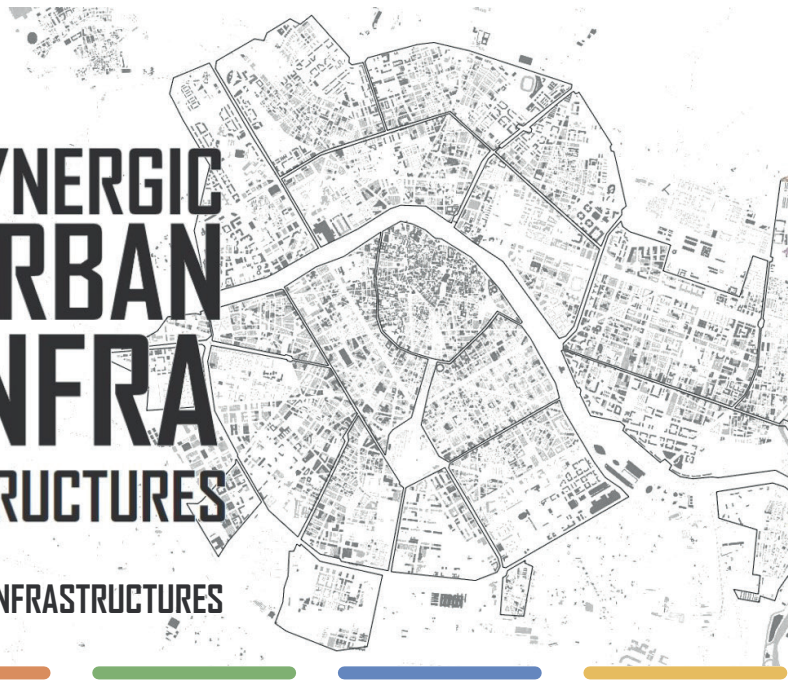
VLC SYNERGIC URBAN INFRA STRUCTURES



VALENCIA SUMMER SCHOOL ON SYNERGIC URBAN INFRASTRUCTURES

Editors: Juanjo Galan Vivas | Luis Bosch Roig

To cite this publication please use the following reference:
Galan Vivas, Juanjo and Bosch Roig, Luis (editors) (2024). *Valencia Summer School on Synergic Urban Infrastructures*. Valencia: edUPV. DOI: https://doi.org/10.4995/2024.677901

Editors
Juanjo Galan Vivas
Luis Bosch Roig

Authors
Juanjo Galan Vivas
Mrudhula Joshy
Stefano Salata
Fabio Bayro Kaiser
Christian Larisch
Alena Cohrs
Carolina Pacchi
Christoph Wessling
Maciej Lasocki
Kinga Zinowiec-Cieplik
Luis Bosch Roig
Julia Deltoro Soto
Christa Reichter
Adolfo Vigil de Insausti

Edited by: edUPV, 2024
Ref.: 6779_01_01_01

Graphic design and layout
Júlia Martínez Villaronga
Juanjo Galan Vivas

ISBN: 974-84-1396-254-2 (printed version) ISBN: 978-84-1396-255-9 (electronic version)
DOI: https://doi.org./10.4995/2024.677901

TABLE OF CONTENTS

SECTION 0_FOREWORD 7

SECTION 1_INTRODUCTION 13

- Chapter 1.1. The VLC SUMMER SCHOOL on synergic urban infrastructures 15
  Juanjo Galan | Polytechnic University of Valencia

SECTION 2_URBAN INFRASTRUCTURES: ANALYSIS AND TOOLBOXES 37

- Chapter 2.1. GREEN INFRASTRUCTURES: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 39
  Stefano Salata and Carolina Pacchi | Politecnico di Milano
- Chapter 2.2. BLUE INFRASTRUCTURES: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 53
  Maciej Lasocki | Warsaw University of Technology
- Chapter 2.3. SOCIAL INFRASTRUCTURE: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 61
  Mrudhula Koshy | Norwegian University of Science and Technology
- Chapter 2.4. HOUSING INFRASTRUCTURE: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 67
  Christoph Wessling and Alena Cohrs | Technical University of Berlin
- Chapter 2.5. MOBILITY INFRASTRUCTURES: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 73
  Christian Larisch and Fabio Bayro Kaiser | RWTH Aachen University
- Chapter 2.6. ENERGY INFRASTRUCTURES: PRINCIPLES, DIAGNOSIS AND TOOLBOX IN VALENCIA 85
  Juanjo Galan | Polytechnic University of Valencia.

SECTION 3_ SYNERGY METHODS & TOOLS IN URBAN PLANNING 95

- Chapter 3.1. SYNERGY TOOLS: DETECTING, ASSESSING, AND INCREASING SYNERGIES BETWEEN URBAN INFRASTRUCTURES 97
  Juanjo Galan | Polytechnic University of Valencia. Maciej Lasocki and Kinga Zinowiec-Cieplik | Warsaw University of Technology. Stefano Salata | Politecnico di Milano. Fabio Bayro Kaiser and Christian Larisch | RWTH Aachen University. Mrudhula Koshy | Norwegian University of Science and Technology. Alena Cohrs | Technical University of Berlin. Luis Bosch Roig and Julia Deltoro Soto | Polytechnic University of Valencia. Martina Schretzenmayr | Lecturer, ETH Zurich

SECTION 4_SYNERGIC PROPOSALS FOR THE VLC PILOT SITE 125

- Chapter 4.1. TEAM 1: VALENCIA WATERMOSAIC: Revitalizing Ecosystem through Urban Wetlands 127
  Summary by Stefano Salata and Carolina Pacchi | Politecnico di Milano
- Chapter 4.2. TEAM 2: BYE LAZAROTE 131
  Summary by Kinga Zinowiec-Cieplik | Warsaw University of Technology
- Chapter 4.3. TEAM 3: SYNERGY SCAPE 141
  Summary by Christoph Wessling and Alena Cohrs | Technical University of Berlin
- Chapter 4.4. TEAM 4: THE HAM OF SYNERGIES 145
  Summary by Mrudhula Koshy | Norwegian University of Science and Technology
- Chapter 4.5. TEAM 5: RECONNECTION OF LITORAL NEIGHBOURHOODS 153
  Summary by Fabio Bayro Kaiser and Christian Larisch | RWTH Aachen University
- Chapter 4.6. TEAM 6: BRING BACK THE SEA TO THE CITY + DOWN THE RIVER WE GO 157
  Summary by Julia Deltoro Soto, Luis Bosch Roig and Adolfo Vigil de Insausti | Polytechnic University of Valencia

SECTION 5_CONCLUSIONS 171

Chapter 5.1. DISCUSSION AND SOME FINAL REFLECTIONS 173
Luis Bosch Roig | Polytechnic University of Valencia. Juanjo Galan | Polytechnic University of Valencia. Mrudhula Koshy | Norwegian University of Science and Technology. Stefano Salata | Politecnico di Milano. Maciej Lasocki and Kinga Zinowiec-Cieplik | Warsaw University of Technology. Christoph Wessling and Alena Cohrs | Technical University of Berlin. Fabio Bayro Kaiser, Christian Larisch, Christa Reicher | RWTH Aachen University. Julia Deltoro Soto and Adolfo Vigil de Insausti | Polytechnic University of Valencia

5.1_DISCUSSION AND SOME FINAL REFLECTIONS

Luis Bosch | Associate Professor, Polytechnic University of Valencia
Juanjo Galan | Associate Professor, Polytechnic University of Valencia
Stefano Salata | Assistant Professor, Politecnico di Milano
Mrudhula Koshy | Assistant Professor, Norwegian University of Science and Technology
Maciej Lasocki | Assistant Professor, Warsaw University of Technology
Kinga Zinowiec-Cieplik | Assistant Professor, Warsaw University of Technology
Fabio Bayro Kaiser | Research Associate, RTWTH Aachen University
Christian Larisch | Research Associate, RTWTH Aachen University
Cristoph Wessling | Professor, Technical University of Berlin
Alena Cohrs | Research Associate, Technical University of Berlin
Julia Deltoro | Associate Professor, Polytechnic University of Valencia)
Martina Schretzenmayr | Lecturer, ETH Zurich

5.1.1 Discussion

This chapter discusses three main aspects of the VLC_Summer School namely, the course co-creation process, the blended methodology, and the learning outcomes.

Course Co-creation Process

From the point of view of the course design process, the VLC_Summer School proved to be an excellent platform for interaction between teachers from the Enhance Alliance university partners engaged through the Urban Planning Educational Pathway. Thanks to the one-year-long codesign process subdivided into five different meetings, the participating teachers were involved in the course from the beginning. All the aspects of the course were discussed and refined to match the particularities and pedagogical approach of each partner, producing a unique proposal with an "Enhance DNA." The face-to-face meeting was particularly important, not only because the most significant decisions were collectively taken, such as the pilot area selection, but also because it created a sense of cohesion and solidarity between the teachers, enhancing their commitment to the project. The most illuminating evidence of this achievement is that a new edition of the Summer School is scheduled for July in Milan 2024 and will embrace some of the new members of the Enhance+ Alliance.

Blended methodology

The course adopted the format of the Erasmus Blended Intensive Programmes, which had the mandate to include both online and onsite phases in the course structure.
On the one hand, the learning methodology was revealed as a helpful system during the three-week online phase, not only in the analysis process by assigning experts to each infrastructure, but also from the operational point of view by facilitating the interaction between tutors and students from the same university. It was useful to create a local and multidisciplinary network of students within each university and helped them feel committed to the summer school from the beginning. In addition, the specialization of each online team in one urban infrastructure made the students feel relevant in the on-site and multi-thematic teams because of their particular roles as experts in the infrastructures they have studied before. It is also important to note the relevance of the lectures delivered during the online phase. These lectures provided important perspectives regarding the study case and the different infrastructures and helped students to identify and meet all the tutors involved in the course in an in-depth manner.

On the other hand, the onsite phase was fundamental to the learning process. Activities such as the visit to the site were necessary to understand the scale, dimension, and complexity of the case study. The physical interaction between students promoted by the creation of multi-thematic teams and the participatory workshop with locals would hardly have been possible in an online format. From the methodological point of view, the initial brainstorming sessions were fruitful in activating discussions and revealing different points of view, whereas the sessions after each task were essential to extract conclusions.

As a counterpart, the duration of the on-site phase was likely insufficient for deeply developing all the planned contents.

Learning outcomes: exploring synergies for the spatial strategy

The proposal of developing methodologies to detect and increase synergies between urban infrastructures was mainly achieved through the development of synergy meters. This tool helped participants put aside conventional urban design methods and start thinking from a different point of view, finding synergies and conflicts between different urban infrastructures or systems, and introducing indicators to measure them. This alternative resource activated an explorative process that allowed the students to use the synergy meters not only as an "assessment tool" to evaluate the quality of their proposals but also as a "design tool" by suggesting new design possibilities.

As discussed in Chapter 3, several aspects and issues were relevant to the methodological definition of the synergy tools. Firstly, identifying qualitative or quantitative indicators was often perceived as necessary to assess synergies and understand their meanings. Secondly, the level of connection of the proposed synergy tools to the site's specific conditions affected their universal or contextualized character. Thirdly, the innovative use of graphic tools to represent and explore connections between infrastructures and the synergies generated in the proposed solutions influenced the students' capacity to define a solid narrative and an effective work process. Fourthly, the definition of maps was essential to identify the location of existing or proposed synergies and clarify their meaning. Fifthly, the definition of 'super-synergies' opened an effective way to simplify and operationalize the work, but it also required the definition of new and more complex indicators.

However, it should be noted that the time allocated to task 2, just one day, was likely insufficient and did not allow the students explore more connections and formulate refined outcomes. For instance, students needed to simplify the synergies to make the tool manageable, and in doing so, it lost its applicability to some extent. Considering the length of the course, the goal was achieved, and a different way of thinking and approach to the design process was activated in the students. However, in a longer course, devoting more time to exploring synergies could lead to a more refined method for defining synergy tools that could be more helpful in the design process. Issues such as identifying synergies and conflicts among urban infrastructures, producing more precise synergy meters and their application in the design process could be improved. With more time, resources, and data, it would also be possible to operate more quantitatively and generate digital models that measure synergies between different urban infrastructures in various scenarios.
In the spatial strategy design process, the synergic tools or synergy meters were very useful for assessing the strengths and weaknesses of different alternatives. This helped the students to choose the best suited synergies and evaluate the benefits of their final proposals. The scale and complexity of the pilot site led some teams to sectorize the site into homogeneous functional areas, adjusting the synergy meters to the characteristics of each of those areas accordingly.

It is also worth mentioning that the participatory meetings with local people and experts were crucial to foreground the socio-cultural dimension to the course. The local residents' perspectives allowed the students to check if their synergy tools and spatial strategies detected and addressed all the critical aspects. In conclusion, considering the time constraints, all the produced outputs exceeded the initial expectations from the tutors, and all the teams achieved the planned learning goals. The student's and teachers' different backgrounds and skills influenced their approach to the design process, so in some way, the work developed by each team reflects their specific and unique characteristics.

5.1.2 Conclusions and some personal reflections

"The Summer School pursued the key question of the extent to which new, more efficient, and, therefore, more sustainable approaches to urban development projects and processes can be found by identifying and analyzing synergies between important urban structures. The results of the Summer School do not provide such a clear picture that it could be said that these results could not have been achieved with a traditional urban development planning and urban design method. However, it did become clear that the process followed in the course made the step from analysis to conceptualization easier. By identifying and analyzing synergies, a focus is already being placed on areas representing particular development potential and impetus. Otherwise, there would be no synergies. It is already a clear step towards concept development based on existing (infra)structures, which also integrates the utilization of existing (infra) structures into the concept development process, also in terms of resource efficiency. Therefore, this method promises to promote a more sustainable development approach compared to traditional planning approaches with a SWOT analysis."

Christoph Wessling, Technical University of Berlin

"The first edition of the blended intensive summer school on synergic infrastructures offered an opportunity for the teaching staff and students to reflect on alternative starting points for spatial planning and design. Rather than a static master plan, using the synergic methodology allowed the students to wear hats other than that of a planner, designer and architect and think in a dynamic and iterative way. It allowed for systems design thinking and understanding of interdependencies between infrastructures in an abstract manner before contextualizing them. The abductive approach of returning to the synergies to evaluate their final spatial strategic proposals allowed the students to be reflective on their early decisions. The synergic method could be considered complementary to the 'layer approach' and 'systems-oriented thinking'. In this sense, it is not a completely new approach to spatial planning. Nevertheless, the interpretations of the synergy meter by the different student groups based on their educational background highlighted how it can be a useful pedagogical and methodological tool to analyze spatial-temporal conditions."

Mrudhula Koshy, Norwegian University of Science and Technology

"The course on Synergic Urban Infrastructures started with an ambitious goal: exploring new tools and procedures to inform the urban planning process in a time of increasing specialization and scientification of the planning discipline. As presented in this book, the use of the 'synergy' concept provided a useful platform to integrate different urban dimensions by considering how each urban infrastructure or system interacts with each other. However, the design and implementation of the course raised soon some relevant questions: Was the synergic approach opening a significantly different possibility for the planning process? Was the provided knowledge, the available time, and the offered data sufficient to develop in depth the proposed tasks?

These issues have been presented and discussed before in this book, so in this final section, we can concentrate on the main potentials and shortcomings detected on the course. Firstly, one of the strengths was the capacity of the synergic approach to promote systems thinking and integrative thinking. This was favored by the use of the synergy concept as an operational instrument to reflect more concisely and proactively about the interactions between different urban layers. The focus was not on each urban infrastructure but on the connections between them. Secondly, the combination of social, environmental, programmatic, and spatial issues proved to be essential to overcome the conventional and to get a wider perspective. In particular, the social infrastructure and the housing challenge were crucial to provide a human dimension and a critical problem that could be recognized by everyone in the course. In this regard, it must be noted that the physical visit to the site and the face-to-face interaction with the locals were particularly valued by the students. Somehow, it seems paradoxical, that in the time of the virtual, the scarcity of the physical gives it more importance and relevance.

Regarding problems, the wide and multi-disciplinary character of the course and the shortage of time made it difficult to gain depth. In addition, the preexisting mental frameworks that inevitably we all have, and the tendency to follow conventional planning processes and to produce conventional outcomes when the time is short, affected the capacity to think out of the box. Nevertheless, the course clearly opened new possibilities and activated new ways of thinking. Quite probably, the main challenge now is to decide how to give continuity to this initiated process.

Last but not least, it must be highlighted that the codesign and implementation of the course created an opportunity to establish a community of teachers and students in the ENHANCE alliance interested in exploring new conceptual and operational frameworks for the planning discipline. This in the end can be the most important outcome of all."

Juanjo Galan Vivas, Polytechnic University of Valencia