

BEAT THE HEAT

How do heatwaves affect
workers?



Laboratorio del Cammino Summer School “WalkKras, camminare nei territori a rischio climatico”

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HEAT WAVES

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INTRODUCTION

This book is the outcome of the summer school “Walkras, Walking in Climate-Risk Territories” organised by Laboratorio del Cammino in the summer of 2023. It is the result of **our research on the topic of heatwaves, conducted by walking for 170 km between the Italo-Slovenian border** during the last two weeks of August. Having to start our walk right while another heat wave was afflicting Italy, we can state that our research has been embedded in the sense that our bodies, due to the extreme temperatures, have gone under considerable stress and exhaustion. Therefore, **our personal and physical experiences have been pivotal starting points from where to grapple with the topic and thereby build our research.** Hence, we took inspiration from our personal experiences and sensations to draw the diary map (see, fig. 8).



Fig. 1. Picture Students on a break on the way to Doberdop, 2023



Fig. 2. Picture, Cloudy Skies Over Koper's Busy Logistic Center, 2023



Fig. 3. Picture, Searing Heatwaves on the Sidewalk: Where the Pavement Meets the Sun, 2023

WHAT IS A HEAT WAVE: IMPLICATIONS

1 Heatwaves over land have become more frequent and more intense in almost all world regions since the 1950s, due to climate change, IPCC, 2022: Annex II: Glossary [Möller, V., R. van Diemen, J.B.R. Matthews, C. Méndez, S. Semenov, J.S. Fuglestedt, A. Reisinger (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O.

Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, pp. 2897–2930

2 Heat wave - Oxford Reference

3 IPCC, AR6 Synthesis Report, Climate Change 2023, Observed Changes and Impacts, p.5

4 ibidem

Heat waves are a relatively modern phenomenon¹; thus, their long-term effects are still difficult to analyse and represent. The dictionary defines heat waves as «**a prolonged period of abnormally hot weather.**»² The Intergovernmental Panel on Climate Change (IPCC), a United Nations body, in their last report, “AR6 2023”³, provides evidence of how heatwaves directly result from Global Warming.

Starting from the second part of the previous century, “humans”, through capitalistic development and industries, have influenced global temperatures. **Global warming has diverse adverse consequences, including increasing the frequency of heat waves and droughts**⁴.

Given the visual transparency of temperature, we had to face the challenge of capturing this phenomenon through the medium of photography and then representing it on a map.



Fig. 4. Picture, Nature's Embrace: A Forest Oasis on the Hiking Trail, 2023

WALKING & WORKING

Our first hurdle has been trying to find our research question. We considered classical urban planning parameters such as vulnerability, risk, resilience and exposure. Still, we found it hard to ground it and link the different kinds of landscapes we crossed. The answer came thanks to our encounters during the walk. In the peak hours, when everyone was avoiding being exposed outside to the unbearable heat, we only went across those who were somehow forced to be out because they were working.

Heatwaves can strongly impact our bodies, especially if we are doing great physical exertion.

Many studies have evidenced how the increase of only one degree can lead to a significant increase in cardiovascular mortality (3.4%), respiratory mortality (3.6%) and cerebrovascular (1.4%)⁵ (see fig. 5). Additionally, studies have proven that **workers are more likely to make mistakes and injure themselves and other workers under sweltering conditions.**

⁵ Bunker A, Wildenhain J, Vandenberg A, Henschke N, Rocklöv J, Hajat S, Sauerborn R. Effects of Air Temperature on Climate-Sensitive Mortality and Morbidity Outcomes in the Elderly; a Systematic Review and Meta-analysis of Epidemiological Evidence. *EBioMedicine*. 2016 Apr;6:258-268. doi: 10.1016/j.ebiom.2016.02.034. Epub 2016 Feb 23. PMID: 27211569; PMCID: PMC4856745. Capitanelli I, Ferri L, Sacco A. Ambienti di lavoro outdoor e stress termico alla

luce dei cambiamenti climatici: l'esperienza di un' Azienda Sanitaria Locale italiana [Outdoor occupational environments and heat stress: the experience of an Italian Local Health Unit in the face of climate change]. *G Ital Psicol Med Lav*. 2023;3(3):94-105

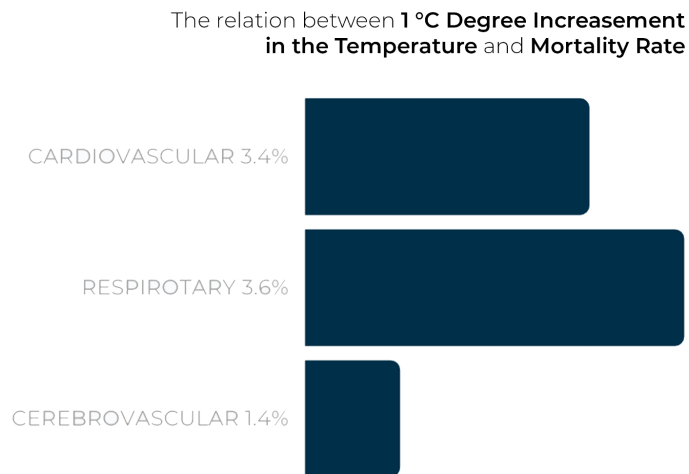


Fig. 5. Diagram showing the relation 1°C Degree Increment in the Temperature and Mortality Rate

⁶ see note number 3

⁷ De Sario M., de'Donato F.K, Bonafede M., Marinaccio A., Levi M., Ariani F., Morabito M., Michelozzi P., (2023), Nationwide epidemiological study for estimating the effect of extreme outdoor temperature on occupational injuries in Italy, *Frontiers in Public Health*, URL=<https://www.frontiersin.org/articles/10.3389/fpubh.2023.117355>, DOI=10.3389/

⁸ Ibidem.

These data have concerned various governments worldwide. As temperatures rise, more people will suffer from these diseases, and governments must reconfigure national health systems to manage these challenges. The AR6 report, produced by the IPCC, underlines how **heat-related health outcomes are «highly moderated by socio-economic, occupational and other non-climatic determinants of individual health and socio-economic vulnerability.»**⁶ Also, on the subject of costs, De Sario et al. (2023, p.3) show how, due to the phenomenon of heatwaves, **«the productivity losses at the global level are nearly 10% and are expected to increase up to 30–40% under the worst climate change scenario by the end of the century.»**⁷ The main sectors affected are agriculture and construction. Although the countries that face a significant risk are the ones with a low middle-class population and at a low latitude, southern European states are also in a vulnerable position⁸.



Fig. 6. Picture, Resting Amidst Slovenian Highways, 2023



Fig. 7. Picture, Voices from the Woods: Interviews with Forest Workers, 2023

REPRESENTING THE PERSPECTIVES OF VULNERABLE WORKERS

Our aim in this book is to type in the conversation around heat wave implications in the working activities and spaces and ground it in the territory of the Krass. Our vantage point is one of the workers we have encountered during our journey. **We wanted to understand through their everyday life experiences how climate change impacts their work and, therefore, their lives.** We have been talking with Mattej, who is a farmer producing wine; A group of woodworkers who take care of the forests, cutting the wood and cleaning the land; Luca, who is a postman and has told us his strategies to deal with high temperatures and funny anecdotes on his encounters, Bonifazi who although he is retired he still goes out with his small boat, but since the heat is also affecting the water temperature, there aren't any more fishes to catch, and Yüksel, who has travelled from the hottest city in Iraq to where we found him, on resting in Ferneti's logistic

centre and that with a great enthusiasm had shown us the ways he keeps refreshing during these long travels.

We have collected these precious experiences and have used them as a base for our reflection on this book.

We argue that these encounters show the discrepancy between the policy level and the actualisation and implementation of these in the working space.

In the first section, we will present our interviewees and case studies. The second section will focus on existing policies both at a macro level and locally. Then, in the third section, we will focus on the problematic aspects of implementing strategies to make the working space more resilient to the impact of heat waves, and then we will head on to our conclusions.

DIARY MAP



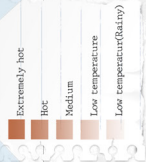
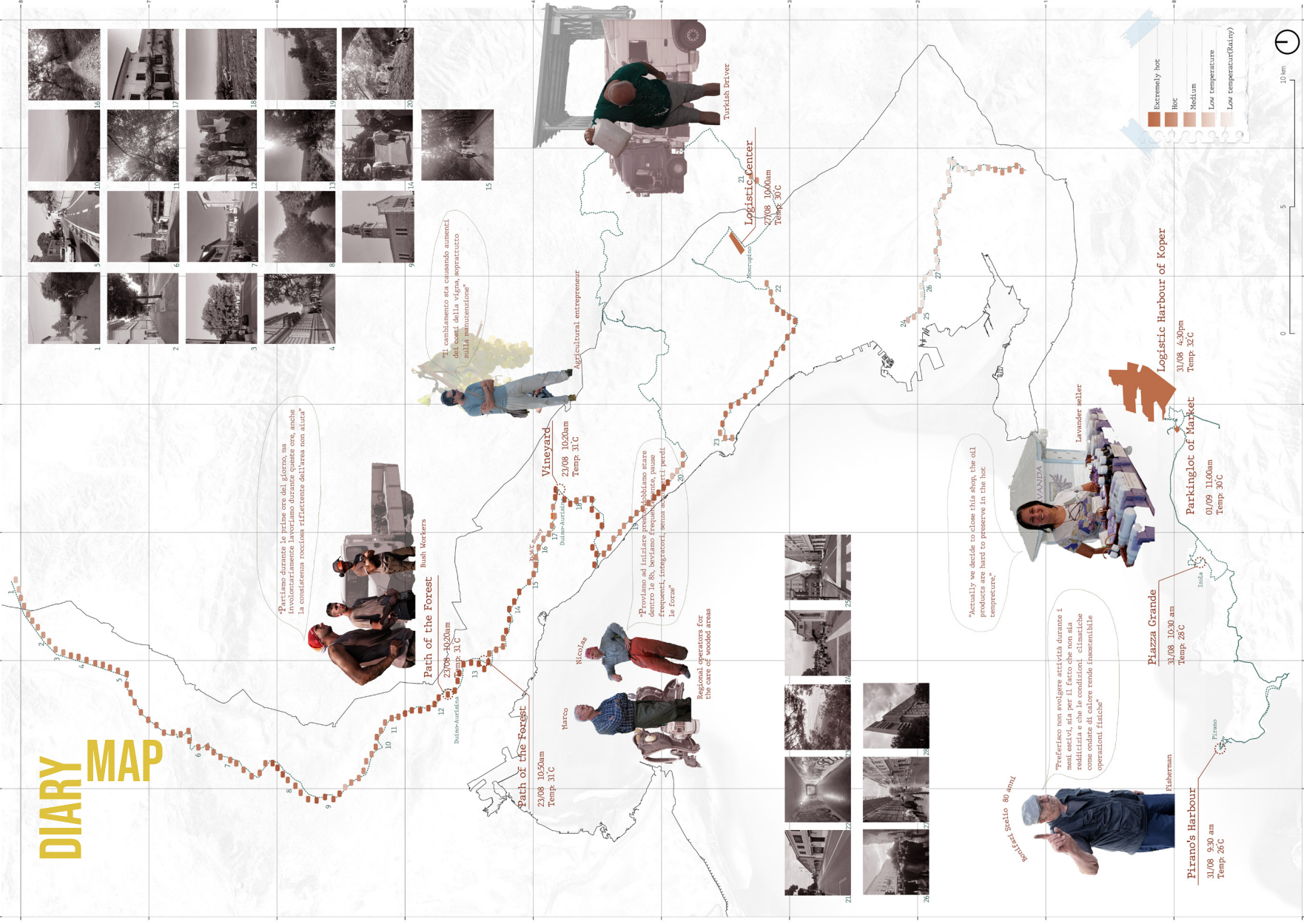
"Partiamo durante le prime ore del giorno, ma involontariamente lavoriamo durante queste ore, anche la consistenza raccolta riflettente dell'area non aiuta"

"Il cambiamento sta causando assenti dei botai della vigna, soprattutto sulla manutenzione"

"Proviamo ad iniziare presto, dobbiamo stare frequenti, irregolari senza un certo periodo le forze"

"Actually we decide to close this shop, the oil pressure was hard to preserve in the hot temperature"

"Preferisco non svolgere attività durante i mesi estivi, sia per il fatto che non sia redditizia e che le condizioni climatiche come entrare di calore rende insostenibile operazioni faticose"



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Bush workers
23/08 10:20am
Temp: 31°C

Path of the Forest
23/08 10:50am
Temp: 31°C

Marco

Nicoletta

Buskers' operators for the care of wooded areas

Vineyard
23/08 10:20am
Temp: 31°C

Dario-Aurilio

Agricultural entrepreneur

Logistic Center
27/08 10:00am
Temp: 30°C

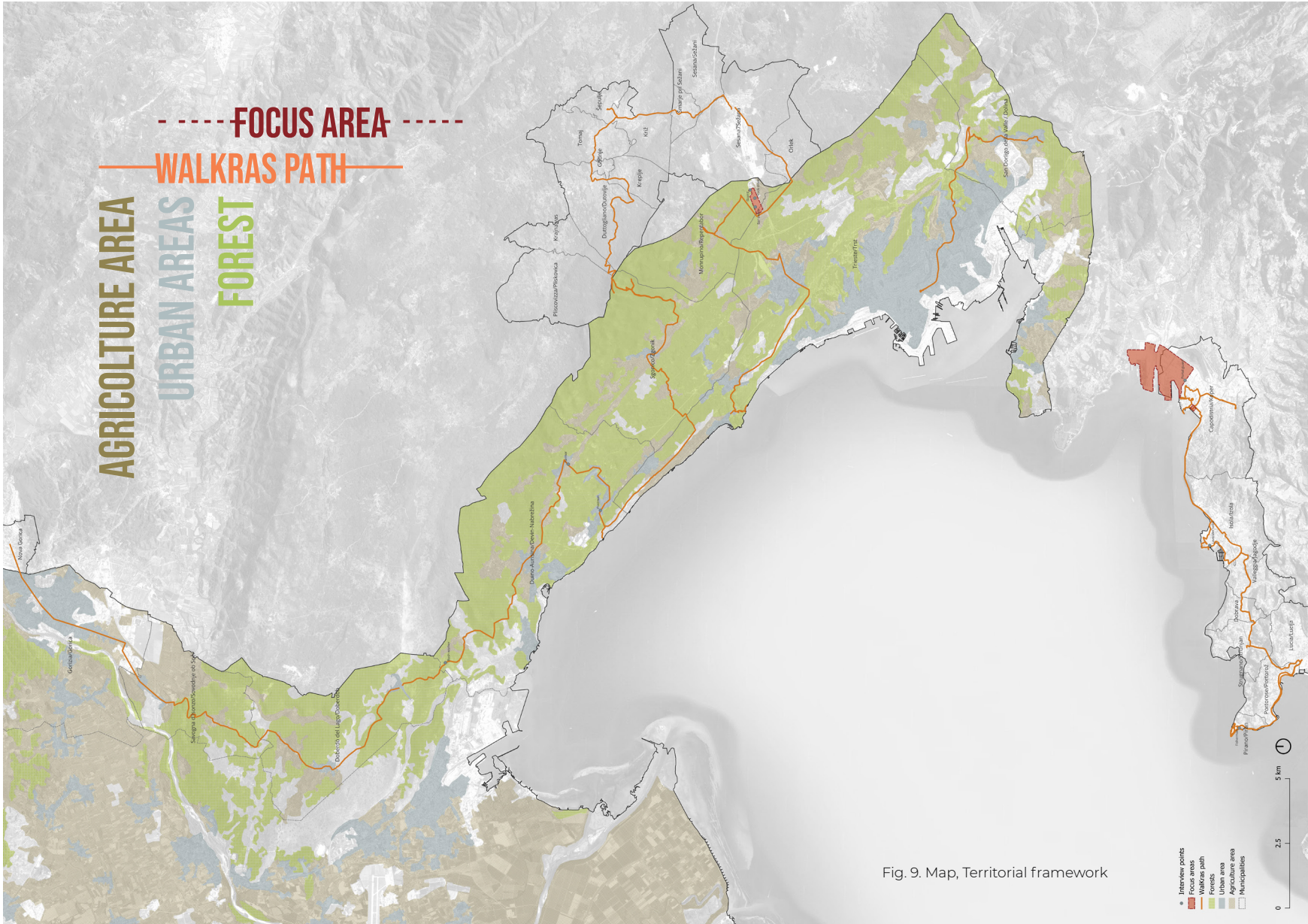
Turkish Driver

Piazza Grande
31/08 10:30 am
Temp: 28°C

Pirano's Harbour
31/08 9:30 am
Temp: 26°C

Logistic Harbour of Koper
31/08 4:30pm
Temp: 32°C

Parkinglot of Market
01/09 11:00am
Temp: 30°C



AGRICULTURE AREA
URBAN AREAS
FOREST

--- **FOCUS AREA** ---
WALKRAS PATH

- Interview points
- Focus areas
- Walkras path
- Forests
- Urban area
- Agriculture area
- Municipalities

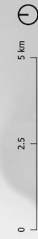


Fig. 9. Map, Territorial framework

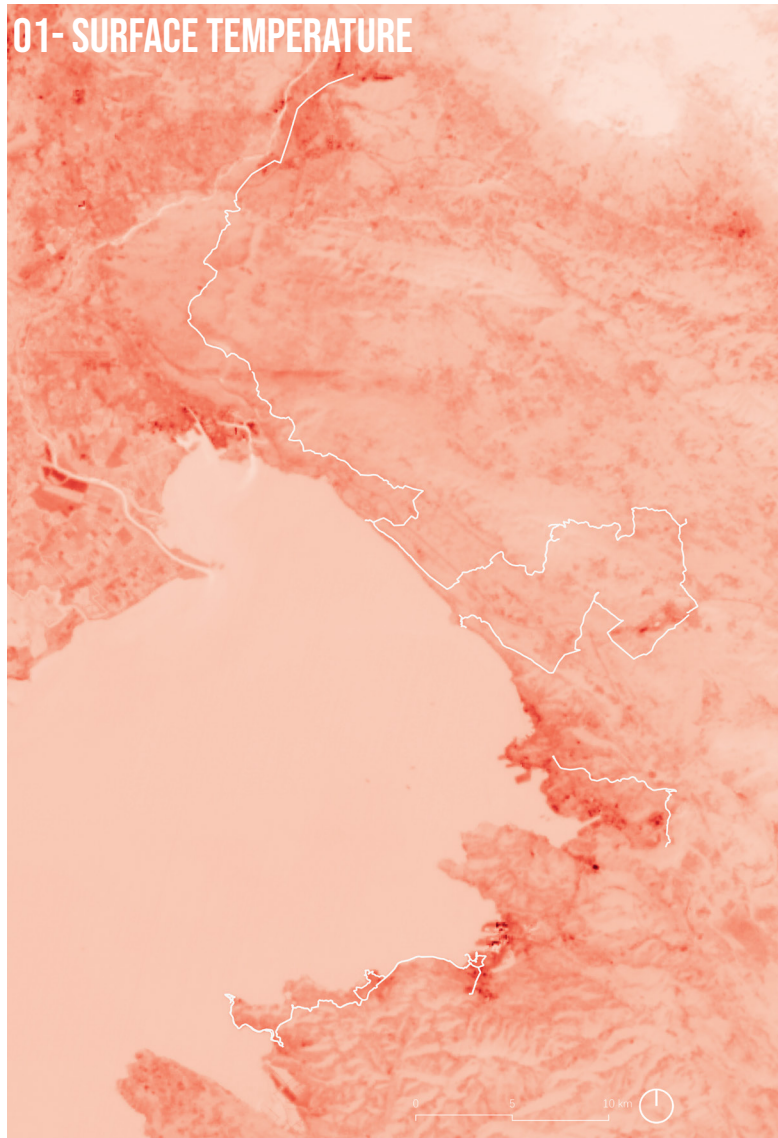


Fig. 10. Map, Surface Temperature



Fig. 10. Map, Surface Temperature

03- SPOTS WITH THE HIGHS SURFACE TEMPERATURE

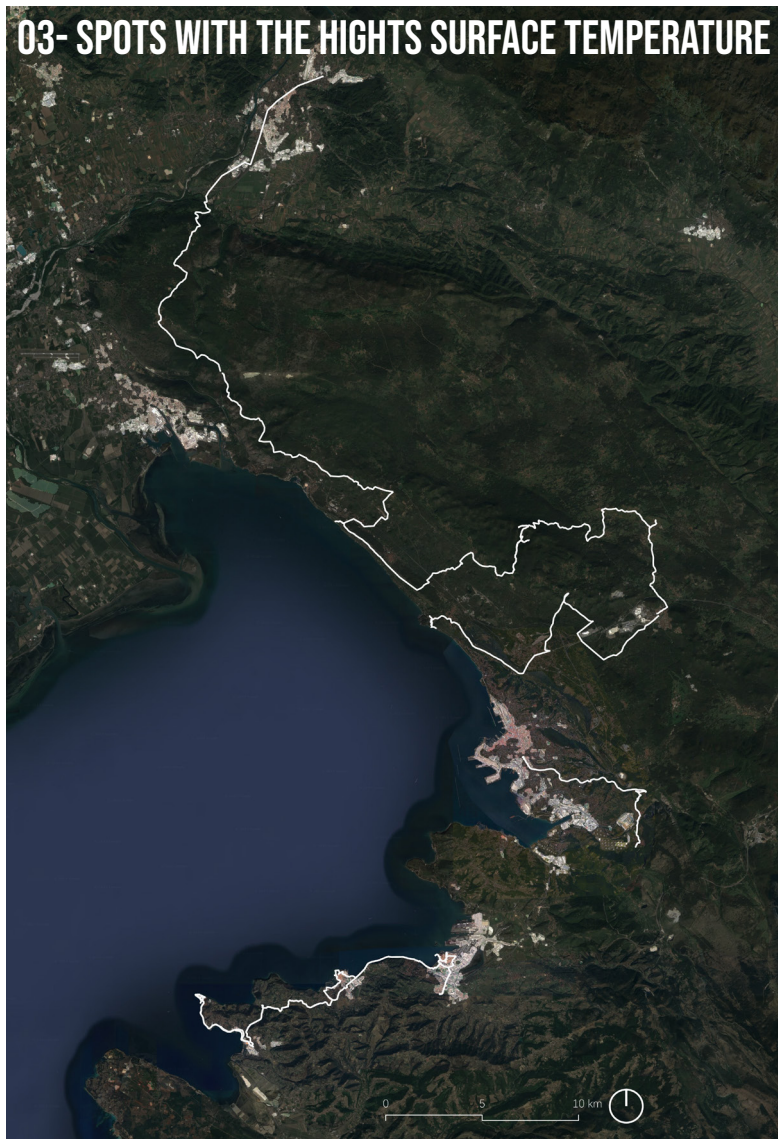


Fig. 12. Map, Spout with their height surface temperature

04- ROUTE

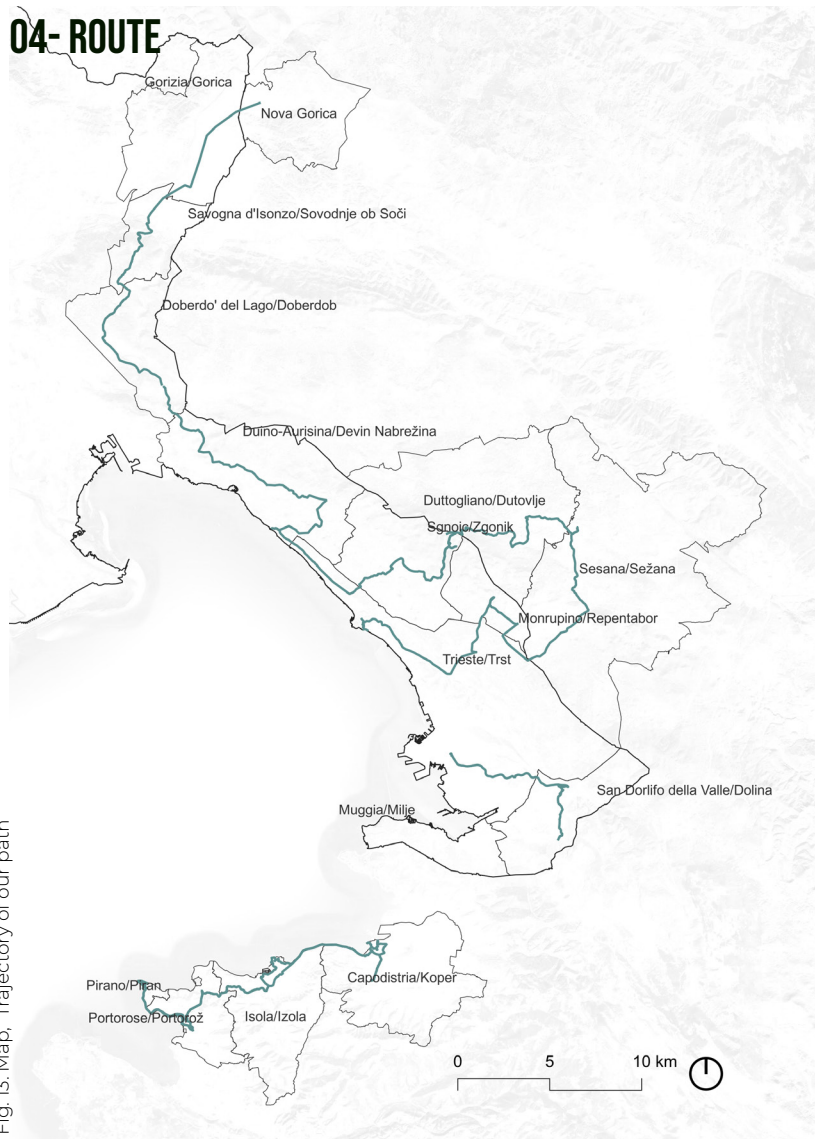


Fig. 13. Map, Trajectory of our path



Fig14. Picture, Walking despite the intensity of the sun, 2023



Fig. 15. Picture, Resting under the three, 2023

CASE STUDIES

Our case studies **represent the difficulties and the peculiarities of the territories we have been walking on**. They are set in very different types of landscapes, and in relation to heat waves, not all of them are usually associated with vulnerable landscapes. Indeed, urban planners have mainly focused on cities. In the strictly considered urban space, one can easily trace phenomena linked to the rising temperature. The most notorious one is the **urban heat island, which is defined as a «phenomenon whereby cities experience higher air temperatures than the surrounding countryside»⁹**. Our case studies consider cemented and impermeable areas outside the urban areas as the logistic centres of Ferneti and the port of Koper. As it is represented in the heat map (see fig. 10 & 11), these are spots that attract a higher level of heat. But we also wanted **to draw attention to areas usually not considered regarding heat**

⁹ Definition from the Climate Portal:
Urban Heat Islands | MIT Climate Portal

waves: aquatic and monoculture-agricultural landscapes. Although these types of territories, compared to the urban landscapes, are more resilient to the impacts of heat waves, they are still places where outside workers have to face high temperatures. Furthermore, the global rising of temperature is strongly affecting not only humans but also animals, wild and cultivated plants, and the ocean temperature. Therefore, we have decided to broaden our scope and focus on these different landscapes:

- **LOGISTIC CENTER FERNETTI**
- **PORTUAL LOGISTIC CENTER OF KOPER**
- **PARKING LOT IN THE COMMERCIAL AREA OF KOPER**
- **PIRANO'S HARBOUR**
- **VINEYARDS OUTSIDE DUINO-AURISINA**

For each case study, we will present pictures taken in these sites a sketch of the most vulnerable areas to heat waves and the stories and experiences of the workers we encountered in these sites.



Fig. 16. Picture, Highways and Wilderness Convergence, 2023

Fernetti



LOGISTIC CENTER FERNETTI

The logistics centre is situated in Località Ferneti, right on the border close to Opicina. It has an area of 245,903 square meters. We went there after a long walk into the forest. Going from a completely green site to this massive amount of cement is quite a shock. While navigating these immense spaces, with hundreds of parked trucks, **we noticed many truck drivers resting inside their vehicles.** Thanks to our international background, we could communicate with a Turkish driver who agreed to tell us his story and his strategies to deal with the high temperatures. Truck drivers usually sleep and rest inside their trucks. **The parking lot for the trucks didn't have any shade,** and although the vehicles have air conditioning to work, in order to benefit from it, they should always keep their vehicle on. Obviously, both for ecological and economic reasons, this is not possible. Yüksel told us he had been travelling from Iraq to where we met him.



Fig.18. Picture: Beating the Heat: After a Long Journey 2023

He noticed that in the last years, while working, he has encountered more and more extreme events, such as sudden torrential rain and violent hailstorms. Extreme rainfall can be very dangerous while driving because it obscures the view. He tells us he always carries gallons of water with him: **«About the hot weather, I work under difficult conditions, and I take a shower in the vehicle. In hot weather, drivers generally stay in the vehicle because it has air conditioning to avoid exposure to the sun.»** Water pantries cover entirely the passenger side. Whenever he feels that his body is **overheated, he takes a bottle and pours it on his head.** In the back of his truck, he keeps essential items such as a Turkish coffee pot and food. But he can't cook during the day because it is too hot and there is no shadow. He must either wake up before sunrise or wait until sundown to cook. The logistic centre is not equipped to ensure a fresh space for the workers that cross the area. There are only a few restaurants and a **bar managed by a Chinese woman who told us that air conditioning is too expensive.** She can't afford to buy an air conditioner because she has to pay for the rent on the premises. Drivers go to her bar to get some cool drinks, chat with their colleagues and then go back in the sun to what is both their working space and their transportable home.



Fig. 19. Picture, Turkish Restaurant on Wheels, 2023



Fig. 20. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

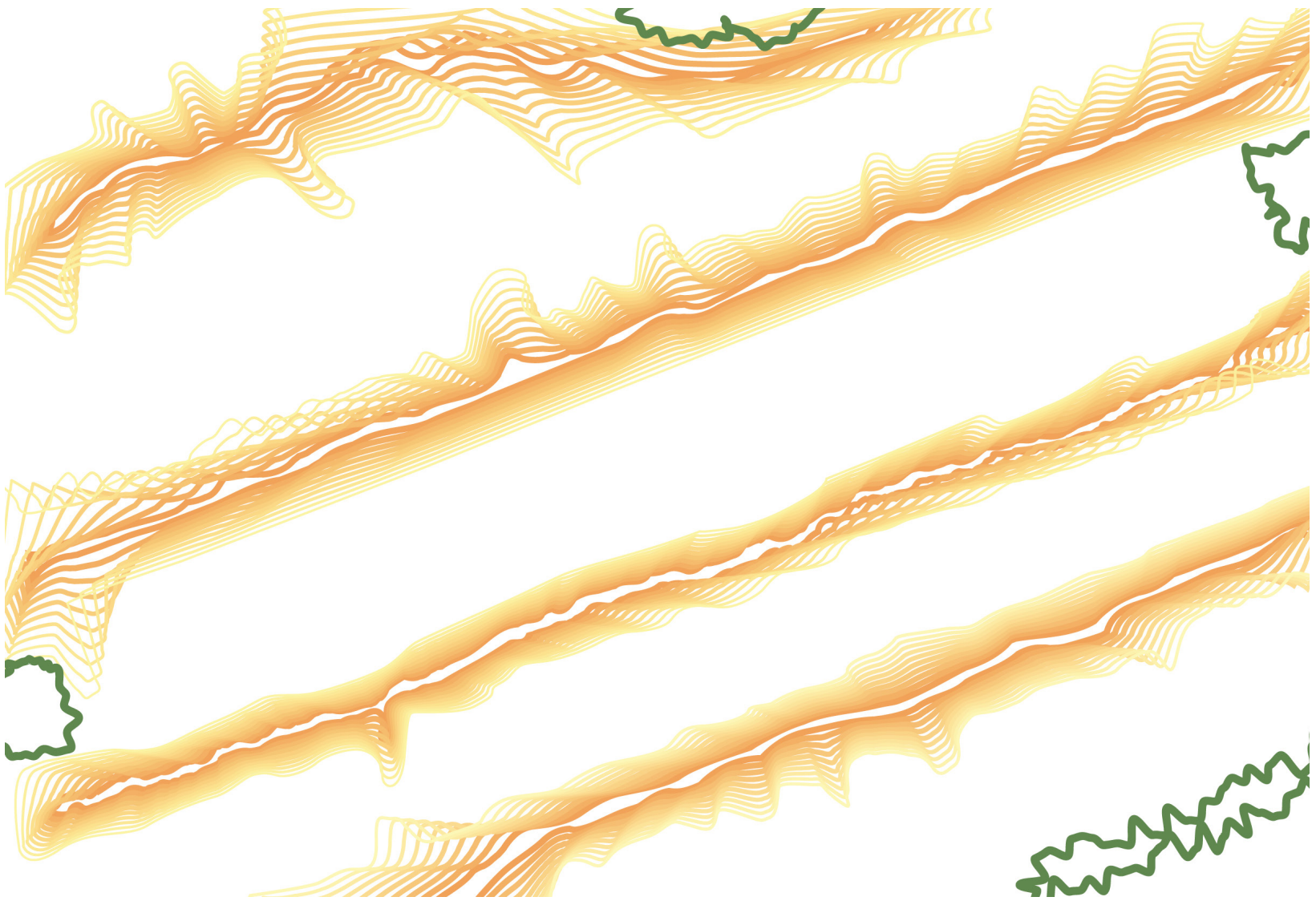


Fig. 21. Sketch, Analysis of the exposure of the Site, 2023

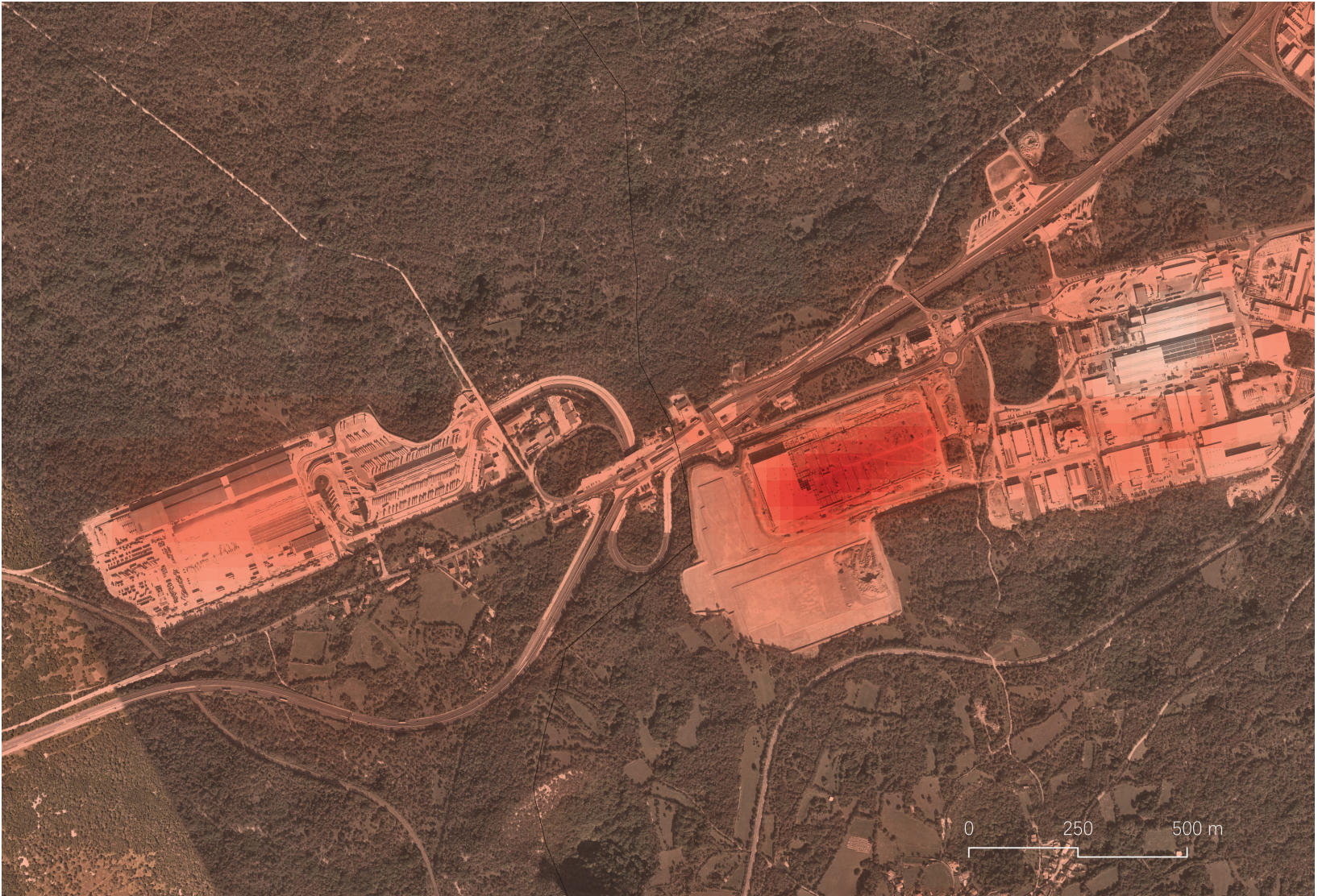


Fig. 22. Map, Temperature Analysis of the Site



Fig. 23. Picture, Truck drivers resting inside their trucks, 2023



Fig. 24. Picture, An Interview with a Chinese Bartender, 2023



Fig: 25. Picture, The Entrance of the Logistic Center: Meeting with the Heat, 2023



PORTUAL LOGISTIC CENTER OF KOPER

The Portual Logistic Center of Koper was built after the Second World War on a new territory that emerged thanks to the process of draining (bonifica) the marshland¹⁰. Most of the “modern” parts of the city have been built on drained land. It represents the **most important port that connects the Adriatic and, therefore, the Mediterranean region to central Europe**. On their website, they state that they are «the green port meeting EMAS¹¹ requirements¹².» The area where the port is developed is enormous and definitely much bigger than the city itself (see fig. 27) — The **fabric of the urban life in Koper circles around the port. People enjoy the beach life and swim next to this humongous heap of concrete**. In the Harbour, there isn't one green spot. It comprehends containers, petrol refinement stations and vast quantities of cars waiting to be shipped worldwide. We couldn't go inside the port, and many workers didn't want to talk with us after working all day long. We

Fig. 26. Satellite Picture of the Logistic Port of Koper



Fig. 27. Map, the three main areas of Koper

managed to talk only with a member of the security staff. He told us that there aren't any regulations to protect workers from the effects of extreme heat. The only thing that they **deliver to workers during the summer is what he called "Fruits Day". Once a month, workers are provided with some fresh fruits.**



Fig 28. Picture, Where Industry Meets Relaxation: The Logistic Center and the Beach, 2023

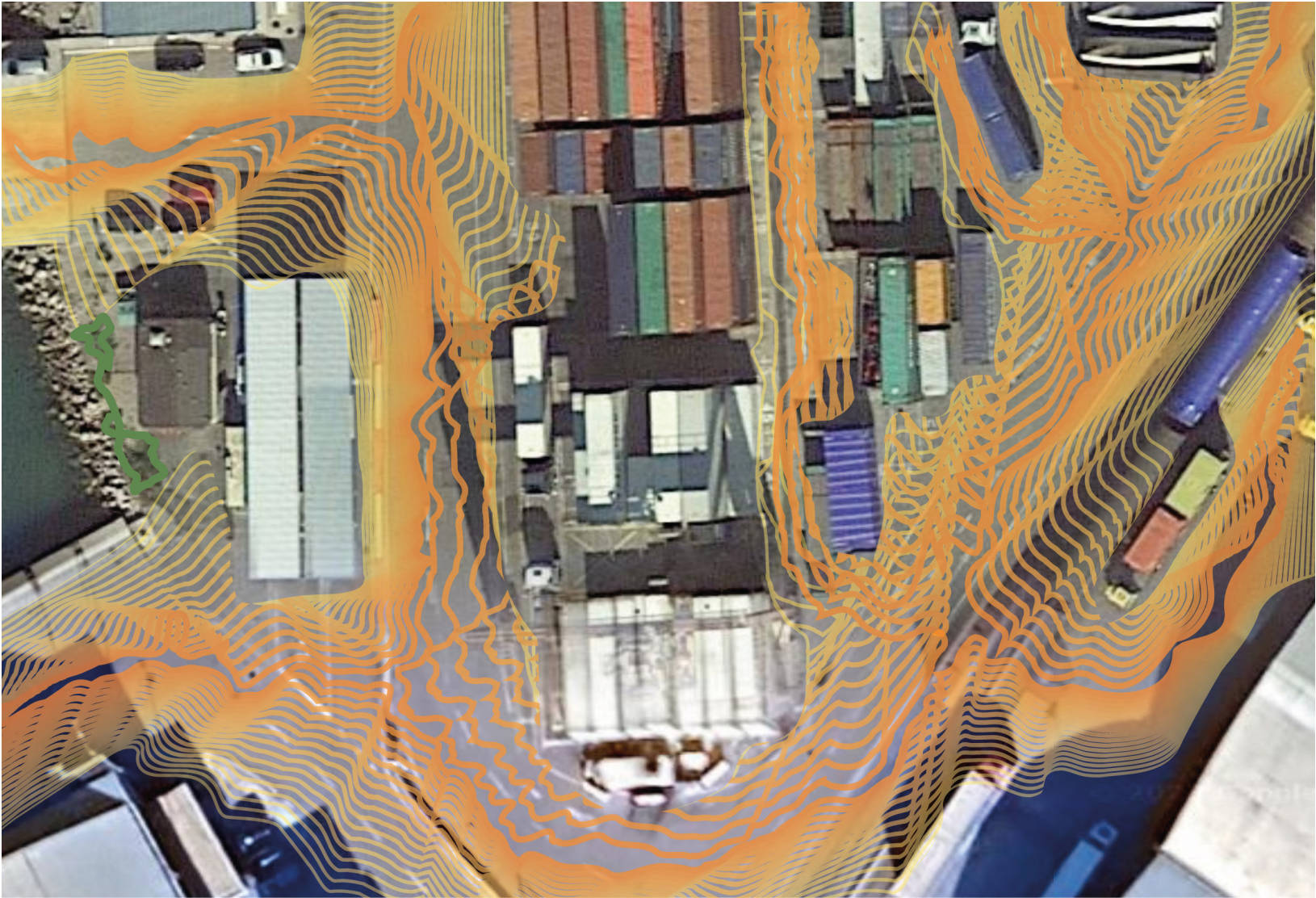


Fig. 29. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

Fig. 30. Sketch, Analysis of the exposure of the Site, 2023

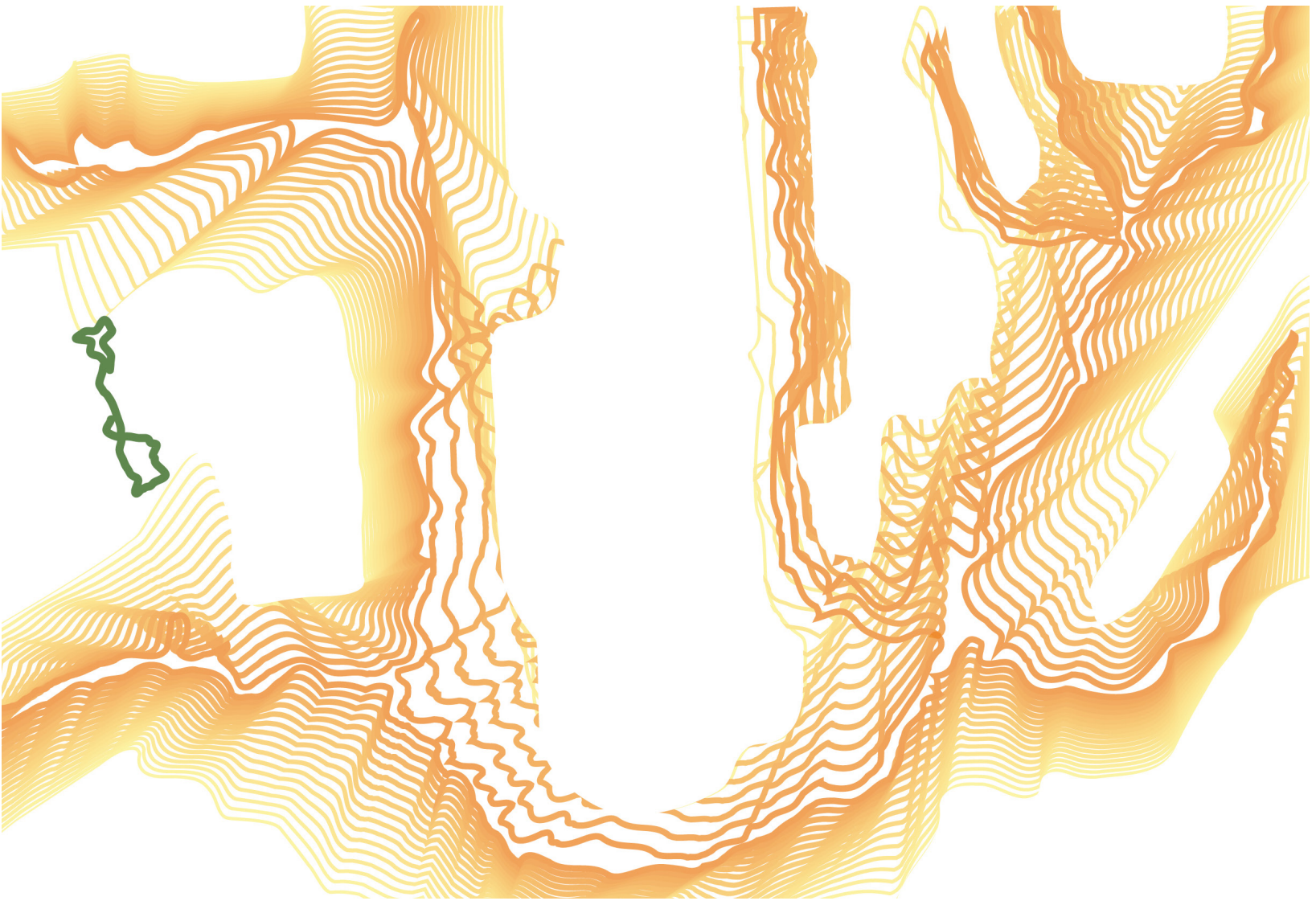




Fig. 31 Map, Temperature Analysis of the Site, 2023



Fig. 32. Where Commerce Meets City: Koper's Logistic Center, 2023



PARKING LOT IN THE COMMERCIAL AREA OF KOPER

As the Port Logistic Center, also the commercial area of Koper, has been built on previous marshlands.

The site hosts the “ Bonifika “ city stadium, **which means integral cleansing in Italian**. The bonifica was first sponsored by the fascist regime in the period between the two World Wars. Therefore, the area’s nomenclature is a reminder of that part of history. «The spectral survivals of these interventions on land»¹³, as Peano defines the reclamation works started by Mussolini, are still present in Koper’s landscape, **and it is here, in this land that was cleared from the sea, that the city’s economy epicentre is**. Professors Miha Koderman Mojca Poklar from Koper’s University pointed out how the same trajectory of planning that goes towards maximising the use of the land, present during the fascist time, was adopted by the communist regime and then after by the neoliberal democratic state.

From home for many species of plants and fishes

Fig. 33. Satellite Picture of the Parking Lot of Koper



Fig. 34. Picture, Parking Lot of the Commercial Area of Koper, 2023

today, it is a humongous concrete expanse that, in summer, becomes a boiling heat island. The large shopping centres in the area have air conditioning, which also causes the rising temperatures outside. Consumers come to enjoy their leisure time here mainly by private vehicles. The site includes a series of industrial barracks and countless car parks. However, the majority of workers, since they work inside, are mainly protected from the effects of the extreme heat. **There are still couriers and maintenance street workers who face this harsh landscape.** Bonifika area is devoted only to consumerism; it is not a place thought to have a walk or in any way a part of the city where it is possible to do outdoor activities.

¹⁰ Logar, Janko, Gorazd Strniša, and Lilian Battelino. "A case history of interactive design of pile foundations in the port of Koper." Proceedings of the XIVth Danube-European Conference on Geotechnical Engineering: From research to design in European practice, Bratislava, Slovak Republic, 2nd-4th June. 2010, p.1.

¹¹ Eco-management and audit Scheme, it is an european data base in which organisation committed to improve

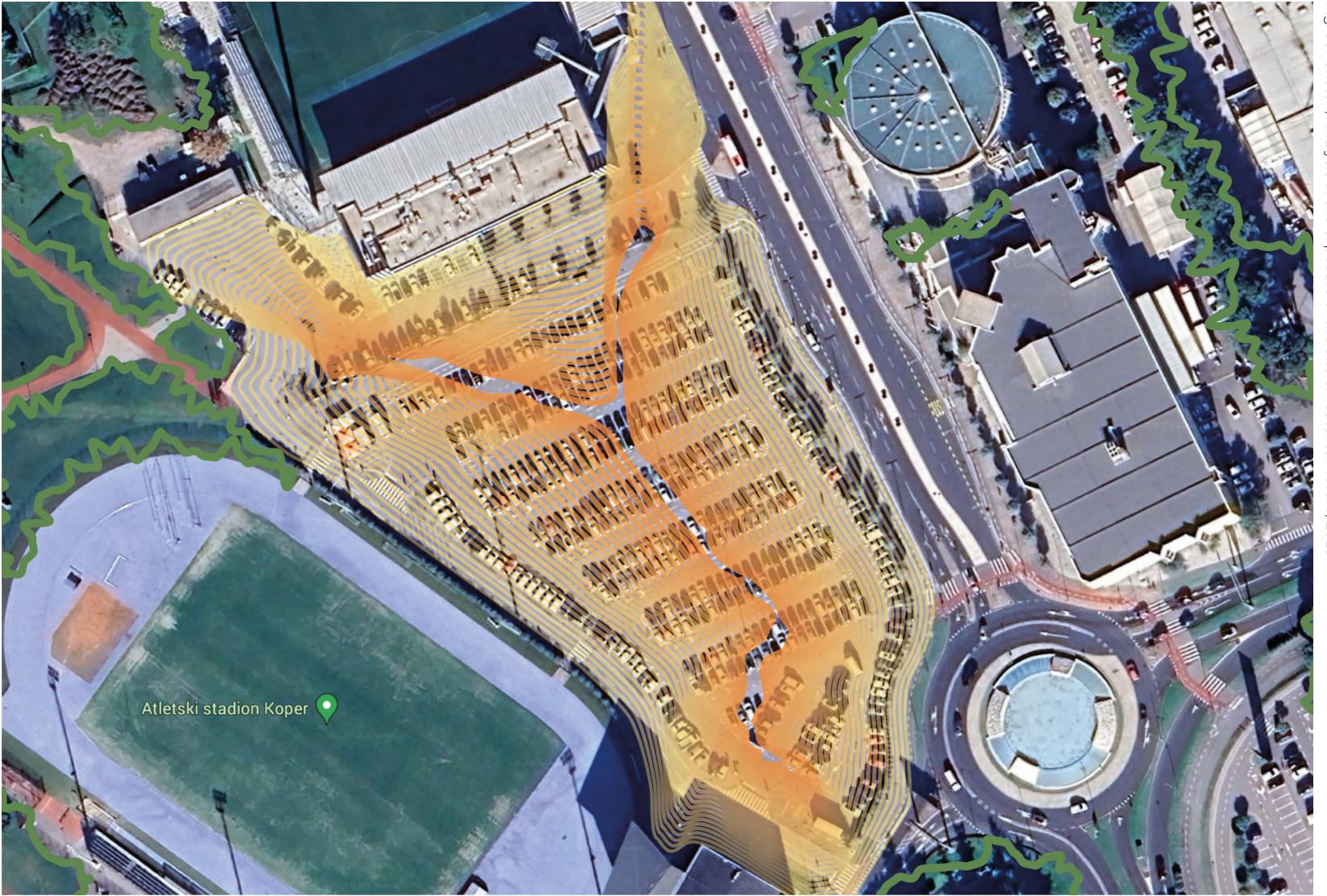
their enveromenital performances can inscribe themselves. EMAS in action (europa.eu)

¹² One point, many advantages - Luka Koper d.d. (luka-kp.si)

⁵ Specters of Eurafica in an Italian Agroindustrial Enclave, Irene Peano, e-flux architecture, 2021: Coloniality of Infrastructure - Irene Peano - Specters of Eurafica in an Italian Agroindustrial Enclave (e-flux.com)



Fig. 35. Picture, Parking Lot of the Commercial Area of Koper, 2023



Atletski stadion Koper

Fig. 36. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

Fig. 37: Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

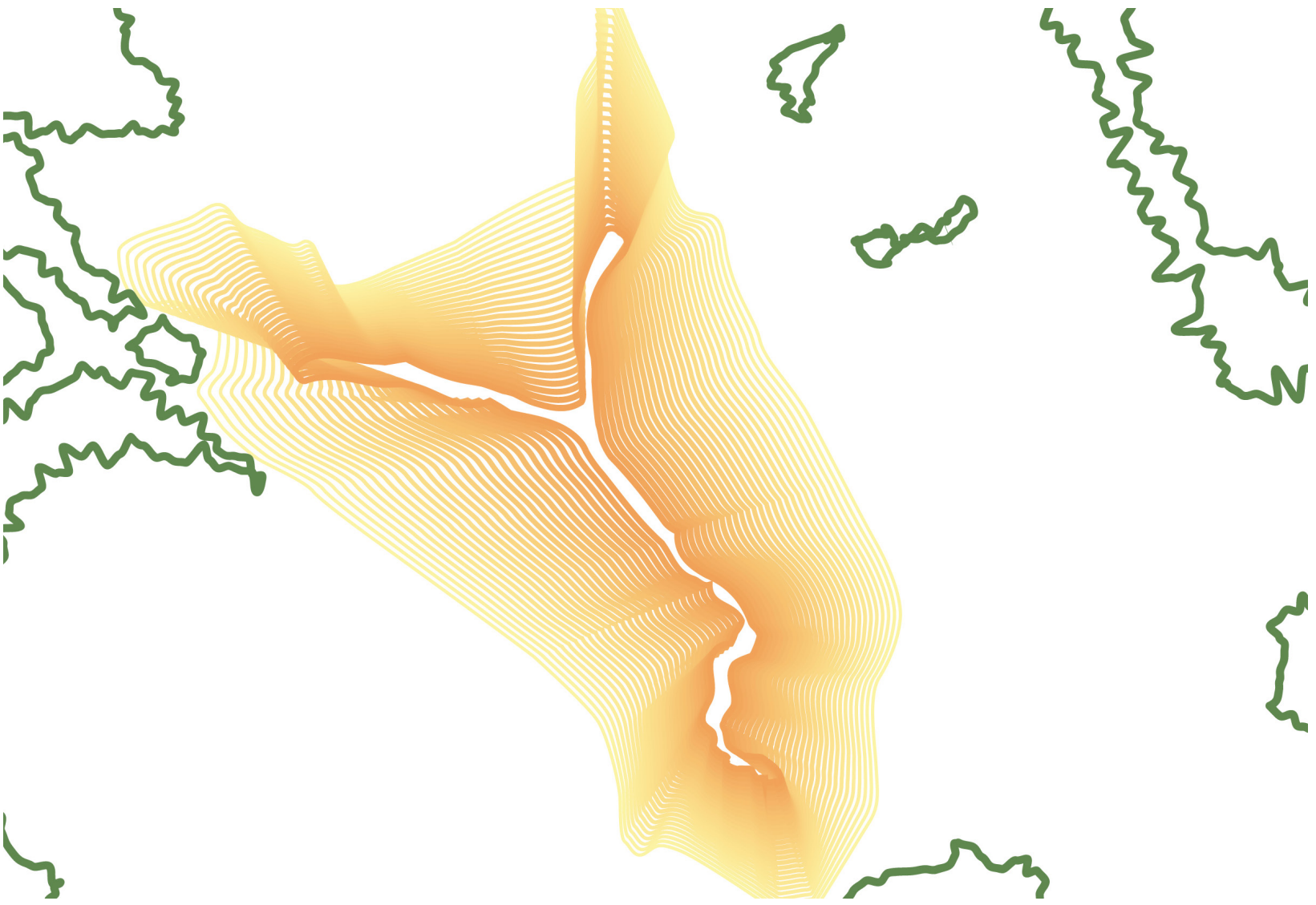




Fig 38. Map, Temperature Analysis of the Site



Fig.39. Picture a woman crossing the parking lot, 2023



Piran

PIRANO'S HARBOUR

Piran's harbour is small and undoubtedly not fundamental to the global economic commerce of fish. Most of the boats are either private yachts for leisure or tourist tours. **Few people nowadays still practice fishing in the sea with their small boats.** As soon as they disembarked with the ferry we took from Trieste, we saw this older man sitting in front of a small boat. Curious about his slight aura of sadness, we approached him. Mr. Bonifazi, this is his name, told us that he has always been fishing. Besides, he did other jobs, he **couldn't imagine his life without a boat.** Although today, because of the scarcity of fish and petrol costs, it is not worth it to keep on fishing, he still sends his son and son-in-law out to try to catch something. He is too old to fish with his boat, so he stays in the harbour, cleaning the fish and preparing the nets. He tells us: **«The ecosystem is not able to cope with the climate crisis; local fisheries are unable to sustain themselves due to the industrialisation of the sector, trawling.»** There

Fig. 40. Satellite Image, Pirano's Harbour



Fig. 41. Picture, A View from the Pirano's Picturesque Harbour, 2023

are not any more fish because the water is too warm for them, and the few left are taken by big fishing vessels. He also adds, «**The crisis has caused a drastic decrease in local species and facilitated the arrival of invasive alien species unsuitable for commercialisation, as well as causing enormous ecosystem damage.**»

The only thing they can do to avoid the extreme heat and try the fortune to find some fish is to leave in the deep night. Bonifazi, in summer, actually tells us that: «**I prefer not to carry out activities during the summer months, both because it is not profitable and because weather conditions such as heat waves make physical operations unsustainable.**» He also expresses his concerns towards the European Union's policies, particularly **the lack of attention from the E.U institutions to small enterprises and companies.**

¹³ Specters of Eurafrica in an Italian Agroindustrial Enclave, Irene Peano, e-flux architecture, 2021: Coloniality of Infrastructure - Irene Peano - Specters of Eurafrica in an Italian Agroindustrial Enclave (e-flux.com)



Fig.42. Picture, Heatwave Stories from the Sea: Interviewing a Fisherman, 2023

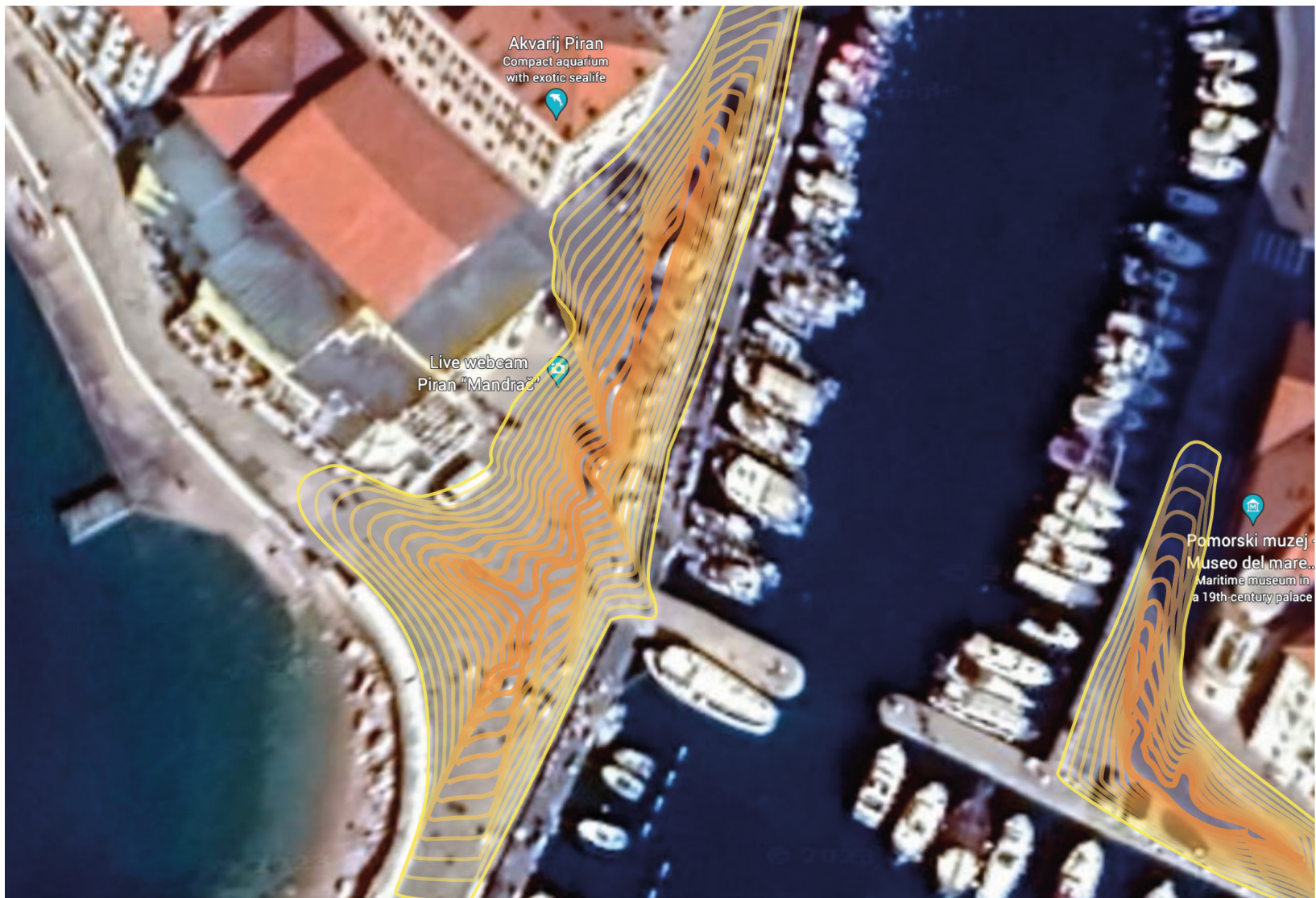


Fig. 43. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

Fig. 44. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

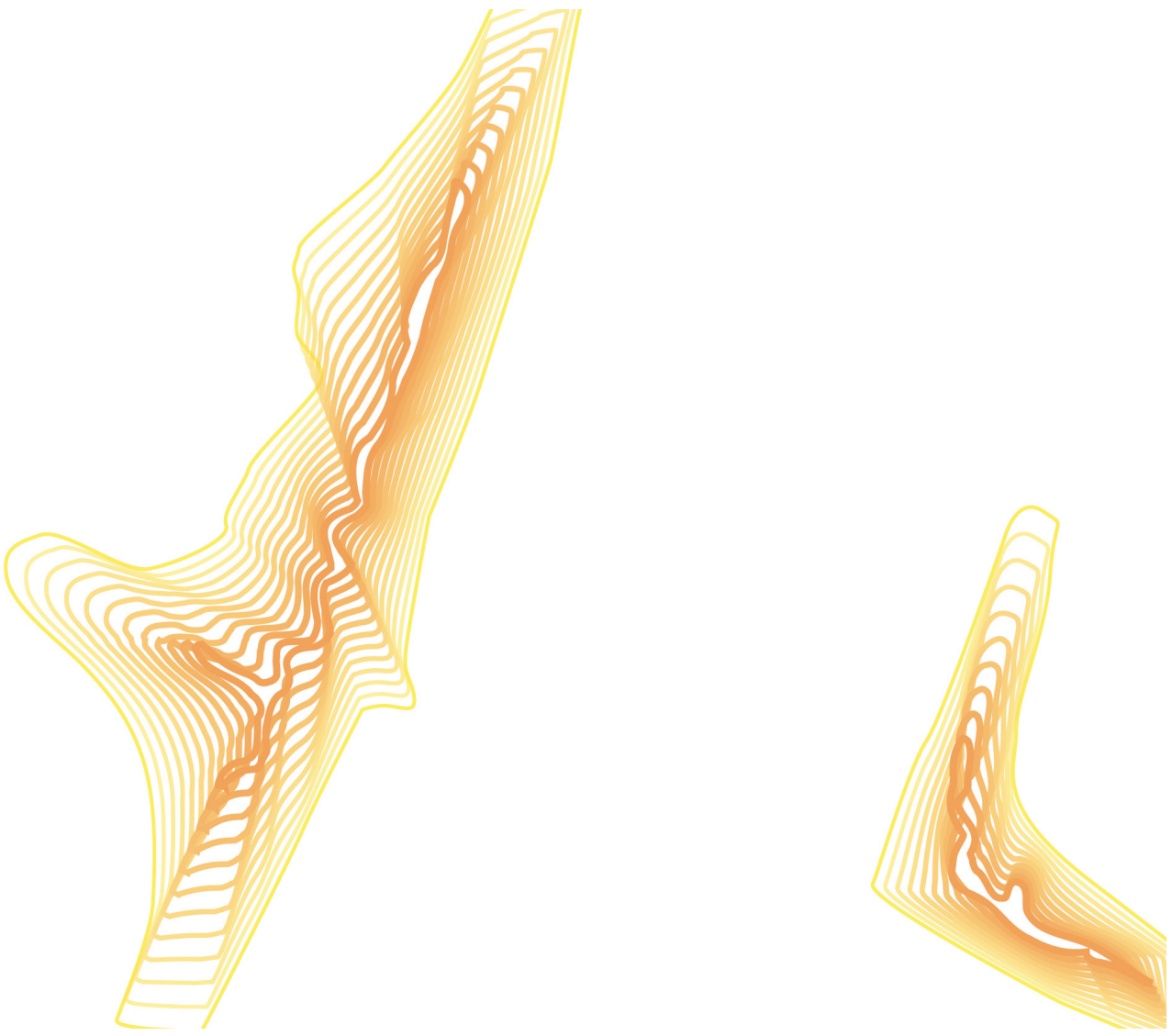




Fig. 45. Map, Temperature Analysis of the Site



Fig. 46. Picture, lavender seller, 2023



VINEYARDS OUTSIDE DUINO-AURISINA

Mattej Lupinic's farm is situated near Duino Auresina. His ancestors used to be farmers, but with the economic boom, his father decided to leave the uncertain life of the countryside to follow the dream of a secure career in the town. He told us that his choice to return to agricultural work wasn't easy. But regardless of the obstacles he had to face, he also won significant awards for his wine. We find him gripped by despair. «The climate is changing, and many of us feel helpless.» The problem, he told us, **«is that agriculture and farmers are not valued enough in our society. In this extremely competitive market, we are left alone to find a solution to resolve the problems that climate change is giving us.»** From what emerges from the European platform, Climate Adapt: **«The agricultural sector is one of the main drivers of climate change, emitting methane (CH₄), nitrous oxide (N₂O) and carbon dioxide (CO₂), mainly related to land use, fertiliser application and livestock production.»**¹⁴

Fig. 47. Satellite Picture of the Lupinic vineyards, 2023



Fig. 48. Picture, A Journey Through the Crapes, 2023

Monoculture is the practice of growing one crop species in a field at a time¹⁵. However, **researchers have evidenced the limits of this kind of organisation and its impacts on climate change; it is still the most used worldwide way of organising agricultural land.** It is still seen as the only possible way to produce and sustain the growing population in the world efficiently. Mattej explained to us that **he can't afford to change the way of organising the vineyards without risking being unable to be any more competitive in the market.** The working time for his employers can't change much because although the temperature is rising more, the sun is essential in the work because they have to be able to see. Electricity would be too complicated and expensive to implement. To make some implementations in his field, he would need funds and support from the State. The support that he needs should not be only to receive some money to build an agrovoltaic facility or to sponsor tourism in the area. **What is required is that agriculture and agriculture should**



Fig. 49. Picture: Mattei's Perspective on Climate Change, 2023

be at the centre of our political life, and therefore, the support should go in the direction of helping the farmers to have a decent life.

For this reason, whoever wants to talk about climate change should address the corporations exploiting farmers' work, buying raw materials at ridiculous prices and reselling them for four times more. **«Capitalism is the problem of climate change.»** He then adds, «Until our states promote this economic system, we cannot change our production method.»

¹⁴ Agriculture — English (europa.eu)

¹⁵ Pandey, D.K; Adhiguru, P; De, H K; Hazarikaa, B N (2021). "Permaculture to monoculture in shifting cultivation landscape of Mizoram, Northeast India: Are agrobiodiversity and happiness waning?" (PDF). Indian Journal of Traditional Knowledge. 20 (2): 479–485 n15

¹⁶ Priorities 2019-2024 (europa.eu)

¹⁷ The European Green Deal (europa.eu)



Fig. 50. Satellite Picture of the Parking Lot of Koper

Fig. 51. Sketch, Analysis of the exposure of the Site on Satellite Picture, 2023

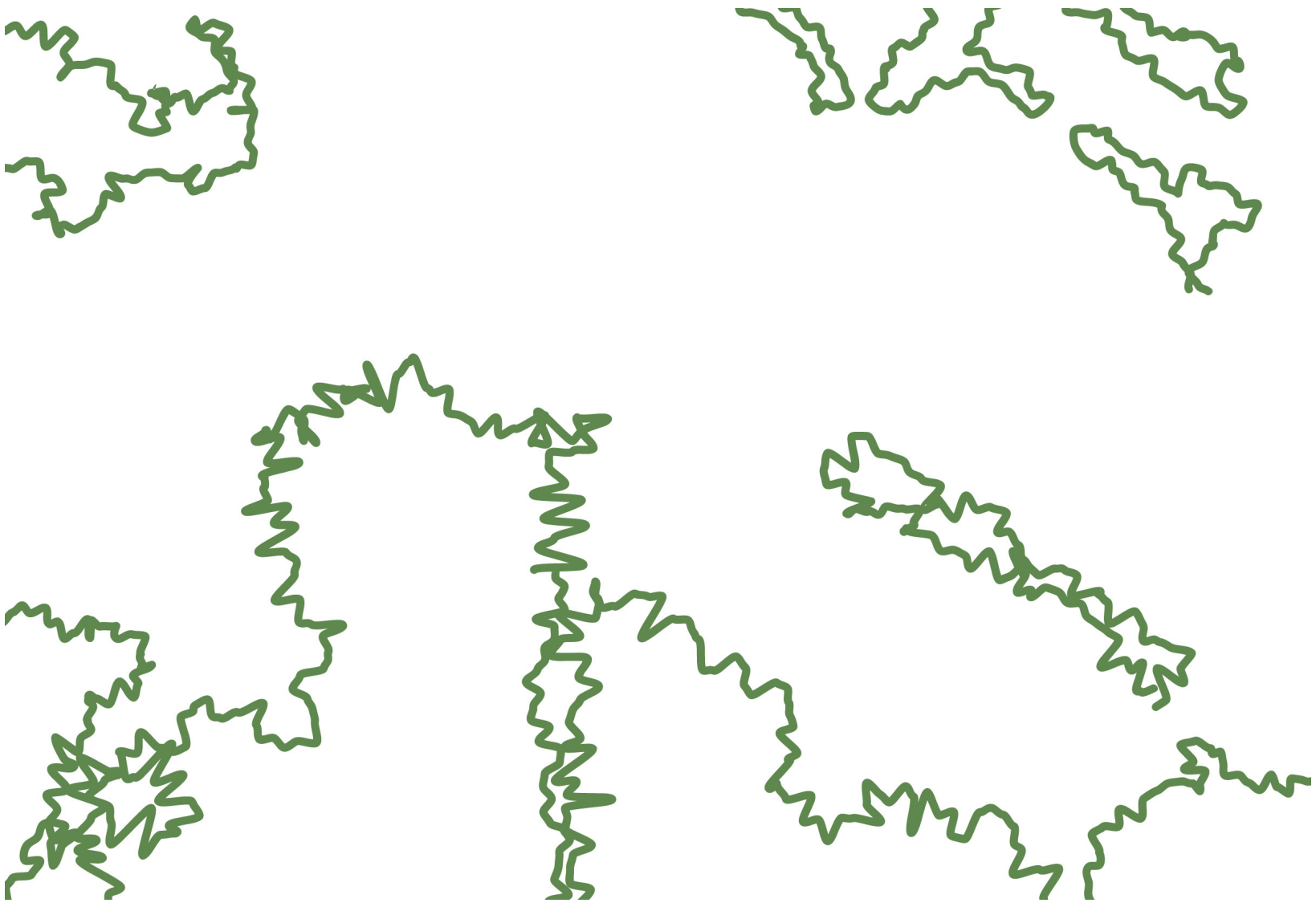




Fig. 52. Map, Temperature Analysis of the Site



Fig. 53. Picture, When Agricultural Lands Face the Heat: A Battle of Resilience and Resourcefulness, 2023

LEGAL FRAMEWORK

Many policies, both at a national level and in a European one, tackle the issue of climate change and provide legislative support to workers' rights. In this section, we will briefly present the most poignant ones and analyse which are the implications for employers and employees.

EUROPEAN GREEN DEAL

The European Green Deal is one of the European Commission's priorities for 2019-2024¹⁶. **The ultimate goal of this set of policies is to reduce the European net greenhouse gas emissions by at least 55% by 2030¹⁷**. To achieve his ambiguous goal, the commission published a handbook to guide local governments toward a more sustainable development. More precisely, the Handbook «gives local and regional authorities (LRAs) **guidance in implementing the Green Deal on a local and regional level**. It provides assistance in finding the right measures to deal with the hazards of climate change. It offers guidance regarding case studies, financial aid and technical assistance in the fields of adaptation, renovation wave and biodiversity.»¹⁸ In the document drafted for Italy, under the section “Discover how to Manage with Higher Temperature”, we have found a list of strategies of adaptation with useful links to get information for

European funds and a series of practical examples that had worked out in Europe. This document does not directly tackle the issue of working under extreme temperatures but addresses how to monitor vulnerability. In this regard, it favours «**early warning systems include detection, analysis, prediction and warning dissemination, followed by response decision-making and implementation.**»¹⁹

Unfortunately, the online forecast called EuroHeat to assess vulnerability to high temperatures is not functioning anymore. However, there are other kinds of tools to provide technical assistance to local governments, such as the Copernicus Climate Change Service, National Adaptation Platforms, City Networks and many other platforms. Among their strategies, they also favour the **adaptation of insurance**, which would help in risky areas to secure the population and, therefore, «foster economic and social stability»²⁰. **Through insurance, the risk can be allocated to private services, but in the case of safety in the working space, it doesn't eliminate the threat of harming the worker's life.**

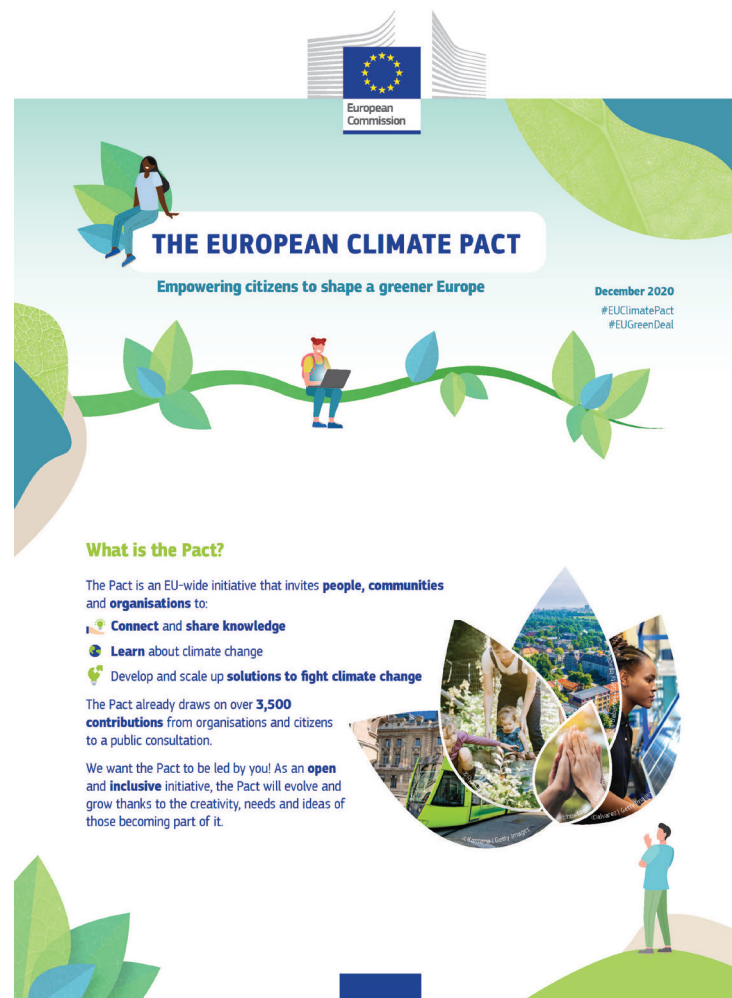


Fig. 54. Book Cover, The European Climate Pactness, 2023

LA STRATEGIA NAZIONALE DI ADATTAMENTO AI CAMBIAMENTI CLIMATICI (SNAC)

The National Climate Change Adaptation Strategy was enacted in 2015, following in the footsteps of the Guiding Principles for Adaptation to Climate Change in Europe report in 2010²¹. The plan stems from the need to combine and implement a strategy across the various plans implemented by the Ministry of Health and the Ministry of Agricultural Food and Forestry Policies. The end of **this document is to give a national overview of how to address problems related to climate change and mitigate the level of risk from a health and economic perspective**. In the chapter “Climate and Health: Risks and Impacts, Determinants Environmental and Climatic Weather”, they enunciate: «In addition to the elderly, children and susceptible individuals, vulnerable groups include also include outdoor workers, the socio-economically disadvantaged, urban economically disadvantaged, residents in urban, urban-coastal

and hydrogeological risk areas hydrogeological risk.»²²**Despite mentioning outdoors workers, there isn't in this plan any strategic point that addresses this kind of vulnerability.**

¹⁸ GDGL Campaign: Handbook

¹⁹ *ibidem*

²⁰ *ibidem*

²¹ Guiding principles for adaptation to climate change in Europe ETC/ ACC 22 Technical Paper 2010/6 — Eionet Portal (europa.eu)

²² SNAC

²³ *ibidem*, See chapter A.3, p. 47

PIANO NAZIONALE DI ADATTAMENTO AI CAMBIAMENTI CLIMATICI (PNACC)

The PNACC is Italy's National Plan for Adaptation to Climate Change. It was created earlier this year (2023) and comprehends **a strategic framework outlining Italy's approach to climate change impacts**. It considers the findings from the European Climate Impact report and serves as Italy's specific response to the challenges identified. Great emphasis is placed on tools to implement a climate change adaptation plan at the regional level²³. The adaptation plans should mediate between the macro level of national policies and the local administrations. In further terms, while they have to be coherent with National and European Plans, they must also be situated in the local specificity. Fundamentally, it is to involve the different stakeholders during the planning process. They argue that it will be easier to monitor the implementation of the plan by **opening up the planning process** because accountability will be shared among

different categories. Additionally, the plan provides a practical tool to follow up on the adaptation status by setting a list of markers to evaluate the level of vulnerability and control the implementation level²⁴. Although this document doesn't directly tackle our issue, we can extrapolate a set of tools needed for a planning proposal.

ITALIAN NATIONAL LAWS FOR THE PROTECTION OF EMPLOYEES

Regarding our topic, heat waves, in Europe, there is no EU-wide specific law on heat protection for workers. Several European countries²⁵ have national laws and regulations that address working conditions during hot weather. These may include requirements for adequate hydration, rest periods, protective clothing, and measures to reduce exposure to extreme temperatures. In Italy, several laws and regulations regulate risks in the workplace. The specific regulations differ depending on the

industry and the nature of the work. Here are some key Italian laws and guidelines that address heat-related risks:

- 1. Legislative Decree 81/2008 (Testo Unico sulla Sicurezza):** This is Italy's primary legislation governing occupational health and safety. It includes provisions related to risk assessment, protective measures, and the employer's duty to ensure their employees' well-being, including, in our case, protection from extreme temperatures. «It also envisages **the elimination of risks and, where this is not possible, their reduction to a minimum in relation to knowledge acquired on the basis of technical progress.**»²⁶ Although it provides a broad legal framework to protect workers' rights, there is no mention of the risk due to rising temperatures and phenomena such as heat waves.
- 2. Project Workclimate:** this project results from the collaboration between the National Institute

for Insurance against Accidents at Work (INAIL) and various research groups. They have exposed their analyses to « **assess the impact of extreme thermal conditions (heat and cold) on the incidence of accidents in the world of work.**»²⁷ They also provide specific guidelines to prevent workers' bodies from overheating and practical implementations that employees should follow to avoid risk²⁸.

In addition to these, there are laws in the Italian Constitution that protect labour. In particular:

Articolo 35

The Republic protects work in all its forms and applications.

It provides for the training and professional advancement of workers.

It promotes and encourages international agreements and organisations aimed at affirming and regulating labour rights.

Art 41

The private economic initiative is free.

It cannot be carried out in conflict with social utility or in such a way as to harm health, the environment, security, freedom and human dignity.

The law determines the appropriate programmes and controls so that public and private economic activity can be directed and coordinated for social and environmental purposes.

²⁴ See chapter C.2.2, p. 121

²⁵ See this article about Spain: Extreme heat is forcing outside workers to shift their hours | World Economic Forum (weforum.org)

²⁶ Capo III, Gestione della prevenzione nei luoghi di lavoro, Sezione I, MISURE DI TUTELA E OBBLIGHI, Art. 15, Misure generali di tutela, section c

²⁷ Citation from: IL PROGETTO WORKCLIMATE E LA PIATTAFORMA PREVISIONALE DI ALLERTA PER LA VALUTAZIONE DEI RISCHI LEGATI ALL'ESPOSIZIONE AD

ALTE TEMPERATURE IN AMBITO OCCUPAZIONALE, 2022. See also their website: Workclimate | Clima Lavoro Prevenzione

²⁸ See also from Workclimate the "Decalogue for the prevention of Heat-Related Illnesses in the workplace- information for employers".

PROBLEMS OF POLICY AND FUTURE PLANNING **IMPLEMENTATION**

As evidenced in the previous chapter, there is a large variety of policies and regulations at a legislative level that should guide national and local governments in shifting towards a more sustainable economy.

Although research has broadly exposed the risks outside workers face with climate change and high temperatures, a specific policy to protect workers has yet to be created. Thus, even if there was a particular law, the question of how to implement it will remain open.

There can be various challenges in the process of implementing policies and guidelines related to heat-related risks in the workplace. The main ones can be summarised in these focal points:

-Resource Constraints: As Matěj Lupinić evidence, **small enterprises need resources to make structural**

changes to their activity. In particular, adequate resources for providing cooling facilities, protective clothing, and training on heat stress may be lacking.

-Monitoring systems: Even when regulations are in place, enforcement can be inconsistent. Insufficient **inspection and monitoring** by regulatory authorities can lead to non-compliance without consequences.

-Lack of Awareness/ Being blind to the evidence: Many workers and employers may need to be fully aware of the specific laws and guidelines to address heat-related risks. This lack of awareness can lead to non-compliance. As Klinber's argues:

«**Heat waves receive little public attention not only because they fail to generate the massive property damage** and fantastic images produced by other weather-related disasters, but **also because their victims are primarily social outcasts**—the elderly, the poor, and the isolated—from whom we customarily turn away.»

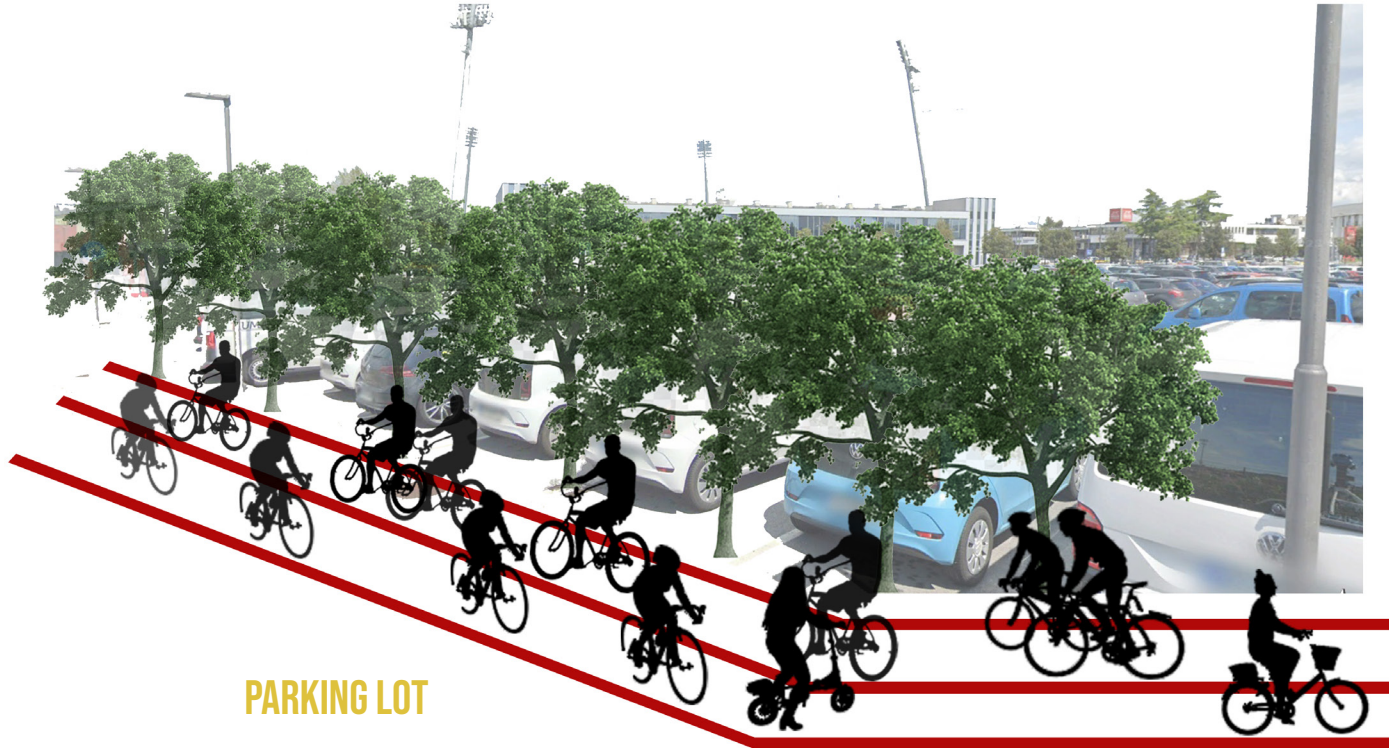
Therefore, we have to understand that the problem of not addressing the safety of vulnerable workers under extreme heat conditions also stems from their marginalisation from public debate.

-Need to have more **specific strategies for each different industry and sector.** They may face unique challenges in implementing heat-related guidelines. For example, agriculture and construction may have additional requirements and difficulties managing heat stress.

²⁹ Klinenberg, Eric. (2003). Heat Wave: A Social Autopsy of Disaster in Chicago. Bibliovault OAI Repository, the University of Chicago Press. 10.7208/chicago/9780226026718.001.0001, p.17.

FUTURE PLANNING IMPLEMENTATIONS

Workclimate Risk has been publishing many valuable documents on the matter. Specifically, they have drawn up guidelines for preventing heat-related illnesses in the workplace. We could translate their points into planning implementations from this document and the interviews we made. We have represented them in collage formats. Here, you can see two examples taken from our case studies.



PARKING LOT

In the parking lot, it is observed that cars are exposed to extreme heat especially in the afternoon and getting hotter all day long. That is why drivers are also exposing hot and overwhelming areas in the car when they come to take their vehicles. Other than drivers, people walking through parking lot as pedestrians are experiencing extreme weather conditions because of the absence of green areas, especially big trees that can create shades.

Fig. 55. Future Implementation Collage for the Parking Lot, 2023

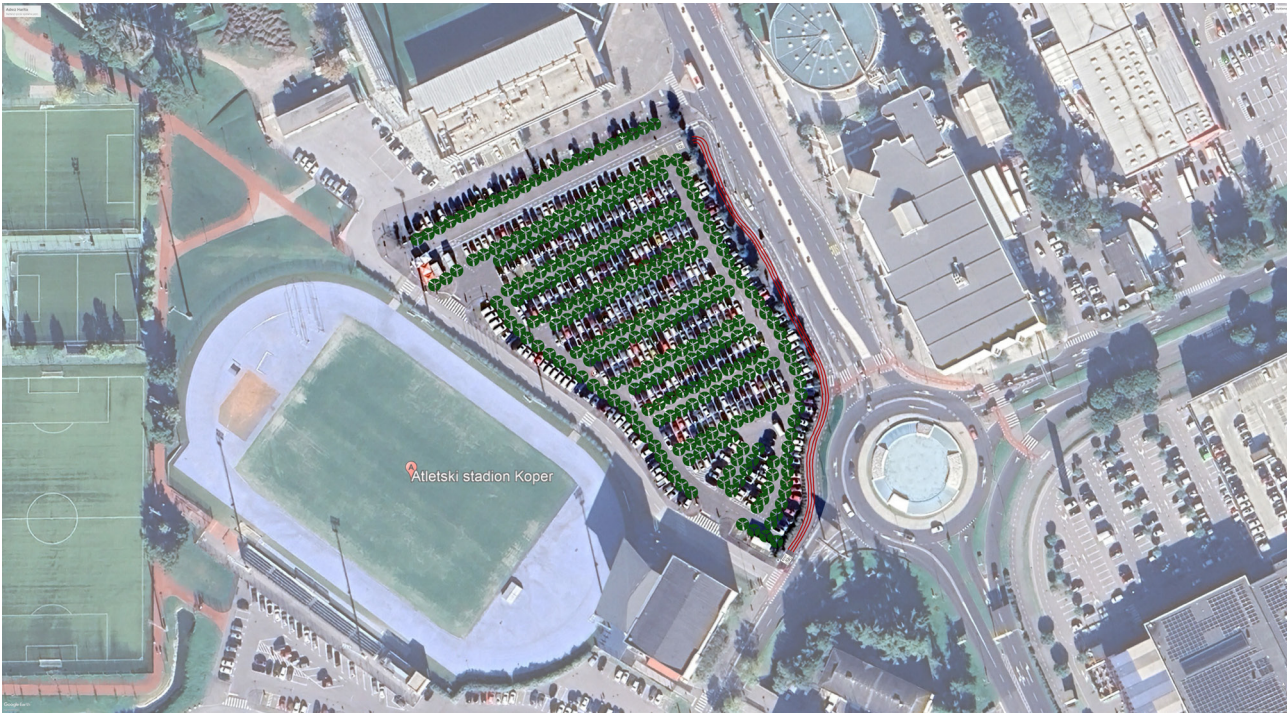


Fig. 56. Future Implementation Collage for the Parking Lot, 2023

That is why, as a feasible implementation, it is proposed that providing more greenery in the area and incentivizing public transport. Moreover, offering a bicycle road is another proposal to decrease the use of motor vehicles.



LOGISTIC CENTRE

Logistic center is an area where workers are exposed to sun and extreme weather conditions because there is not any area where workers can go and relax during the peak hours or breaks. Exposing heat waves every-day is quite difficult for workers. That is why proposing gazebos and greenery may help workers for these extreme weather conditions. Gazebos and

Fig. 57. Future Implementation Collage for the Logistic Center, 2023

green spaces are feasible implementations that would give space for workers to refresh and pause during the peak hours or breaks.



Fig. 56. Future Implementation Collage for the Logistic Centre, 2023

CONCLUSIONS

Outside workers are the first ones to face the most serious effects of climate change. Either they work in the landscape of a city or the fields in a rural area. With this small contribution, we wanted to evidence their everyday hustles and underline their agencies. We have learned from their stories about the land that we crossed on foot, about the significant historical events that took place in this land that cross not only borders but also ideologies. Despite many studies showing the correlation between heat and severe illness, there aren't specific policies addressing the problem. As Klinberg argues any "natural" emergency has to be situated in the social geography and political economy of the site³⁰. The legislative gap contributes to making these workers vulnerable to climate change. As Mattej said, the problem is capitalism. The free and competitive market exacerbates the precarious conditions that our interviewees have to face.

As urban planners, architects, and scholars, we must question our roles and expertise. We had the chance to learn about the territory through the people's eyes. It would be just performing greenwashing if the plan for these territories comprehends only some trees here and there. There could not be some individual solutions to a collective problem. We need to understand that the vulnerability of these workers is a result of the absence of policies and actions to protect workers' lives. Thus, we must also understand how to make employees follow the present regulations. In the competitive global market, can a worker stop for fifteen minutes every hour to rest and cool down? Our planning implementation, therefore, makes sense only if the rhythm of the world adapts to the climate change crisis, only if the singular perspectives of our interviewees can be understood as a social body with claims but especially also with rights.

³⁰ Klinenberg, Eric. (2003). Heat Wave: A Social Autopsy of Disaster in Chicago. Bibliovault OAI Repository, the University of Chicago Press. 10.7208/chicago/9780226026718.001.0001, p.21

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