want to adopt a practice seen on site and in some places in Morocco, i.e. the use of opuntia borders to define and protect cultivated surfaces. This is an organic border which is multifunctional.

Biology
From a biological point of view, such borders contribute to the fixation of nitrogen in the soil, reduce erosion, and help diminish floods. The nitrogen component allows for a new symbiosis scheme with the potential introduction of fruit trees that have low water demands such as figs and olives. Biodiversity and rurban relations: The border also creates a microclimate that can increase biodiversity. We incorporate aromatic shrubs such as jasmine or brugmansia, blurring the division between production and ornamentation, and contributing to an improvement in the quality of urban borders.

Concept section
The opuntia border contributes to the production of Kalmos fruit.

Investment and results
The proposed organic border requires a minimum investment, requires very low maintenance and no irrigation. Positive results can be seen in a very short period.

Security
Finally, the biological border contributes to the security of vegetable production by protecting fields against intrusion by animals and humans, a concern that local farmers have voiced about urban agriculture. The area reserved for vegetable production could use existing wells in order to irrigate efficiently.

Crop selection
The selection of crops should be made according to rotation practices, and should promote diversity and respond to price inflation in local markets and in Casablanca.

Plastic base
The advantage of introducing a recycled plastic base for agriculture is that urban farming can be introduced in non-arable or damaged areas usually already absorbed by the urban footprint.

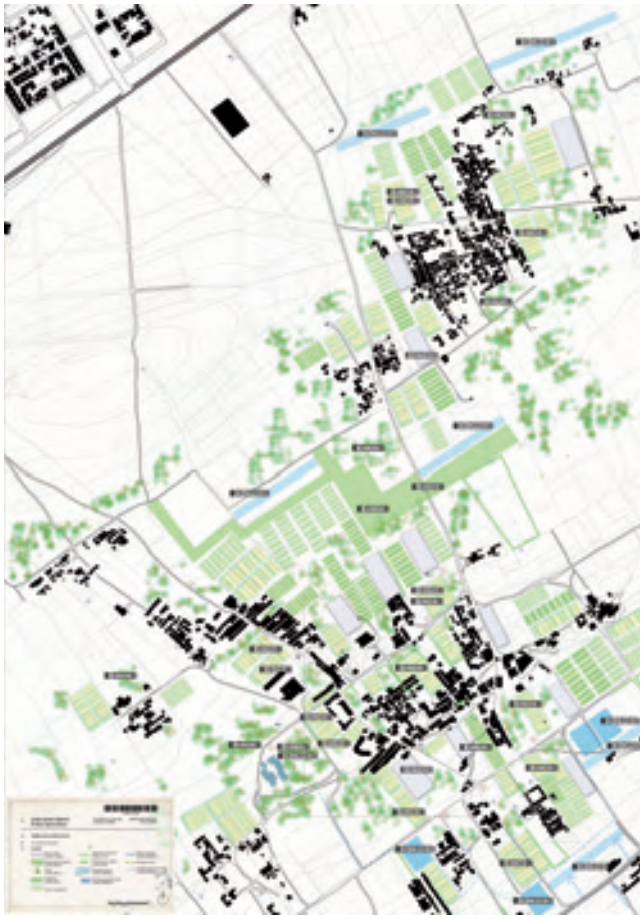
Visualisation of Bioproduction Modules

construction of new ones. These proposals should not be understood as a list of random ideas. Instead they are a site-specific package of realistic proposals that inhabitants could immediately put into practice. In this regard, one main criterion has been to diminish the use of complex and expensive technologies and to adapt the ideas to match existing resources.

This package of ideas, or toolbox, is also a relevant format that is highly suitable for inhabitant's participation and implementation. Once the potentials of a tool have been discussed with inhabitants, it is up to them to define the extent to which an idea will be used and the priority it will have. This fits to the idea of not proposing a linear plan that will guarantee a successful neighbourhood once it is completed, but instead to accelerate and decentralize important decisions in order to overcome bureaucratic hurdles that can discourage further community involvement.

Ideas / Toolbox Overview

- Biodiversity Bridges
- Agriculture Firewall
- The Ideal Hectare
- Bioproduction Module
- Organic Dress
- Compost Loop
- Rurban Oasis
- Thermal Green House
- Integrated Water Resource Management



Application placement for rurban living

Birds eyes view Ouled Ahmed

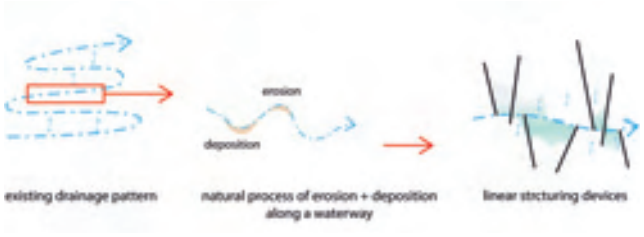
An Expanded View of Agriculture in Ouled Ahmed

Team KDI

In the face of rapid urban expansion, Casablanca is calling for sustainable urban development. The new master plan specifically calls for a greenbelt, social integration, and if possible, urban agriculture. Abstracted, we can say that Casablanca wants development that equally values the environmental, social, and economic aspects of a city.

There are a few constraints, however. Private developers driven by profit dominate the landscape, usually leaving the environment and social cohesion out of the equation. The government, though armed with a good plan, does not own the land where it wishes to implement the plan nor does it have the means to purchase it for competitive returns. Access to water isn't easy, making farming and agriculture a tough sell, and more critically, the younger generation, the future of Casablanca, do not see themselves as farmers.

To address these complex problems we propose an expanded view of agriculture, one that pairs farming with other things needed in the development of a vibrant city such as infrastructure, cultural and recreational amenities, commercial development and housing. To supplement this expanded view, we propose a strong social enterprise programme to promote schemes and systems that would promote the production, sales, and marketing of high-value goods from the fresh agricultural produce. In addition to increased income, this would build capacity in business administration and agricultural engineering, making urban agriculture attractive to a greater number of residents.

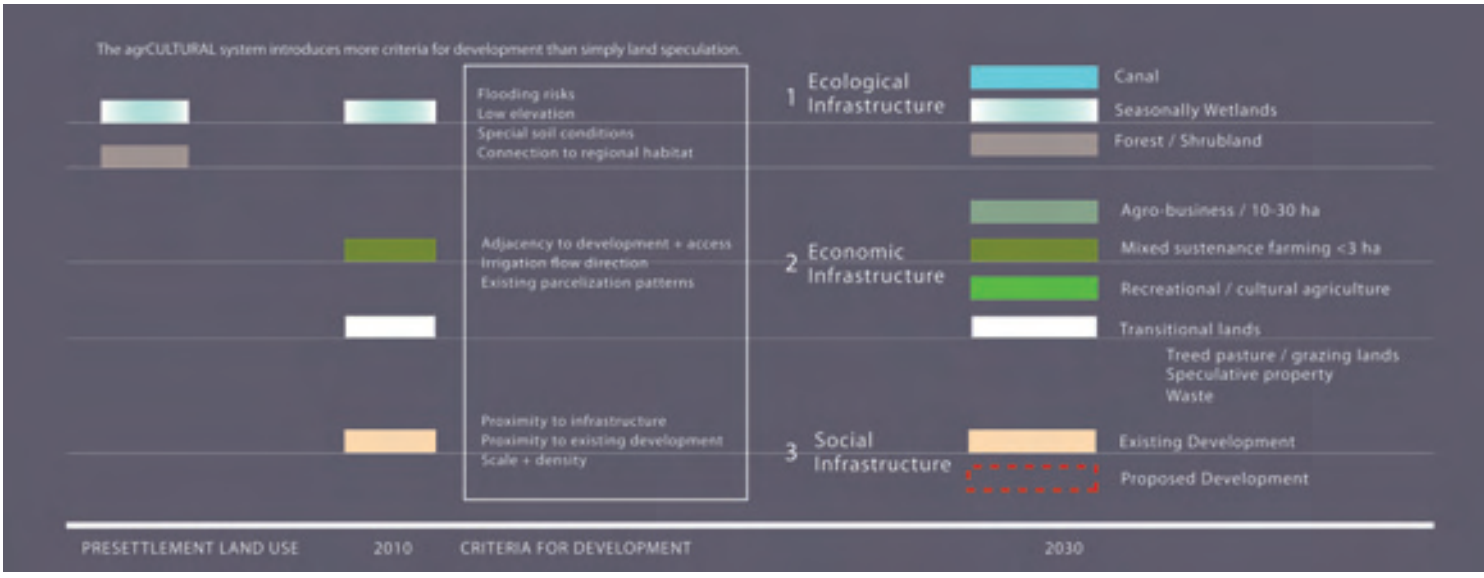


Site strategy

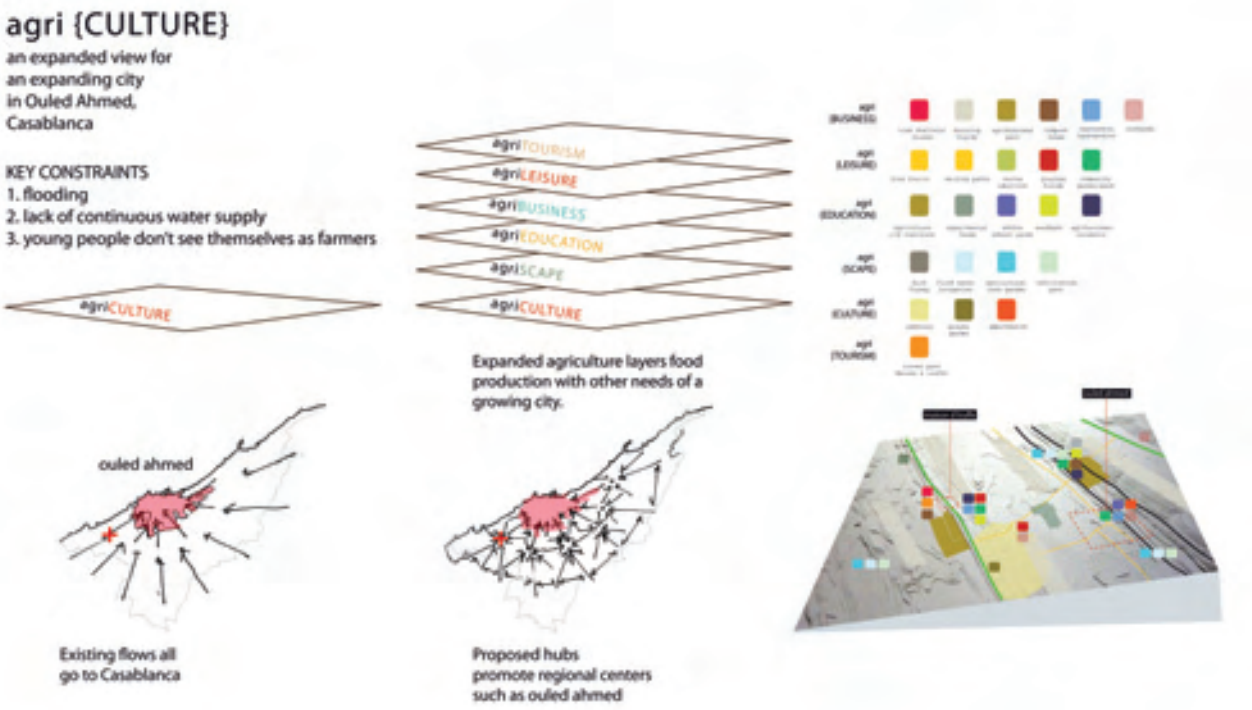
The Strategy

The vision for an expanded view of agriculture and a strong social enterprise component translated spatially into three broad landscape land use typologies that drove our site planning and design. These were:

- Ecological Landscape Land Use
- Economic Landscape Land Use
- Social Landscape Land Use

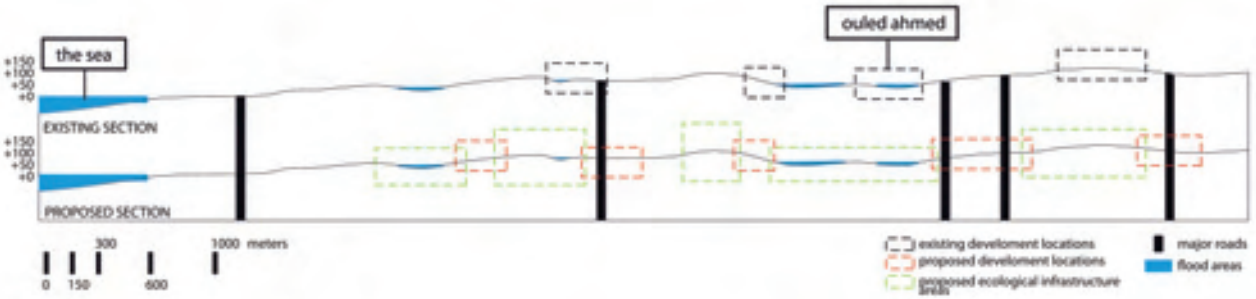


The agricultural system introduces criteria for development above and beyond mere land speculation

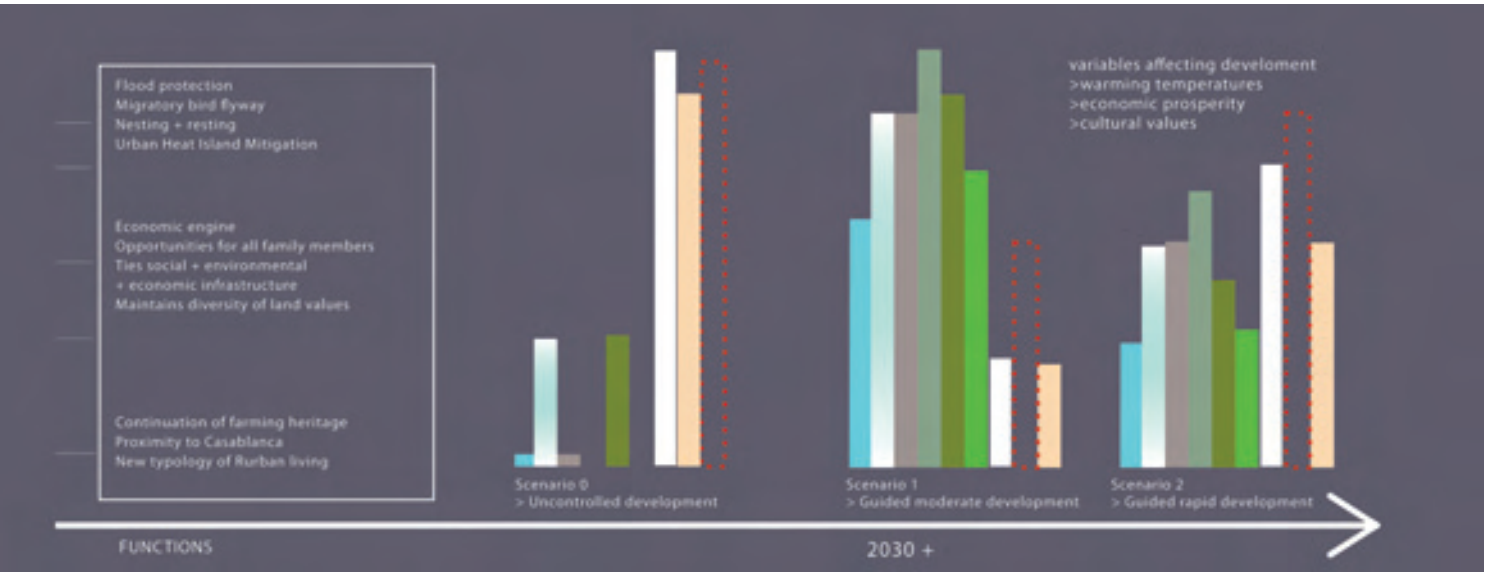


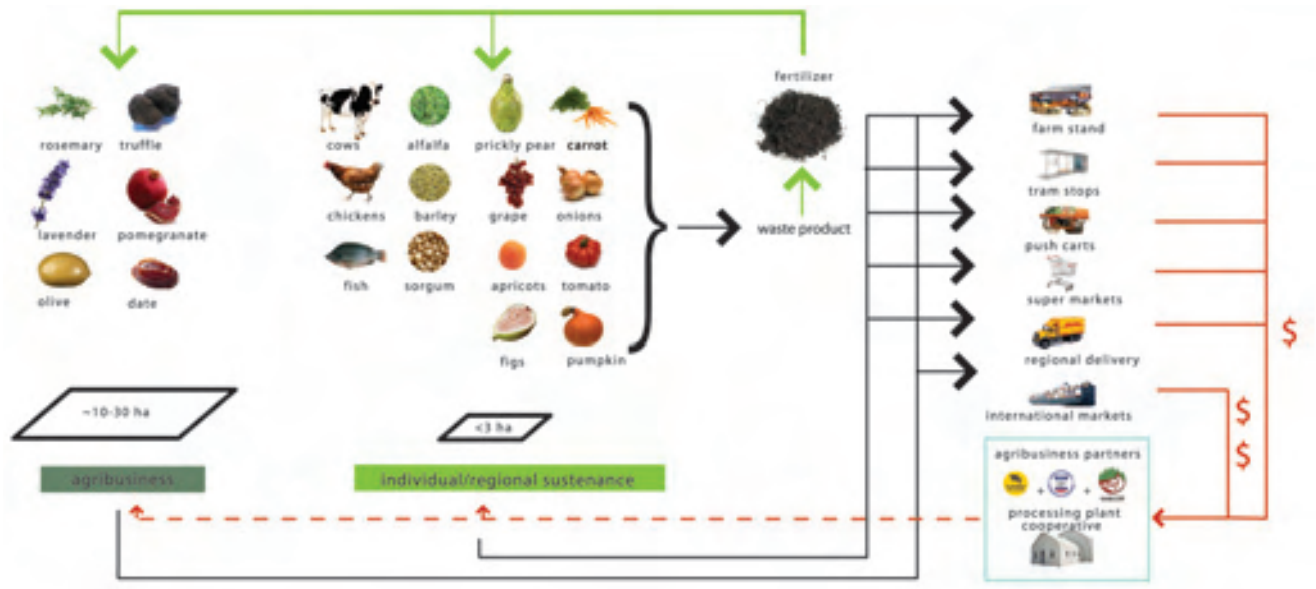
Expanded view of agriculture

The expanded agricultual system



Site section: The development strategy protects the ridges and valleys and prioritizes the midslope for building





An agribusiness modell yields higher profit potentials and greater distributions opportunities

Programme and Land Use

Ecological Landscape Land Use

A series of linear structuring devices parcels the land and establishes a consistent language throughout the landscape. The devices enhance the microclimatic conditions of the floodways by harnessing natural processes like erosion, sedimentation, and water systems. Walls, weirs, and hedgerows trap sediment, control and redirect storm water flows, create areas for enhanced infiltration for ground water recharge, and create wind breaks. A series of paths and linear bosques define the agricultural lands, providing visual continuity and secondary circulation routes away from the major existing roads.

Social and Economic Landscape Land Use

The agricultural infrastructure is established around a system of roads and recreational pathways that intersect with the broad linear gestures. At opportune moments along these, we insert a network of agriculture programme elements based on our expanded view. The AGRI-recreational programme areas are located along pathways that draw people away from the urban cores, through natural programme elements such as bird nesting + resting parks. Agri-business programme elements such as business incubators gravitate to the major existing hubs and are located where large-scale farming is deemed feasible as derived from the landscape strategy.

As an example, at the middle of Ouled Ahmed we've inserted recreational agriculture. A valley runs through it and provides an opportunity to pass and ecologically reclaim the drainage way. The built environment will be moved closer to roads, providing large and easily accessible parcels of agribusiness in close proximity to Ouled Ahmed. Opportunities for robust sustenance farming are taken advantage of downhill. We knit the whole system together with recreational amenities.

This proposed network is not only an attractive and important connector for greater Casablanca but also puts a much needed environmental infrastructure in place to guide development, making the idea of urban agriculture more feasible to implement. In effect, the land and resources required for agriculture can be coordinated with other private development or government agencies that have existing mandates and budgets to provide the infrastructure.

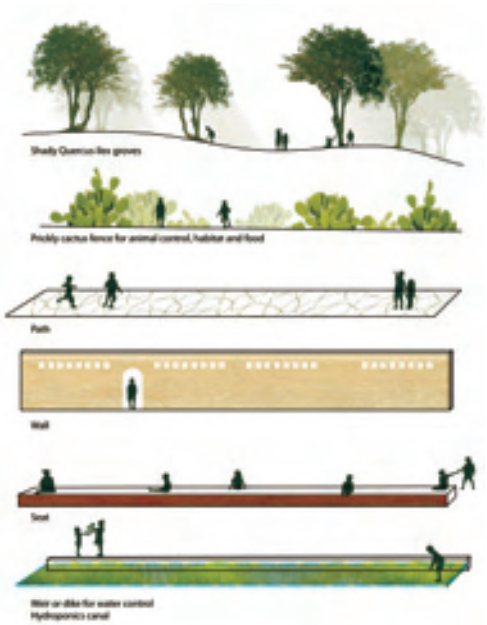
Development Strategy

The landscape strategy also shows where the built development will be located. The primary focus is to increase density in the existing Douars, thus increasing the land available for meaningful urban agriculture. By layering the landscape strategy to existing development patterns we identify the most ideal locations within existing centres for increased density, avoiding ridges and in some cases ridge tops. The new developments will respect the organic nature of the existing development as it responds well to the terrain and the proposed insertion of agricultural programme elements.

Social Enterprise

To tie all these together we propose the creation of a strong social enterprise. Our suggestion is based on the cultivation of truffles, but the model would be easily replicable with a variety of agricultural produce. An emphasis is put on social enterprise in

Site plan



Series of linear elements structure zones for agricultural infrastructures

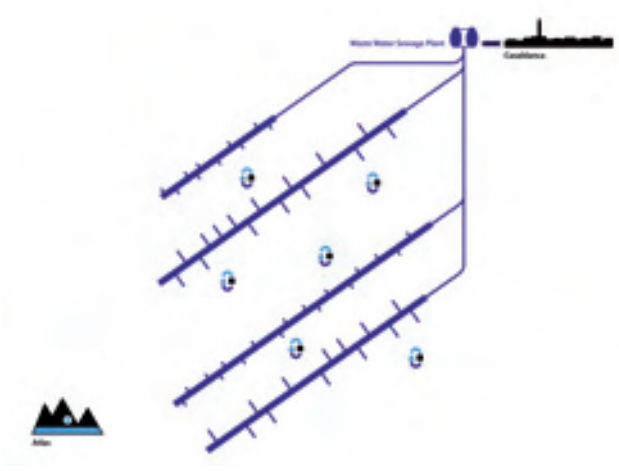
Greenway through Ouled Ahmed

order to ensure that the strong social networks that already exist within the Douars are tapped into and maintained. This will ensure a graceful stewardship of the land and the built fabric while increasing the economic output of residents. We propose setting up systems that go beyond the mere farming and harvesting of the crop, and also include its processing, packaging, sales and marketing, and value addition. The main goal is to expand the professional options of agriculture at the local level. These additional systems will help build capacity sales, marketing, accounting, and agricultural engineering, thus increasing the attractiveness of (urban) agriculture.

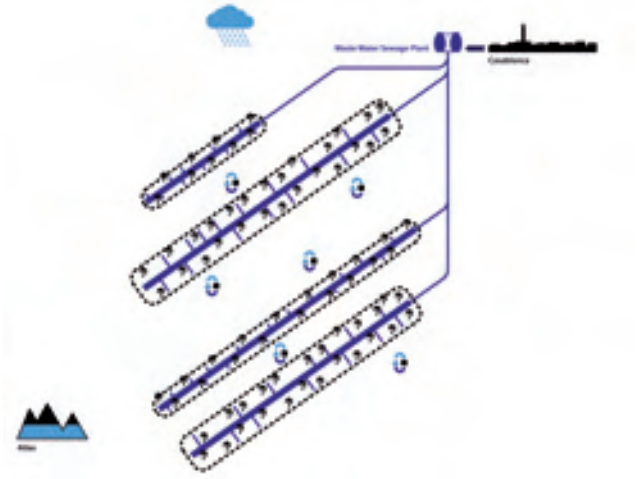
In summary, we return to the expanded view of agriculture and the role urban agriculture can play beyond food production and the creation of picturesque landscapes, i.e. in the enhancement of urban social life, micro-economies, capacity building, and urban environmental stewardship.

The Rain Makers – Towards a Water-based Urbanity

Team SMAQ



Territorial water strategy: Wastewater irrigation



Territorial water strategy: Water and vegetable self-sufficiency

This concept is based on a territorial water strategy and on the recovery of the natural water cycle through evaporation, condensation, and precipitation.

The general idea is to use all locally accessible water resources for the irrigation of vegetation in order to refill the atmosphere with water and thus cool the environment. Not a single drop of water should leave the landscape by being funnelled into sewer systems or as surface runoff into the ocean. Instead, wastewater needs to be recycled and used after being pretreated in order to improve environmental conditions. All remaining water should be redirected into the atmosphere to improve the water cycle.

The evaporation of water reduces surface temperatures and is the source of precipitation. Due to the importance of the small water cycle for local precipitation rates, further steps need to be taken to improve the soil's water storage capacity and to avoid surface runoff.

Three steps will lead to a water-based urbanity

Step 1: Towards a Territorial Water Strategy

The crux of water based urbanity is the establishment of a Territorial Water Strategy for Waste Water Irrigation. Casablanca's future master plan proposes a total area of 22,000 ha of new built-up areas and multiple sewage treatment plants to pretreat wastewater before it is fed into the ocean. But wastewater represents a valuable resource and – after additional treatment – greywater can be used for irrigation. Greater Casablanca already produces about 200,000 m^3 of wastewater per day. If this water was reintroduced into the landscape so that it could evaporate, it would have a major effect on the climate. If this 180,000–200,000 m^3 of evaporated water for Greater Casablanca would generate an additional 600,000 m^3 of rainfall per day. To stabilise the regional water cycle a territorial water strategy for Ouled Ahmed is therefore needed.

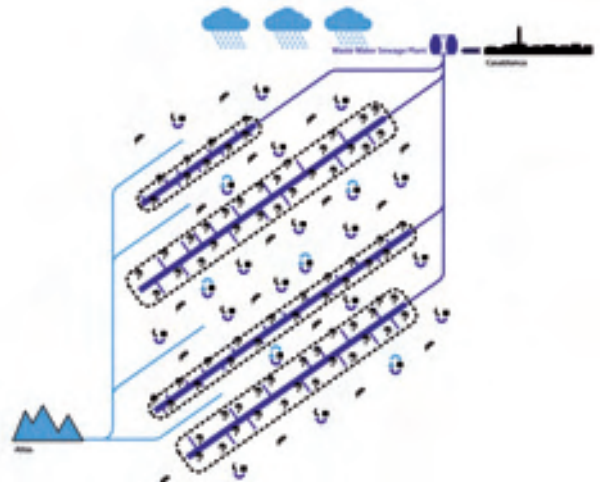
Water cycle: Today

Water cycle: Stabilization

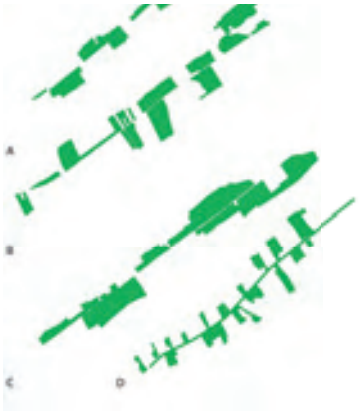
Water cycle: Further stabilization

Water cycle: Stabilization

The overall assumption is that problems of the present situation in Ouled Ahmed could be mitigated by 2015 mainly by means of recycling wastewater from the area of Greater Casablanca. It is expected that this will lead to a further increase in local precipitation and evaporation rates by 2030. As evaporation increases, all of the other radiation and energy components from the incoming solar radiation will decrease, thus improving the local climate situation even further. When the water cycles on a regional scale are stabilized, the reservoirs in the Atlas would have enough fresh water. The system would be balanced. Casablanca would then have enough fresh water to support further development.



Territorial water strategy: Adding irrigation to urban quarters / more rain supports a more productive landscape

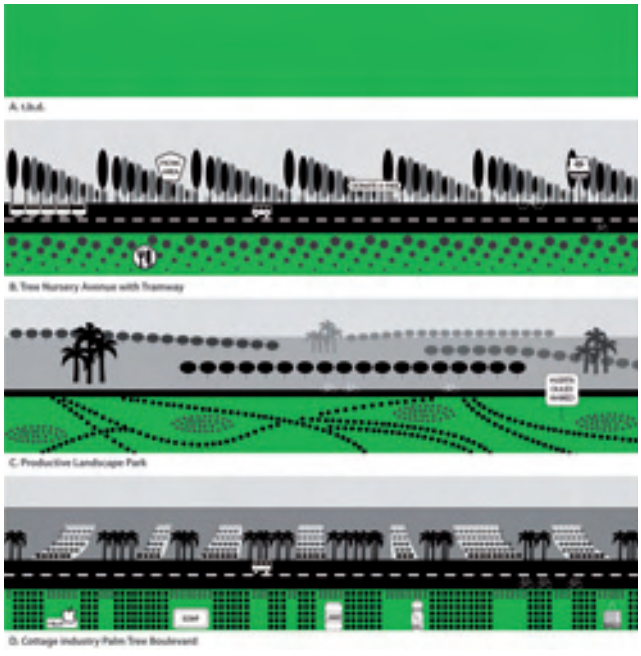


Productive multifunctional green infrastructure in relation to existing parcelling and occupation

In Ouled Ahmed, which will have about 1,400 ha of new built-up areas in 2030, about 18,000 m³ of treated water from sewage plants could be recycled per day to irrigate 300 ha of productive new landscape. This represents 6 mm of additional irrigation and approximately 15,300 m³ of evaporated water per day.

Step 2: Towards Multifunctional Irrigated Landscapes

Making use of the existing topography, we propose the creation of a differentiated system of parallel irrigated landscape bands that will link the existing topography and landscape functions with new economic concepts. The goal is to improve the landscape in the next few decades through manifold vegetative structures, especially along borders for settlements and agricultural fields. This land, which is currently used for growing wheat, can then be converted into more fertile and profitable agricultural land which could sustain vegetable and fruit production. Additional areas could be used as tree nurseries, which are intended to use wastewater for non-edible crop production.



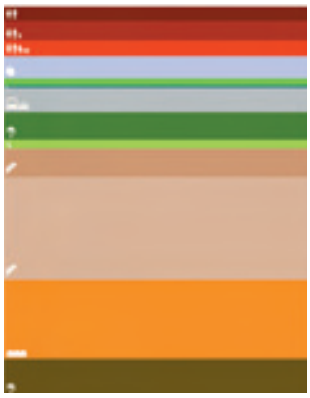
Wastewater-irrigated multifunctional landscapes

Site plan 2010

Site plan 2015

Site plan 2030

Land use schedule 2015



Land use schedule 2030

Three steps to a water-based urbanity

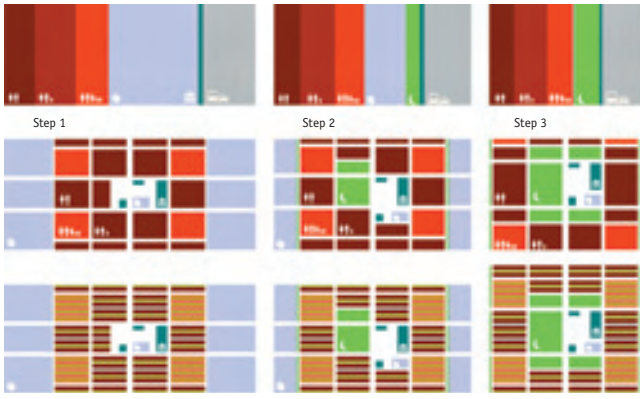
Step 1: Self-suffient water and vegetable unit using 0 % net water

Step 2 (2020): Semi-self-suffient water and vegetable unit using 50 % net water

Step 3 (2025): Water-net based units using 100 % net water

Land use distribution 2015

Land use distribution 2030



These three steps will lead to a water-based urbanity

Step 3: Towards Irrigating Urban Quarters

The proposal is a step by step urbanisation strategy that also includes a landscape and water strategy. The timetable for Ouled Ahmed illustrates the further densification process for the area.

Integrated Water Strategy

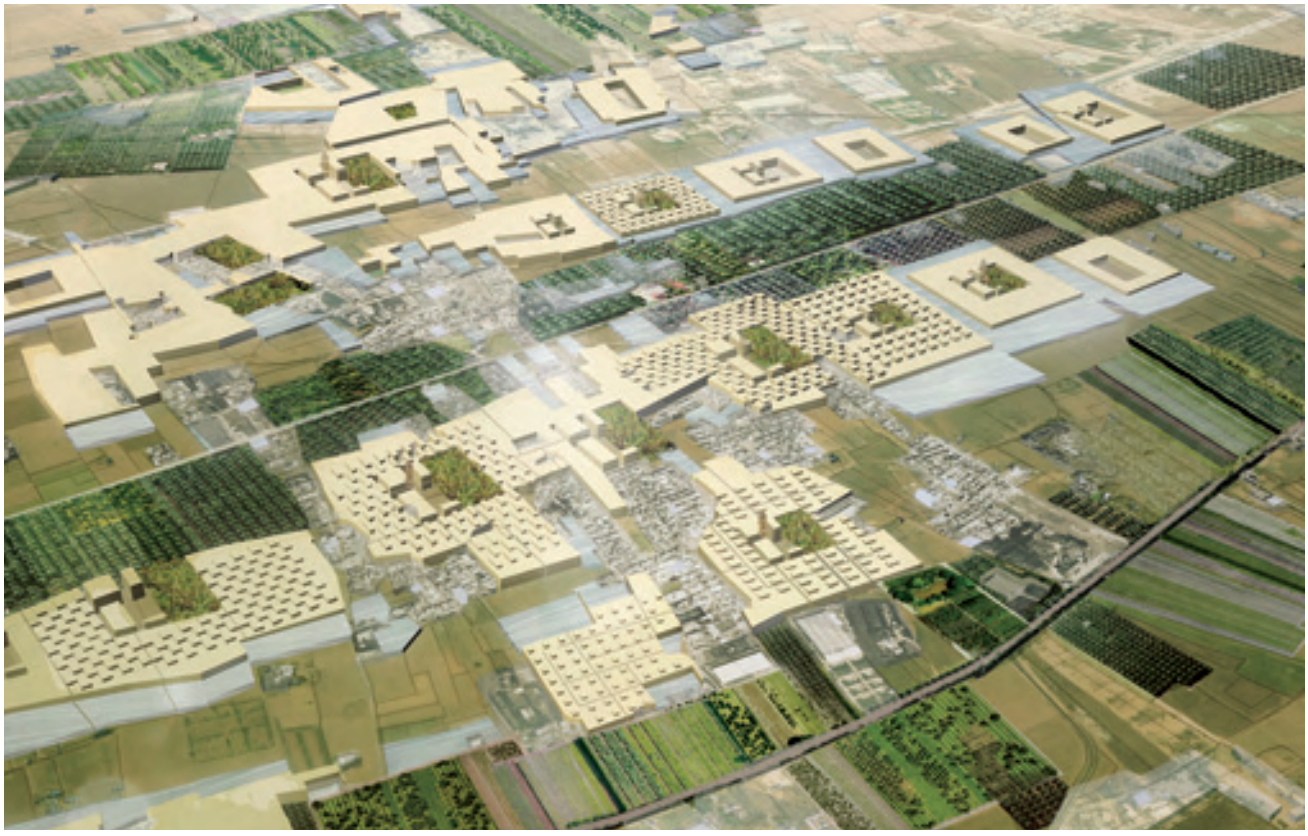
The basic concept for the first phase is to supply local people with clean drinking water by including small closed greenhouses in the further development of settlements. Greywater produced in buildings will be used to irrigate vegetables in closed greenhouse systems.

In the second phase, the new units are equipped with composting toilets and therefore do not generate any blackwater. The greywate will be used for cultivating land. New settlements can be tied into the city's water supply system.

A Model Calculation

A family household of three people needs 120 litres of fresh water per day and generates 100 litres of greywater. This 100 litres of greywater are enough to irrigate 20 m^2 of cultivated land. This cultivated land generate 90 m^3 of evaporated water and 270 m^3 of rain. The family scale can affect the local scale.

Greenhouses and new city development in and around Ouled Ahmed



Birds eye view

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Médiouna Summer School, September 2010

Technische Universität Berlin (TUB)
in cooperation with
EcoleNationaled'Architecture, Rabat (ENA)

SUMMER SCHOOL MÉDIOUNA

Médiouna Fruit Baskets
Green Factory
Agriscape Corridors

Multifunctional Landscape Spatial Systems

Undine Giseke, Majid Mansour, Anne-Katrin Fenk

The Challenge

What does a beautiful and productive urban landscape look like? The goals of the summer school were to develop innovative concepts for multifunctional landscapes in an intercultural and interdisciplinary dialogue, and to strengthen the awareness of the urban agricultural areas of tomorrow.

The research project introduced the new concept of multifunctionality to design productive synergies by combining urban and agrarian systems. Within the UAC project the urban centre Médiouna serves as a reference area for redefining the significance of Multifunctionality with regard to landscape. The subsequent step of identifying different land use categories and interweaving the spatial characteristics with the intrinsic ecological, economical, cultural, historical, and aesthetic spheres is one the milestones of the design work at the summer school.

The Site

Médiouna is a lively and fast-growing centre located in the south east of Grand Casablanca. It is surrounded by various small douars and extensive agricultural land. To the north, the agricultural fields border on a large and varied green belt that includes the forest of Bouskoura and rocky areas that are part of a qued. Due to the fertile soils, agriculture has a long tradition in this area. Grain and fodder are the main crops and dry cultivation is widespread, with only a few irrigated areas.

On the other hand massive residental and industrial development is currently occurring in this area. The new urban development plan proposes a major industrial corridor to be built alongside Médiouna, which will connect the city of Casablanca and the new airport. This will change the existing fabric dramatically. Between 1994 and 2004 the number of residents in the province doubled and Médiouna is therefore an ideal example to show the transformation of agriculture in co-existence with urban development.

The Task

"Research by Design" was carried out in a 25 km² area around the town of Médiouna. Within this area, three 1 km² sites were chosen as sites for more detailed design. The task was to develop a specific spatial scenario on two different scales (1:10,000 and 1:2,000). In terms of time, 2030 was the objective. This corresponds to the SDAU 2010's timeframe for Grand Casablanca.

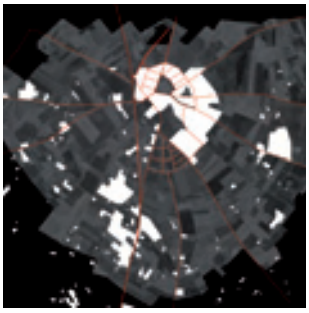
The designs were to demonstrate prototypical approaches for linking further urban development with food production, water treatment, agrarian industries, irrigation, and leisure and recreational activities and to show how these would generate new landscape profiles. The summer school took advantage of the irrigation skills of historical Arab cultural landscapes and attempted to develop contemporary reinterpretations of these images. This method aims view at urban growth from a wider landscape perspective. The landscape system itself and the embedded historical and socio-cultural layers serve as a "Leitfigur" and a realm of possibilities for addressing the task of designing sustainable visions for the "cities of tomorrow".

Central questions evoked heated debates on urban agriculture as a productive green infrastructure: What kind of agriculture is imaginable? What are the economic concepts behind it? How can resource-efficient cycles be developed? The design results show surprising and innovative propositions by introducing an irrigation system based on the trading of water and certification, new urban farm typologies with smart systems of multifunctional units, and a cultural landscape that also functions as a food processing industry.

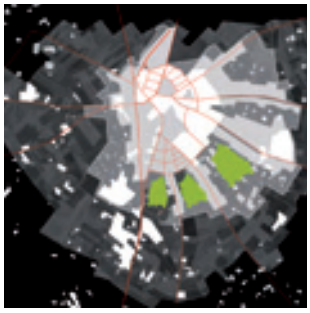
Photo: Feng Gang

Médiouna Fruit Baskets

Ahmed Belamine, Lulu Dombois, Hajar Mahdaoui, Yassine Moustanjidi, Azadeh Rahnama



Present state



Scenario for 2030

The second project area is located on the southern edge of the rapidly growing town of Médiouna. It is characterised by the coexistence of old agricultural use and new residential areas. The growth of the city is immediately noticeable here.

Thesis

The Médiouna Fruit Baskets project focuses on urban growth and the transformation of agriculture caused by it. It has been suggested that the town is growing mainly along traffic arteries and that the area in between can be developed into a new kind of productive open area near the town: the Médiouna Fruit Baskets. These areas will simultaneously fulfil aesthetic, productive, climatic, and regenerative purposes.

Water for the fruit baskets

The transition from built-up areas to the newly functional open areas is formed by a filter belt that purifies greywater from the city, thus providing the agricultural areas with water. Due to this synergy, a permanent and efficient form of inner-city agriculture can be operated. Linear irrigation channels inspired by traditional irrigation techniques carry the water away from the filter belt into the fields. The channels come together again at a reservoir at the far end of the fields that serves as a transitional zone to a dense new built-up area.

Agriculture for urban residents

Existing agricultural fields thus become new open space areas that can be productively used while serving as recreational areas that are easily accessed by urban residents. Dense new urban neighbourhoods will spring up around these productive recreational areas, increasingly turning the Fruit Baskets into “green islands”.

Fruit Baskets and agricultural open spaces

Parks for the farmers

The parks serve as the farmers' new fields, meaning that a minimum size is required. In the Fruit Baskets three to four families will live in these new urban farms (see Fig. bottom right). This agriculturally used open space is divided into two distinct areas: The Dense Landscape has a greater productivity /intensity in a classical agricultural sense. It is located close to the farm, thus making it semi-private in character. Spatially, it is characterised by different features: It may be somewhat lower than the surrounding area, and rows of trees and hedges, or even greenhouses will give the space its relative privacy. By contrast, the Light Landscape is publicly accessible and will function primarily as a recreational area. Residents can go for walks here or have a picnic, or even go to the market, which sells regionally grown products.

Dense Landscape

Assosiations
1. Very productive
2. Semi-private space

Spatial Elements
1. Irrigated agriculture
2. Greenhouses
3. Hydroponics
4. Horticulture

Multi-layered
Double-coded spaces with:
1. Living space
2. Intensive production

Vegetation concept (small-scale)
1. Field crops
2. Climbing plants
3. Herbs
4. Fruit trees

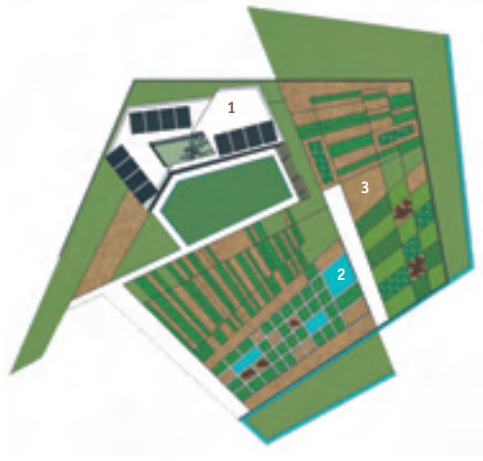
Light Landscape

Assosiations
1. Less productive
2. Big leisure effect
3. Public space

Spatial Elements
1. Orchards
2. Wide fields
3. Pastureland
4. Constructed wetlands
5. Purification Ponds

Multi-layered
Combination of functions e.g.:
Recreation, production, green lungs, education, economic market, water purification

Vegetation concept (big-scale)
1. Meadows
2. Corn and grain
3. Energy crops
4. Fruit trees



The new urban farm: 1. Living space, 2. Irrigation tanks, 3. Agriculture

View of the new urban farm

Green Factory

Kenza Anice, Mohamed El Tayeb, Mohamed Gazoulit, Sophie Holz, Mania Lohrengel

The concept

Green Factory is the name of a landscape where a hyper-productive agricultural area is linked to a recreational area that is adjacent to the city. At the same time, a new aesthetic expression for this kind of landscape is being sought. The combination is unusual, and is a response to local challenges: Médiouna is an important agricultural centre in Grand Casablanca but is also located within a significant development corridor.

The idea

Due to the extremely good soil, agricultural activity will be maintained to a large extent and will even be developed into "hyper-productive agriculture". The area will also be made more attractive for those seeking rest and relaxation.

Water has a key function

Changing the way water is managed plays a key role in all of this. The emergence of a new landscape will only be possible because of this change. Despite the good soil, only a small section of the agricultural land is currently irrigated with well water. The water table has nonetheless dropped dramatically during the last few decades. As the urban population grows the region's consumption of water grows with it. At the same time, however, the city is becoming a source of water for agriculture. It has been proposed that municipal wastewater be collected, purified, and used to irrigate agricultural land. This would create the possibility of having a constant source of water that is independent of the water table. Rough calculations show that with a growing population and a consequent increase in wastewater, it will be possible to produce up to 24,000 m^3 of purified wastewater, which is enough – depending on the crop – to provide water for up to 2,400 hectares of farmland.

Water scenarios as the main design strategy: 1. Urbanisation in 2010, 2.Urbanisation in 2030, 3. Hyper-productive landscape

Concept elements and strategy

- Accepting urbanisation
- An overall strategy of purification
- A new concept of irrigation
- A groundwater independence agriculture

Water station | Typological transformation | Picnic area | Waterfall for infiltration | Leisure area | Water tower and greenhouse

Elements of the design strategy

Hierarchy of the wastewater irrigation system

Water trade and certification

The pipeline: sharing, distributing, enjoying

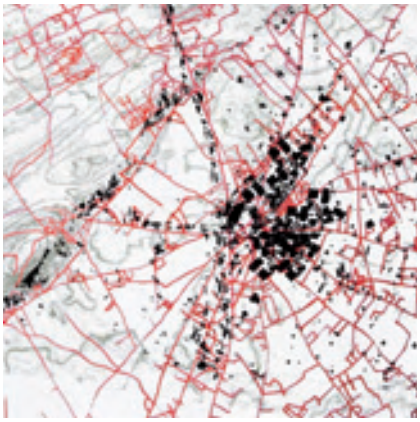
In order to transport the water from the wastewater treatment area to the agricultural fields a new surface water and pipeline system will need to be developed as a new form of technical infrastructure in the landscape. It will have water management, aesthetic. and recreational functions. Together with the water towers, it will form a decentralised storage system in the landscape. And yet the pipeline will not only distribute water; as an oversized guidance system it will also serve as an orientation system in the landscape. It will also be used to define picnic areas and to provide seating. In certain areas small waterfalls will occasionally flow out of the system, creating small oases in a productive landscape. Together with this new multifunctional infrastructure, the idea is also to introduce a new water trade system: each hectare of agricultural land will be allocated a negotiable water certificate for 10 m^3 of water per day. At a minimum 1 m^3 has to be infiltrated into the ground per day to stabilize the groundwater. The other 9 m^3 can be used for irrigation or traded. The distribution of water will be managed by the pipeline. In Médiouna a water council will be appointed, which will discuss how the water is to be distributed and the certificates traded.

Picnic pipelines as structural elements for recreation, 2030

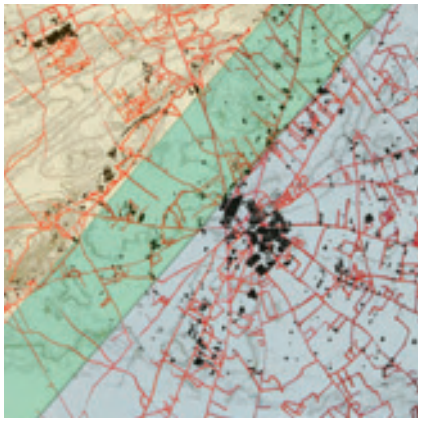
Water storage and provision in a hyper-productive, 2030

Agriscape Corridors

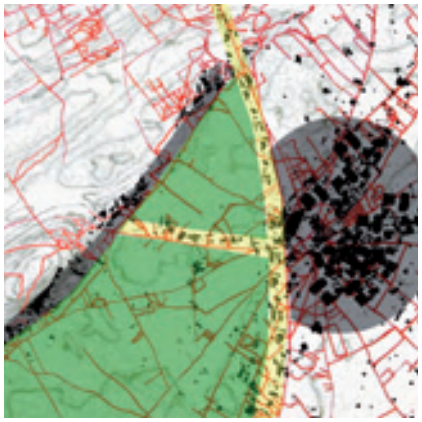
Georg Bock, Yasmina El Housni, David Kaufmann, Hanane Lamrini, Amal Ourahali



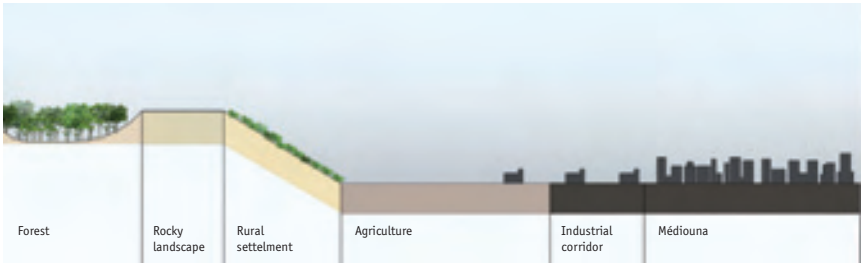
The current site



The main regional sequences



The agro-industrial corridor to the west of the town



The current sequences of the site its specific zones

The third site is situated at the border of a greenbelt between Casablanca and Médiouna. Between the city and the greenbelt part of the supra-regional industrial corridor between the coast and Casablanca's airport will one day be built. The most distinctive natural feature here is a large geological slope. This slope separates a huge, elevated, dry, and rocky plain at the top from intricate, tightly structured agricultural land at the bottom. The exposed rocky land leads up to the unique Forest of Bouskoura and has a few upcoming informal settlements next to the slope.

Thesis

We want to strengthen this green interruption by reinventing the landscape in order to create a strong and powerful landscape. The reorganisation of the space will combine new productive characters and specific aesthetics.

The first strategy: more sequences

In its present state the area is characterised by sequences running parallel to each other from the north-west to the south-east.

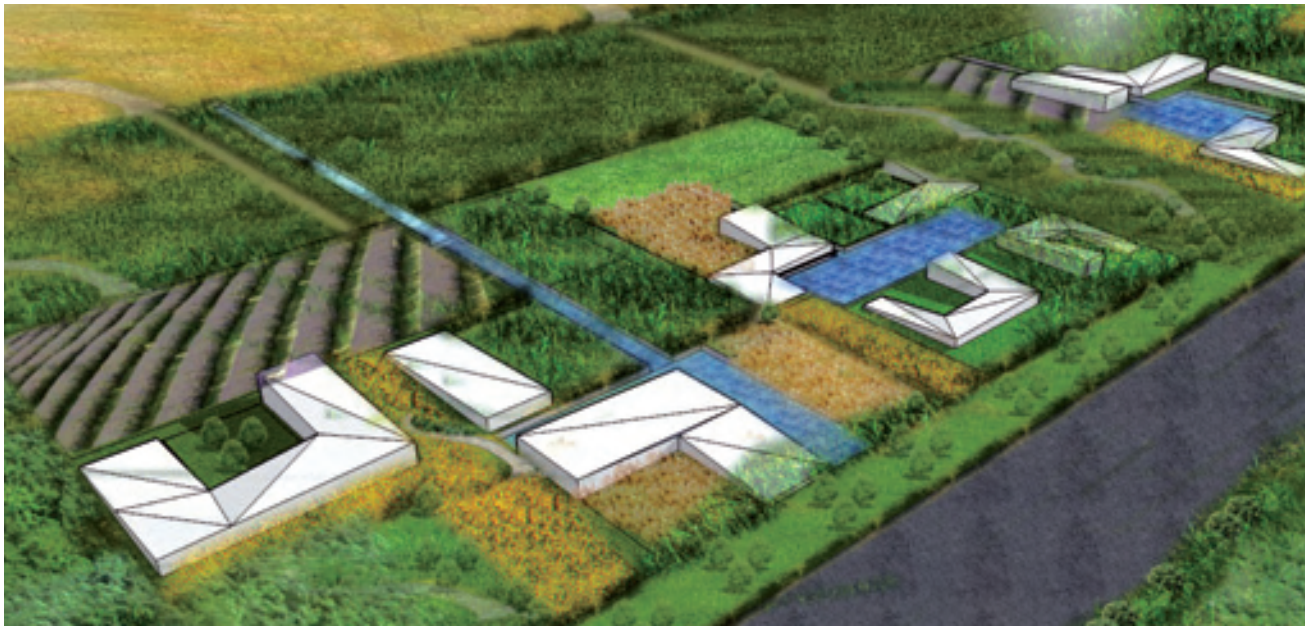
To simplify the site it can be described as having six sequences: the forest, the rocky land, the slope, the agricultural land, the industrial corridor, and the town of Médiouna. The overall proposal is to connect the two outermost dense bodies, i.e., the town of Médiouna and the Forest of Bouskoura by creating a more sequenced landscape that can work from macro to micro scales. A more micro-scale sequence will be the addition of linear cactus plantings.

The second strategy: more interaction

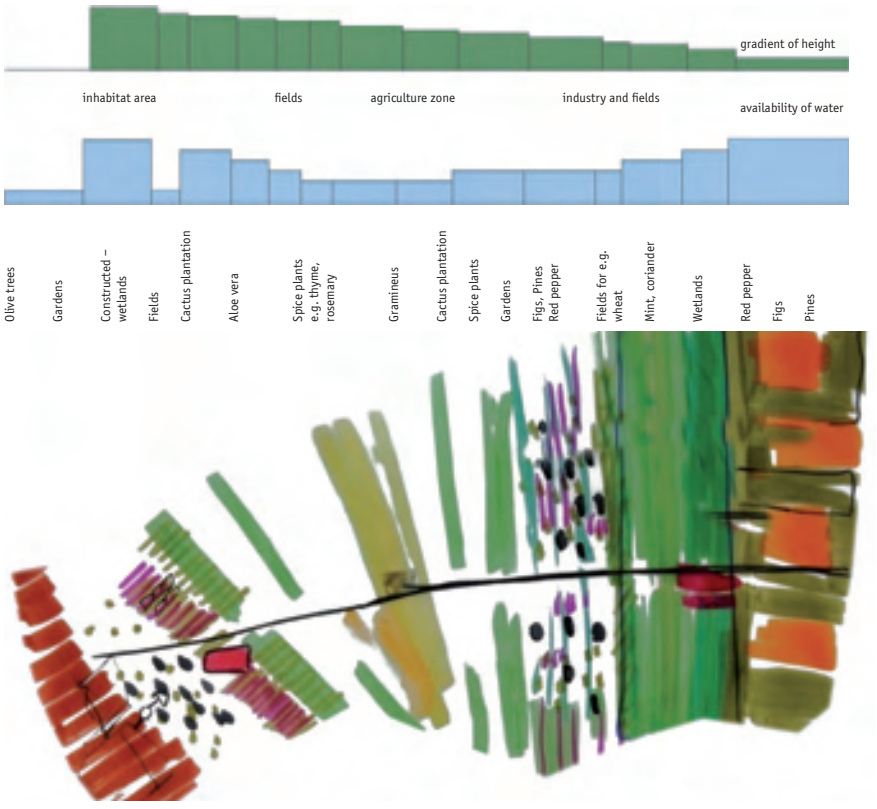
Today there seems to be no positive social or economic interaction between the site's different actors. Most notably, the industrial corridor acts like an impenetrable border between the city and the agricultural land. Developing more interaction between the existing sequences is the main part of the design strategy, so that rural inhabitants and industry will profit from each other. To do so, we add a second small-scale green-agroindustry corridor that will stimulate landscape-based education and production. The landscape can therefore become an attractive and cooperative partner for the sprawling town and its industry.

The third strategy: wet and dry – smart water management and adapted plants

Within the landscape of sequences the supply of water will vary. Hence, the creation of a botanical gradient which supports the idea of the sequences by using plans that are adapted to different quantities of water. Plants that use less water like cactus (Opuntia spec.) will play an important role in permanently altering the site as well as in introducing new marketing (e.g., essential oils) and agricultural strategies. Near built-up areas, like the industrial corridor or the inhabited slope, wastewater could be cleaned in decentralized constructed wetlands and then either reused by industry or in specially adapted irrigation systems.



Proposal for the small-scale green-agroindustry corridor



Botanical gradient related to the amount of water and proposed vegetation to underline a permanent open space character of the sequences

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STUDIOS

Studio work by students of the Technische Universität Berlin (TUB), Department of Landscape Architecture and Open Space Planning

WAEX 3dry
Designs for green, productive open space in semiarid regions, Casablanca (2008)
WAEX stands for Water Extreme, for water as a 21st century challenge, and for the demand for contemporary designs involving water in urban open space. In the scope of this design, water is not only considered to be an economic or sustainable resource, but rather a potential cultural and traditional agent with an imminently interwoven and poetic character within a city.

TLU – Tourist Landscape Urbanism
Designs for Multi-Productive Landscapes, Casablanca (2006)
TLU stands for the challenge of designing urban landscapes that are not only beautiful and provide recovery, but which can also be made available for growing food and offering green urban tourism, thereby making the enormous potential of open space in an urban region effective in a multiple sense.

How to Design for Urban Agriculture?

Anne-Katrin Fenk, Undine Giseke

As is the case with the summer school, student projects represent one of the research project's accompanying methodological modules that link teaching and research.

The Challenge

Today urban growth in cities is a dynamic process. Many challenges must be mastered in terms of future urban growth processes, some of which still remain unknown to us. The creation of a basic infrastructure like living space and transport possibilities are the most important tasks, but cities also need a "green vision", as a city's open space is an important contributor to the quality of life. However, when urban areas are heavily built-up, the chances for open space and sustainable development are reduced. The fact is, that when we speak about the spaces of tomorrow, we discuss open space systems that are productive, and at the same time can support "green visions" for a city like Casablanca.

Four big questions accompany the students' work in both studios:

- What type of open space do the cities of tomorrow need?
- Which strategic challenges need to be dealt with concerning open space in dynamically growing cities like Casablanca, and how can open space be integrated?
- What relevance might water systems and food production have in the future?
- Where is the water for this productive open space supposed to come from?

The Site

Both studios started working on the regional level of Grand Casablanca before taking a more detailed look at a selected area. The locations for the studios were not assigned beforehand. They were selected by students independently during field trips.

The Tasks and the Methods

Designing an unknown landscape for an unknown city. The challenges of rapid and highly dynamic development cannot be allied with classic planning and design methods. New tasks demand specific answers. As a consequence, questions about what kind of future city and future landscape will emerge and how can they be established have to first be asked.

And thus, as a first step in both studios students work on a green vision for the Casablanca mega-region. Simply suggesting a "green vision" is insufficient in itself, and a strategy regarding how it can be developed must also be considered. We call this method "strategic and explorative design". Design, in this case, is always to be the equivalent of a search for innovative tools, a sharpening of definitions, and the expansion of the tasks within the project. In this manner, the first stage of work – designing scenarios – resulted in an extreme break down.

The initial main tasks were to create a comprehensive approach for an urban vision of the Grand Casablanca mega-region. A combination of map overlays from different time periods and simultaneous sketched scenarios – "drawn theses" – empowered the students for the first time to formulate spatial patterns for potential future growth. The TLU studio tested their scenarios by making a huge jump in scale from 1:500,000 into a strip at the southern edge of Casablanca (scale 1:2,000). The work of the WAEX dry3 studio led to a "toolbox", which was applied at selected locations in Casablanca as an example of what is possible.

These methods of working were very open but also very fruitful, especially since they helped to produce visionary ideas about urban open space. They were also open enough to work with the unexpected, which occurs when working within a culture that was still closed to the students in many aspects.

Photo: Feng Gang

A Toolbox for the Open Space of Tomorrow

The planning consensus for the WAEX dry3 studio was to figure out a basic understanding of how to define specific tools related to urban agriculture (UA). Students therefore created a toolbox and used the tools for their further design work.

The following five points are the aims of the tools:

- UA as a sustainable farming grid of open space in terms of climate conditions
- UA as ankers to fix open green space against the force of a speculative property market
- UA as a "describer" of the characteristics and aesthetics of a productive landscape
- UA as land for organic agriculture; a revival of traditional and regional food growing
- UA as highly efficient agriculture

The tools that were produced, as shown in the toolbox, are related to research, scenario work, and field research within the studio. They combined design and strategy as a new method. And they helped to develop "fresh" approaches and "green visions", including the urban complexity in which they need to be implemented in. The tools address a wide range of subjects like mobility, the networking of urban actors, rainwater collection, foodboards, and social interaction or space markers / signifiers. All of the tools pay particular attention to the term "productive landscapes".

The toolbox was created by all of the students and was open for everybody to use and further develop in their final design projects, some of which are shown here. The process of combining different tools and merging them with challenging sites, led to the creation of unexpected and at the same time comprehensive design solutions.

How the tools work – an example!

The sense tool is based on a spatial and atmospheric understanding of productive landscapes – in some sense referring to the construction of oasis systems. The interesting part of this tool is that it is not related to a particular scale or theme. In an urban design strategy this tool can be chosen to create an island of highly specialised productive landscapes. Besides its functionality, the design purpose is especially related to the idea of a beautiful and atmospheric three-dimensional landscape.

After its initial implementations, the sense tool can be used to multiply these island spaces within the city. The spread of these new islands will depend on the scenery of the landscape that exists or that was created – and thus the tool follows spatial and qualitative aspects in order to create new living qualities in the city by establishing new types of open space.

Optimisation Tool

Buffer Tool

Transforming via Diffusion Tool

Capsule Tool

H_2O Decentralisation Tool

Netting Through Setting Tool

Different areas are linked through a conscious introduction in a public space. This tool functions like a catalyst that sets processes in motion and demands interaction. An introduction could be, for example, a market or a playing field that brings residents of different neighbourhoods together. It could very well have a temporary character, be accelerated by the process and then become independent. It promotes infrastructure, as well as a social and cultural exchange.

Implantation of Innovation Tool

This tool is effective in troubled high-density urban areas. Something new and unfamiliar is "implanted" and its development is then observed. If the implantation establishes itself and is accepted, it is standardised and repeated. Community gardens or highly specialised islands of agricultural production, for example, can be implanted and then observed to see what effect they have. If successful, the size of the area can be increased or expanded at another site. Such islands have a positive effect on users and neighbours alike and stimulate a social and economic exchange.

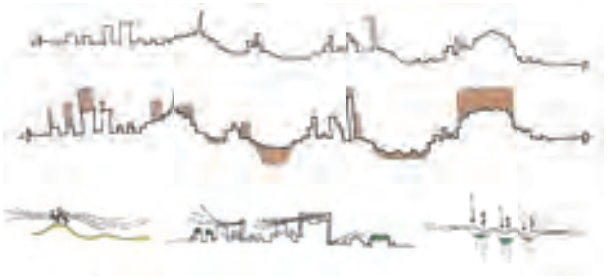
Cooperation Layers Tool

Hamaquifier Tool

Corridor Tool

Initiator Tool

Reserved for Greening Tool



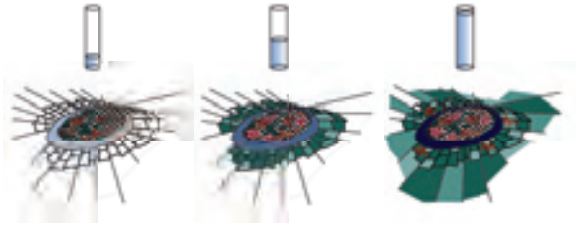
Trust-generating Element Tool

Foodboard Tool

Joker Tool

Topoaction Tool

This tool plays with a site's topography. It ensures that existing topography is used and that this results in a more efficient use of resources and that a strong signal is sent. This can be done by elevating the site (greater effectiveness of wind turbines, solar cells, etc.) or lowering it (less evaporation in retention basins or targeted infiltration).



Opening Tool

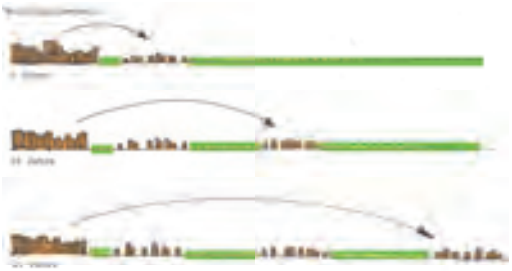
Living Roof Tool

Flexible Sponge Tool

Flexibran Tool

Transformation Tool

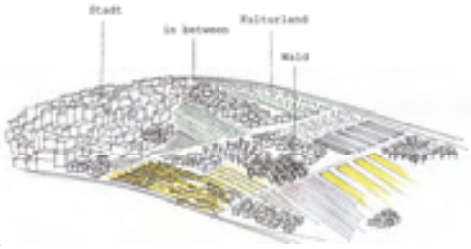
This tool uses a flexible storage system that collects, consolidates, and transports water, thus supplying an individual enclave with water. Through swelling, shrinkage, and compaction it can also serve as a border and create a link. This water hose, which absorbs and stores water, is infrastructure and an open space element in one. It reacts flexibly to varying amounts of precipitation.



Raindrain Tool

Low Pressure U-Turn Tool

Emphasising Contrasts Tool



Agroforest Corridor Tool

Jumper Tool

The jumper tool creates green open space by introducing rules that channel urban pressure and urban growth in a way that it skips over open space, thus preserving it. It blocks unimpeded growth on the periphery of the city and promotes the deliberate interweaving of rural and urban space. This occurs in several stages, and the development of agricultural zones alternates with new residential areas. The tool also deals with present patterns of land-speculation, which mostly leads to a highly fragmented urban fabric.

Being in Paradise Tool

This tool is used to create unique areas that distinguish themselves from their heterogeneous surroundings through their colours, verticality, and climate. These areas are always oriented inwardly, and there is little interaction with the surrounding area. The result is a highly concentrated area that often serves as space for contemplation (e.g., a mosque, giardino segreto, cloister garden, or hermitage).

Social Interchange Tool

Compost Most Tool

Blocker Tool

Cultural Fields – An Agropool for the City

Mareike Knocke

Development scenario of the parcel structure

Based on an analysis of parcel sizes and their potential, this project proposes the creation of agriculture protection areas as an urban planning instrument. It is especially important to protect and develop small-scale cultivated areas that are highly productive while using little water. Through the programme for protecting agricultural zones, regional agricultural conservation areas will be designated in which the potential of effectively using surface water will be taken advantage of and the character of traditional agriculture will be maintained. By forming a union, small-scale farmers will create an economically stable agricultural pool, thus counteracting migration from the countryside to the city. The creation of different zones is a result of natural conditions, such as the wadis, surface and underwater river systems that flow out of the mountains, the topography, and the spatial distribution of agricultural parcels. By combining recreational and agricultural uses, new types of urban structures will be created. The urban structures of the megacities of tomorrow will be defined by the use of agriculture as open space.

Zones of the agricultural pool: 1. Wadi – a priority area for effective agriculture, 2. Valley – a mixed form of effective agriculture and living, 3. Coastline – large-scale construction; living and tourism, 4. Urban expansion – large-scale construction; living and working, 5. Forests – large-scale wooded areas; recreation

The structure of the agricultural pool

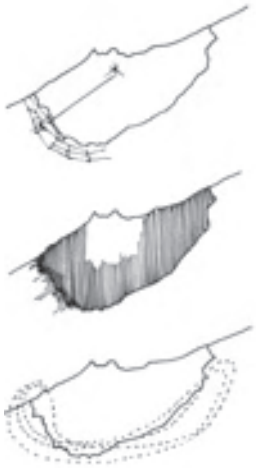
Schematisation of the agricultural pool

Looking at Casablanca's eastern periphery in detail

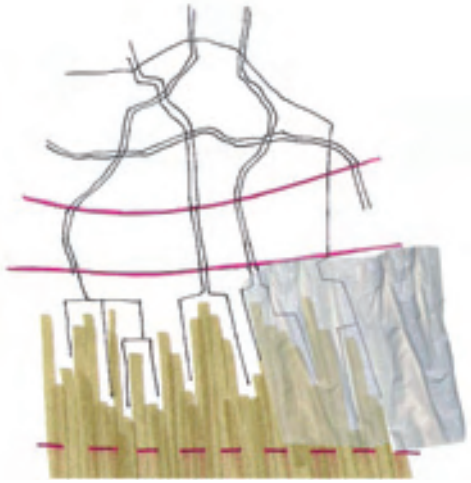
Through an Interactive Membrane

Ludvine Gragny

The concept of this project is to create a new and autonomous area that would be the meeting point between the city and agriculture. It would be a sort of merging, stretchy, and flexible area that would change and develop with time according to needs. It is important to keep a certain amount of uncertainty in a project of such a scale. Thus, the goal was to propose a development plan that can react with a certain flexibility. The membrane serves as a buffer zone and sometimes as a link because it connects and emerges between the two different areas.
The membrane stops the urbanisation process and builds a strong materialised border of new urban lines. Between these lines plots of agricultural land face toward the new housing, following the membrane's outline, the mild slope, and the topography of the site, thus reproducing a natural design.



Principles



Status quo

Scheme / Interpretation of the membrane

Development of the call membrane: The new buildings are oriented to the agricultural areas.

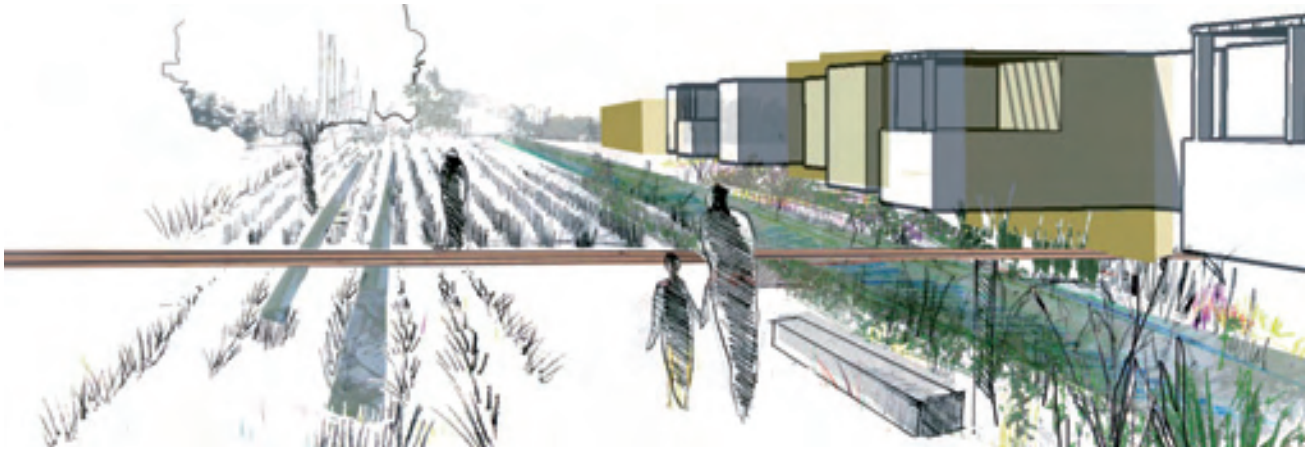
First level: The arid zone; drought-resistant crops are grown here.

Second level: The low water zone; crops with minimal water requirements are grown here.

Third level: The intermediate zone; crops with normal water requirements are grown here.

Fourth level: The humid zone; crops with high water demands are grown here.

Construction of an agricultural park that breaks through the membrane and opens itself to the city.



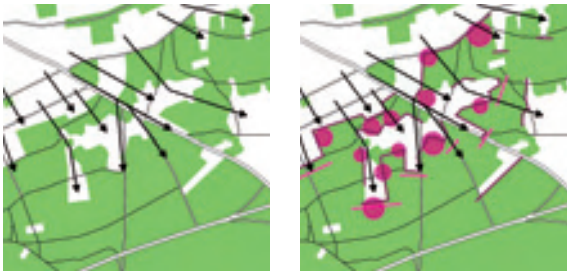
"New" urban typologies in the "new" landscape

Green Joker “Landscaping”

Pia Custodis

In general, the Green Joker is a tool for saving open space and then occupying this space with green functions. The Green Joker responds to urban pressure conditions, i.e., the pressure of urban growth in Casablanca. There are four responses to this pressure, which are influenced by the conditions on site: to affirm, to occupy, to apply counter pressure and to dock onto.

The strongest urban sprawl occurs at the urban fringe. The Joker aims at stopping or changing urban sprawl by empowering the landscape to exert counter pressure. The landscape is equipped with highly productive and highly profitable units. The original efficiency of the rural area is to be maintained while allowing for urban growth without the loss of too much fertile land. The landscape emerges as artificial, spacious, occupying, and highly productive land.

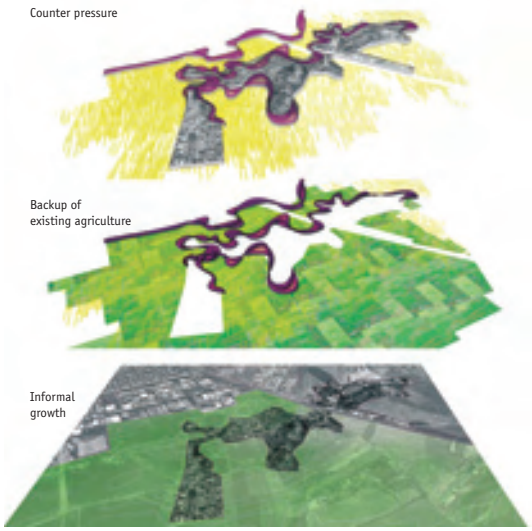


Action diagram: Allocation, counter pressure, docking

Irrigation diagram: The spread of landscape and its dependency on irrigation

Tactical docking

The tactic of the joker is to dock directly onto the urban edges, to appropiate those which are highly efficient and to assert counter pressure. The spreads of land infiltrate the residential areas, dissolve the fixed urban borders, and enhance inhabitants’ contact with their productive surroundings. The well-organised introduction of greenhouses will allow for a regulated water balance. The strategy is to only insert as many greenhouses as necessary to water the adjacent spread of land with the water that was saved within the greenhouses. The number of greenhouses is thereby limited.



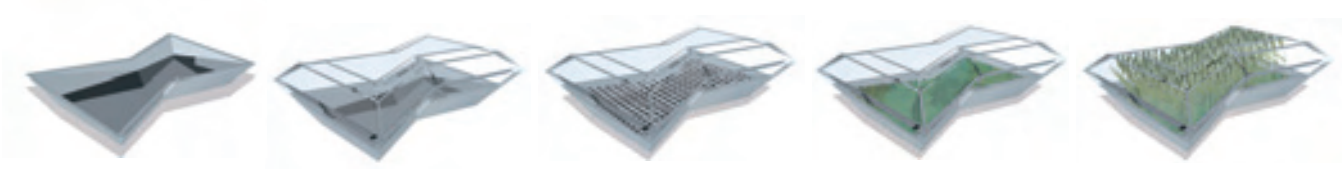
The landscape of tomorrow?

Maghrebian Foodboard

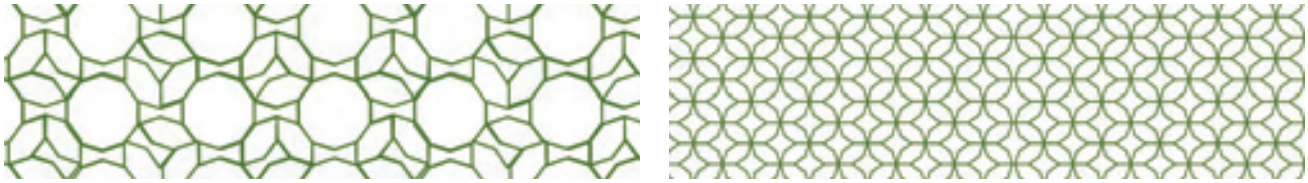
Kristian Ritzmann

The Maghrebian Foodboard is designed as a tool that integrates food production into an urban context. It makes it possible to both grow food and to reuse wastewater. The modularity of the board allows it to be used across a wide spectrum of applications ranging from the private to the commercial sector. It is intended to be an intervention that creates a new image for an urban area. The design of the Foodboard is intentionally based on Islamic design principles in order to achieve the highest possible symbiotic appearance, thus giving an identity to Casablanca's urban areas. The Foodboard generates a productive cityscape while taking advantage of the opportunity to create qualities for a contemporary and atmospheric type of urban design.

The Foodboard: Vertically applied and integrated into existing conditions



A Foodboard module: The development and phases of growth
Growing crops requires a lot of water. Nowadays most of Casablanca's water runs through just one cycle before it flows into the Atlantic Ocean. The Foodboard will use a portion of locally produced wastewater for irrigation. The reused water can then either be drained off or reused for other processes. The cycle of water usage thereby grows with every single Foodboard that is installed. It is also possible to combine different forms of vegetation with the Foodboards. Indigenous plants can be used as well as plants for vertical gardening and plants for luxury products.



Islamic ornamentation as the inspiration for Foodboards

Foodboards as an interim use on fallow land: At the beginning of the project the Foodboards should be placed in an apparently random fashion on fallow land in order to provoke a spontaneous discussion between man and object.

New Ideas for Casablanca – How the Project Changes the View on Agriculture

Mohamed Chlaida, Fouad Amraoui

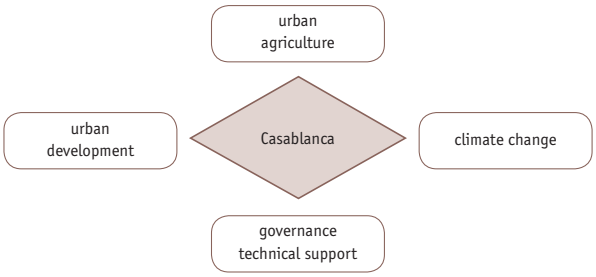
When the project began in 2005 we began to talk about a topic that had not been on the local agenda before. The awareness of the import role urban agriculture plays in urban planning and land use management processes has been raised immensely since then.

There has been a relevant consciousness-raising among the city's decision makers concerning green space, i.e., the launching of rehabilitation projects and the creation of green space in partnership with the private sector. Several new projects have also been started, including the creation of water treatment plants in the peri-urban areas of Grand Casablanca (Médiouna, Nouaceur, Deroua, etc.), which makes the reuse of treated wastewater in agriculture possible. There have also been an increasing number of projects involving investments in modern agricultural methods (organic agriculture), which are bound more strictly to the project's core questions.

The general public showed a keen interest in the project during the Casa Vision Verte, which was organised in March 2009 (and will have a follow-up event in the spring of 2011). The contribution this event made to the general public's consciousness-raising is unquestionable, especially regarding the importance of urban agriculture in the wider sense of the concept, i.e., as productive green space for a more sustainable form of urban development.

The various communication and training activities organised at the pilot project sites have been met with keen interest by large numbers of farmers. The latter are convinced that the UAC project will provide them with the support they need to properly revive their agricultural activity. And thus, the project has more or less made the jump into real life due to its action research.

At the same time basic research has been carried out concerning the project's main fields of enquiry: agriculture, urban development, climate change, governance, and techniques. By involving different disciplines new cooperative efforts have been started, both in the Moroccan-German context as well as among the different Moroccan Research Institutes and Universities. But the project also has more to offer: The project itself functions like a new "open space", i.e., as a think tank for the common generation of integrated ideas and visions. The Future Search Workshop, common scenario writing, and the integrated design approaches were important parts of this process to show possible future scenarios.



Project Rhombus

The main goal of the project is to show how urban agriculture – both in the broad meaning of the concept as green space, and more strictly speaking, as space for agricultural production – can be integrated into the great dynamic of urban development and to show any possible benefits and synergies of this type of land use. This includes urban agriculture as a means of adapting to climate change through its potential impact on the mitigation of temperatures, on energy efficiency, and on the good management of water resources.

In the long term, our project will also provide a toolbox showing strategies and instruments for the preservation, stimulation, and reactivation of agricultural production in urban and peri-urban areas. This will be carried out in coordination with existing planning tools like Casablanca's new master plan and the regional *Plan Maroc Vert*. It will include proposals for the diversification of agricultural practices and thus contribute to the improvement of the population's present living conditions as well as to the development of instruments needed to protect agricultural land from the effects of real estate speculation and to build up a new type of green productive infrastructure for Casablanca.[1]

[1] The text is based on presentations and interviews given at the BMBF-Conference "Future Megacities in Balance – New Alliances for Energy – and Climate-Efficient Solutions" in October 2010 in Essen.

URBAN AGRICULTURE CASABLANCA

DESIGN AS AN INTEGRATIVE FACTOR OF RESEARCH

Edited by Undine Giseke

الفلاحة الحضرية
الدار البيضاء
Urban Agriculture Casablanca

Factsheet Urban Agriculture Casablanca Research Project

Project Title
UAC – Urban Agriculture as an Integrative Factor of Climate-Optimised Urban Development, Casablanca / Morocco

Grand Recipients
Technische Universität Berlin (TUB)
School VI Planning Building Environment
Chair of Landscape Architecture / Open Space Planning, Professor Undine Giseke

Project Time Scale
1st Phase: 06/2005–03/2008
2nd Phase: 04/2008–03/2013

Partners
Technische Universität Berlin (TUB)
- Department of Landscape Architecture and Environmental Planning, Chair of Landscape Architecture / Open Space Planning
- Department of Ecology, Chair of Climatology
- Department of Process Engineering, Chair of Chemical and Process Engineering
- Centre for Scientific Continuing Education and Cooperation (ZEWK kubus)

University Hohenheim, Department of Social Sciences in Agriculture, Chair of Agricultural Communication and Extension
University Wuppertal, School of Architecture, Chair of Economy of Planning and Building
Association for Rainwater Harvesting and Water Utilisation, Darmstadt (fbr e.V.)
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Naturex Maroc

Website
www.uac-m.org

Sponsored by the Federal Ministry of Education and Research within the programme "Sustainable Development of the Megacities of Tomorrow" focus on "Energy- and climate efficient structures in urban growth centres". *www.future-megacities.org*

Photo: Christoph Kasper

From the hidden face to an iconic body.

In the UAC future research workshop in autumn 2009 a moroccan architect described Urban Agriculture in a poetic way *"as the hidden face of the city"*. The aim of the project is to unveil the hidden face and let it become an iconic body of Casablanca.

ISBN 978-3-7667-1896-9