

Introduction. A Polytechnic Approach to Urban Africa. Methodological and Cultural Challenges of a Transdisciplinary Research Cooperation



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Abstract This introductory chapter provides and discusses the main cultural and methodological frameworks in which the contributions of the volume are embedded. Drawn on current debates on academic partnerships between international educational and research institutions, the essay explores the increasing importance of pluralism, internationalization, and new policies of social responsibility in performing transdisciplinary research in the Global South. The text also discusses the specificities and originality of the approaches adopted in the past decades by the book authors' institutions—the Politecnico di Milano and the Eduardo Mondlane University (UEM)—embedded into the mutual interplay between space and society, multidisciplinary and practice-based research, and the role of socially and environmentally responsible transformations, in dialogue with other academic approaches to international cooperation. The paper further presents the ongoing academic joint initiatives between Polimi and UEM, introducing two major research and educational programmes that are the main source of evidence for this volume's contributions and discussion within and beyond the international academic networks involved. In addition, an overview of the book's structure and main contents is provided.

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1 Situating International Educational and Research Cooperation in the Global South

As suggested by Petrillo and Bellaviti (2018), international cooperation initiatives among universities and research centres working on territorial and urban development and planning have assumed a more and more prominent role in view of the challenges posed and the opportunities offered by the UN “New Urban Agenda” (UN-Habitat 2015; UN 2016). Indeed, during the past decades, academic partnerships have been shaped by the increasing importance of pluralism, internationalization, and new policies of social responsibility

which aim to make room for relating, exchange and sharing of knowledge and skills among a wide variety of subjects (students, lecturers, researchers, institutions, the private world, NGOs, civil society) and an increasingly broad range of countries, cities, territories, building up networks of knowledge and training that move beyond geopolitical and cultural frontiers (Petrillo and Bellaviti 2018: xiv).

At the same time, a major challenge today appears to be overcoming the paradox of a widespread scientific literature on African urbanism produced in the Global North, with low production (but often just a limited visibility) from the Global South, where in many cases there’s a lack of urban planning and management professionals accordingly trained to respond to the rapidly evolving urban complexity. Paul Jenkins stresses the North-centric prevalence of research activities in his “Urbanization, Urbanism and Urbanity in an African City” (Jenkins 2013) and Vanessa Watson and Babatunde Agbola, wondering “Who will plan Africa’s cities?” (Watson and Agbola 2013) stress how “the urban and rural planning curricula of many planning schools are as outdated as planning legislation” and, moreover, some African countries even don’t have a planning or architecture school.

However, to limit the dominance of “unsuitable archetypes” (Watson and Agbola 2013), related to colonial legacies or post-colonial cultural dependencies, the potential role of academic institutions as inclusive places for multi-directional North-South exchange, cooperation, and co-production of knowledge and awareness is crucial.

In the last decade, in fact, the interest of the most important technical schools at the global scale towards African territorial development and planning issues has been raised. This happened for a combination of reasons interweaving research interests with political-economic interests linked with multilateral or bilateral cooperation targets, but it hasn’t always implied a fair involvement and exchange with local academic institutions. Working together, instead, should have the crucial aim of setting alternative balanced cooperation frameworks, able to take advantage of the available resources with the shared objective of exchanging knowledge and building on it to produce common contemporary-aware, transculturally responsive, and locally sensitive theories and methodologies. This is anything but easy in practice, but it is of particular importance when considering design education and polytechnic disciplines (including urban planning, engineering, and architecture) not only as regards scientific and institutional knowledge exchange, but also for the implementation of local development projects and plans, as well as hands-on educational programmes

facing the challenges of contemporary development trends and conditions in different geographical contexts, characterized by a tangled combination of global and local dynamics.

In this framework and considering a long- and well-established relationship between Mozambican and Italian (academic) institutions since the mid-70s, during the last decade, the Eduardo Mondlane University - UEM¹ (Maputo, Mozambique) and Politecnico di Milano² (Milan, Italy) have been involved in higher education cooperation programmes, research initiatives, pedagogical exchanges, capacity building and training on relevant technical fields such as mobility and water management, food security, energy production, urban planning, along with spatial planning and architectural research and design.

The two institutions share a common and well-established attention to international agendas and a special care in localizing issues, as well as in spatializing them in physical terms with an experimental research-by-design attitude relying on the powerful neutral role of academia (out of political or entrepreneurial interest). The specific approach of the two academic institutions has a key role in setting the value of their cooperation.

Politecnico di Milano (Polimi) has a solid polytechnic vocation to recognize and strategically exploit territorial values by combining synergic skills in architecture, urban design, planning, urban studies, and civil, environmental, management, energetic engineering, among many. Research on territorial development and strategic planning, including projects, plans, studies, policies, and processes has a long tradition and blends different perspectives in terms of scale, methodology, and tools, with the general character of high respect for local values in their tangible and intangible assets. As regards the Department of Architecture and Urban Studies (DASU), their main expertise can be recognized in the careful reading of territories, according to both cultural and technical lenses, with the aim of conceptualizing the interdependence of social and physical relational patterns in terms of robust structure of urban settlements to be protected and strengthened. This effort of conceptualization is key in strategically supporting democratic and inclusive policymaking and decision-making processes as agents of sustainable transformation and development.

The Eduardo Mondlane University has a strong rooting in the territory of Maputo metropolitan region, being involved in the elaboration and technical assistance for the design of planning tools and projects for the local governments of the area and for the city of Maputo itself. In particular, the Faculty of Architecture and Planning (FAPF) hosts the Centre for Development of Habitat Studies, a research and services institution created in 1992, whose objectives are, among others, contributing to the improvement of habitat conditions in Mozambican cities. In addition, in the context of collaborations with international research institutions and centres (i.e., the University

¹ Funded in 1962, the Eduardo Mondlane University (Portuguese: Universidade Eduardo Mondlane; UEM) is the oldest and largest university in Mozambique. Today it counts more than 30 faculties and research centres, and has about 40,000 students enrolled—www.uem.mz.

² Politecnico di Milano (Polimi) established in 1863 is ranked among the top 20 universities in the world QS World University Rankings by Subject 2020 in the category “Architecture” (Ranking #7) and Design (Ranking #6), “Engineering & Technology” (Ranking #20)—www.polimi.it.

College London—UCL or the Danish Research Council) the FAPF has been involved in the development and testing of climate change adaptation/mitigation tools and methods for urban development (Broto et al. 2015).

The most relevant and recent cooperation initiatives between Polimi and FAPF-UEM have been carried out in the context of the Politecnico social responsibility programme (the Polisocial Award³) and the memorandum of understanding between the Italian Cooperation Agency (AICS), the UEM, and several Italian universities in the field of academic restructuring, scientific research, and technological innovation. In particular, the Polisocial programme has been designed and carried out since 2011 with the aim to introduce

a new way of building and applying knowledge and academic excellence, by fostering and supporting new multidisciplinary projectuality, aware to human and social development, and by widening training, as well as exchange and research opportunities, offered to students, young researchers, university staff and its network (Colombo et al. 2016: 5).

For this purpose, the AICS-UEM-Polimi trilateral partnership represents a promising setting in terms of long-term cooperation and funding scheme for applied research as well as educational innovative formats. Despite some inevitable criticalities due to bureaucratic difficulties in translating formal agendas and agreements into actual operative programmes, the partnership—whose implementation is underway and will be further enforced in the upcoming years—has so far allowed to carry out a number of short-term academic research cooperation initiatives and a long-term research-based educational programme, involving different units and departments from both universities, also in cooperation with other local and internal partners.

Starting from such premises, this book capitalizes on the research and educational cooperation “ecologies” between Italy and Mozambique and proposes a research-by-design and an interdisciplinary collaborative methodology to contribute to the international discourses on transcultural urban and territorial studies regarding sub-Saharan African cities, highlighting inventive patterns in methodological, analytical, and operative terms. To this aim, the volume sets the research framework and challenges through different and complementary cultural and disciplinary gazes applied to the specific case study of Maputo (Mozambique) supported by insights and tools from a research-by-design perspective. Contributions come from different departments in Politecnico di Milano and in Eduardo Mondlane University, with insights from various disciplines such as architecture and urban studies; geography; social sciences; civil and environmental engineering; electronics, information, and bioengineering; energy engineering.

In the following paragraphs, we introduce the main conceptual and theoretical framework on which the book’s contributions are based and more specifically the WEF (Water-Energy-Food) nexus as the main conceptual and interpretative lens and source of scholarship for the interdisciplinary research projects and trajectories discussed in the volume. We, then, provide some general introductory information about the context of the Maputo Province, through two main Polimi-UEM research

³ www.polisocial.polimi.it

and educational and research initiatives that are among the major sources of evidence for this book.

Finally, we provide some details about the structure of the volume and a synthetic overview of the contributions presented.

2 Cultural and Theoretical Framework and Know-How

The multidimensional and cross-disciplinary approach adopted by the research experiences presented in this book is embedded into sustainable development debates inside the field of urban planning, especially in African urban studies, as well into civil, environmental, and energy engineering.

The first mainframe of reference is related to UN-Habitat rural-urban linkages and partnerships in the Global South, following the UN Sustainable Development Goals and the New Urban Agenda launched on the occasion of the Habitat III conference in Quito (2016). According to UN-Habitat (2017).

the concept of Urban-Rural Linkages contains the idea of complementary functions and flows between rural and urban territories of various sizes, such as metropolitan regions, small- and medium-sized cities and market towns as well as sparsely populated areas with the smallest scale of human settlements.

Such a framework is particularly appropriate when studying fast-growing metropolitan regions in sub-Saharan African countries: among them the case of Maputo represents a meaningful example in light of the current socio-economic interactions occurring between the attractive and vibrant capital of Mozambique and the small and medium-sized (r)urban centres gravitating around the city, witnessing very diverse urbanization and demographic patterns and trends, as well as manifold challenges related to the access to food, basic services and resources for the local populations.

The second source of reference (both in cultural and political terms) is the broader discussion about the challenges of urban planning and governance in Sub-Saharan African cities. Different scholars have tried to systematize scientific contributions on the characters of Sub-Saharan extreme urbanization (Mbembe and Nuttall 2008; Myers 2011; Pieterse and Simone 2013), with the recurring of keywords such as postcolonialism, cosmopolitanism, informality, climate change, political and social fragility, governance weakness, invisibility, segregation, and gentrification. Their effort witnesses (and in most cases orients) research trajectories that are mainly focussed on a socio-cultural perspective investigated through a phenomenological lens. A relevant role, in this perspective, is currently played by the African Centre for Cities (ACC) at the University of Cape Town (UCT), which has become a hub for African researchers and a champion of an African perspective in producing knowledge in the field of urban studies (Harrison 2006).

This background is crucial in shaping an attitude of respectful sensitivity towards local contexts as well as an honest openness in dealing with unprecedented challenges. However, it's relevant to highlight limited attention to the urban and territorial physical dimensions. Differently, this attention emerges in the work of Behrens and Watson (1996), Jenkins (2013), Todeschini (2014), but it especially found fertile ground in the experimental attitude of local and international universities cooperating through workshops and teaching activities in the field—as witnessed, for instance, by activities by Columbia University (Kurtak and Daher 2011; Blaustein et al 2012) and Penn University (Gouverneur 2014)—or through specific initiatives such as the International Design Collaboration for Kenya promoted by UN-Habitat in 2016 (UN-Habitat 2016).

Finally, and most importantly, a major source of scholarship, connected to the previous ones, is related to the broad field of the so-called Water-Energy-Food (WEF) nexus. The nexus approach, embraced by FAO (2014) and many other important international organizations, has undergone different conceptualizations, according to scope, objectives, and understanding of drivers. However, the conceptual framework that systematically links natural environment and human activities through trade-offs and synergies is a crucial lens to investigate the complexity of territories and to set more integrated and cost-effective decision-making and planning processes by challenging existing borders, policies, and procedures at the various scales.

Scholars also underline how “whilst the WEF nexus scholarship has expanded since 2013, there is also evidence of growth in the conceptual, intellectual and social structures of the WEF nexus in the African continent” (Botai et al. 2021). At the same time, most of the existing literature about WEF Nexus and sustainable development in the Global South (Hassan Tolba et al. 2018; Botai et al. 2021; Purwanto et al. 2021; Wahl et al. 2021), however transdisciplinary, has a preferential methodological and conceptual perspective focussed on one of the elements of the nexus and/or limited to a very technical and non-spatialized approach. The aim of this volume, also building on previous research products on these topics by Politecnico di Milano (Colucci et al. 2017), is to investigate the nexus by starting from a spatial perspective. Therefore, it focuses on the effects of the nexus technical assessments on the physical space we inhabit with an integrated territorial/urban gaze. Moreover, the volume presents the challenges of uncovering and implementing the WEF Nexus in a context (Maputo, Mozambique, as representative of a large part of sub-Saharan African urban areas) that is still scarcely sensitive to these issues.

Looking at the Maputo Province and the critical issues related to the urban-rural dynamics pushed by climate change and socio-economic drivers, the transdisciplinary perspective given by the framework of the WEF nexus together with the main debates on urbanization trends and territorial development in African metropolitan regions, have profoundly shaped the interpretative and operative lenses adopted by the research projects presented in this volume.

3 Learning by Practice: Designing an Integrated Territorial Vision for the Maputo Metropolitan Area

The main territorial framework to which this volume is devoted is the metropolitan region of Maputo, and, in particular, the districts and municipalities of Boane, Moamba, and Namaacha. This area is in the south-eastern section of Mozambique and of the Maputo Province, bordering two other nations—South Africa and eSwatini—and it is crossed by the “Maputo Corridor” (Maputo—Johannesburg—Durban).

More than 3,000,000 inhabitants live in this urban agglomeration, representing more than 13% of the Mozambican population and over 40% of the urban population of the country (see Fig. 1). However, the lack of information regarding existing cross-scalar patterns that have been shaping this territory in the past decades makes Maputo an “unknown metropolis”, fragmented in terms of administrative boundaries and territorial governance and shaped by a complex tangle of informal or unmapped flows and systems.

Among the main challenges that affect this territory, some are more evident and urgent, such as the changing rural–urban balance and social transitions due to demographic growth, migrations and progressive (and mostly unplanned) urbanization patterns, the local effects of climate change, deforestation and the following changes in the landscapes, food and water insecurity, land grabbing, socio-economic and political instability. All these conditions make the peripheral districts of the fast-growing Maputo metropolitan area a vulnerable territory in need to be framed in a synergic inter-scalar vision for a sustainable and integrated territorial development.

Along with these emerging issues, the scarcity and inconsistency of the available statistical data, the lack of published cartographic documentation and easily accessible digital databases and cartographies, and the scarcity of investigations of economic related transformations pose a series of challenges also in terms of research methodologies, planning and governance tools to be developed in support of local actors to face this crucial task while coping with present urgent issues.

The contributions presented in this volume—based at Polimi and FAPF-UEM—have embraced these challenges by proposing a multidisciplinary and multi-level planning approach to tackle the development of the growing peri-urban environment of Maputo in an integrated way, overcoming the traditional sectorial approach, and considering the interdependencies between issues such as migrations and demographic trends, unplanned urban growth, food and water security, climate change and natural hazards, local economic patterns (formal and informal), land tenure and cultural diversity, mobility, and infrastructure.

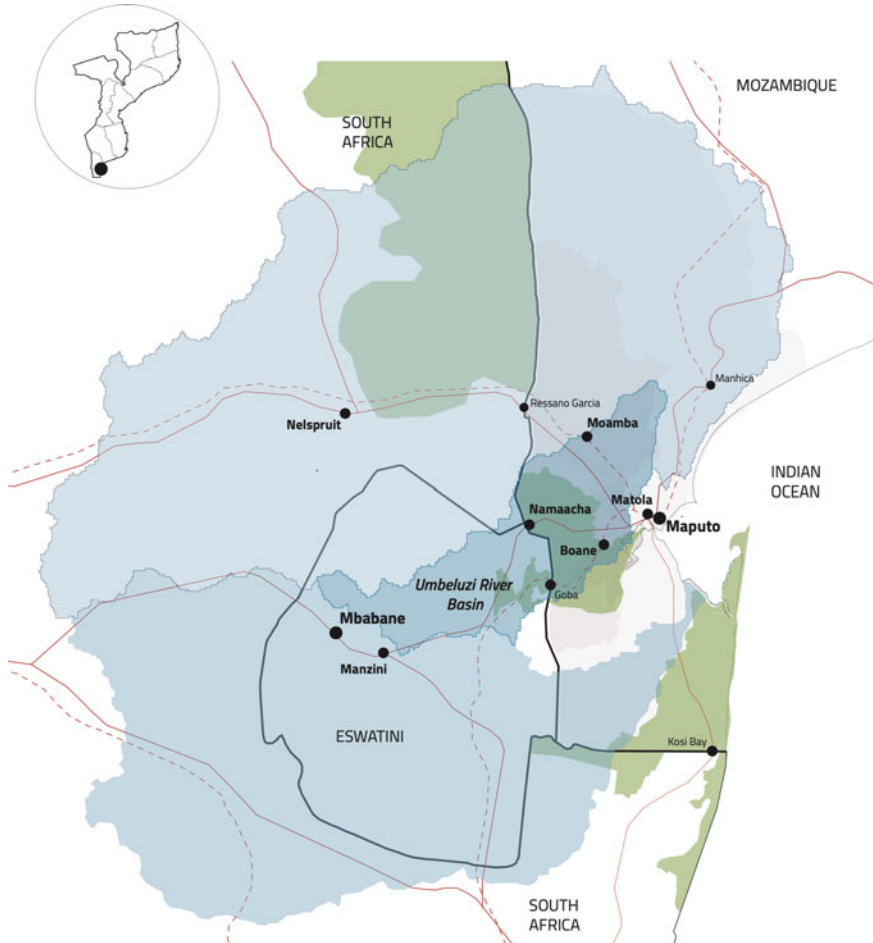


Fig. 1 Transnational research framework: administrative boundaries, main connections, protected areas, and river basins. *Source* Elaboration by “Boa_Ma_Nhã, Maputo!” team 2019

3.1 From PIMI to “Boa_Ma_Nhã, Maputo!” and Back

As Carlos Trindade, João Tique, Domingos Macucule explain in their contribution, PIMI⁴ is an ongoing research and educational programme based at the FAPF-UEM. The programme is part of the Intergovernmental Agreement between Italy and

⁴ Acronym of *Programa de Investigação Multisectorial Integrada: Estudo para a Promoção do Desenvolvimento Territorial Integrado da Região de Boane, Moamba e Namaacha*, in English “Integrated Multisectorial Research Programme: Study for the Promotion of the Integrated Territorial Development of the Boane, Moamba and Namaacha Region”.

Mozambique (2011) to support UEM in terms of academic and technological innovation and scientific research⁵. In the context of such programme, the FAPF, together with other units from UEM, is carrying out the programme within a timeframe of three years starting from 2020. The study aims to gain a thorough and in-depth understanding of the territory of the Boane, Moamba, and Namaacha region in its different dimensions, with a focus on the creation of an updated territorial database and the development of territorial planning and management activities. Thus, among the main aims of PIMI there is an extensive analysis, from a critical perspective, of the trends of transformation of the city of Maputo and the Boane, Moamba, and Namaacha region to further propose specialized tools for the protection and maintenance of the cultural, environmental heritage in a sustainable perspective, as well as for intervening on the built and natural heritage in consolidated urban centres and fragile areas.

The research programme is articulated into five research lines: “Economy and Territorial Development”; “Territorial Planning”; “Socio-demographic and socio-territorial dynamics”; “Governance and Public Policies”; “Environment and Sustainability”. From a general methodological perspective, the programme combines both research and educational activities in an integrated way. This means that the five different research lines have been assigned to five leading researchers that coordinate teams composed of other colleagues, Ph.D. students, and Master students from the faculty. Research activities—such as data collection and other research operations—overlap and integrate training activities (intensive workshops, seminars, lectures) throughout the programme.

Drawn on the territorial and conceptual framing defined by PIMI, in 2019, the research programme “Boa_Ma_Nhã, Maputo! A study for the integrated development of the region Boane, Moamba, Namaacha (Mozambique)” based at and funded by Politecnico di Milano, was established running throughout 2019 and 2020. The project has been carried out in partnership with the FAPF-UEM, the Italian Cooperation Agency (AICS) in Maputo, and the NGO Progetto Mondo MLAL. As already mentioned, the project is framed into international cooperation initiatives between Polimi, UEM, and AICS and has been designed to provide scientific support to PIMI with a specific interdisciplinary, cross-thematic, and multi-scalar approach, in order to fill in the knowledge gaps and co-produce new knowledge in support of future research and planning activities for the programme.

Indeed, particular attention has been devoted to the WEF Nexus, considering the potential evolution of the agriculture sector, backbone economy of the Maputo metropolitan region, and the related food systems in their multiple environmental, economic, social, and cultural implications. The project also assumed the UN Sustainable Development Goals (SDGs) (UN 2015) and the UN-Habitat framework for urban–rural linkages as a main cultural and policy-oriented framework and reference (UN-Habitat 2017).

⁵ See for more details: <https://www.uem.mz/index.php/noticias-recentes/1119-uem-em-seminario-de-apresentacao-de-resultados-de-investigacao-do-fiam>. Accessed 13 December 2021.

The main aim of the project has been to test an integrated, replicable, multi-disciplinary methodological approach to produce scenarios and specific guidelines to support decision-makers dealing with the challenges of sustainable development in fragile contexts of the Global South. The project further aimed at verifying the methodological approach through a locally relevant pilot project, involving local actors, and investing in education and local rural entrepreneurship with the aim of producing measurable impacts.

The project involved four different departments from Politecnico di Milano (Architecture and Urban Studies—DASU; Civil and Environmental Engineering—DICA; Electronics, Information, and Bioengineering—DEIB; and Energy—DENG) which are all represented in this volume, together with different departments and faculties from UEM.⁶ Among the main outcomes of the project, there are an analytical and interpretative transdisciplinary study, integrating remotely collected data and empirical on-site observations, on the current conditions of the Maputo Province, and a planning-oriented document entitled “Territorial guidelines and scenarios articulating the WEF Nexus in the Greater Maputo Region” which aimed at suggesting a series of strategic scenarios and actions for the territory of study. These ones represent the main contribution of the project as an interpretative and imaginative framework for supporting further research trajectories, first of all, PIMI, and policy-making initiatives by local authorities and the urban governance stakeholders in the Boane, Moamba, and Namaacha area, as well as for the entire Maputo metropolitan region.

3.2 Working Together: Methodological Challenges and Insights

Despite PIMI and “Boa_Ma_Nhã, Maputo!” having been conceived and designed as autonomous research programmes, along with the territorial focus, the projects share some key methodological features and tools. As mentioned before, the access to recent and systematized data and documentation has been from the very beginning a critical challenge for both Polimi and UEM research teams, due to the difficulties in collecting updated and coherent information both in terms of level of geo-referenced accuracy and details, administrative definition and formal (planning) documentation. For this reason, both research teams proceeded in a tentative and heuristic manner, by combining different methods and tools for data collection and representation, scenario-building and urban planning experimentations, as well as in terms of interaction with local agents and institutions (See Fig. 2).

In this regard, a key research operation has been the spatialization and visualization of the main territorial conditions and processes occurring at different scales (demographic trends and urban growth, land cover and land uses, food production

⁶ Along with FAPF, also the Faculty of Arts and Social Sciences, the Department of Geography and the Centre for Policy Analysis (CAP) are represented.

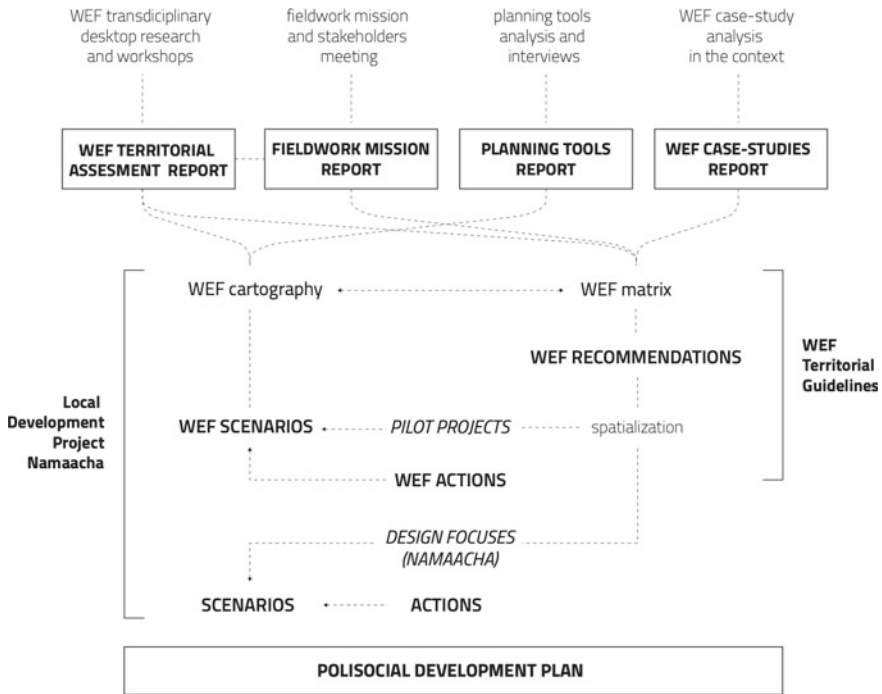


Fig. 2 Research operations: relations between methods, tools and outcomes. *Source* Elaboration by “Boa_Ma_Nhã, Maputo!” team, 2020

patterns, climate data, hydrographic systems, energy networks and resources, etc.) into synthetic cartographies and data-visualization diagrams. An in-depth description of the methodological approach and research results is provided in Part 1 and Part 2, devoted to the projects.

As mentioned earlier, both programmes adopted a research-by-design approach regarding the territorial guidelines and scenarios for the Maputo metropolitan region: the joint research efforts performed by the projects’ partners have been oriented towards the provision of some WEF-sensitive and transdisciplinary policies and planning strategies to deal with the challenges and opportunities observed.

In this sense, for the purpose of both PIMI and “Boa_Ma_Nhã, Maputo!”, a set of the research operations have been performed integrating educational activities inside the research process itself, providing training to MA and Ph.D. students, who were able to take on a proactive role and assume specific responsibilities.

The project teams also adopted Participatory Action Research methods, which emphasizes the co-generation of knowledge between the researchers, the projects partners, and other actors to implement and assess the result of the research process with the academic/scientific community of reference. On the occasion of both the fieldwork missions, a series of interviews with a number of local actors and experts have been organized. The interviews were mostly conducted in unstructured and



Fig. 3 Meeting at the “25 de Setembro” agriculture cooperative, Boane, August 2019. *Photo* by “Boa_Ma_Nhã, Maputo!” team, 2019

informal settings, allowing the respondents and the researchers to interact freely and add issues and questions during the conversations (See Fig. 3). This allowed the team to assess and re-orient the early findings and insights as regards the territory of the study.

The ongoing joint research and educational initiatives implemented by Polimi and UEM represent a meaningful example of academic cooperation in contributing to building knowledge and awareness about the challenges and potentialities conditioning urban development in a critical context, also providing an interpretative and imaginative framework for supporting further research trajectories and policymaking initiatives by local authorities and the urban governance stakeholders in the area.

Since the early implementation of PIMI, and later throughout “Boa_Ma_Nhã, Maputo!”, the construction and maintenance of mutually proactive relations and partnerships between the two institutions has been key for the successful completion of the main research agenda of the two programmes. The interdisciplinary, intercultural, and multilingual nature of the projects has been, since the early moves of the programme, both a challenge and an opportunity for their development. The success of such “translation” operations—also in terms of communication outside the academic arena—is yet to be assessed: however, the effort to identify and design (cultural and disciplinary) “mediation tools” (such as data-visualization tools and

interpretative matrices—Cfr. Part 2) can be seen as a positive output of the interactions among the projects' teams, especially in methodological terms.

The key role of academic international cooperation in reconceptualizing spatial planning for a more context-sensitive, equitable, and sustainable development needs this effort of setting open and inclusive common grounds.

4 How This Volume Is Structured

As mentioned, this volume is the outcome of the ongoing collaborations among Polimi and UEM and the long-term conversations with the colleagues that generously have contributed to building a fertile common ground for the co-production and sharing of knowledge, not only collaborating in the research activities conducted in Maputo, but also in the many occasions of encounter and discussion in the past three years that have involved a “community” of many different voices and expertise. In this sense, the book is a representative collection of the excellent scientific expertise which characterize the two institutions in different fields of knowledge: from social sciences to hydraulic, environmental, and energy engineering, to architecture and urban planning and design.

Benefitting from and exploiting such richness of viewpoints and expertise, the volume is organized into three main sections:

Part 1 (Chapters “Introduction. A Polytechnic Approach to Urban Africa. Methodological and Cultural Challenges of a Transdisciplinary Research Cooperation” to “The Demography of the Maputo Province”) presents contributions by scholars from different disciplines based in Maputo and Mozambique introducing the main issues and challenges for this territory with context-based and long-term perspectives. These essays provide privileged entry points into research and innovation trajectories in urban history and planning, local material culture and habitat, societal challenges, and natural resources management, through the voices of prominent scholars based in Maputo and, in particular, at the Eduardo Mondlane University (UEM). This section includes essays by Paul Jenkins, Inês Macamo Raimundo, Domingos Macucule, João Tique, and Carlos Trindade.

Part 2 (Chapters “Integrated Multisectoral Research Programme (PIMI). Origins, Trajectories and Horizons” to “Energy-Food Challenges and Future Trends in Mozambique and in the Maputo Province”) is devoted to presenting the main outcomes of the “Boa_Ma_Nhã, Maputo!” project, as an applied research-by-design case study, according to the main thematic/cross-disciplinary approaches adopted by the programme. A set of potential strategic planning visions, actions, and policies from a WEF nexus perspective is presented, exploiting disciplinary specificities and expertise within a common operative and methodological framework. Territorial readings, guidelines, and scenarios complement and integrate projective and policy-oriented models in suggesting new ways to envision food and energy production and water management, stressing the key role of appropriate cartography

in dealing with the complexity of the challenges. This section includes essays by Alice Buoli, Alessandro Frigerio, Davide Danilo Chiarelli, and Lorenzo Rinaldi.

Part 3 (Chapters “Trans-scalar and WEF-sensitive Strategic Scenarios for an Integrated Territorial Development. A Proposal for the Maputo-Boane-Namaacha Transect as a Green-Blue Metropolitan Armature” to “Society: Maputo, a Case of Social Non-simultaneity? A City Repertoire of Issues”) presents a collection of relevant lemmas helping in defining the key dimensions of the “urban question” in sub-Saharan African cities. Most of the essays present a general and introductory discussion around the suggested term from a disciplinary perspective and then explore the topic with reference to the specific context of Mozambique and/or Maputo. Each contribution is to be seen as a contextualized/context-sensitive “entry” of an open and transdisciplinary lexicon that complements and integrates the discussion on the past, present, and future of the Maputo Province. This section includes essays by Paola Bellaviti, Paolo Beria, Andrea Castelletti and Elena Matta, Valentina Dessì, Laura Montedoro, Agostino Petrillo, Matteo Rocco, Maria Cristina Rulli, Davide Danilo Chiarelli, Nikolas Galli and Camilla Govoni, Maria Chiara Pastore.

The book is also enriched by a presentation by Emanuela Colombo (Politecnico di Milano Rector’s Delegate to Cooperation and Development since 2005) and Manuela Nebuloni (Polisocial Award Organising Committee) and a final contribution by Gabriele Pasqui (Full professor and former director of DASTU, Politecnico di Milano, proponent of the Polimi-UEM memorandum of understanding and PIMI). All the contributions in this book can be seen as autonomous essays, yet we suggest the readers to consider them as pieces of a comprehensive narrative made of different interdependent parts, open to a variety of reading levels and paths. In the multiplicity of gazes and internal references lies one of the main qualities and contributions of this book to international scholarly debates on urban sustainable development (in the Global South and beyond), providing an example of productive interdisciplinary exchange and knowledge co-production across disciplinary fields and research cultures.

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