GUIDE BOOK

MAGICAL FOODSCAPE

A Guidebook For Re-planning The Cities Base On The Culture, Food And The Built Environment

PENSOFT

Edited by Xiwei Shen

WHAT IS THE RELATIONSHIP BETWEEN FOOD AND OUR CITY

GUIDE BOOK

MAGICAL FOODSCAPE

A Guidebook For Re-planning The Cities Base On The Culture, Food And The Built Environment

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PREFACE

Earth, agriculture, fishing, hunting and gathering ... The ways of acquiring food and also the factors dominating the settlements' landscape pattern in the primitive society, has been gradually replaced by industries like manufacturing, financial industry and service industry through thousands years of urbanization. Nowadays, "food" is no longer the priority factor for urban planning while urban pattern has a profound impact on the long-term development of catering. So, what is the relationship between food and our city?

Under the COVID-19 epidemic, the common problem faced by different countries and regions — food shortage, stimulates us to reflect on the place of food in urban life. Through our investigation on Shanghai, Xi'an, Wuhan and Chengdu, four cities that featured by different and distinctive food culture, exploration of the distribution pattern and potential of grain origin, delivery chain, processing chain and retailors in these cities, we intend to take urban green space as carrier to improve efficiency of food production, absorption and processing, alleviate food problems under social crisis and improve the city's ability to respond to social emergency.

The project was carried out by students from multiple cities in an online collaboration during the epidemic. Through the investigation and research on the culture, traditional cuisine and environment of four typical cities in China, we explore the significance and role of cuisine in the development of different cities and put forward corresponding planning Suggestions.

We have written manuals and have shared our results through websites, offline interviews and so on. We look forward to more offline publicity in the wake of the outbreak to help more people understand what Magical Foodscape means to the city.

MAGICAL FOODSCAPE

A GUIDEBOOK FOR RE-PLANNING THE CITIES BASE ON THE CULTURE, FOOD AND THE BUILT ENVIRONMENT

CONTENTS

CHAPTER 1

CHENGDU FOODSCAPE HIGH-EFFECT CITY PLANNING

CHENGDU, CHINA

CHENGDU, the birthplace of Sichuan cuisine, has three types of cuisine, hot pot, skewers, and teahouses, which are well-known all over the world, but they also face serious waste in the production, transportation, and consumption.

With the goal of **"Anti-waste" planning**, we deeply explore the inherent advantages of Chengdu cuisine, create a new food evaluation system, and combine the highly dynamic urban texture of Chengdu 's river channels to define the potential patch strategy along the river and design it for a highly effective food city Provide a base.

Based on data extraction along the river value space, the concept of **Blue-green symbiotic gourmet corridor** is proposed.

The purpose is to make comprehensive use of the public space on the river and both sides of the river, and to combine idle space to form a landscape corridor with Chengdu cuisine as the link.

Based on the **Three main strategies** of landscape-driven efficient use of urban space, efficient food circulation and efficient cultural communication, it explores how food can help the future development of **high-efficiency cities**.

CHENGDU FOODSCAPE HIGH-EFFECT CITY PLANNING

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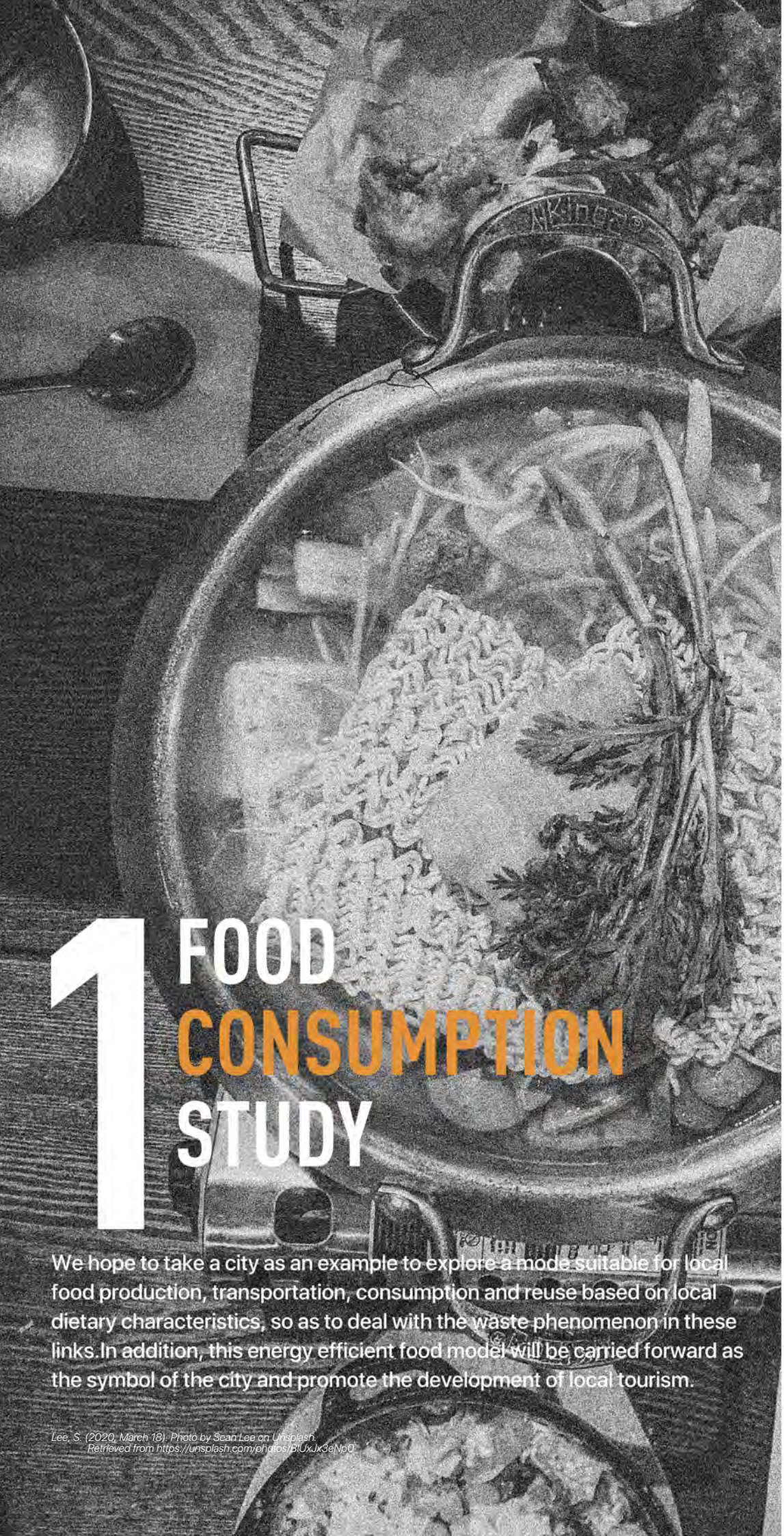


1 FOOD CONSUMPTION STUDY

We hope to take a city as an example to explore a mode suitable for local food production, transportation, consumption and reuse based on local dietary characteristics, so as to deal with the waste phenomenon in these links.In addition, this energy efficient food model will be carried forward as the symbol of the city and promote the development of local tourism.

Lee, S. (2020, March 18). Photo by Sean Lee on Unsplash. Retrieved from https://unsplash.com/photos/BlUxJx3eNp0

PREFACE
SOMETHING ABOUT FOOD WASTE

China is a country with a vast territory and a large population. Such characteristics give birth to a rich and colorful food culture.

China's economic development is also closely linked to the sales volume of the catering industry. The annual income of Chinese urban and rural residents has increased significantly, and the retail sales volume of the catering industry increased from 8 billion yuan in 1980 to 1.8 trillion yuan in 2009. In the five years from 2007 to 2011, at the height of the global financial crisis, restaurant revenues grew at a steady annual rate of about 14 per cent, according to the office for national statistics.

However, with the continuous development of catering industry, the improvement of people's consumption level and the change of consumption concept also make the amount of food waste increase greatly. China's consumers only in the medium - sized restaurants above the food consumption, every year at least about 200 million people a year of food or rations; At least 30 million people a year can be fed by the food thrown out every year in all kinds of schools and collective dining halls above the unit size. Every year, Chinese individuals and families may waste about 11 billion kilograms of grain, equivalent to 15 million people's annual rations.

But the food that our country wastes on table is far from waste all, in the link outside table - farmer stores grain, storage, transportation, processing and so on respect, the amount of food that our country wastes is likewise astonishing.

Food security is an ongoing challenge for our country and the world.While agricultural production is an important part of responding to growing food demand, more attention should be paid to reducing food loss and waste across the supply chain. From professor Liu Gang's research[1], it can be seen that the loss in the food supply chain has the following aspects:

Stockpiling *- the biggest contributor to post-harvest food losses is stockpiling.Decentralized, small-scale agriculture is the main cause of grain loss in the storage stage.China's grain stocks exhibit a distinct pyramidal structure.*

Processing *- only a small portion of food in China is currently processed industrially, and food is processed and marketed inefficiently.*

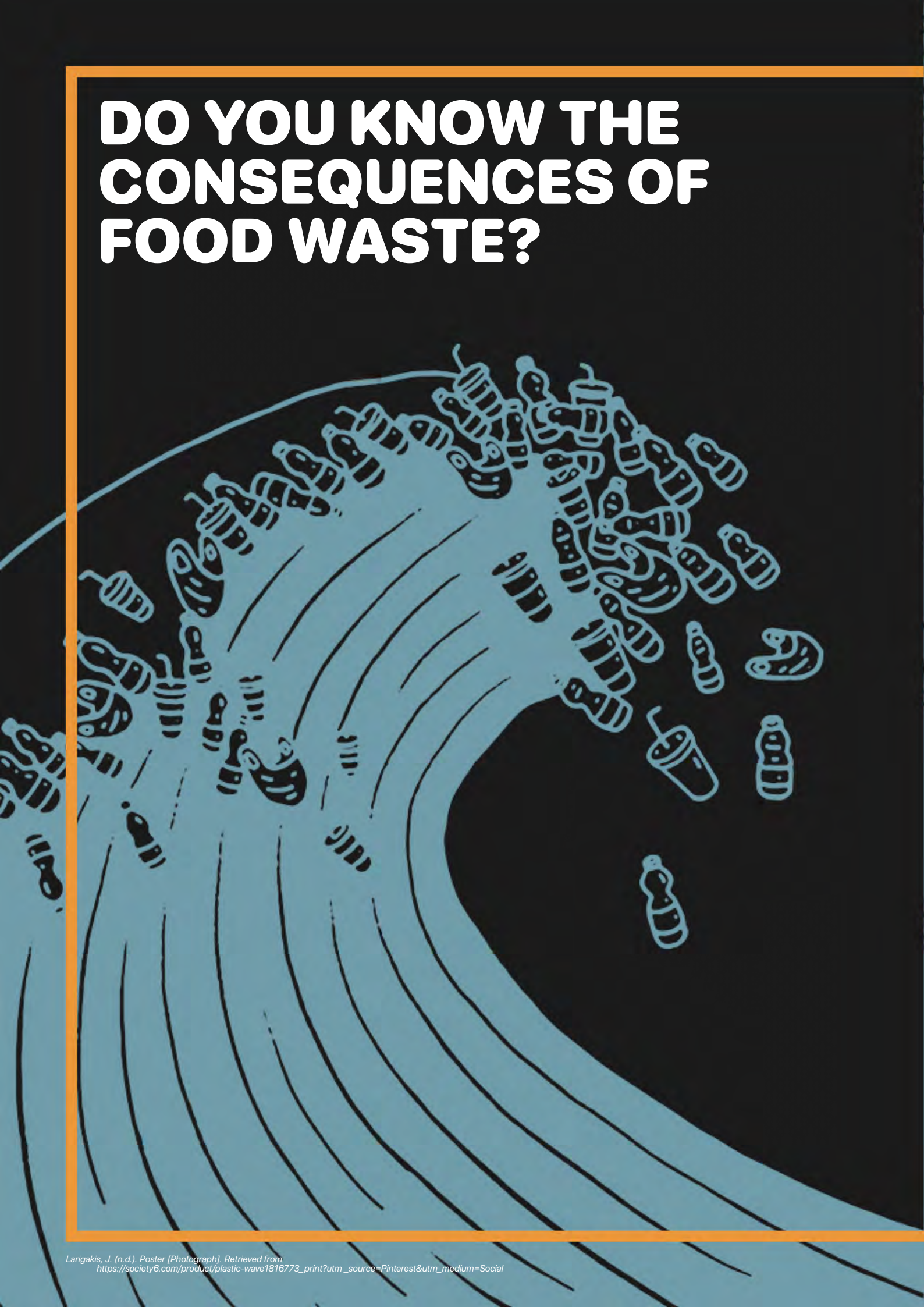
Distribution *- losses in the transport and distribution phases are mainly due to the lack of widespread mechanisation of bulk transport, such as the fact that most food is bagged, unloaded and transported by hand.*

Consumer waste *- China wastes 5.5 million tons of food per year from household sources, well above the world average.Eating out is even more wasteful, with a 2011 study by China agricultural university showing that 28.3 percent of all meals and beverages are wasted. Preliminary estimates put the amount of food wasted at the consumer level at 5 million tons a year, and the number will continue to increase.*

It is not just the shortage of food resources that comes with food waste. There are also environmental problems, such as water shortage, soil degradation, energy consumption and the spread of diseases.

1. Liu, G. (2014, April 03). Food Losses and Food Waste in China: A First Estimate, by Gang Liu. Retrieved May 24, 2020, from https://ideas.repec.org/p/oec/agraaa/66-en.html

DO YOU KNOW THE CONSEQUENCES OF FOOD WASTE?



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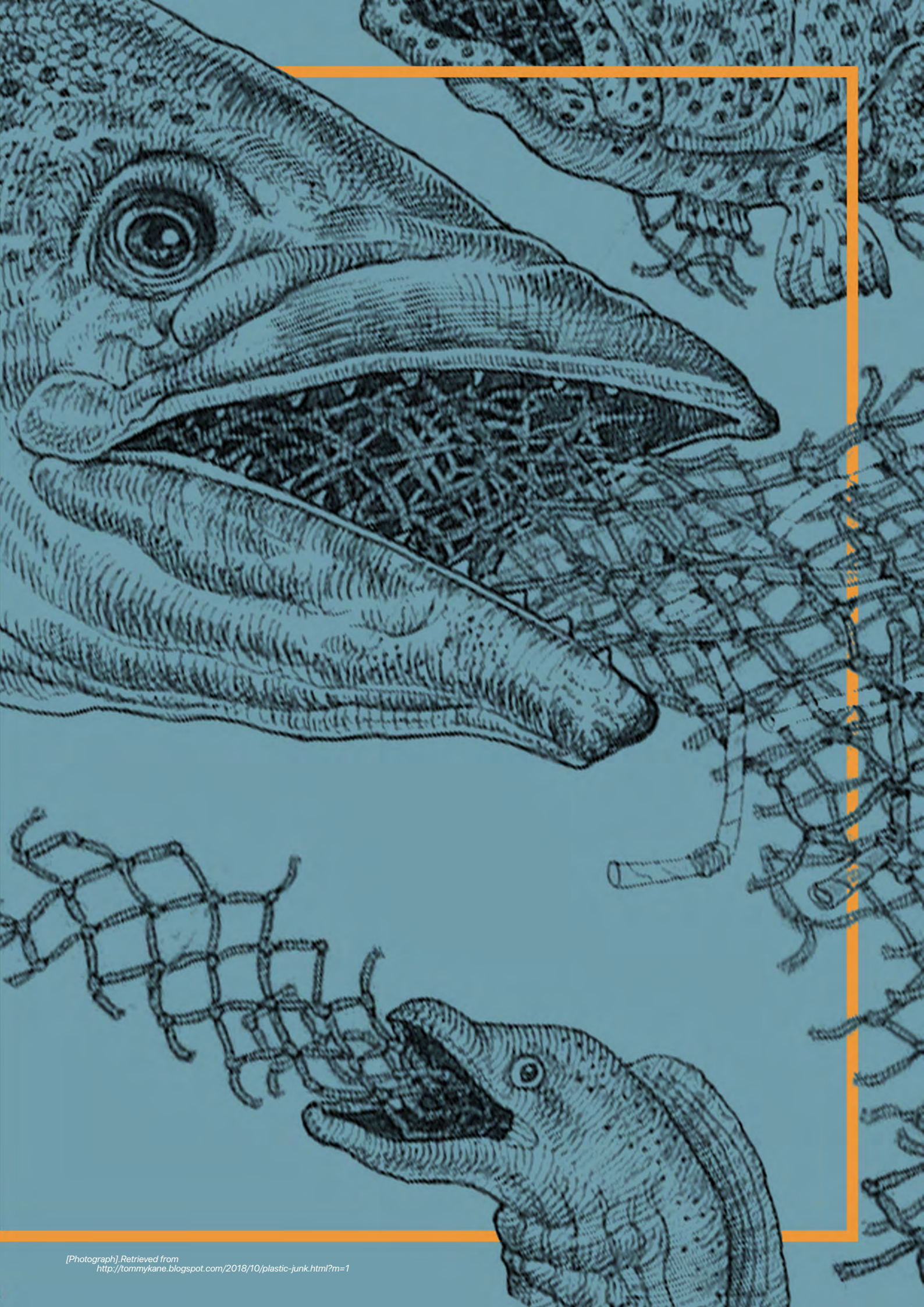


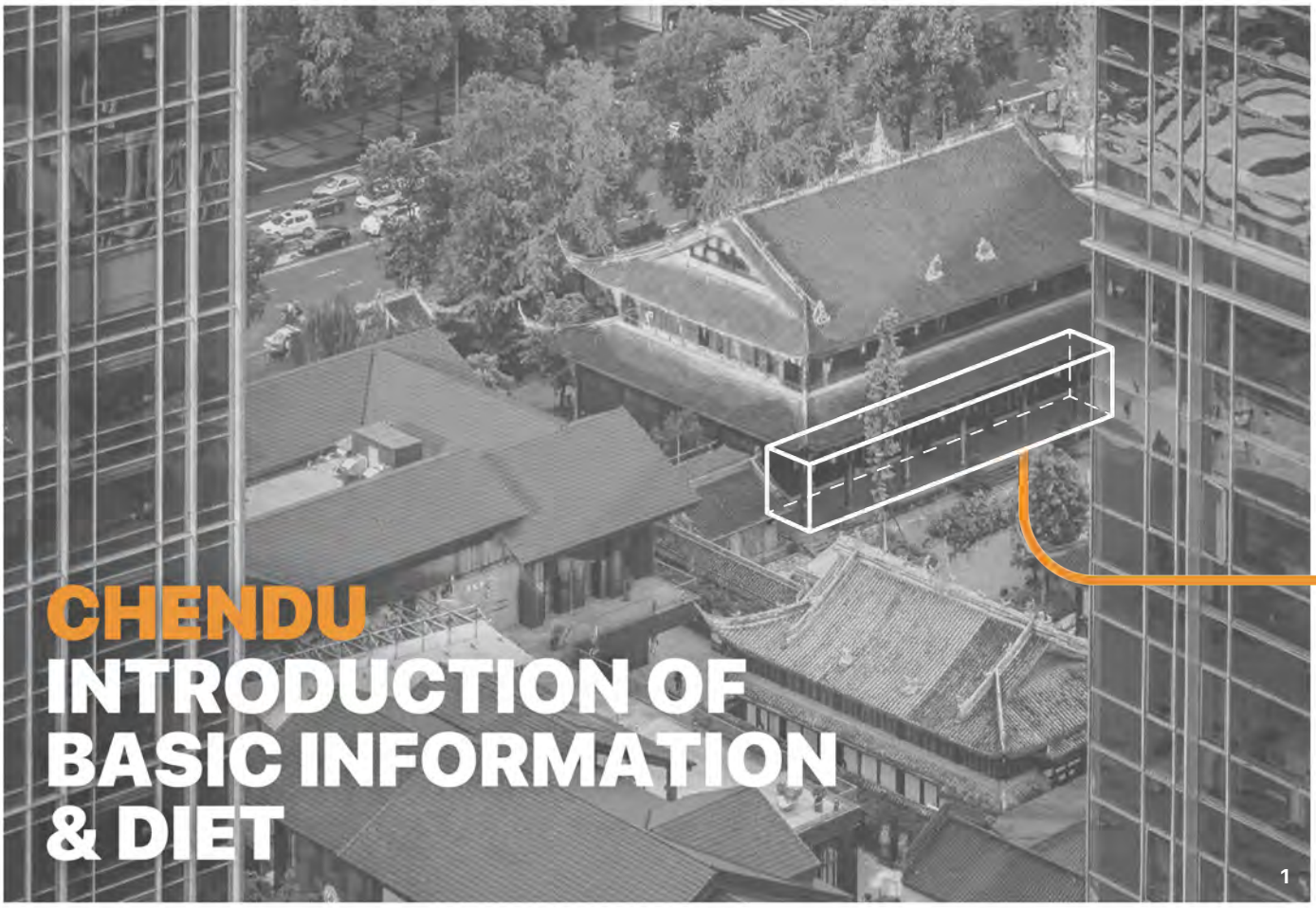
[Photograph].Retrieved from http://tommykane.blogspot.com/2018/10/plastic-junk.html?m=1

手指断了 a. (n.d.). Chengdu [Photograph]. Retrieved from https://weibo.com/niehuizheng?is_all=1

成都 CHENGDU

Chengdu is located in the hinterland of southwest China, western sichuan basin and chengdu plain, with flat terrain, river network, rich products and developed agriculture, and a subtropical monsoon humid climate.

This climate gave birth to a cuisine characterized by "spicy" cuisine: si-chuan cuisine. This distinctive diet pattern has also greatly promoted the development of tourism in chengdu. In particular, hot pot in sichuan cuisine accounts for 40.9 percent of online orders in all categories of catering. Other food and beverage, such as incense and tea, also play an important role in the local food culture.At a time when food consumption is a growing share of the economy, chengdu's tourism industry is growing at an annual rate of 11.2 percent, making it China's fifth-fastest growing tourist industry. But at the same time, such opportunities bring many challenges. How to solve the environmental burden caused by excessive consumption and waste of food is the challenge faced by Chengdu.



CHENDU
INTRODUCTION OF BASIC INFORMATION & DIET

1

1. 朱毁毁 . (2019, May 16). 成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mjfU

Chengdu is a rapidly developing city where tradition and innovation blend harmoniously, which is very beneficial for it to become a characteristic tourist city.

Chengdu is known as the hometown of pandas and a foodie's paradise. Thanks to its beautiful environment, numerous delicacies, unique tea culture and modern economic construction, the tourism industry here ranks the fifth in the world with an annual growth rate of 11.2%

In 2019, the permanent population of chengdu was 16.581 million, among which, the permanent population of urban areas was 12.3379 million. Chengdu has a permanent floating population of 4.37 million and more than 200 million visitors.

>200 M
VISITORS PER YEAR

TOURISM MARKET

>16.58 M
CHENGDU PERMANENT POPULATION

POTENTIAL CONSUMERS

2

2. Wang, S. (2019, August 22). Photo by Stan Wang on Unsplash. Retrieved from https://unsplash.com/photos/fFO5DsFV5gk

1

TEAHOUSE

The lack of forest wood in the chengdu plain, high prices and inefficient burning of stalks mean that people will go to tea houses to buy boiled and hot water, or even to boil medicine and stew meat.

But as society has changed, hot water is no longer a scarce resource. At the same time, the "sense of public" and "sense of community", which are the basis of teahouses, are dying out. The objective "teahouse atmosphere" has disappeared.

HOTPOT CONSUMPTION

Hotpot belongs to sichuan cuisine and is the representative of chengdu cuisine. It achieves the diversification in the food material variety, coupled with dozens of different flavor dishes, can meet the needs of different customers.

FOOD WASTE

The World Wide Fund for Nature released a report on food waste in Chinese cities: people waste 93 grams of food per person, the maximum for chengdu is 103 grams per person per meal.

12 BILLION RMB ANNUAL HOTPOT CONSUMPTION

CATERING MARKET

WASTE DURING CONSUMPTION

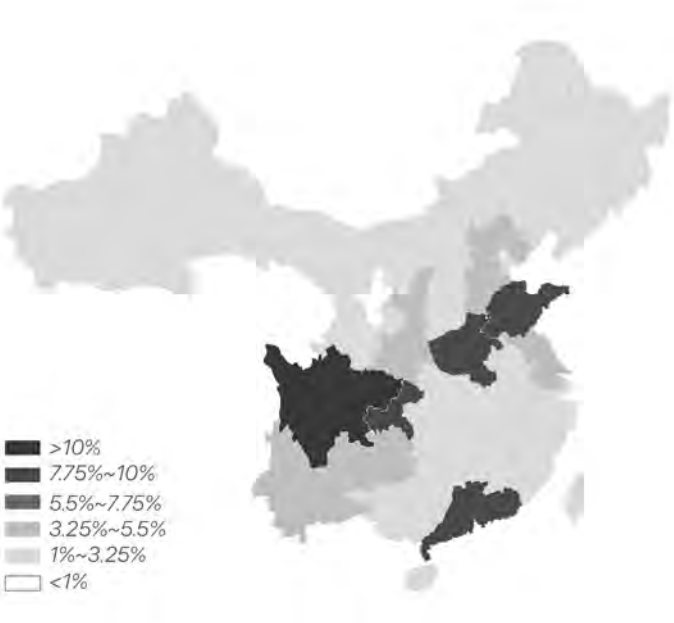
ORGANIC WASTE

83.14 G FOOD WASTE PER PERSON PER MEAL

1. 打卡成都最著名的百年老茶馆，在茶香中遇见老成都味道_盖碗茶 . (2020, February 20). Retrieved from https://www.sohu.com/a/374422330_396605

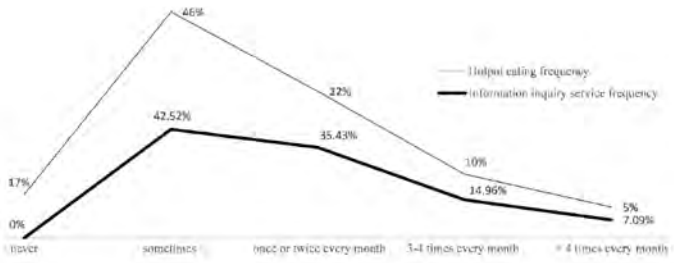
FOOD | HOTPOT

INTRODUCTION OF HOTPOT & ITS DEVELOPMENT POTENTIAL



It is often said in China that there is no food better representative of the Chinese love of excitement and reunion than hot pot. Because the cooking method of hot pot is very simple, it is suitable for group cooking.

The map shows the percentage of hotpot restaurants in each province in 2018. According to the chart, sichuan has the highest proportion of hotpot restaurants in China, more than 10%. Chengdu, the capital of sichuan province, has the largest number of hotpot restaurants, with more than 17,000.Therefore, chengdu is a good city to explore the potential of hotpot.



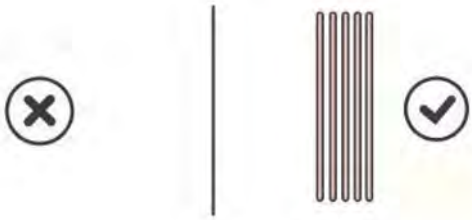
This chart shows how often people eat hotpot on average every month and how often they use the electronic ordering system at the hotpot restaurant.

It can be seen that most people go to hot pot restaurants once or twice a month and most diners use electronic ordering. Later hotpot improvements could consider allowing the Internet to get more involved.

In order to further develop the influence of hotpot, we studied the expectations of diners on various aspects of hotpot restaurants, among which taste is the most important factor in determining the popularity of hotpot restaurants.

In addition, creating a unique and comfortable dining environment is also a way to enhance the quality of hotpot restaurants through the landscape.

FOOD II
CHUAN CHUAN XIANG
RELATIONSHIP BETWEEN CHUAN CHUAN XIANG & HOT POT



Chuan chuan xiang is actually another form of hot pot. The ingredients are strung together with bamboo sticks, which are used by the staff to serve a variety of dishes, which are then purchased by the guests on a stick basis.

The difference between oils. Chuan chuan xiang is generally mixed with oil, and most hot pot multi-purpose butter.

Consumer positioning, chuan chuan xiang consumption: belongs to the public consumption, wage consumption, more young people, and the hot pot consumer group belongs to the working class above the diners, friends, family dinner, company, unit dinner, and so on, the price is higher than chuan chuan xiang.

1

Differences in eating patterns. Hot pot tends to be a way for diners to cook their own ingredients in a pot, while chuan chuan xiang can be cooked by staff and taken away in disposable containers.

1. [Photograph]. Retrieved from https://www.hatdot.com/meishi/3042910.html

Chuan chuan xiang & Hotpot Have the Potential to Reduce The Waste of Urban Resources

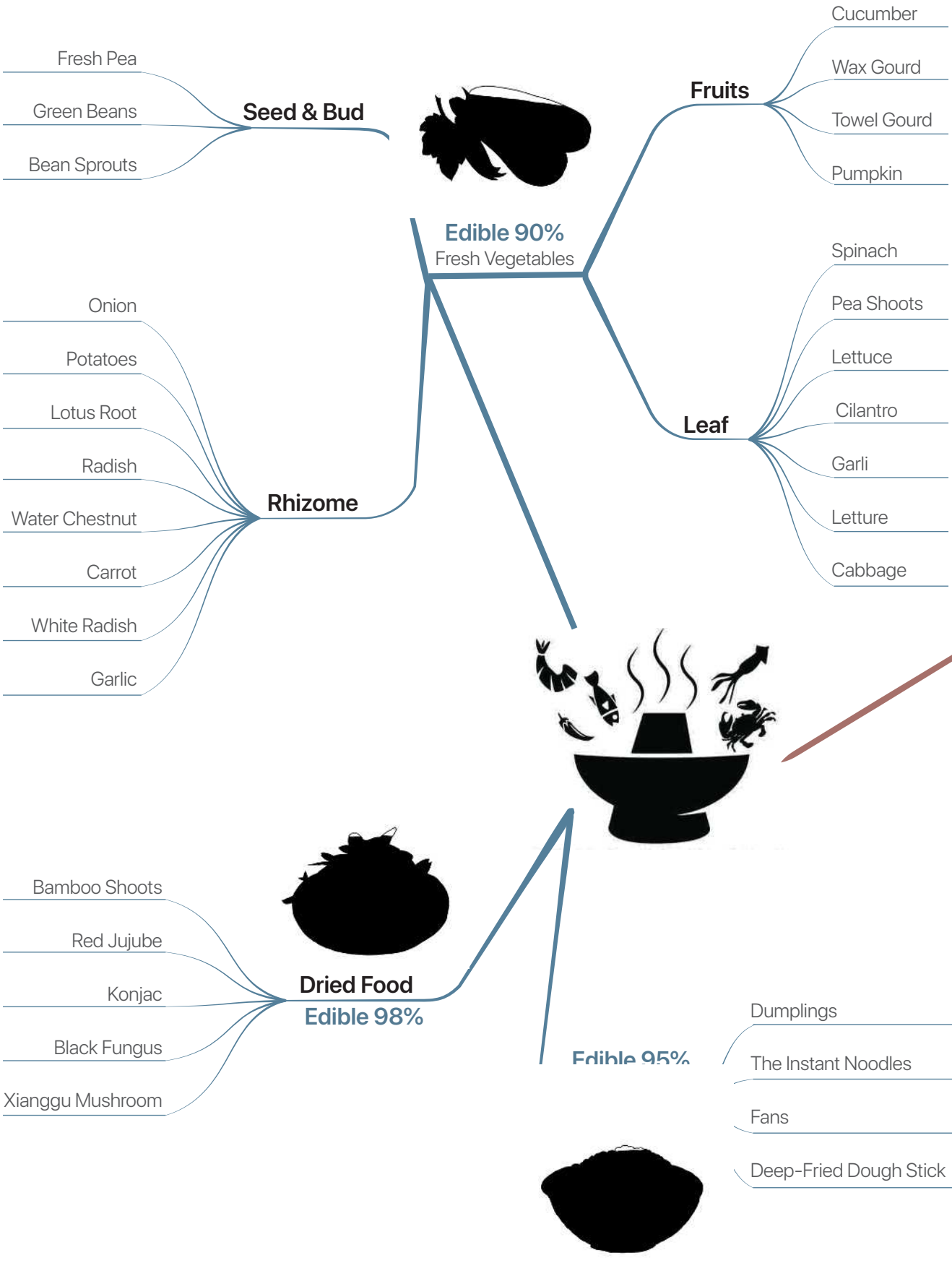
Sichuan cuisine and hot pot are popular among diners because of the variety of ingredients used in cooking. Can we use the abundant food materials in cities to reduce the waste of food, especially the offal of livestock to a greater extent, thus reducing the energy consumption and waste in cities? It can also reduce energy waste in processed foods.

2

2. 牛签签串串香 . (n.d.). [Photograph]. Retrieved from https://www.sohu.com/a/231980246_355437

THE PROCESSING RATE OF HOT POT & CHUAN CHUAN XIANG

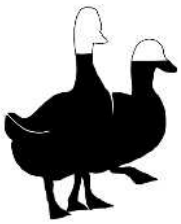
We will demonstrate the diversity of ingredients that can be processed in hotpot and chuan chuan xiang, and examine their existing production and consumption chain for food consumption to further reduce waste.



Meat

Poultry Meat

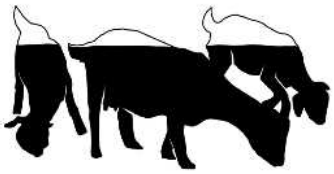
Edible 88%



- Chicken
- Duck
- Goose

Red Meat

Edible 75%



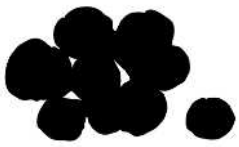
- Cow
- Sheep
- Pig

- Meat
- Edible Offal
- The By-Product
- Oil And Grease
- Bone

Marine Product

Edible 90%

- Crucian Carp
- Grass Carp
- The Carp
- Eel
- Loach
- Crab
- Shrimp
- Shellfish
- Hairtail
- The Sea Cucumber
- Cuttlefish Squid

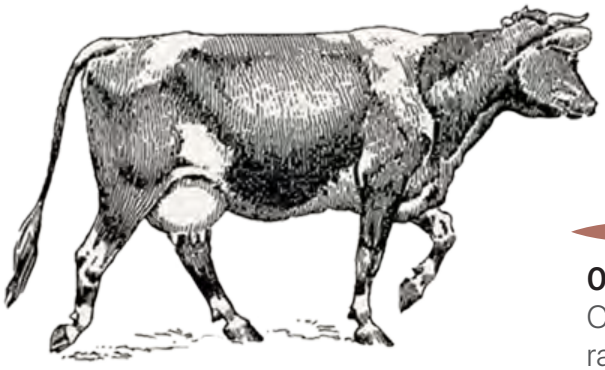


Edible 100%

- Sweet And Sour Balls
- Shrimp Balls
- Fish Ball Child
- Chicken Meatball
- Pork Balls

FOOD CONSUMPTION STUDY

For beef cattle breeding, transportation (to slaughter enterprises), resting, slaughtering, cold acid drainage, segmentation, frozen storage, transportation (to wholesale / Processing enterprises), retail and other production and sales of the loss of each link of the discussion, and according to the Chinese people's eating habits to cattle. The analysis of the weight of the edible parts of the carcass, such as head, hoof, tail and "water", summarized the comprehensive loss and the whole of beef production and marketing in ChinaEdible, effective supply, etc.



01 Breed Tache

Sichuan province does not breed beef cattle, so there is no wastage.

02 Transportation

The transport radius<100km, the total weight loss is 15-20kg.

03 Pre-Cooling and Acid Removal

Cooling and acid removal refers to the rapid cooling and acid removal of the slaughtered carcasses of beef cattle

Carcass 78.68%

04 Split
4.4%

Edible Head, Hooves and Tail 5.39%

05 Split Charging

Bones and Inedible Parts 21.32%

Haslet 28.78%

06-1 Retain Freshness 62%

07 Transportation 0.76%

06-2 Freezing

This portion of beef, which enters the market in the form of frozen meat, is cut up and stored in the freezer.

Evaporation of Water 2.91%

Frozen Loss 2.91%

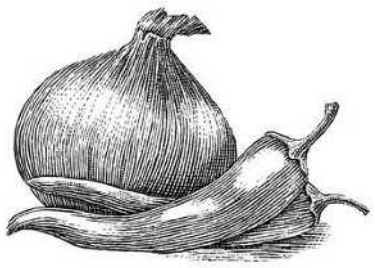
Recycle

Discarded food scraps are shipped to waste-waste plants, where the slops extracted from food scraps can be converted into biodiesel at a rate of about 98 percent.

02 Harvest
Most of the waste straw is incinerated

01 Production
Poor soil and harsh weather are the main reasons for the decrease in crop yields

10%



03-1 Postharvest Handling and Storage

03-2 Small Group Receiver Acquisition

8%

5%

04 Transportation
The natural water loss rate for vegetables is about 5%

06 Transportation
Depending on the distance and mode of transportation, the attrition rate varies from 5% to 30%.

5~30%

05 Processing
Some vegetables will undergo rinsing, cutting, packaging and other processes before entering the subsequent transport link.

2%

Retail
The weight loss of food and its products in this link, such as water loss, deterioration, discard and theft, is collectively referred to as the loss of food in the retail link.

8~15%

3.27%

Eatting Wastes 17.4%

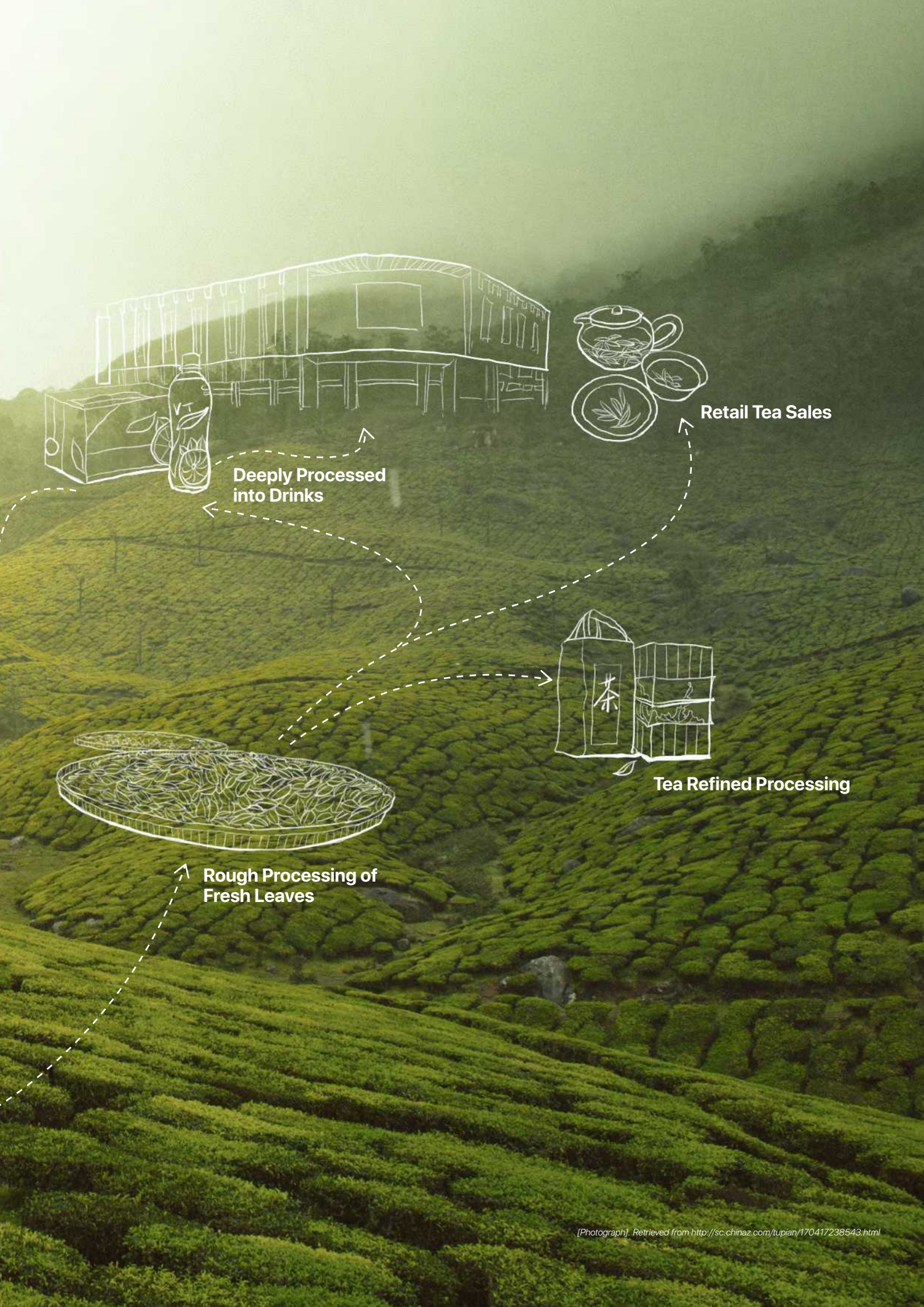
Eatting Wastes 47.5%

FOOD III THE SPACIAL ONE
TEA
LOSS AND REUSE POTENTIAL OF TEA

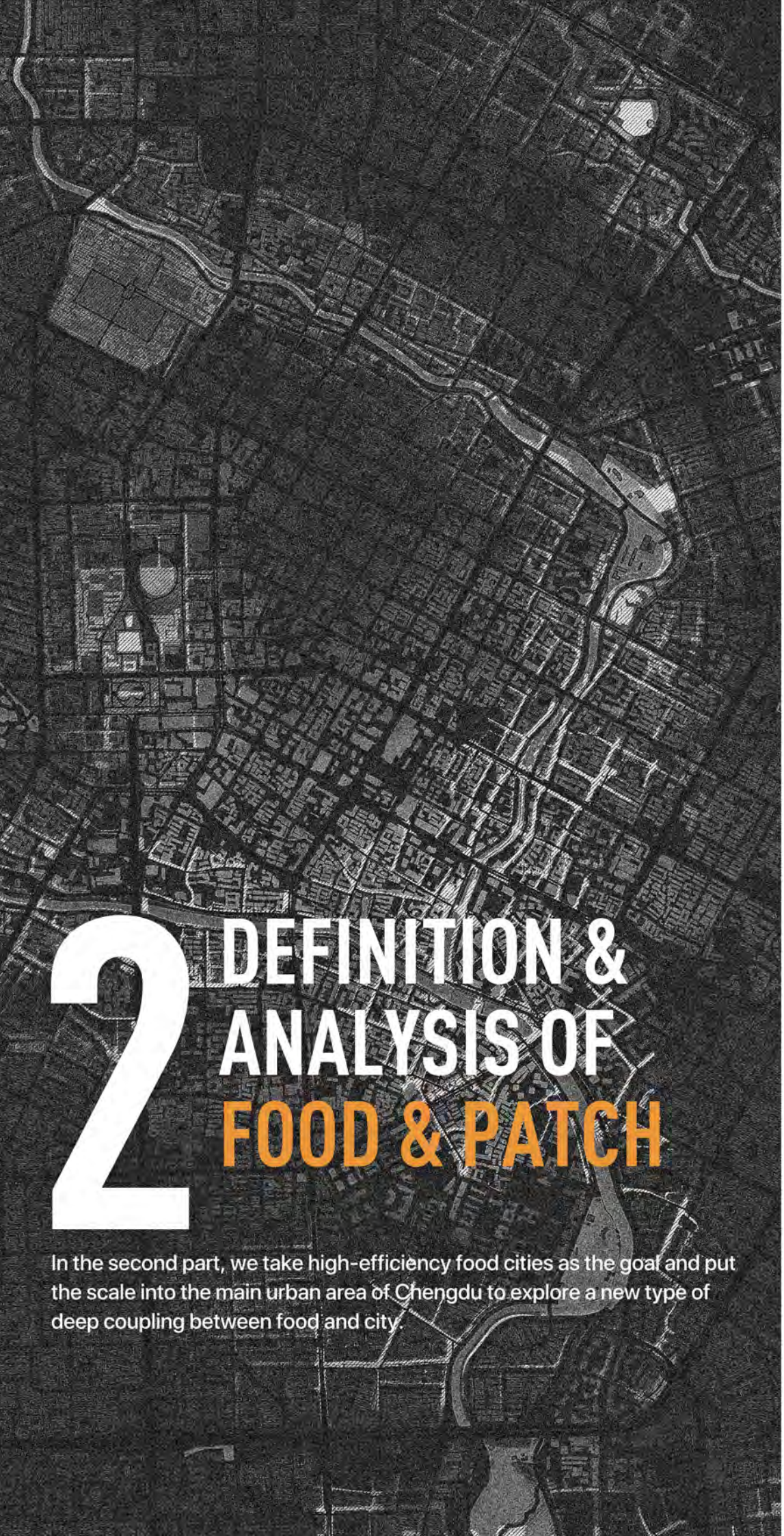
Tea waste contains rich fibrin, hemicellulose, lignin, theanine, tea protein, tea polyphenols, tea polysaccharide, caffeine, tea pigment, tea saponin, vitamins, trace elements and other useful components, which have broad application potential in food processing, agriculture, animal husbandry, medicine, health care, environmental protection and other fields.

However, the waste and pollution of natural resources exist in every link of the tea production chain. Specialized tea gardens have single species and simple structure. Birds and birds seldom inhabit in the tea gardens.

This is the main cause of environmental damage caused by the tea plantation production process.However, the fresh leaves which are processed in the process of sale and put into the market face the problem of being discarded in large quantities because of the long-term quality degradation.In the following design, we will try to explore a way to make tea production less wasteful and beneficial to the environment.



[Photograph]. Retrieved from http://sc.chinaz.com/tupian/170417238543.html



2 DEFINITION & ANALYSIS OF FOOD & PATCH

In the second part, we take high-efficiency food cities as the goal and put the scale into the main urban area of Chengdu to explore a new type of deep coupling between food and city.

We defined three types of urban potential patches along the river, provided a design basis for the formation of the foodscape corridor, analyzing the food POI points of three kinds of food, the hot pot, chuan chuan xiang and tea house, using big data to create a more comprehensive system to evaluate and score the food.

Visualization Data-assisted analysis provides data support and theoretical support for the overall planning strategy.

POTENTIAL PATCH

OPEN P-PATCH

LANDSCAPE P-PATCH

CONFLICT P-PATCH

CHENGDU DOWNTOWN VITALITY TREND

FOOD ANALYSIS & SCORE SYSTEM

LOCATION & DENSITY

FOOD & P-PATCH CO-DESIGN

POTENTIAL PATCH DISTRIBUTION

POTENTIAL PATCH (P-PATCH)

Potential patches along the river: The neglected but potential use space that interweaves with the river. We have defined this concept and it is not divided into three categories: Open patch, Landscape patch and Conflict patch.

After investigation and research, this type of plaques accounted for as much as 23% of the urban area along the river in Chengdu, so it can be seen that there are still many potential spaces along the river but not used.

23%

After investigation & research, this type of plaques accounted for as much as 23% of the urban area along the river in Chengdu.

1

It can be seen that there are still many potential spaces along the river but not used.

2

3

Patch Catergory
Open Patch
Landscape Patch
Conflict Patch

4

5

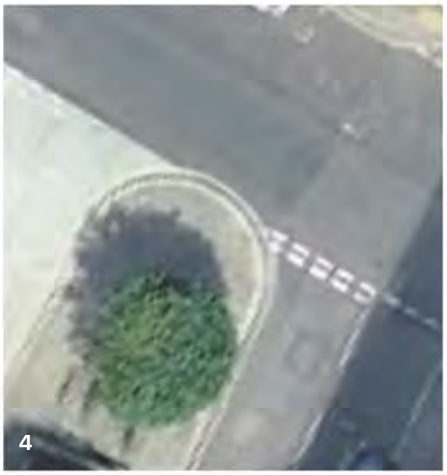
IMAGES:

1. Outdoor Tea House
2. Typical Conflict Space
3. Chengdu mian area mapping
4. Special Panda Lanscape Sculpture
5. Combination Porention Space

OPEN P-PATCH

Open Space Patch:

This type of patch refers to a large number of spaces in urban spaces that mainly carry citizens' commuting and basic leisure functions including Coner Square, Cross Road, Extra Roadway, Extended Space etc.



IMAGES:

1. Coner Square
2. Cross Road
3. Extended Space
4. Extra Roadway
5. Open Space Activity1
6. Open space Activity2

LANDSCAPE P-PATCH

Landscape Space Patch:

This type of patch refers to a space that has a landscape function in an urban space and has vitality potential including Public Grass, Roof Garden ,Border Tree, Space, Small Park, Isolated Landscape etc.


1


2


3


4

IMAGES:

1. Public Grass
2. Roof Garden
3. Border Tree
4. Small Park
5. Landscape Space Activity
6. Isolated Landscape

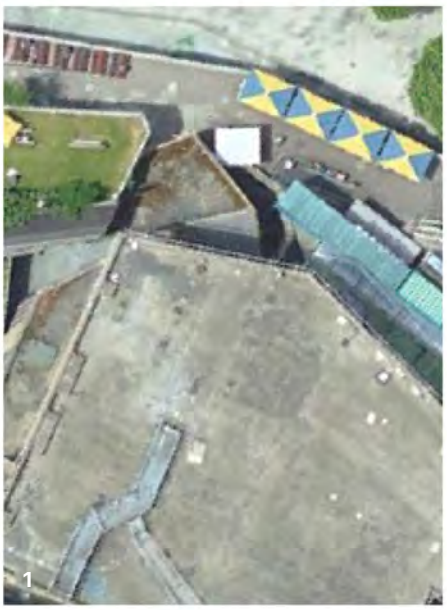

5


6

CONFLICT P-PATCH

Conflict Space Patch:

This type of patch refers to the area of conflict between the developed and the to-be-developed in the urban space, or the excessive gray zone space between the building and the outdoor, which has a strong usable value including On the Roof, Indoor to Outdoor,In the corner,Under Structure,Unvalued Space etc.



IMAGES:

1. On the Roof
2. Conflict Space Example
3. Indoor to Outdoor
4. In the corner
5. Under Structure
6. Unvalued Space

CHENGDU DOWNTOWN VITALITY TREND

Chengdu, a core city in western China that rises along the river. When the original water system is combined with the three types of patches in modern and active cities, Chengdu has greater potential space.

0 100 200 500 1000M N

0 100 200 500 1000M N

FOOD ANALYSIS & SCORE SYSTEM

TIME FACTOR

Recently submitted reviews are more important. Older reviews have less impact on star ratings.

INTEGRITY FACTOR

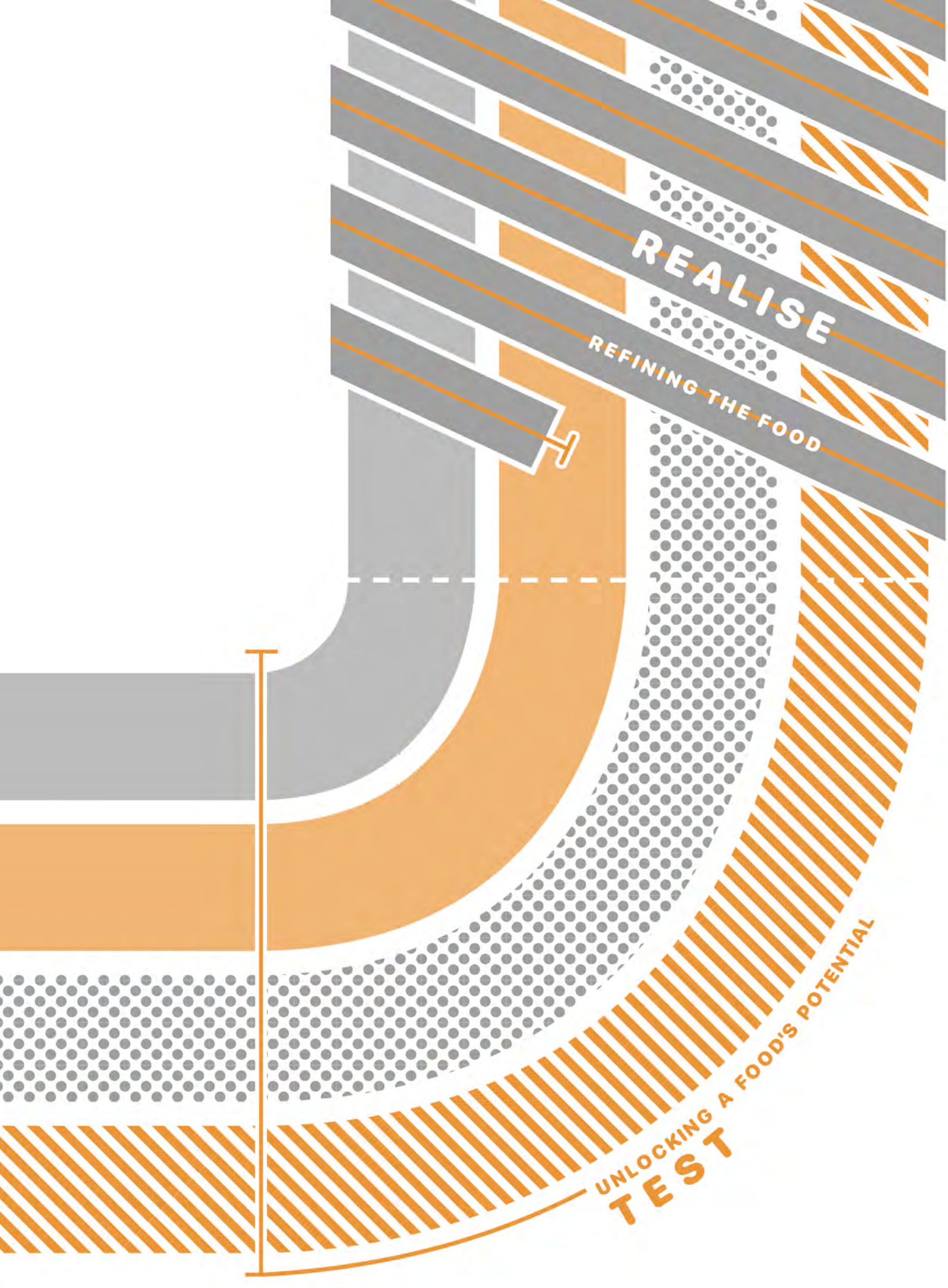
The true evaluation after experience will be included in the calculation.

USER FACTOR

The more users in the historical evaluation of the same category, the higher the reference value.

REVIEW FACTOR

High-quality long reviews with pictures have a higher impact on star ratings.

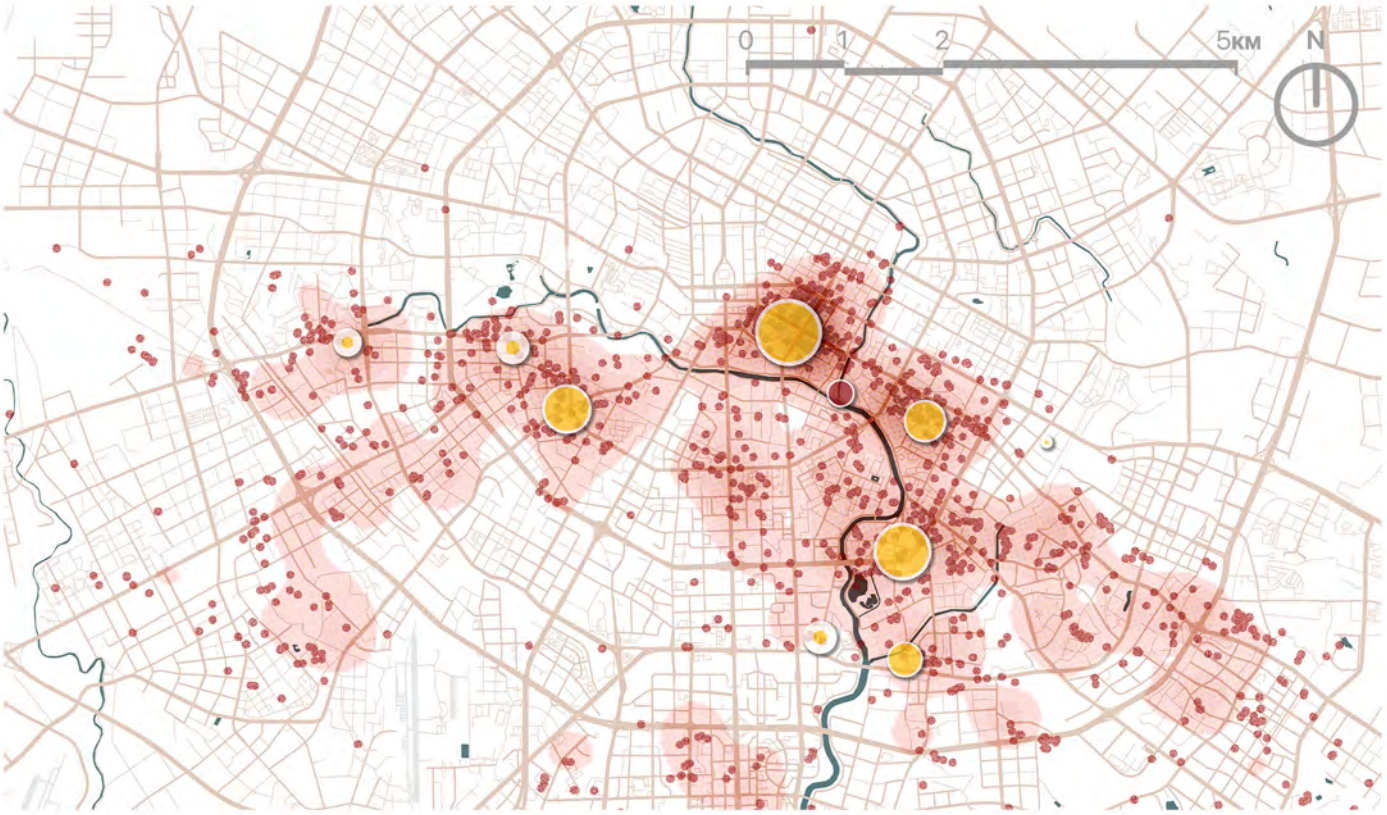

REALISE
REFINING THE FOOD
UNLOCKING A FOOD'S POTENTIAL
TEST

LOCATION & DENSITY

LEGEND

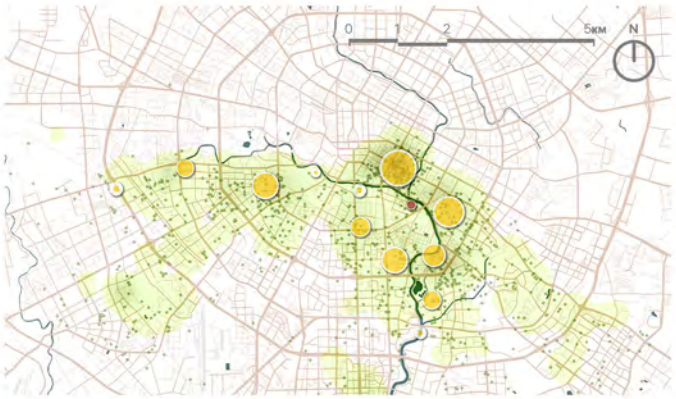
- High Density
- Medium Density
- Low Density
- Hot Pot Restaurant POI
- Primary High Kernel Point
- Secondary High Kernel Point

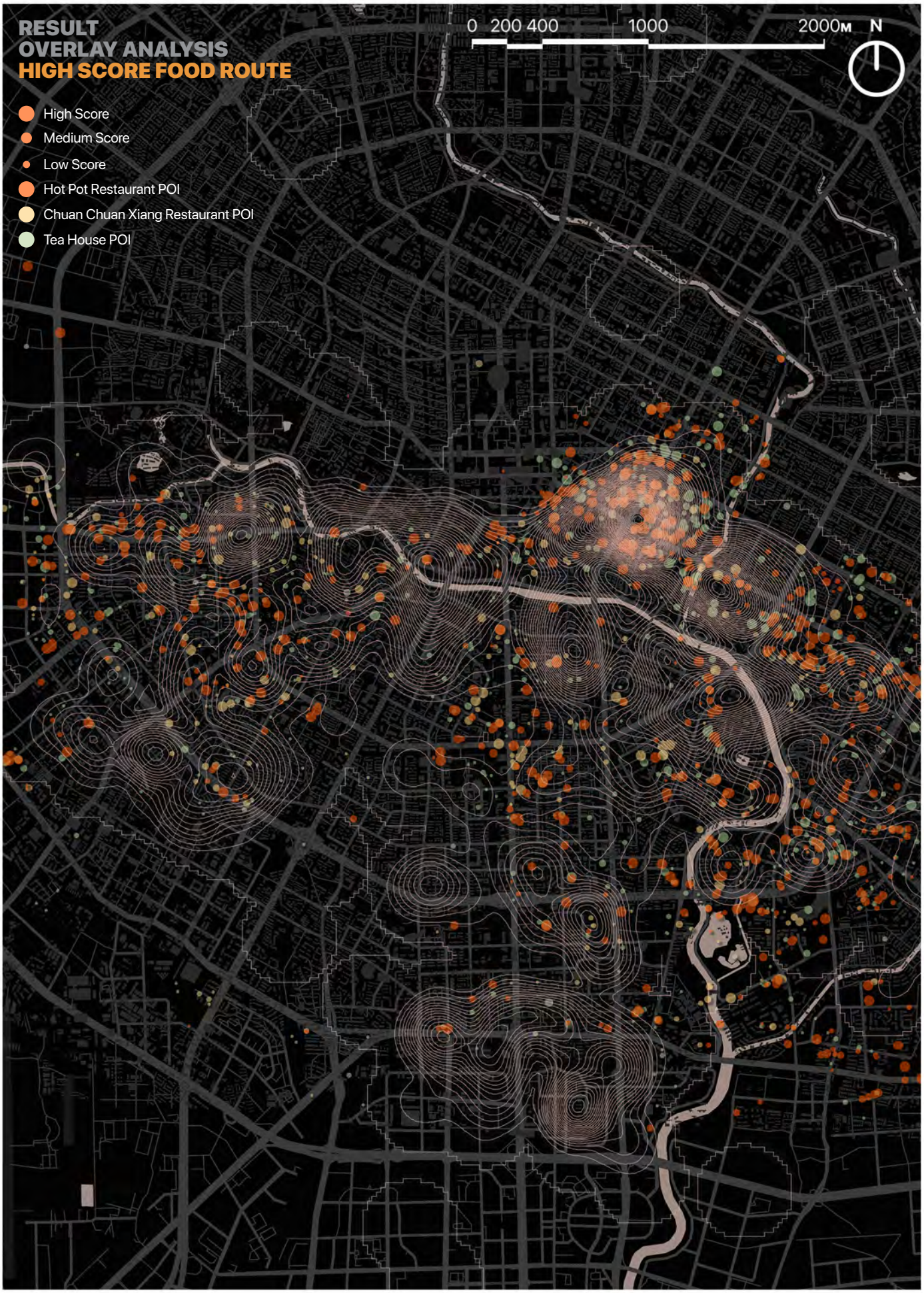
ANALYSIS 1 HOT POT RESTAURANT



ANALYSIS 2 CHUAN CHUAN XIANG RESTAURANT

ANALYSIS 3 TEA HOUSE




RESULT
OVERLAY ANALYSIS
HIGH SCORE FOOD ROUTE
High Score
Medium Score
Low Score
Hot Pot Restaurant POI
Chuan Chuan Xiang Restaurant POI
Tea House POI
0 200 400 1000 2000M
N

FOOD & P-PATCH CO-DESIGN

With the goal of "anti-waste" planning, we deeply explore the inherent advantages of Chengdu cuisine, create a new food evaluation system, and combine the highly dynamic urban texture of Chengdu 's river channels to define the potential patch strategy along the river and design it for a highly effective food city.

Provide a base. Based on data extraction along the river value space, the concept of blue-green symbiotic gourmet corridor is proposed.

The purpose is to make comprehensive use of the public space on the river and both sides of the river, and to combine idle space to form a landscape corridor with Chengdu cuisine as the link.

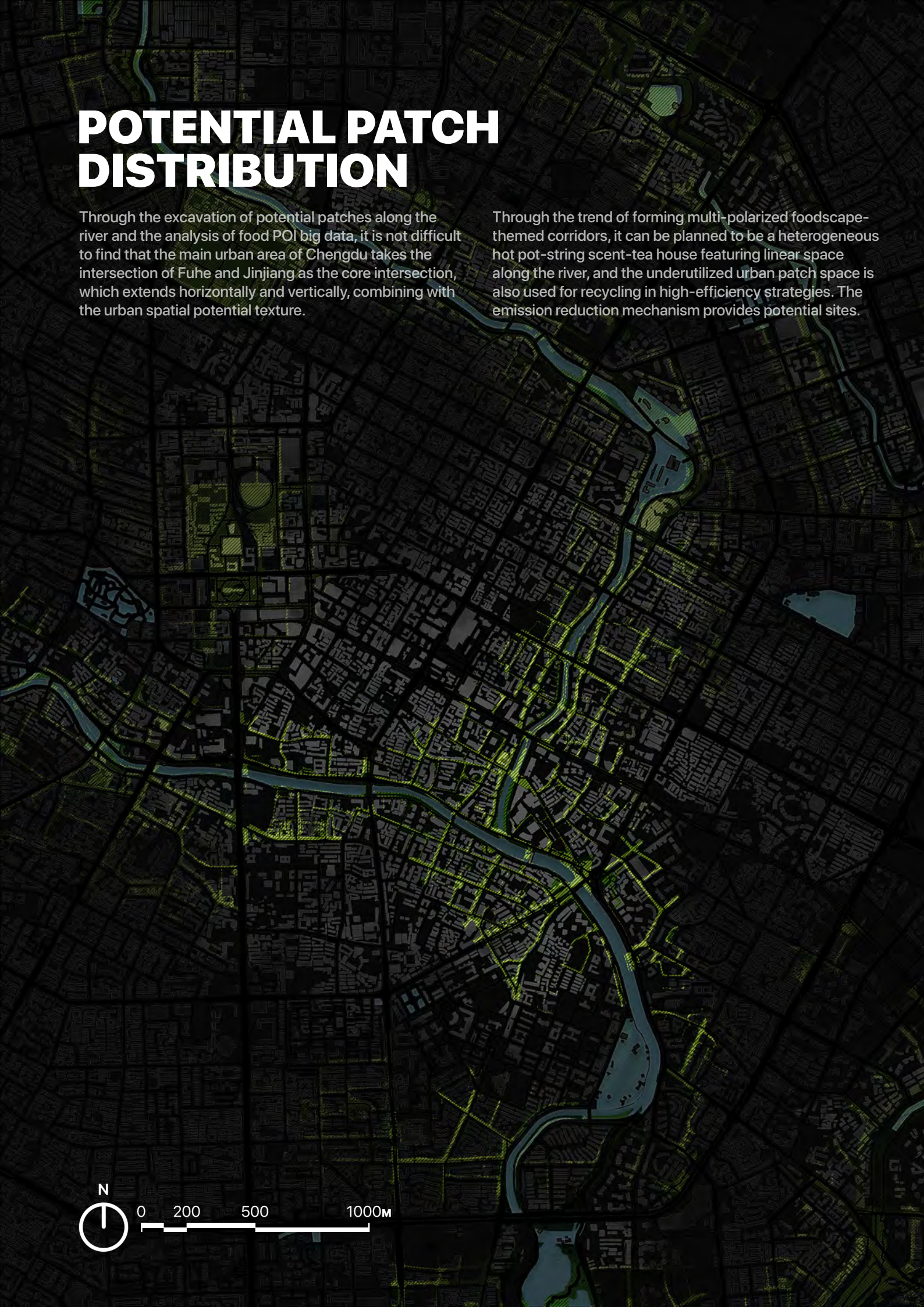
Based on the three main strategies of landscape-driven efficient use of urban space, efficient food circulation and efficient cultural communication, it explores how food can help the future development of high-efficiency cities.

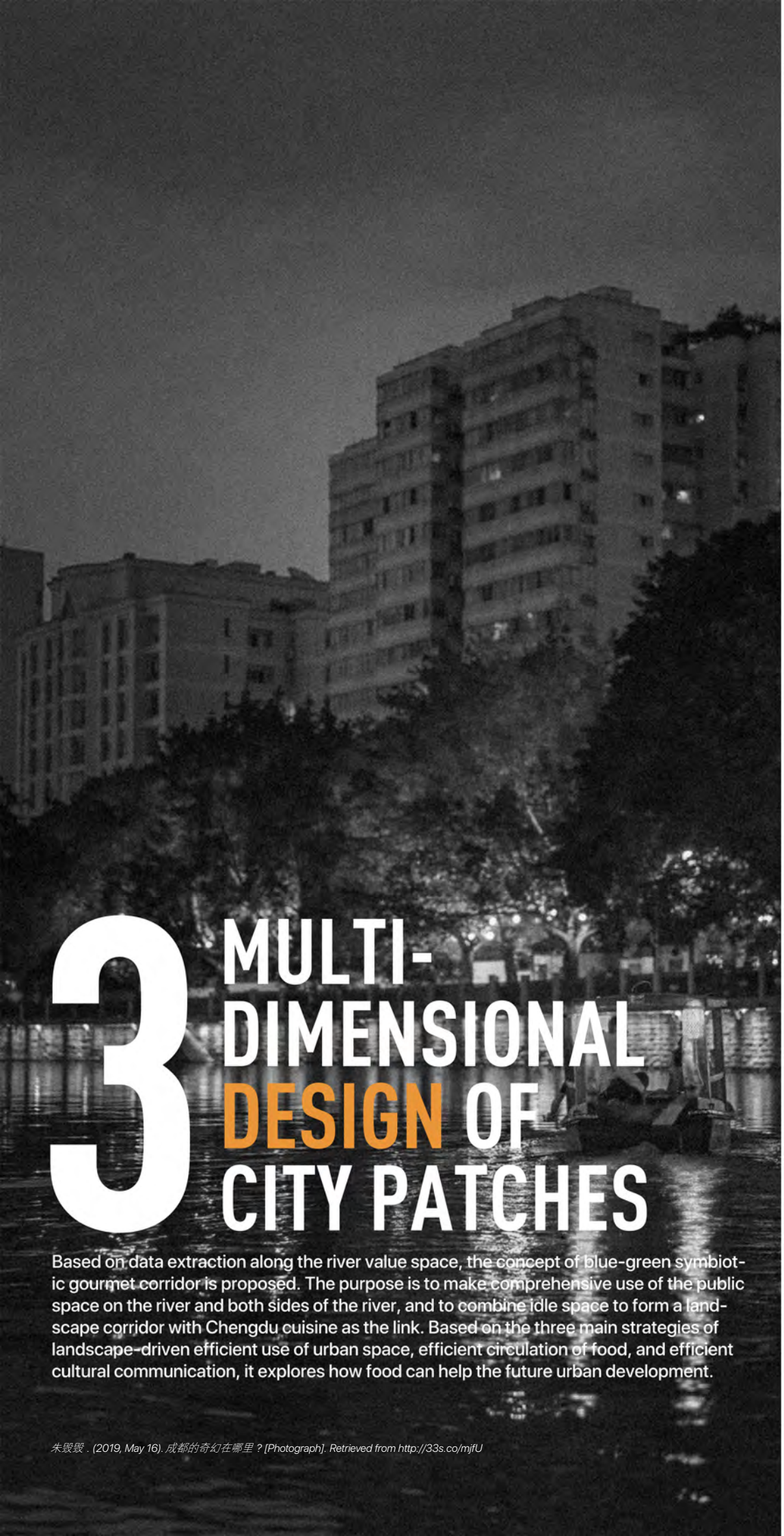
THROUGH OUR DESIGN, WE'RE TRYING TO COMBINE FOOD & P-PATCH TO ACHIEVE HIGH-EFFICIENCY GOAL.

POTENTIAL PATCH DISTRIBUTION

Through the excavation of potential patches along the river and the analysis of food POI big data, it is not difficult to find that the main urban area of Chengdu takes the intersection of Fuhe and Jinjiang as the core intersection, which extends horizontally and vertically, combining with the urban spatial potential texture.

Through the trend of forming multi-polarized foodscape-themed corridors, it can be planned to be a heterogeneous hot pot-string scent-tea house featuring linear space along the river, and the underutilized urban patch space is also used for recycling in high-efficiency strategies. The emission reduction mechanism provides potential sites.





3 MULTI-DIMENSIONAL DESIGN OF CITY PATCHES

Based on data extraction along the river value space, the concept of blue-green symbiotic gourmet corridor is proposed. The purpose is to make comprehensive use of the public space on the river and both sides of the river, and to combine idle space to form a landscape corridor with Chengdu cuisine as the link. Based on the three main strategies of landscape-driven efficient use of urban space, efficient circulation of food, and efficient cultural communication, it explores how food can help the future urban development.

朱毅毅 . (2019, May 16). 成都的奇幻在哪里 ? [Photograph]. Retrieved from http://33s.co/mjfU

朱毁毁 . (2019, May 16). *成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mjfU*

EFFICIENT USE OF SPACE RESOURCES

Commuter space:
Reuse the gray space under the overpass; Optimize and transform the sign system of underground space of subway station.

Vertical farms:
urban roof agriculture; Make efficient use of community green space; Greening the building walls.

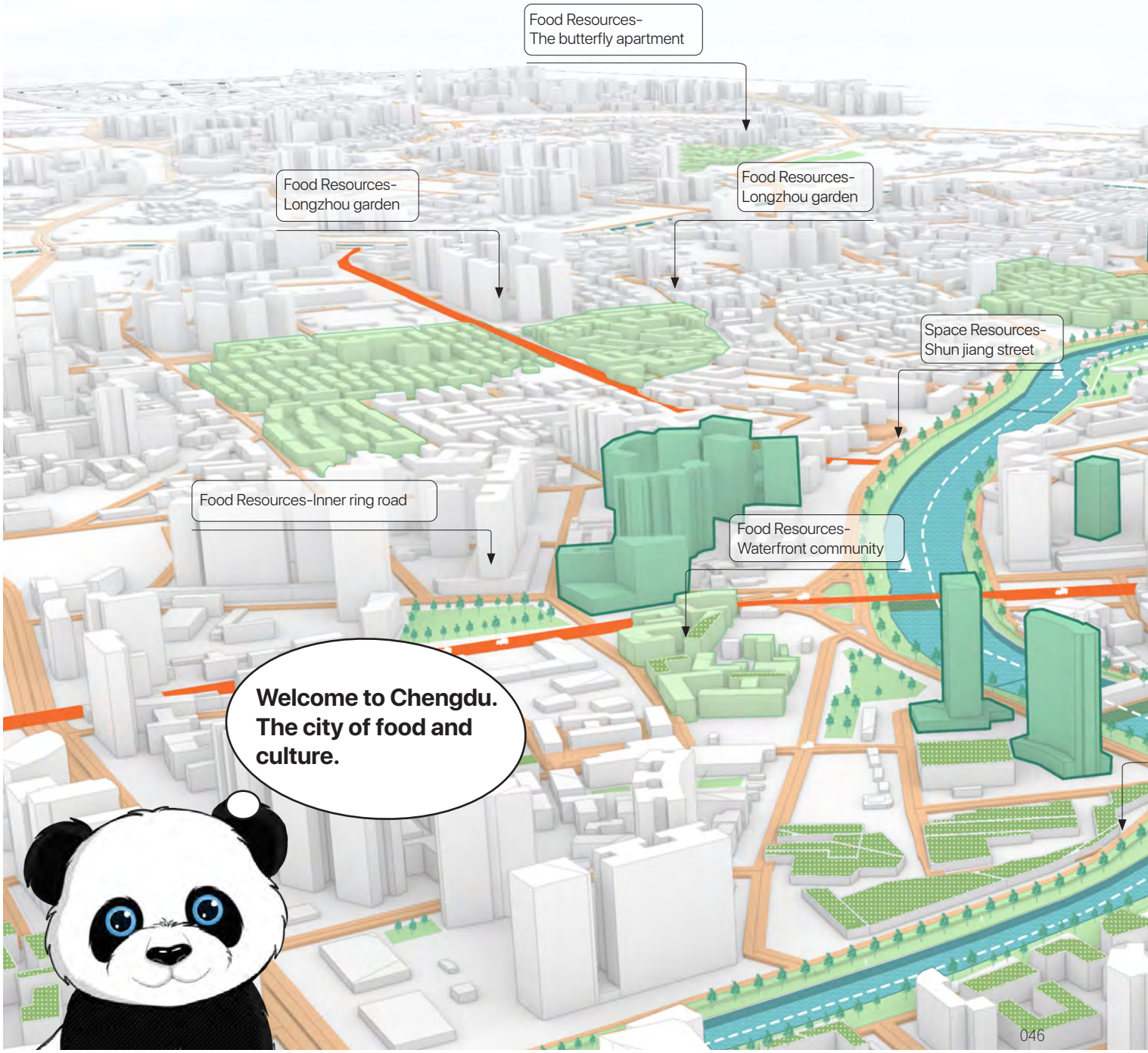
Water-front landscape:
Section development of waterfront space.

EFFICIENT USE OF FOOD RESOURCES

Comprehensive utilization of tea:
Tea as fertilizer, Tea as raw material for water purification device.

Hot pot waste recycling:
Hot pot waste as fertilizer.

Urban agricultural layout:
Urban agricultural areas are distributed throughout the city, with roof farms, community farms and tea gardens along the river.



EFFICIENT USE of CITY PATCHES

EFFICIENT USE OF CULTURAL MATRIX RESOURCES

We media and other social software matrix: Attract the resident of universities and institutions:

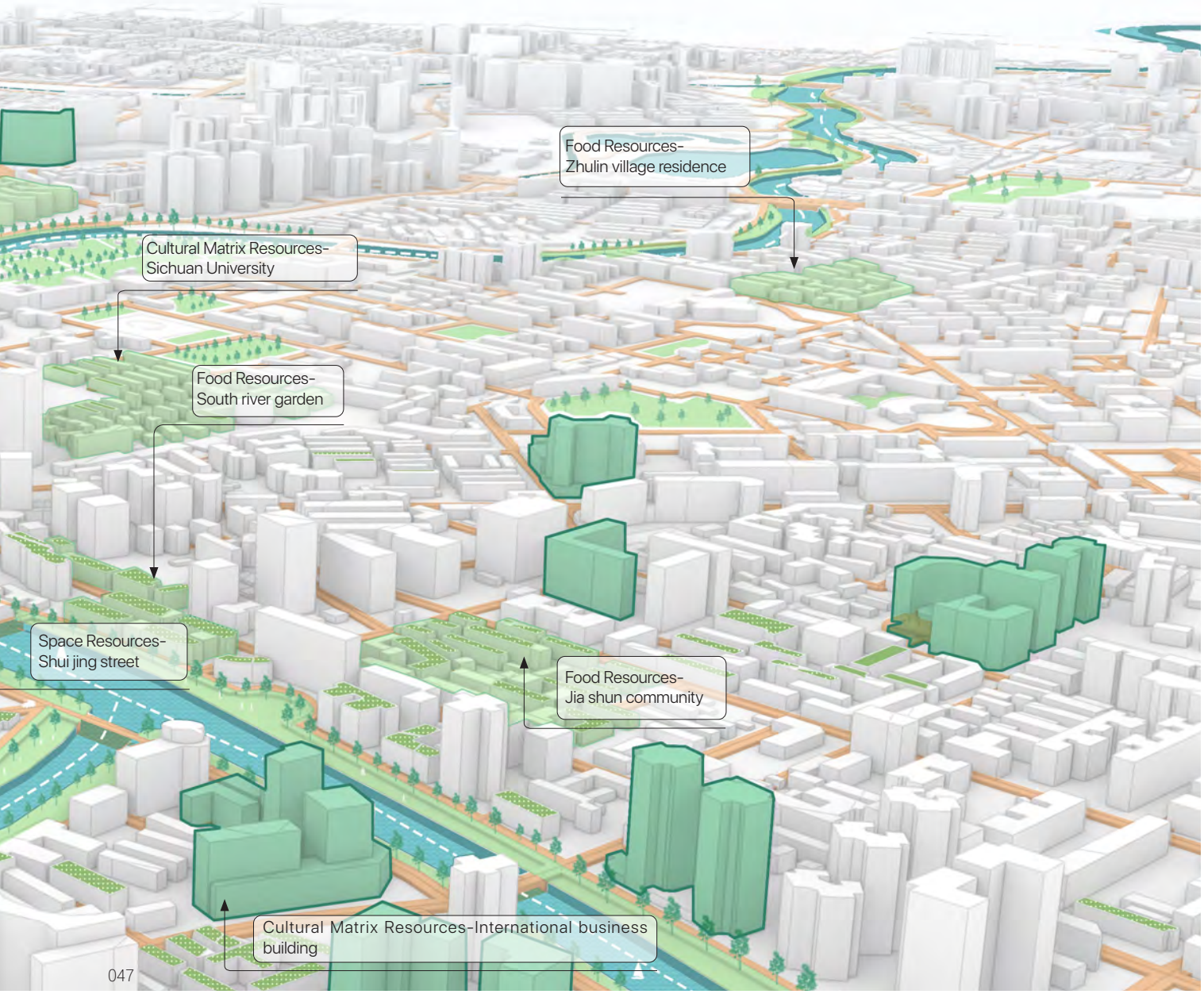
University food design and other professional research; Business establishment entry; Managed by the city food association.

Create experiential Spaces:

Set up pop-up shops and other display Windows.

Output cultural symbol:

Pull out the cultural symbols of chengdu as propaganda materials.



Through the optimization of multiple urban infrastructure scenes, the efficient use of urban space can be achieved, so that urban land can be economically and rationally reused, and strengthen urban functions, improve social welfare, improve the quality of life, promote the sound development of the city, in order to create a good working and living environment.

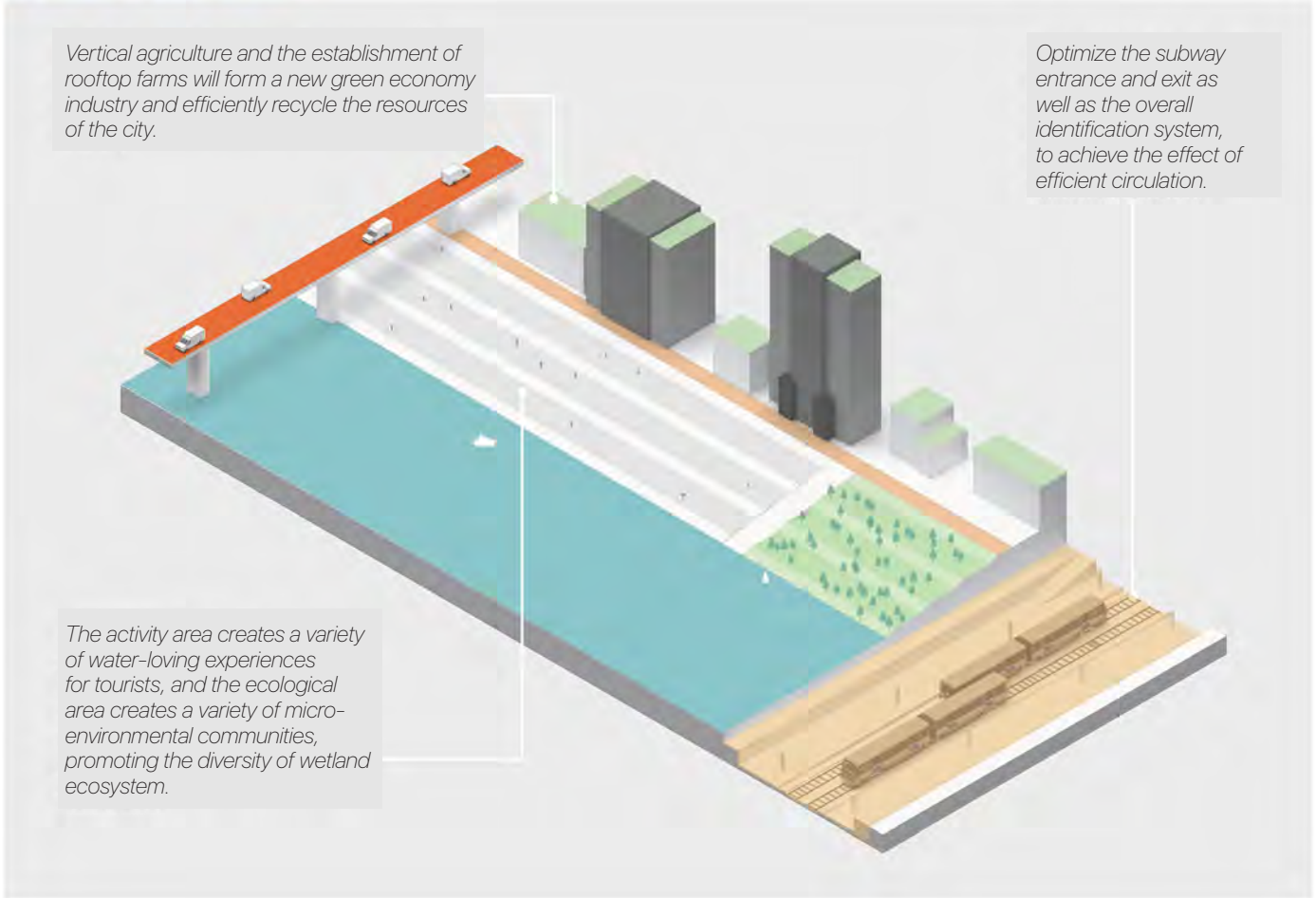
This paper mainly studies and plans the renovation of waterfront space, commuting space and reuse of urban grey space, so as to achieve the purpose of efficient utilization of urban space.

SCENE1: *The waterfront landscape area is improved, and different types of activities are redistributed. In different times of the day, various sites meet the diverse use needs of the surrounding people.And the division of ecological recovery areas, the development of urban agriculture and vertical agriculture.*

SCENE2: *Improve commuting space and re-optimize the signage guidance system so that people can circulate efficiently in the subway system.*

SCENE3: *The reuse of urban grey space, for example, the abandoned space under the viaduct can be transformed into urban greening or urban activity areas.*

POLICY MODEL



As an important city in southwest China, Chengdu is also a gathering place for food culture. As a city with huge amount of food, how to collect and use food waste as an important link in food production is a question that landscape design needs to discuss.

1. 朱毁毁 . (2019, May 16). 成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mjfU

As the largest city in southwest China, Chengdu has an urban population of 8.51 million. In China, People view food as the primary need. With people's huge demand for food, it is accompanied by huge food waste and pollution caused by food waste to cities. Under the COVID-2019 epidemic, the relationship between food and cities needs to be rethought.

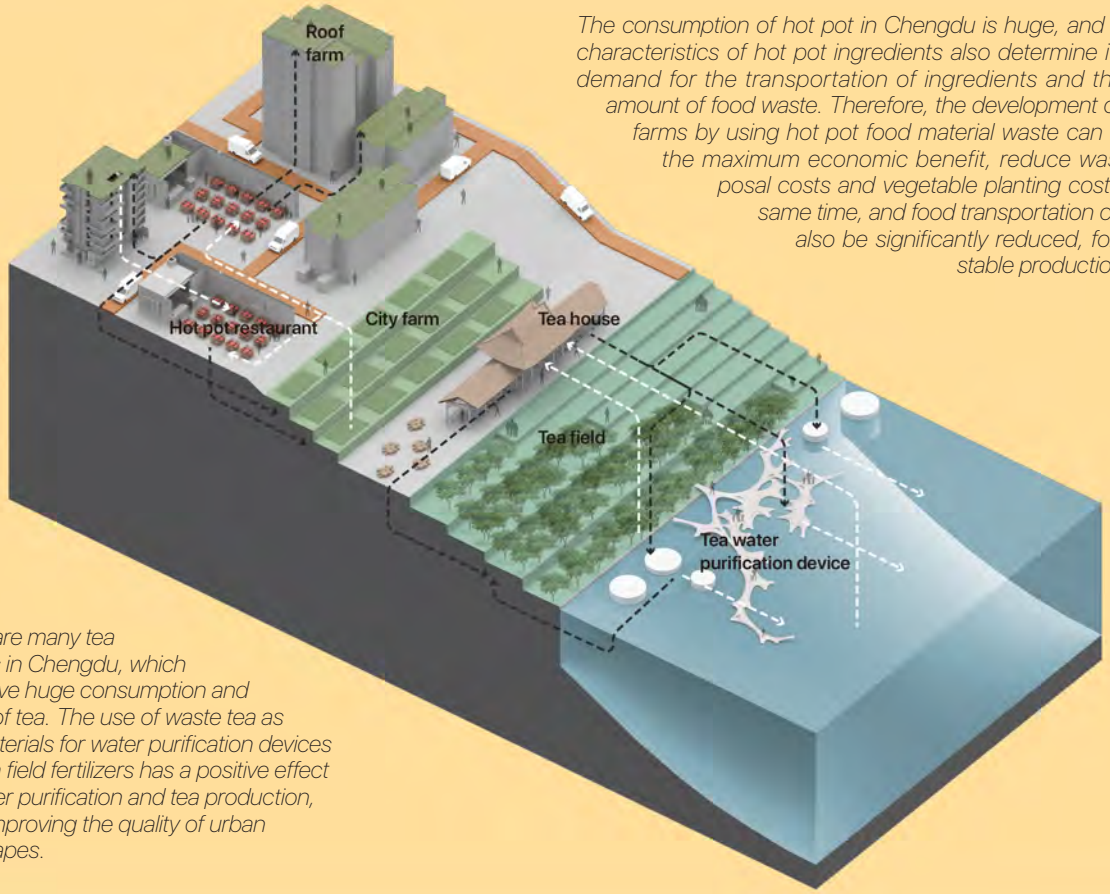
Should cities exist only as consumers of food? Or the city can also be a food producer and processor. With the help of the landscape strategy, let food coexist with the urban texture, let the food transform into its original form, maybe plants, perhaps fish, or their nutrients, so that the food cycle becomes a part of urban life.

6.75 B
RMB
Catering Industry Output Value

17,000
Tea Houses

9,886
Hotpot Restaurants

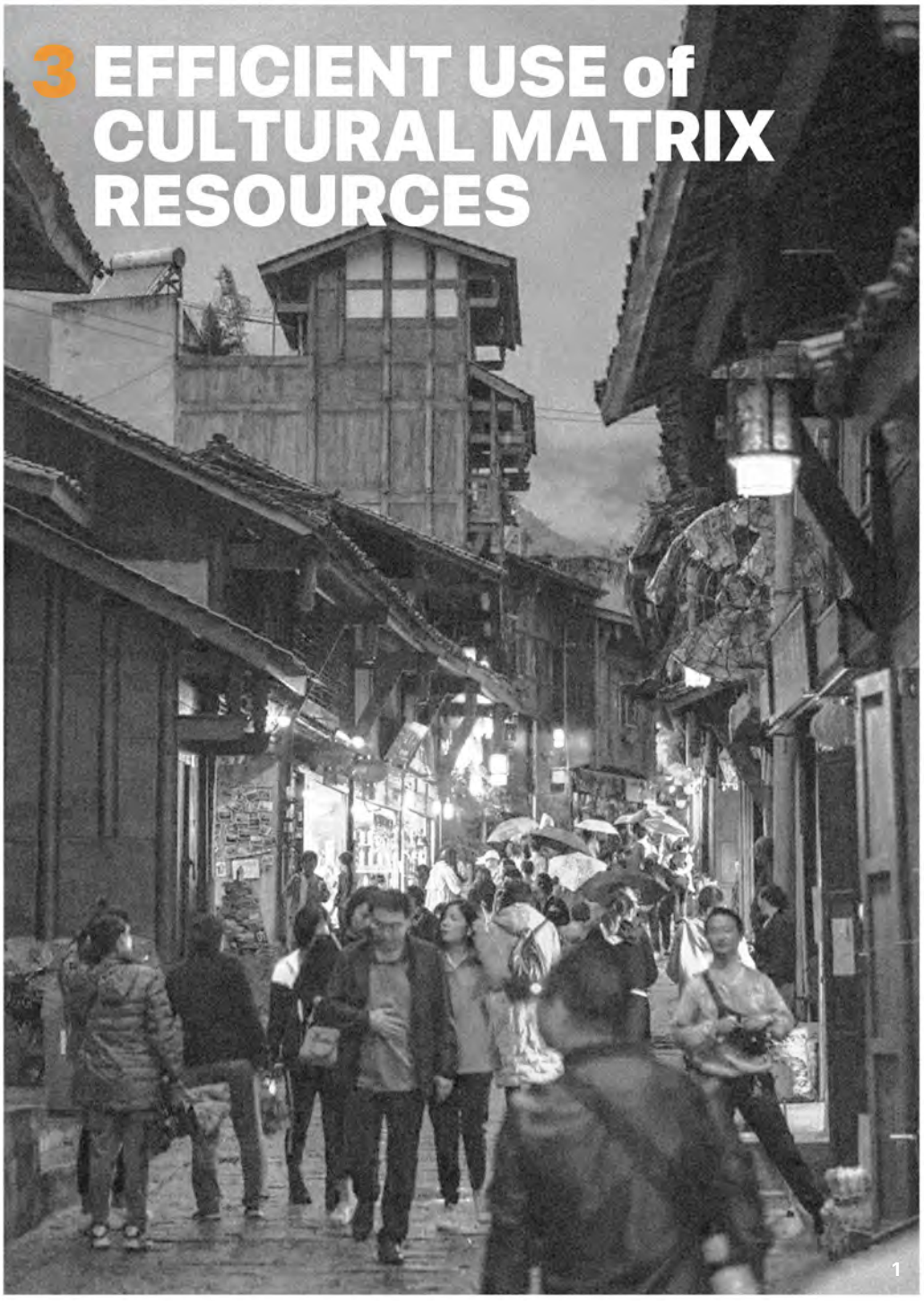
2,629
TONS
Food Waste Per Day



The consumption of hot pot in Chengdu is huge, and the rich characteristics of hot pot ingredients also determine its huge demand for the transportation of ingredients and the huge amount of food waste. Therefore, the development of urban farms by using hot pot food material waste can achieve the maximum economic benefit, reduce waste disposal costs and vegetable planting costs at the same time, and food transportation costs will also be significantly reduced, forming a stable production cycle.

There are many tea houses in Chengdu, which also have huge consumption and waste of tea. The use of waste tea as raw materials for water purification devices and tea field fertilizers has a positive effect on water purification and tea production, while improving the quality of urban landscapes.

1. 朱毁毁 . (2018, December 14). 没人能不流着口水想乐山 [Photograph]. Retrieved from http://33s.co/mmYX
2. 朱毁毁 . (2018, October 25). 人间成都（下） [Photograph]. Retrieved from http://33s.co/mmJX
3. 朱毁毁 . (2019, January 4). 打捞耿家巷 [Photograph]. Retrieved from http://33s.co/mmQW



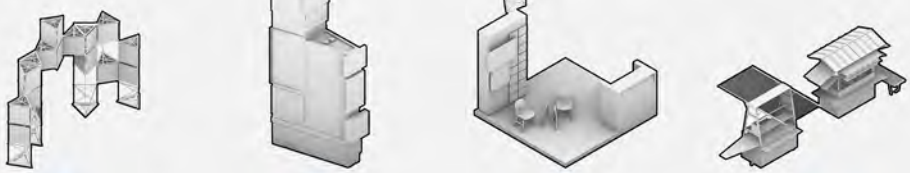
Coalition government, social enterprises, universities and other resources to create a multi-level cultural communication matrix, to achieve the interaction with the public and supplement the content, to create innovative, sophisticated, younger content, refresh the public's understanding of food culture.

1. 朱毁毁 . (2017, October 21). 成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mnaW

Chengdu has experienced six great ethnic migrations and large-scale migrations in history, and the fusion of various folk cultures has brought a variety of food materials and production methods, making chengdu cuisine culture rich and prosperous in exchange and innovation. It is home to some of the country's finest chefs, restaurants and food critics.

The convergence of food, cultural collision, to promote the development of chengdu food culture, behind these foods have a profound humanistic attributes, through mining and in the creation of food culture, to form a unique food culture square.

MATRIX RESOURCES



A Cultural Booths

B Culture Companies -Billboards

C Food Design Exhibition

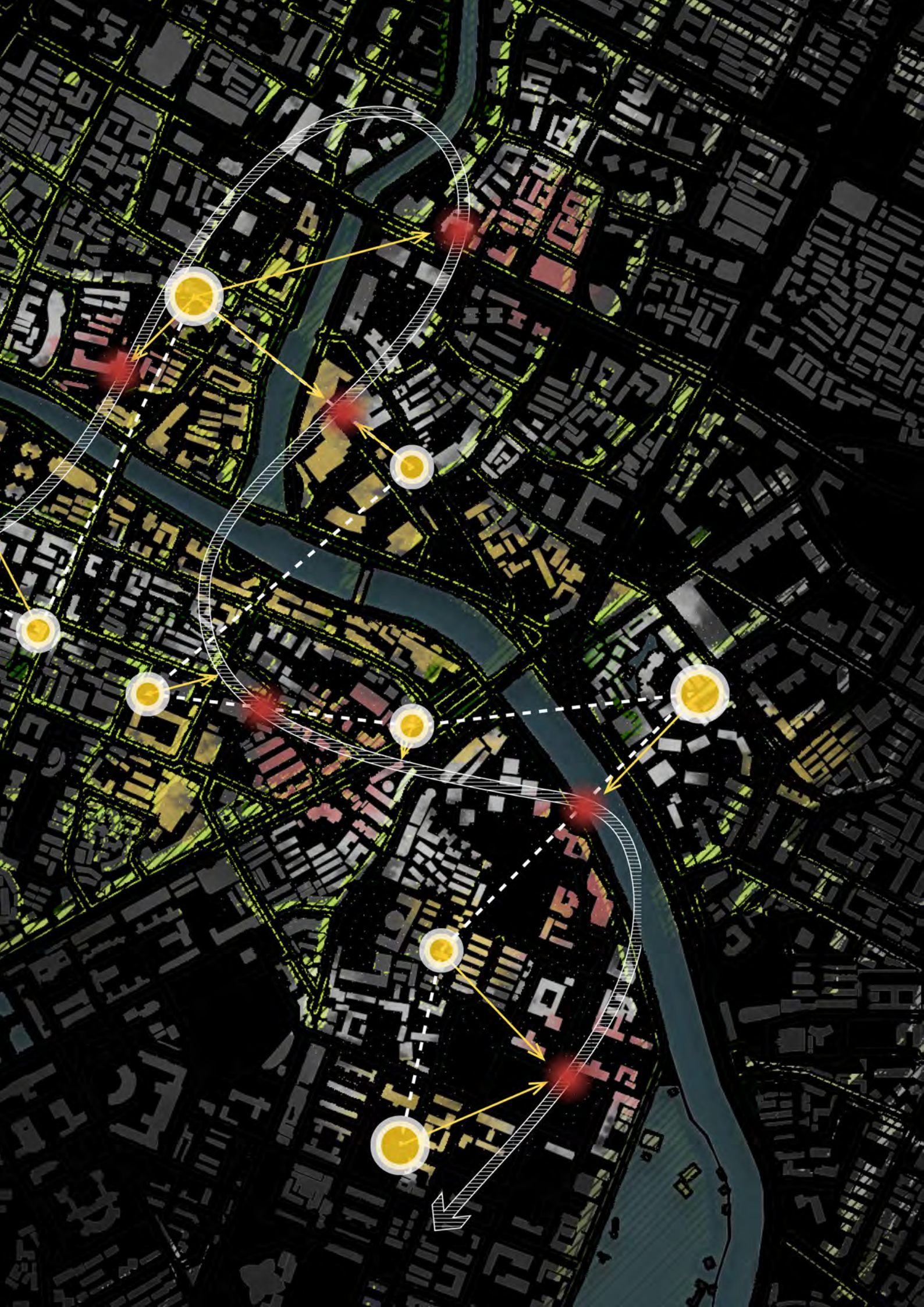
D Flash Stores

VIRTUAL CULTURE SCENE

Combined with the planning layout, adjust the distribution of cultural industry, and advocate healthy and interactive food culture through "online + offline" multi-party interaction.

1. 朱毅毅 . (2019, March 19). 老城是成都的茶渍 [Photograph]. Retrieved from http://33s.co/mmUT
2. 朱毅毅 . (2019, March 19). 老城是成都的茶渍 [Photograph]. Retrieved from http://33s.co/mmUT


4
CHENGDU
FOOD
CORRIDOR
PLANNING
LEGEND
Food Material Planting Space
Food Waste Regeneration Space
Food Culture Experience Space
High Food Density Spot
Garbage Collecting Spot
Food Experience Corridor
Garbage Collection Corridor
Recovery Path
N
0
100
200
500
1000м



CHAPTER II

RESHAPE URBAN LANDSCAPE VIA FOOD

XI'AN, CHINA

Shes, V. (2019, January 15). Photo by Victoria Shes on Unsplash. Retrieved from https://unsplash.com/photos/hbNOsm2eM1M

Cities, as special habitats, are facing huge threats. Increasing population and food demand have brought **Inevitable waste of resources** and caused serious **Environmental problems** in the process.

Fortunately, more and more new recycling technology and design management methods have proved to be feasible. From the perspective of **Landscape and local food culture**, we hope to integrate these design ideas into a system to ensure the sustainable development of the city and the quality of life of people.

Taking **XI'AN** City as an example, this part of guidebook aims to provide a variety of interrelated strategies to provide solutions and design guidance for the widespread food waste, ecological degradation, landscape loss and stray animal management problems. These strategies are combined with each other to form a sustainable **closed-loop network**. In this process, the participation of residents and communities is emphasized and combined with the **gourmet culture and tourism industry**.

In addition, the additional benefits of these systems can also be used as public resources in **responding to emergency affairs**.

RESHAPE URBAN LANDSCAPE VIA FOOD

CONTENTS

1 WE ARE THREATENING OUR HOME

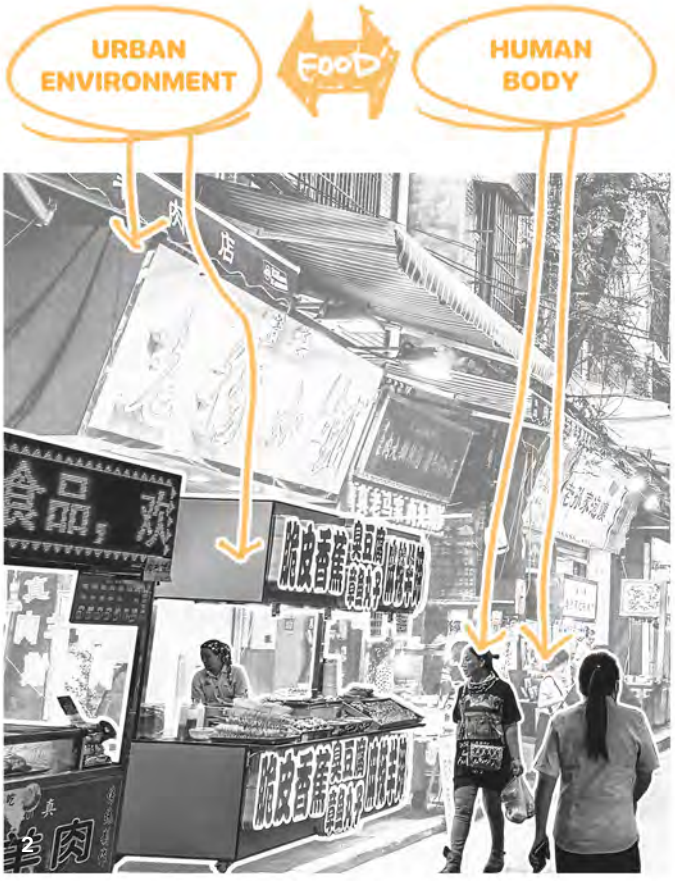
Sessler, J. (2019, July 2). Photo by Jasmin Sessler on Unsplash. Retrieved from https://unsplash.com/photos/5Wfttm2CjeI

HUMAN LIFE AND URBAN LANDSCAPE ARE CLOSELY RELATED

Cities are special types of ecosystems, and they are also habitats for the living needs of billions of people around the world. Even if the urban population is "isolated" from the natural environment of mountains and rivers by industrial production and other factors, they still exchange various forms of material and energy with the environment in the city at any time, anywhere.

At a larger scale, this process also occurs between cities and their adjacent natural areas, for example, energy extraction and consumption, agricultural product cultivation and distribution, and FOOD.

FOOD-One of the most important material exchanges.

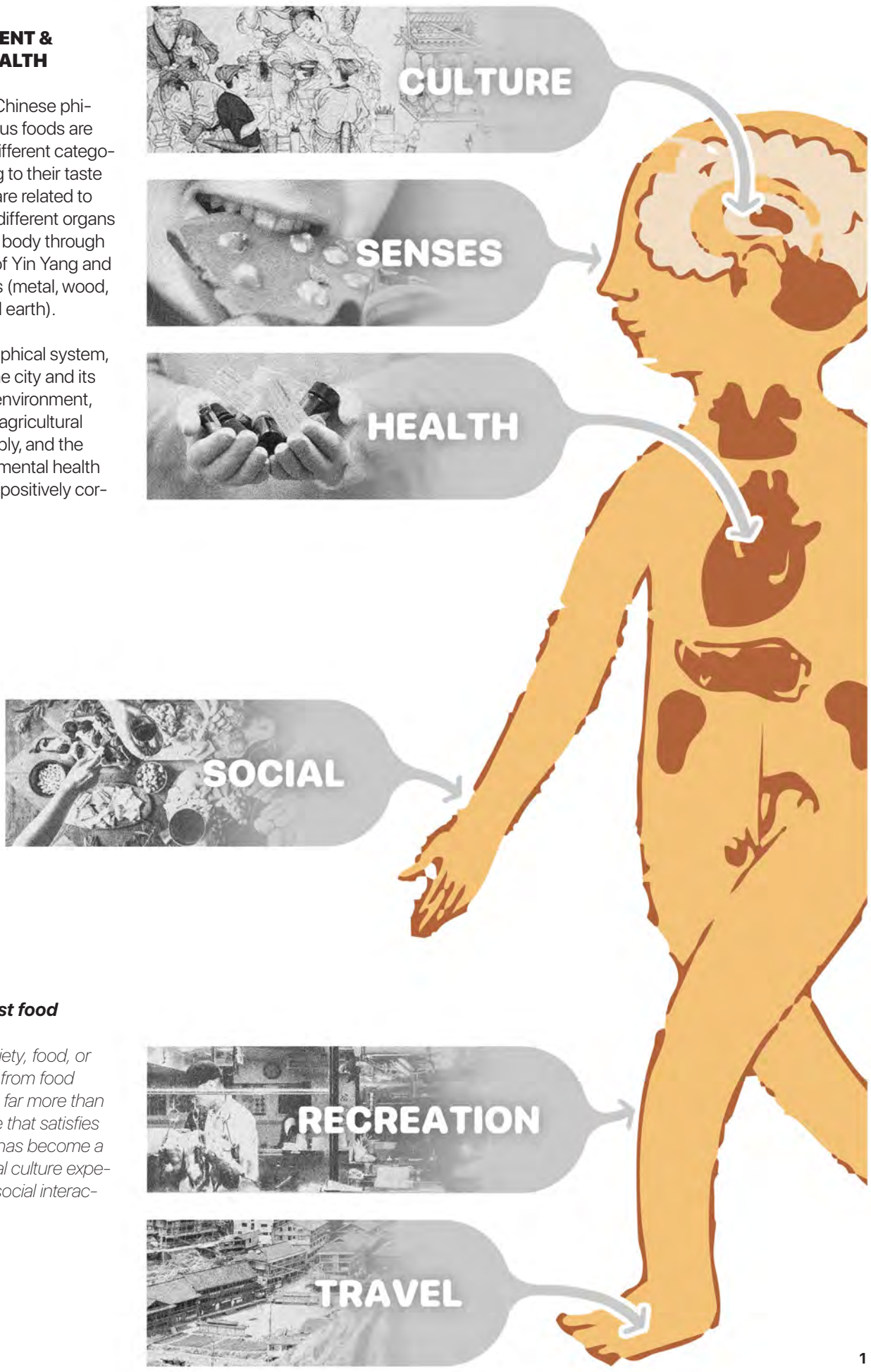


1. LFaaaa 云端听风 . (n.d.). Retrieved from https://720yun.com/t/c2a2bapd9ur?scene_id=803808
2. 回民街摄影图片 . (n.d.). Retrieved from http://www.kaimalo.com/img/0b3d3e9c6ddb1f3c8dbb.html

FOOD, ENVIRONMENT & HUMAN HEALTH

In traditional Chinese philosophy, various foods are divided into different categories according to their taste or color, and are related to the health of different organs of the human body through the concept of Yin Yang and Five Elements (metal, wood, water, fire and earth).

In this philosophical system, the state of the city and its surrounding environment, the quality of agricultural products supply, and the physical and mental health of people are positively correlated.

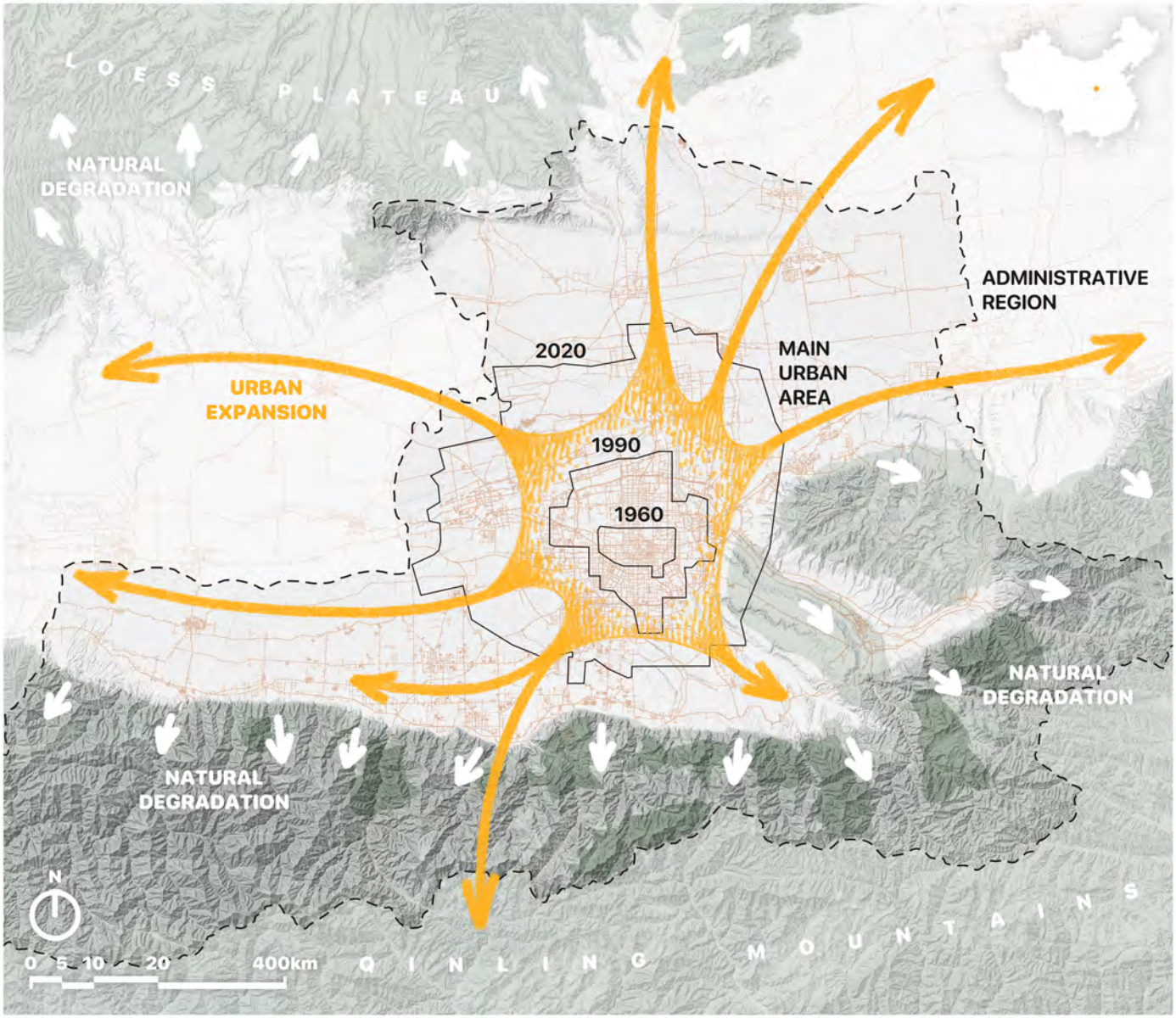


1

Food, not just food

In today's society, food, or cuisine made from food ingredients, is far more than a consumable that satisfies satiety. Food has become a symbol, a local culture experience and a social interaction tool.

1. Endocrine System vector images, illustrations, and clip art. (n.d.). Retrieved from https://www.istockphoto.com/za/illustrations/endocrine-system



TO MEET FOOD NEEDS, WE ARE OVERDRAWING NATURAL RESOURCES

In the past few decades, the population has boomed. In response to the increasing material demand of urban populations, many Chinese cities have undergone a "spreading pie" expansion. This process continues to today and has caused serious environmental problems. At present, the regional planning of Chinese cities is paying more and more attention to the coordinated development of built-up areas and the surrounding natural ecological environment.

Take Xi'an, the capital of Shaanxi Province as an example. Today, Xi'an has a developed zone of more than 700 square kilometers and an urban population of more than 7.4 million. The huge population pressure has forced Xi'an to squeeze the surrounding plains and reclaim them as farmland. Ecolog-

700 km² developed zone
7,400,000 urban population

L A N D

AGRICULTURAL PRODUCTION

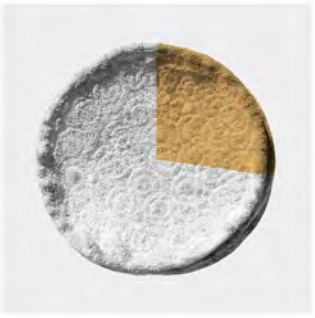
ical green space has shrunk, mountain forests have receded or even disappeared, wild populations have died out, ecological corridors have also been cut off, and the ecology of the Qinling Mountains and Weihe Plains has become increasingly fragile. The environmental quality of Xi'an's urban area has also been declining, manifested in the intensification of the heat island effect and the reduction of air quality. The grand scene of "Eight Waters Around Changan" almost collapsed.

Unfortunately, a considerable part of the resources we ask for from nature, such as the agricultural products, are wasted. Moreover, this waste occurs at every step in the entire food production chain. More sadly, there is a lot of waste or loss that cannot be avoided.

Loss of Agricultural Products in Farmland

Product Damage during Transportation

Expiration of Products in the Market



Discard or Waste of Ingredients in the Kitchen

Waste Up to 60%

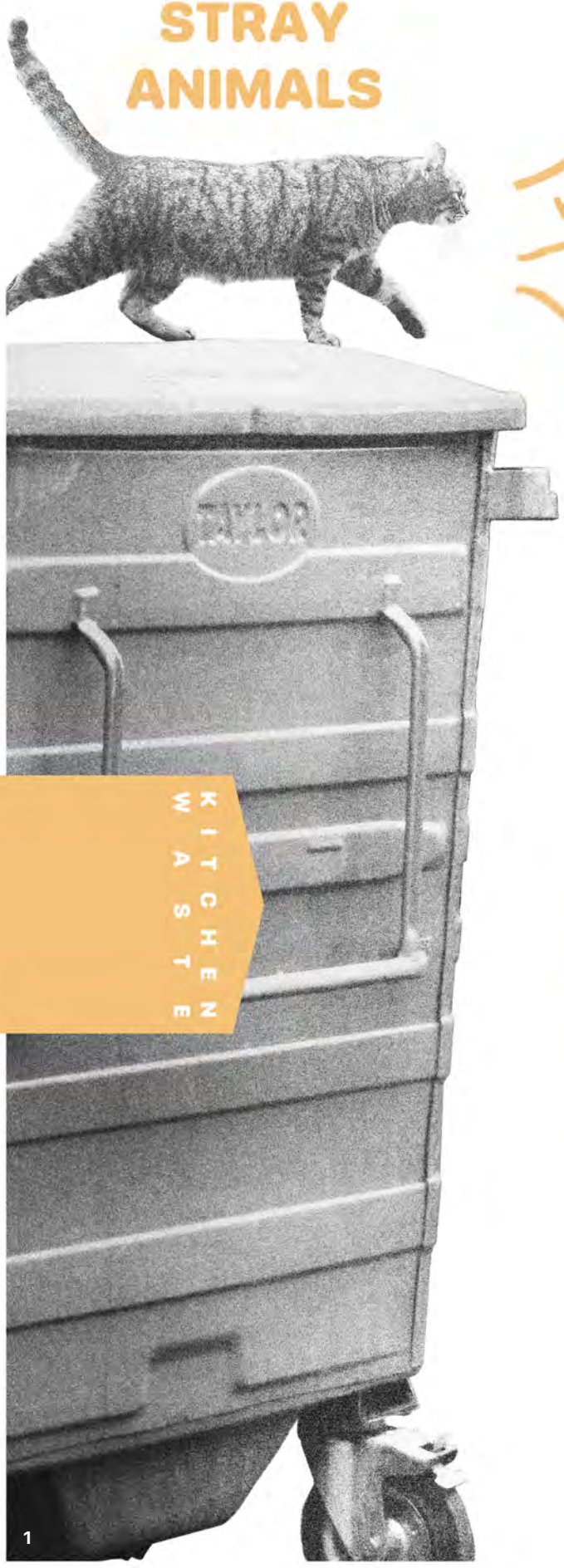
94,200 tons

XI'AN, PER YEAR

Some loss of foodingredients is inevitable

Agricultural products or other foods will inevitably suffer losses during the production process. Such as the defective products in the field, the squeezing during transportation, the backlog in sales, treatment of inedible parts in the kitchen or the deterioration caused by time, etc.

STRAY ANIMALS

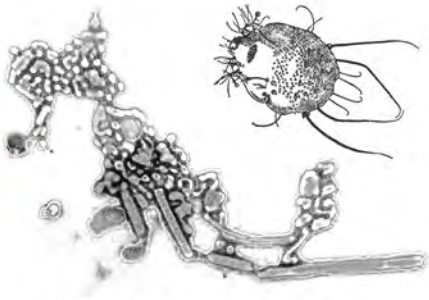


1

HUNT & KILL

SPREAD

NATIVE CREATURES



DISEASE & HEALTH RISKS

>150,000

Stray animals

120
~350
monthly cost

500
~1500
sterilization

500
~750
mercy kill

TO MAKE MATTERS WORSE, THE FRAGILE URBAN ECOLOGY IS BEING DESTROYED

These piles of food waste become homes for stray animals. Adapted to the urban environment, they not only seriously damage important factors of the urban ecosystem, such as stray cats willing to hunt urban birds, but also pose a huge threat to human health, for instance, spreading rabies and carrying multiple parasites.

No money, No stray animal management. Can we get inspiration from food waste?

1. Plashchynski, S. (2018, February 16). Photo by Siarhei Plashchynski on Unsplash. Retrieved from https://unsplash.com/photos/vP3G46hrjno

FOOD WASTE & PLASTIC PACKAGING

Food waste or food loss is food that is wasted, lost or uneaten. The causes of food waste or loss are numerous and occur at the stages of producing, processing, retailing and consuming.

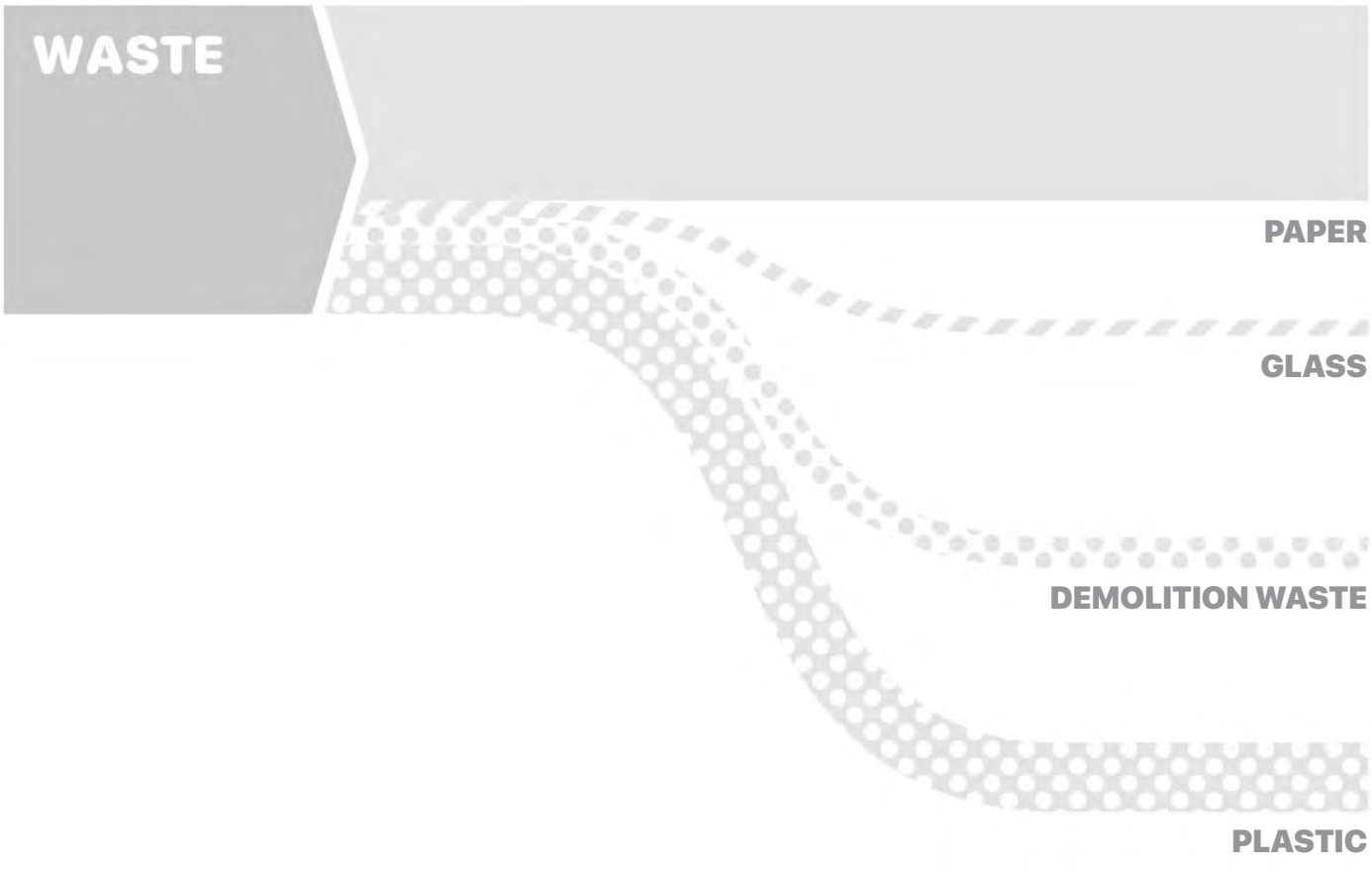
Packaging waste, defined containers and packaging as products that are assumed to be discarded the same year the products they contain are purchased. The type of packaging materials including glass, aluminum, steel, paper, cardboard, plastic, wood, and other miscellaneous packaging. Packaging waste is a dominant contributor in today's world and responsible for half of the waste in the globe.

Both of food packaging and food waste put a lot of pressure on the environment and have a lot of value.

Inspired by the staggering statistic that a third of food produced across the world goes to waste, innovative food-conscious entrepreneurs are finding new ways of reaping the full benefits of what we sow. In addition, Across the globe, textiles manufacturers are also getting a different food waste issue all sewn up – the by-products of food production. It is a strong and flexible leather-like material being created from pineapple leaf fibers in the Philippines, used to make everything from shoes to furniture.

In terms of food packaging, of the 78 million metric tons of plastic packaging produced globally each year, a mere 14 percent is recycled. Lightweight and floatable, plastic that escapes collection flows into our oceans—nine million tons annually—most of it from developing nations that lack the infrastructure to manage it. So we also need to take measures to deal with it.


FOOD
MEAT AND FISH
POTATO
CEREAL
DIARY
OTHERS


WASTE
PAPER
GLASS
DEMOLITION WASTE
PLASTIC

FACTS ABOUT FOOD WASTE

Roughly one-third of the food produced in the world for human consumption every year — approximately 1.3 billion tons — gets lost or wasted.

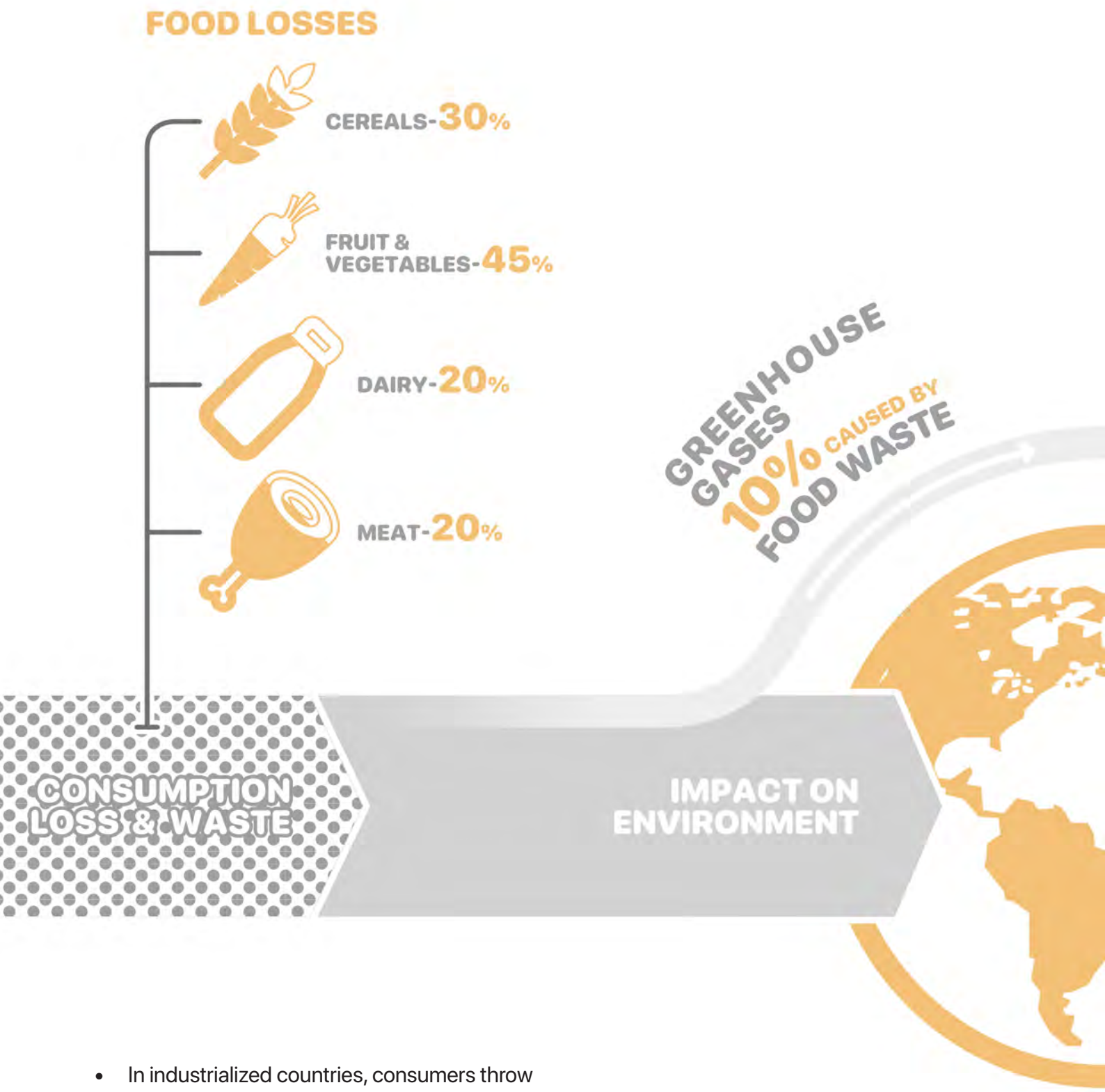
Nearly 95 percent of the discarded food ends up in landfills or combustion facilities. Once in landfills, the food breaks down to produce methane, a potent greenhouse gas which contributes to climate change.

Food that is harvested but ultimately lost or wasted results in a tremendous amount of water waste as well. According to Smithsonian.com, throwing out an apple is like pouring 25 gallons of water down the drain, while beef has a water footprint of 1,800 gallons per pound.

Food waste occurs across the entire food system – producers, retailers and restaurants, and consumers – and many sectors are using technology to tackle the issue. For grocers, a reduction in food waste is not only good for the environment, it can be great for their financials. Many grocers are implementing programs to reduce waste, from supply chain management to targeted promotions to sell fresh food before it reaches the "sell-by" date.

GLOBAL PLASTIC WASTE

Global plastic waste was 275 million tonnes – it did exceed annual primary production through wastage of plastic from previous years.



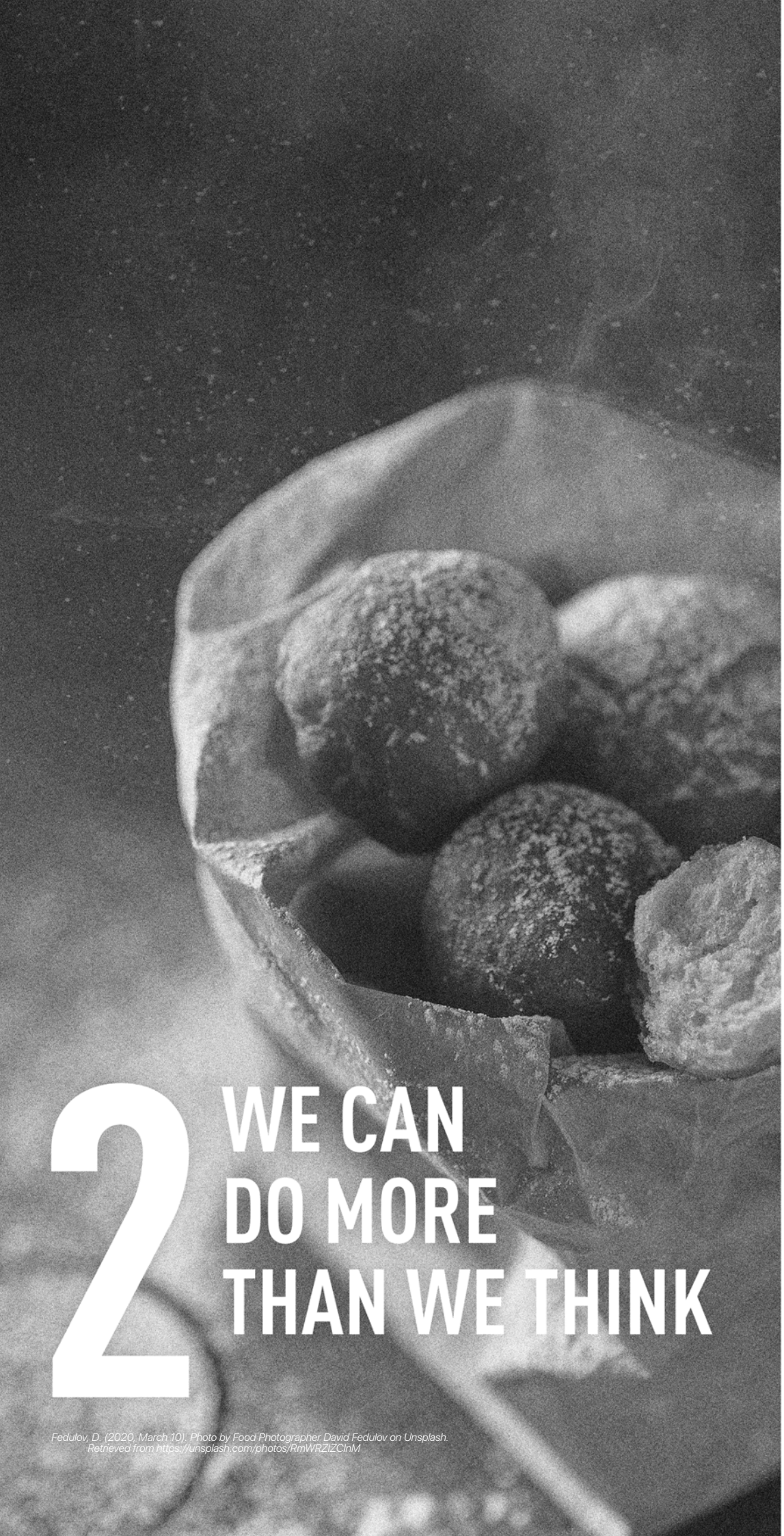
- In industrialized countries, consumers throw away 286 million tonnes of cereal products.
- In Europe alone, 29 milliom tonnes of dairy products are lost or wasted every day.
- Of the 263 million tonnes of meat producted globally, over 20% is lost or wasted.
- Along with roots and tubers, fruit and vegetables have the highest wastage rates of any food products almost half of all the fruit and vegetables producted are wasted.

Our habitats are under threaten...

How to heal the urban environment and promote our culture through food?

Hermes Rivera. (2017, May 23). Photo by Hermes Rivera on Unsplash. Retrieved from https://unsplash.com/photos/R1_ibA4oXil


WASTE?
RESOURCE!



2 WE CAN DO MORE THAN WE THINK

Fedulov, D. (2020, March 10). Photo by Food Photographer David Fedulov on Unsplash. Retrieved from https://unsplash.com/photos/RmWRZIZClnM

1

RECYCLING

OTHER USES

MONEY INCOME

RESIDUE COMPOST

ENERGY GENERATION

Potential recycling value of food waste

Food waste itself can be used as a composting material or as a raw material for bioenergy.
Around this industry, we can design and manufacture derivative cultural or environmentally friendly products.
In areas where organic materials cannot directly play a role, a fund can be set up through the recycling process to allocate resources.

1. Aguilar, P. (2019, January 16). Photo by Pedro Aguilar on Unsplash. Retrieved from https://unsplash.com/photos/1PCJkDXyJjY

WASTE... TO TREASURE!

According to different recycling purposes and different properties, food waste can be roughly divided into two parts: edible parts (nutrients), and packaging & accessories (plastic, paper, metal, etc.). And nowadays the popular classification is "kitchen waste (wet waste)" and "dry waste". We hope to build two paths to explore the recycling value of these two parts of garbage.

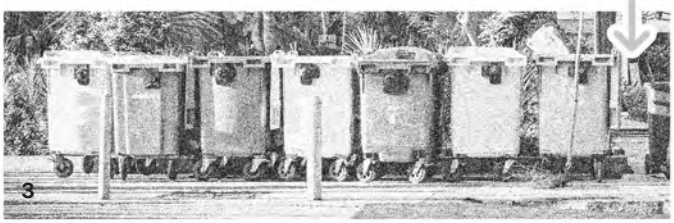
1

China is increasing the construction of food waste disposal facilities.

Located in Shenzhen, one of the world's largest garbage recycling factories is expected to be built in 2020, with a daily processing capacity of over 5,000 tons[4].

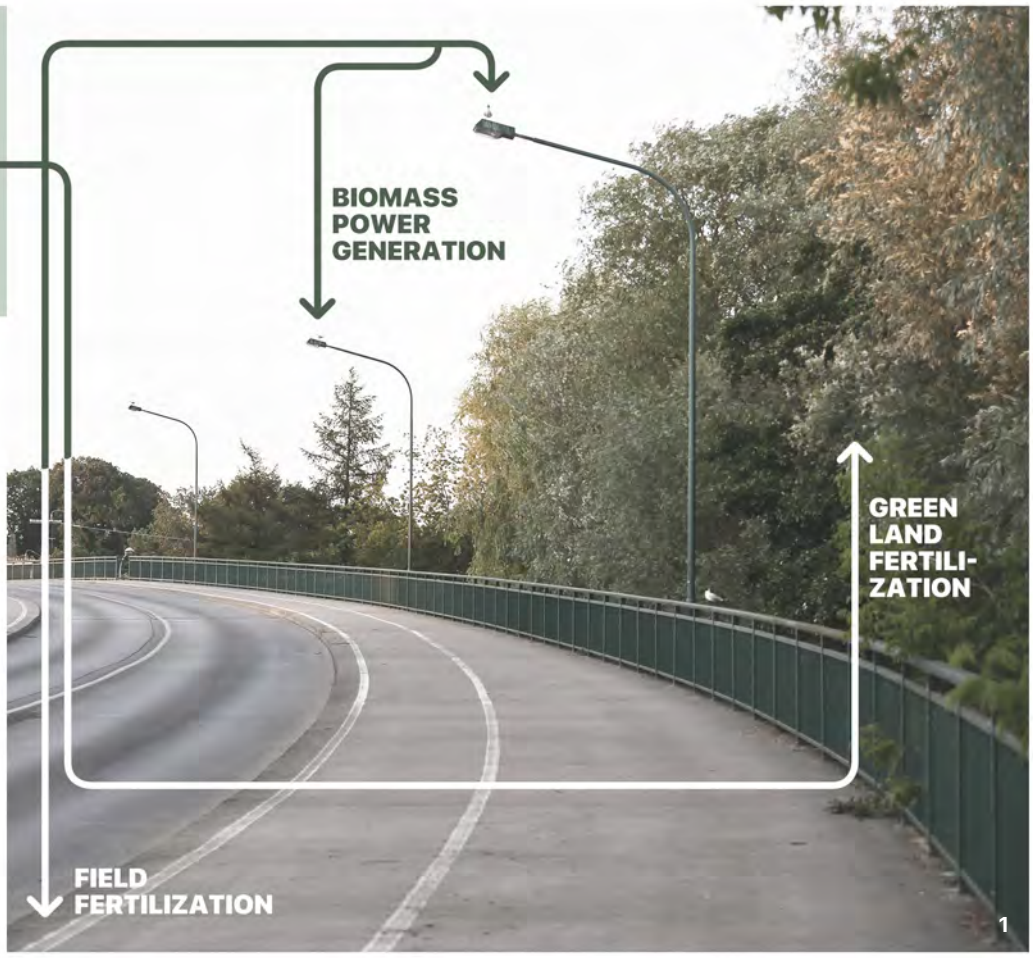
2

Last year in Shanghai, the most vigorous waste classification management regulations are ushered in. It is exciting to see the successful experience being extended to the whole country in the future.



3

1. Gualtieri, S. (2019, October 12). Photo by Sarah Gualtieri on Unsplash. Retrieved May 21, 2020, from https://unsplash.com/photos/tr9GO9WXNRI
2. 应用领域 . (n.d.). Retrieved May 21, 2020, from http://www.wxqcjs.com/yyly
3. Hobi. (2019, May 7). Photo by Hobi industri on Unsplash. Retrieved from https://unsplash.com/photos/S1KFSOiuW0U
4. 展商新闻首页   新闻中心   展商新闻 . (n.d.). Retrieved May 23, 2020, from http://www.ie-expo.cn/Press/Exhibitors/article20160215305.html



China has long been based on the smallholder economy, and today there are still about 250 million scattered farmers. The food waste produced by these farmers can be used for raising livestock or aquatic products, and can also be used as fertilizer after composting[3]. In these areas, biogas digesters can be used as fuel and energy storage facilities.

Meanwhile, in urban areas, "wet garbage" is transferred to factories for treatment, as a clean energy source for street lights and other infrastructure. Also, the remaining residue can work as green fertilizer.

Different from the edible part, the packaging material is easy to be filtered and reprocessed, and can be reused.

It's a good idea to use food packaging to make a set of cultural and creative products! Through paper bags, cards, and envelopes that contain visual symbols, the concept of FOODSCAPE is disseminated to the public and attracts people to actively use these products, and realize such a close connection between them and the urban environment.

However, garbage collection does not solve all secondary problems. We need to establish a mechanism and find an intermediate product to extend recycling effect to all aspects ... Maybe ***MONEY****?*

1. Herrmann, S. (2019, July 16). Photo by Sebastian Herrmann on Unsplash. Retrieved May 21, 2020, from https://unsplash.com/photos/_Wt8n8MZwV0
2. CANELÉ du JAPON – 大阪のブランディングデザイン事務所 8otto. (n.d.). Retrieved May 21, 2020, from http://8otto.com/works/caneledujapon
3. 干货：中国的食物损失及浪费量 _ 研究 . (2018, August 13). Retrieved May 23, 2020, from https://www.sohu.com/a/246952063_292626

PROFITABLE SUSTAINABILITY

ESTABLISHING FOOD WASTE FUND

1

2

As As would be illustrated explicitely in the following chapters, not only food waste can be valuable (making urban life more convenient, bringing people closer together, being educative and creating a new fashion trend), but also profitable. As a matter of fact, if dealt with properly, the profit made from food waste is beyond imagination. We intend to use part of the profit to establish a fund to support all kinds of affairs related to urban ecology.

1. At-Risk Teens Grow Hope in Community Garden(2017,Mar 21)
Retrieved May 1,2020, from https://www.guideposts.org/inspiration/people-helping-people/at-risk-teens-grow-hope-in-community-garden

2. 垃圾分类是新潮流？其实垃圾做的衣服更时髦！ (2019, Jul 4)
Retrieved May 1,2020, from https://www.sohu.com/a/324783380_100286250

URBAN AGRICULTURE

30%

1

URBAN GREENING

30%

2

STRAY ANIMALS MANAGEMENT

20%

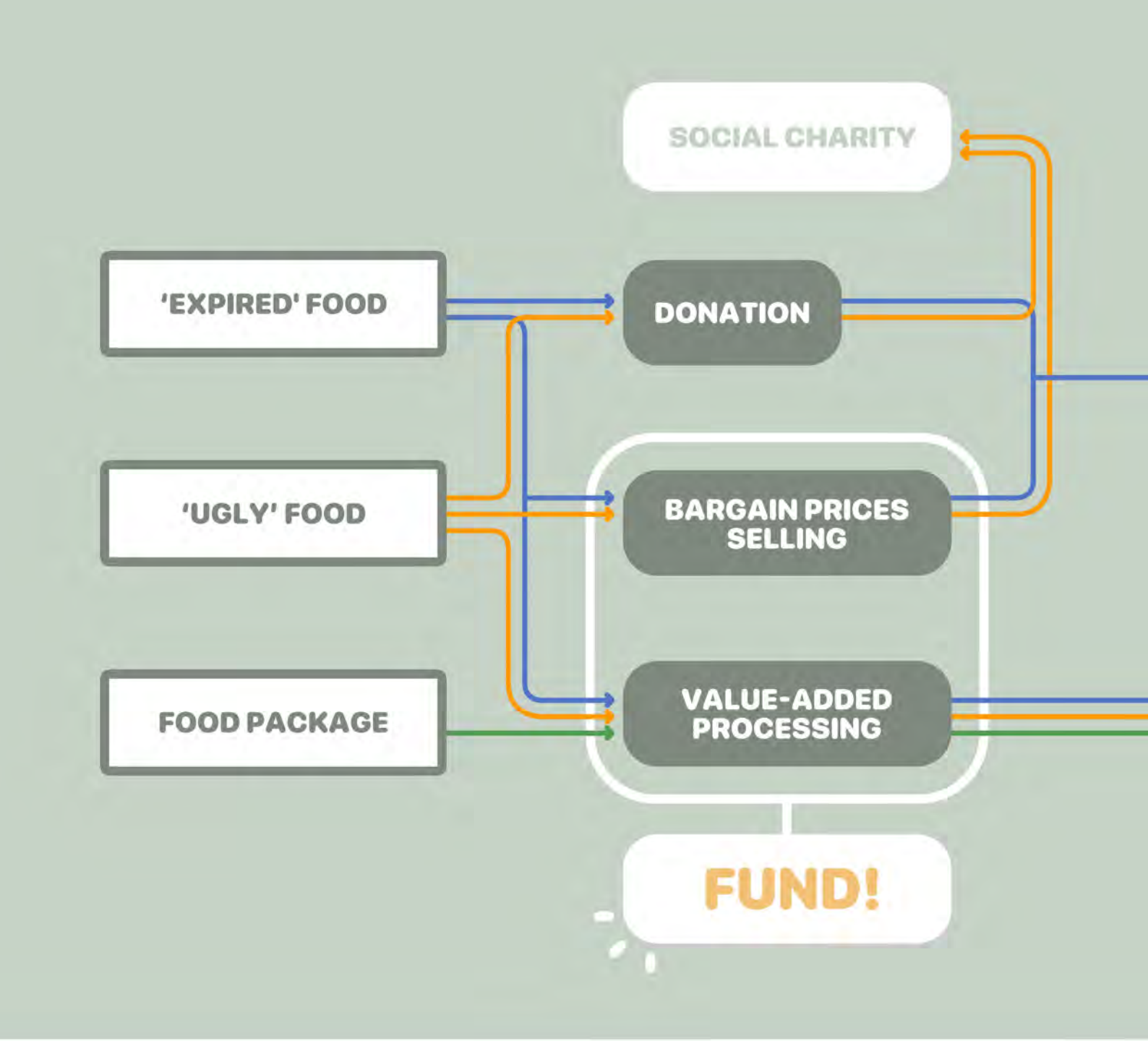
3

DISASTER -RESPODING EMERGENCY MEASURES

20%

4

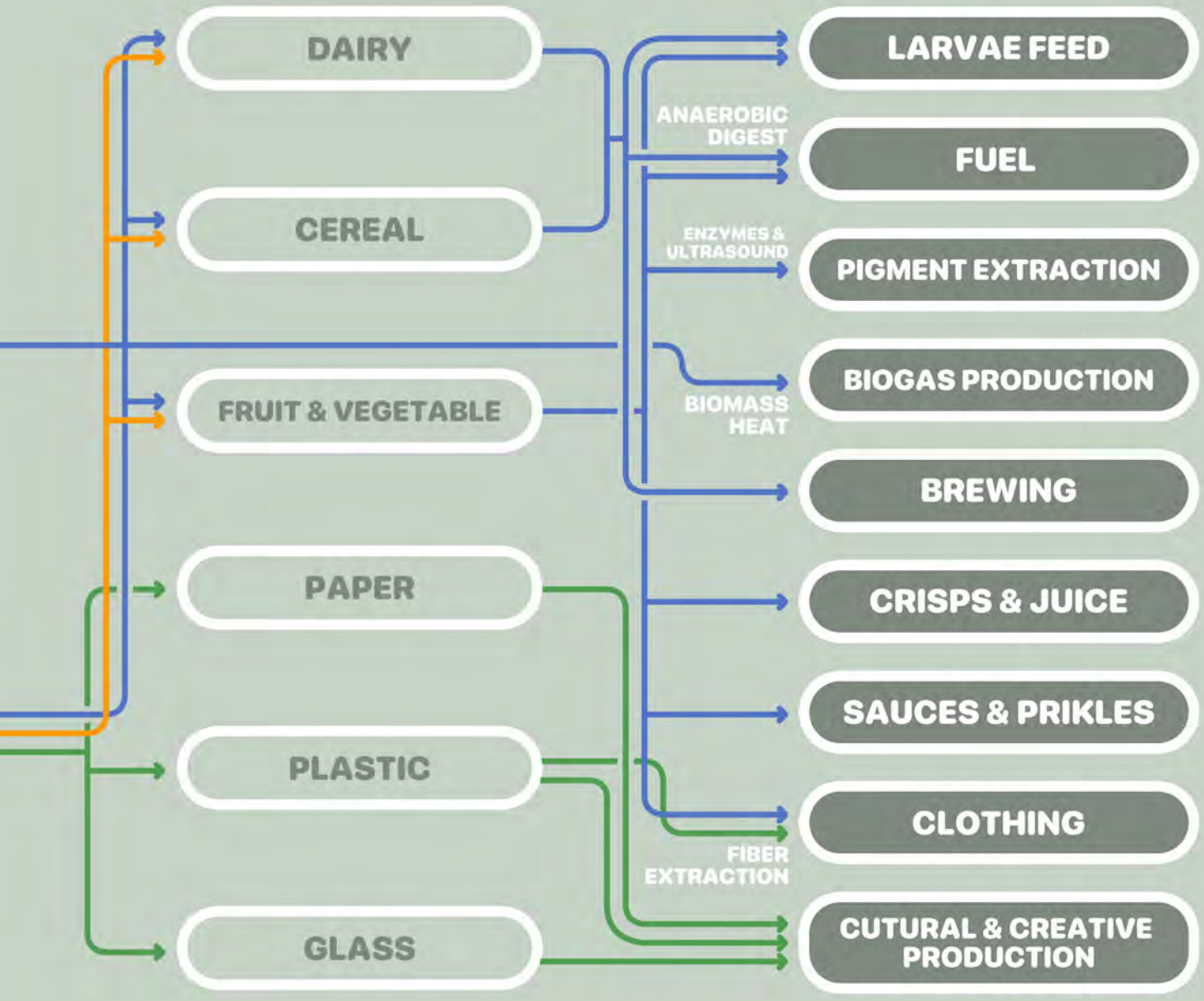
1. Farmers work at the Bowery Farming Inc. indoor farm in Kearny, New Jersey. Photographer: David Williams/Bloomberg(2018, December 12) Retrieved May 1,2020, from https://www.bloomberg.com/news/articles/2018-12-12/uber-ceo-and-alphabet-invest-in-urban-farming-startup
2. Green space is good for mental health(2019, Aug 21),Retrieved May 1,2020, from https://www.ncl.ac.uk/press/articles/latest/2019/08/greenspacegood/
3. The problem of stray animals and the ways of its solving, Retrieved May 1,2020, from https://gogetfunding.com/the-problem-of-stray-animals-and-the-ways-of-its-solving/
4.【抗击疫情 朝阳在行动】在特殊的日子里 感受别样的温暖 , 新华社记者 肖艺九摄 , Retrieved May 1,2020, from http://shuangta.nen.com.cn/system/2020/03/18/020992775.shtml



FUND MECHANISM

'Expired' food are always thrown away by retailors before they go moldy and get rotten. However, with the help of an anaerobic digester, these food waste could be converted into fuel to heat rooms in less than 24 hours. It is encouraged that more and more hotels and businesses should install biomass heating system. The energy is clean and cheap on the long term. Nevertheless, rotting food waste can feed and breed fly larvae, which can be used as a high-protein food source for birds, fish and pets, or turned into fertilizer and bio-oil.

Do you know that up to 40% of the fruit and vegetables



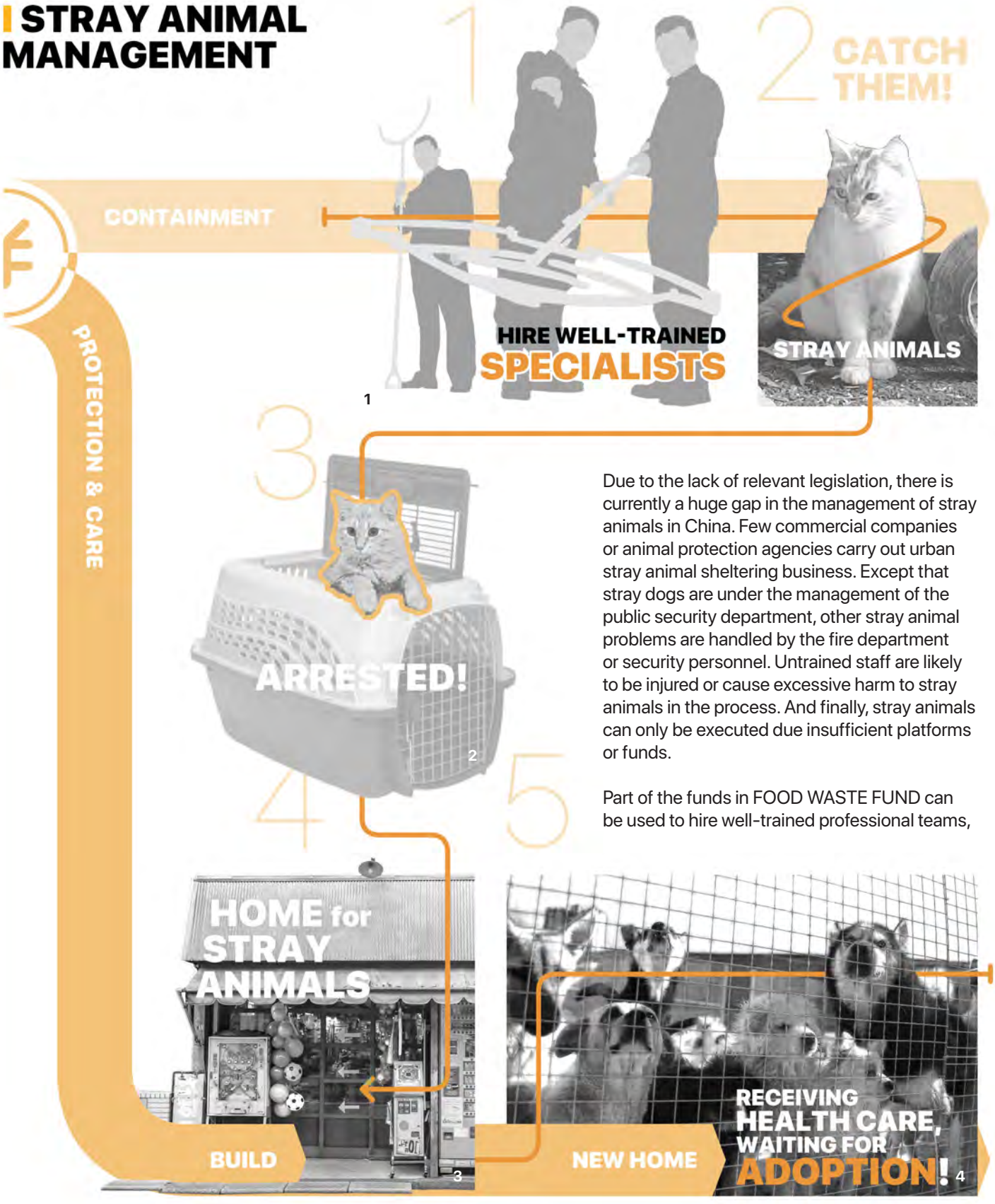
farmers produce are rejected by retailers merely because their size, shape or appearance doesn't meet strict standards? Instead of throwing famers' harness away, why not just donate these 'ugly' yet healthy food to the people in need or sell them at low prices via different media? Or, companies can just turn 'ugly' into 'beautiful' products like healthy crisps, juice, sauces and prickles with food industrial measures. Similarly, rejected cereals or dairy products can be used in brewing industry. What's more, pigment can be extracted from unwanted organic matter using a combination of enzymes and ultrasound. The process uses less energy and fewer chemicals than other methods, and could supply colourants for use in food products or cosmetics.

As has been mentioned in the previous chapters, the recyclable food packages can be re-produced into profitable products. One of our most recommended ways of this reproduction is fiber extraction and then make it fashion. It might not shock you that fashion industry has become the second most polluteting industry in the world, only second to petrochemical industries. We should take actions now.

3 NOW, TAKE ACTION!

Graham, S. (2016, January 30). Photo by Scott Graham on Unsplash. Retrieved from https://unsplash.com/photos/5fNmWej4tAA

STRAY ANIMAL MANAGEMENT



Due to the lack of relevant legislation, there is currently a huge gap in the management of stray animals in China. Few commercial companies or animal protection agencies carry out urban stray animal sheltering business. Except that stray dogs are under the management of the public security department, other stray animal problems are handled by the fire department or security personnel. Untrained staff are likely to be injured or cause excessive harm to stray animals in the process. And finally, stray animals can only be executed due insufficient platforms or funds.

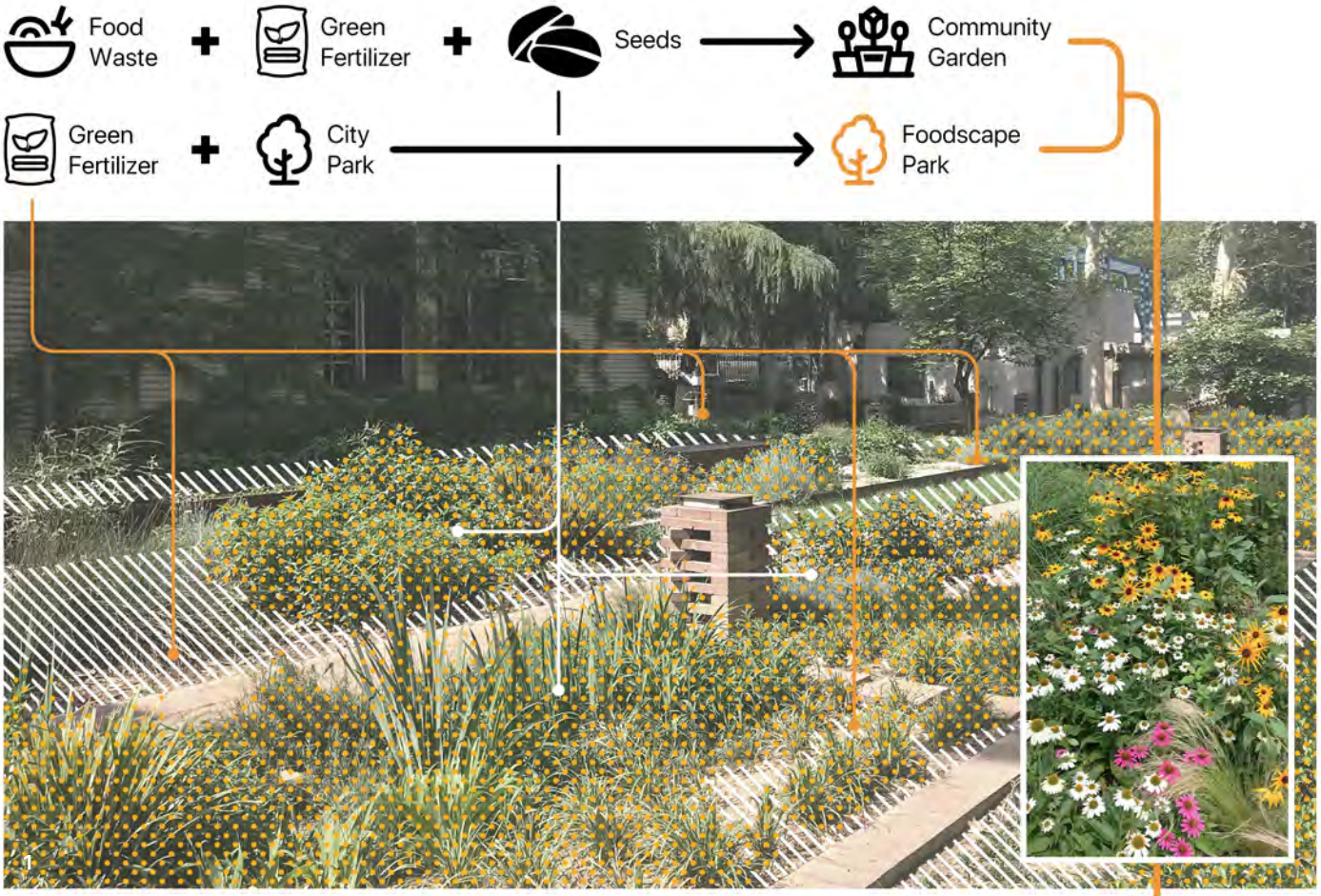
Part of the funds in FOOD WASTE FUND can be used to hire well-trained professional teams, and assist pet institutions to build homes for stray animals which provide a platform for the next step, adoption.

The home of stray animals supported by FUND has good sanitary conditions. This Institution can reduce the contact between stray animals and citizens, thereby minimizing the possibility of infectious diseases. Animals such as urban birds and yellow ferrets, which are often hunted by stray cats, can also benefit.

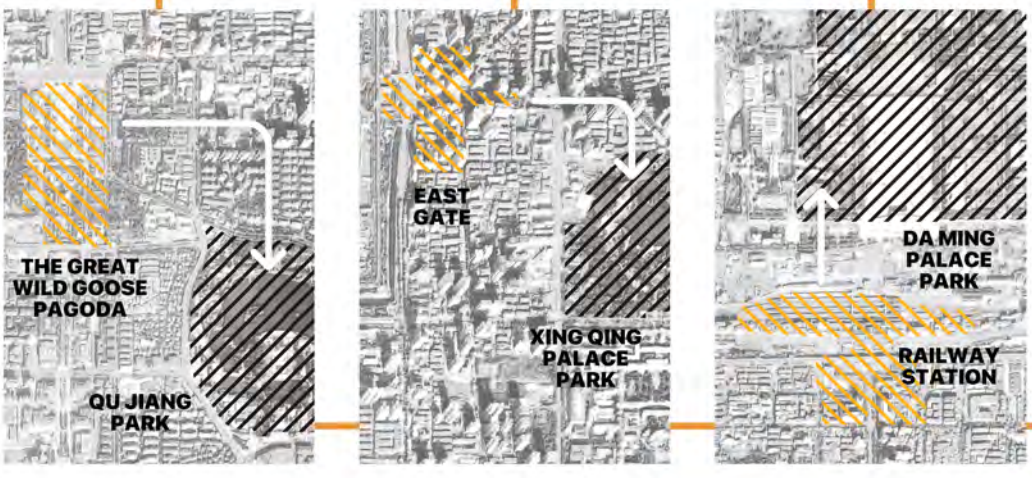
1. 山东频道 - 凤凰网 . (n.d.). Retrieved May 22, 2020, from http://sd.ifeng.com/
2. Plastic Cat Cage. (n.d.). Retrieved May 22, 2020, from https://www.indiamart.com/proddetail/plastic-cat-cage-4479545197.html
3. Fader, J. (2017, December 19). Photo by Julie Fader on Unsplash. Retrieved May 22, 2020, from https://unsplash.com/photos/1KWncoLB1V8
4. 搜狐 . (n.d.). Retrieved May 22, 2020, from https://www.sohu.com/

FOOD OASIS

Food waste is misplaced natural resources. Setting up compost bins and other facilities is actually simulating the material circulation in nature and helping to form a closed loop of urban ecology. Abandoned land in the community has achieved vegetation restoration, lush vegetation, and some production benefits within a few years through measures such as food waste composting, which has been proved feasible by numerous examples[2].



CONNECT
gourmet business districts
and
urban ecological green space



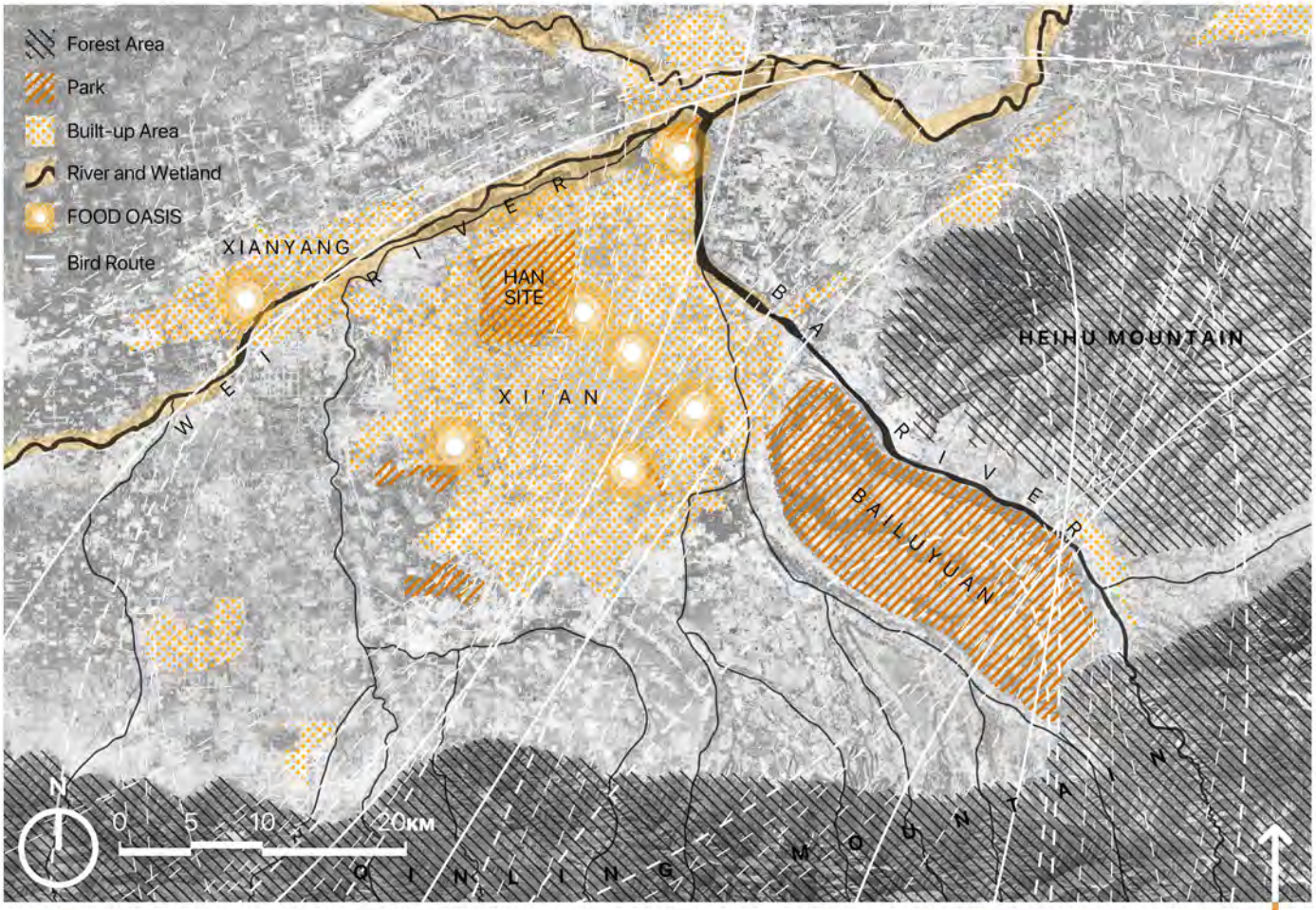
In the city, huge amount of food waste is generated in the food business district where consumers gather, and it can be converted into fertilizers to nourish nearby parks or ecological land.

The FOOD bridge between the gourmet business zone and the city park can connect different functional areas, improve the operation efficiency of the entire plot, and provide opportunities and convenience for people's daily recreation.

1. 王昕歌 . (n.d.). South Gate Garden [Photograph]. Xi'an.
2. 她用 5 年，将废土地变“小森林”，计划将在上海建 2040 处社区花园 _ 堆肥 . (2018, October 24). Retrieved May 23, 2020, from https://www.sohu.com/a/270882673_753478

1

Paradoxornis webbianus *Little Egret* *Otis tarda* *Ciconia nigra* *Bucephala clangula*



2

At the urban-regional scale, these block-level or urban-level larger green spaces are endowed with more ecological functions, just like "oasis" in urban "deserts", becoming the foothold of migratory birds and other creatures.

Xi'an is located in the Weihe Plain and the northern foothills of the Qinling Mountains. It is a hub of middle migratory bird routes in China. However, urban development has cut off the wetland channel from Qinling to the intersection of the Weihe Bahe.

Now, the recycling of food waste can promote the restoration of vegetation in urban wasteland and the construction of ecological parks, forming multiple green nodes within the built-up area. Coming from far away in southern Shaanxi or Sichuan, the birds gained larger habitat space. At the same time, it's also helpful for the next step in the comprehensive development of food, culture, tourism, and urban environment.

1. 一大波候鸟"集结"西安，再现迁徙的视觉的盛宴！ . (2017, November 22). Retrieved May 22, 2020, from https://www.sohu.com/

2. Q. (2015, June 29). 西安浐灞国家湿地公园的翠鸟 _ 湿地中国 _www.shidi.org. Retrieved May 22, 2020, fromhttp://www.shidi.org/sf_E7D3717BB161463CB1B55F0FF6310CF5_151_chanbawetland.html

FOOD LOOP PROJECT

A SPECIAL STRATEGY COMBINING FOOD, CULTURE, TOURISM AND URBAN ENVIRONMENT

Another way to reduce food waste in the city is to raise the efficiency of local food consuming and enhance the gourmet experience. However, in Xi'an, there are many difficulties hindering the way forward:

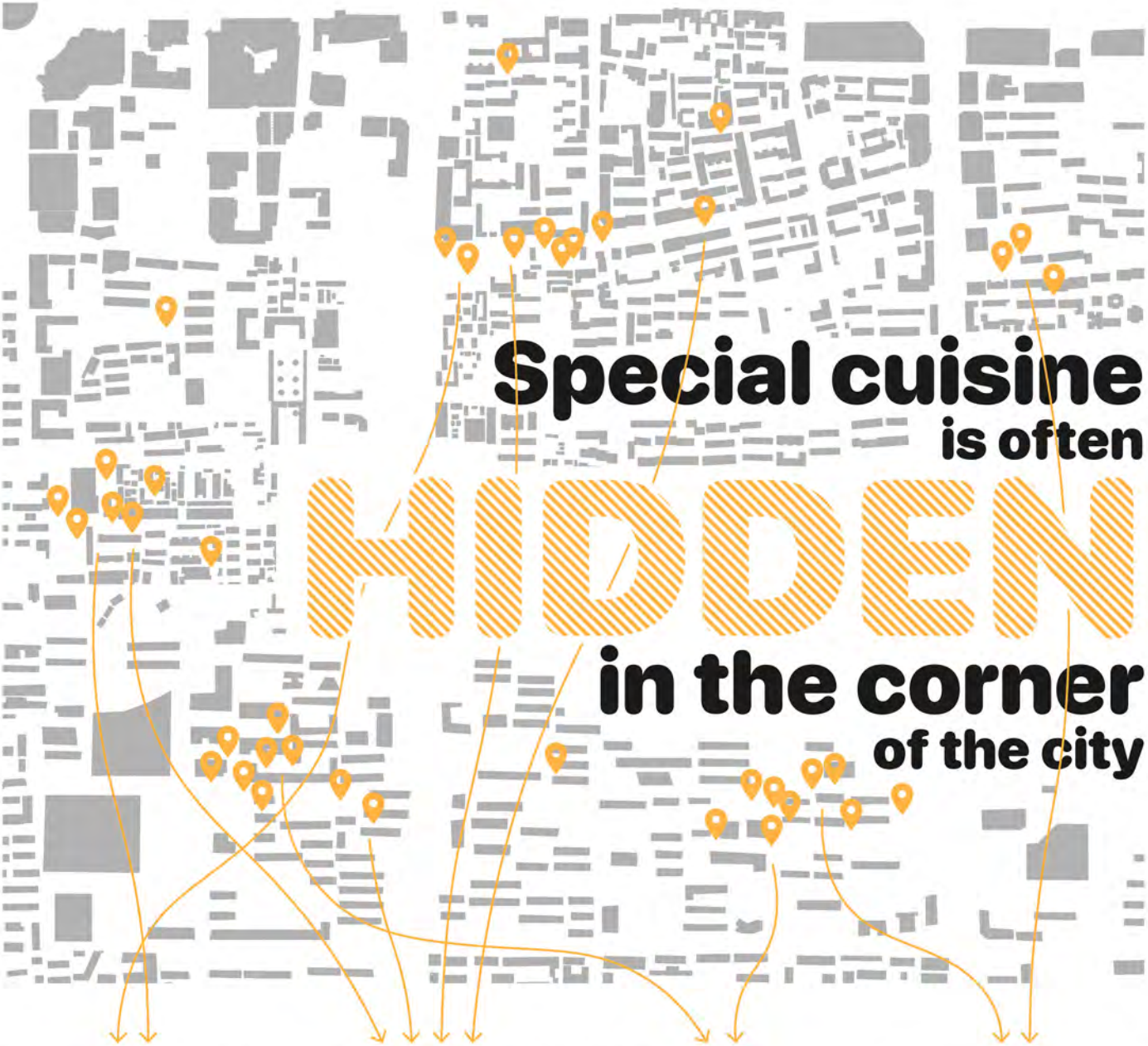
1-Tidal food gathering areas, hidden restaurants, and the unstable flow of people cause a large amount of ingredients to be discarded every day.

2-Poor street dining stall space experience, low pedestrian space utilization, and lack of management.

3-Traditional food, cultural tourism, and landscape resources are not closely related. Tourists are surrounded by chain restaurants with high energy consumption and high waste, which is not conducive to the development of gourmet tourism in the entire city.

It is urgent to design a model that combines food, culture, tourism and environment to achieve comprehensive and efficient development.

LET'S START FROM THE UNIQUE LITTLE SPACE AROUND!

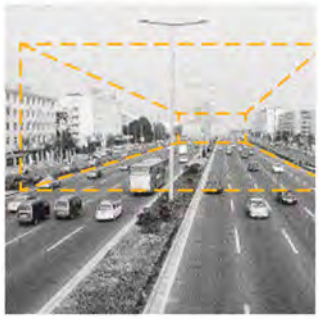


START FROM EVERYDAY SNACKS

The local cuisine of Xi'an are mainly Shaanxi dishes, and some specialties from Sichuan and Gansu. Interestingly, Xi'an cuisine is different from those in the eastern region of China, and it is mostly known for snacks. This also makes the most popular and characteristic restaurants scattered in the streets of Xi'an. There are only a few relatively well-known but small gathering areas.

There is a proverb in China that says "Good wine is not afraid of deep alleys", but today, this scattered and "hidden" food distribution model has hindered the development of gourmet tourism. Gathering areas with cultural symbols,

such as Muslim Street, have evolved into tourist attractions, and the restaurants in the commercial complex have become homogenous. So, how to find the hidden food, and promote the space feeling experience and the food efficiency?



LESS WASTE, BETTER SPACE

Places where food is hidden usually have pleasant spatial attributes, such as appropriate scales (neither in open roads nor in narrow gaps), just the right level of privacy, abundant civic activities, etc.

Of course, their shortcomings are also obvious. Because of the residual food, these spaces could easily become a gathering zone for stray animals. Besides, the lack of management, aesthetic enhancement, and efficient space utilization design are all issues that need to be solved.

Combine FOOD with CULTURE, UNIVERSITIES and TOURISM

Xi'an has a lot of high-quality higher education resources, so the construction of universities' campuses and students' activities in Xi'an are very active. Xi'an cuisine has connections with educational resources in certain areas, such as the tidal snack gathering area around colleges and universities.

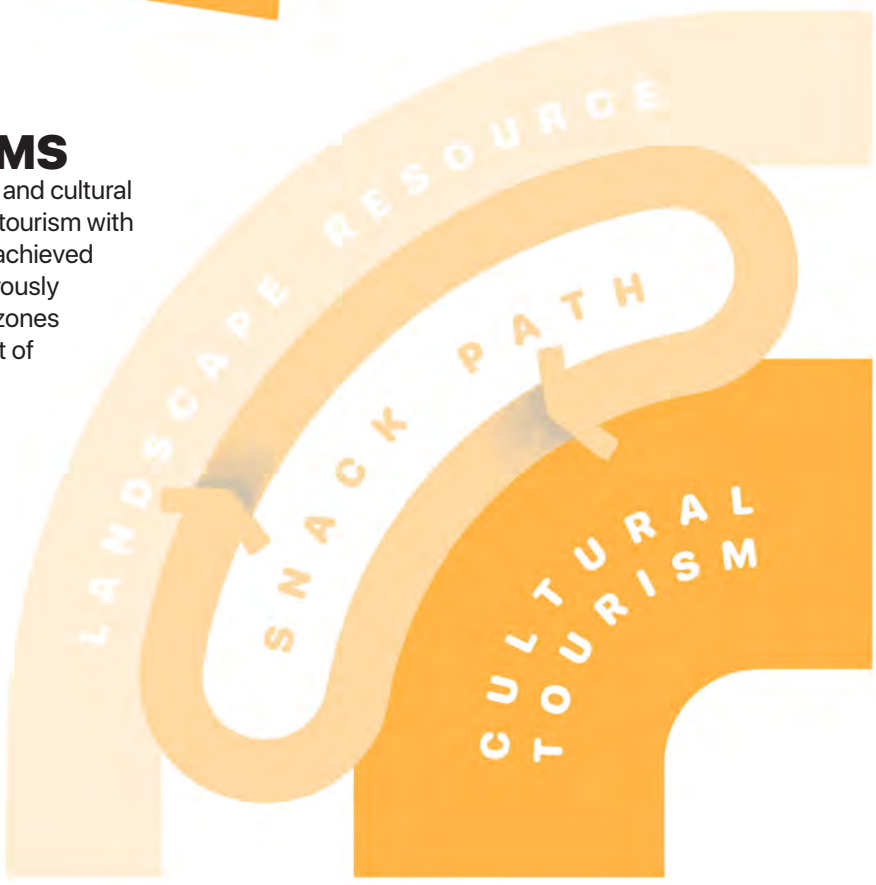
As a new development object of urban tourism, Chinese university campuses, which have their own consumer group advantages, may be helpful to create a gourmet cultural brand.

TURN THEM INTO MORE EFFICIENT FORMS

Xi'an has a long history and is rich in historical and cultural heritage. Over the years, Xi'an has developed tourism with the theme of Han and Tang cultures, and has achieved great results. At the same time, Xi'an has vigorously built wetland parks and ecological protection zones around the city, which has also attracted a part of the eco-tourism market.

However, cultural tourism and eco-tourism tourism in Xi'an have not been well integrated. Cultural sites are concentrated within the city, and wetland parks are located in the far suburbs. We hope to use a medium to form a bridge and bond between the two circles, which is precisely the food culture and food waste recycling mechanism.

We hope to use food and its processing chain to build a fusion model, SNACK LOOP, to form a new connective layer between the cultural tourism and landscape resources.



STEP1
SITE

STREET SCALE

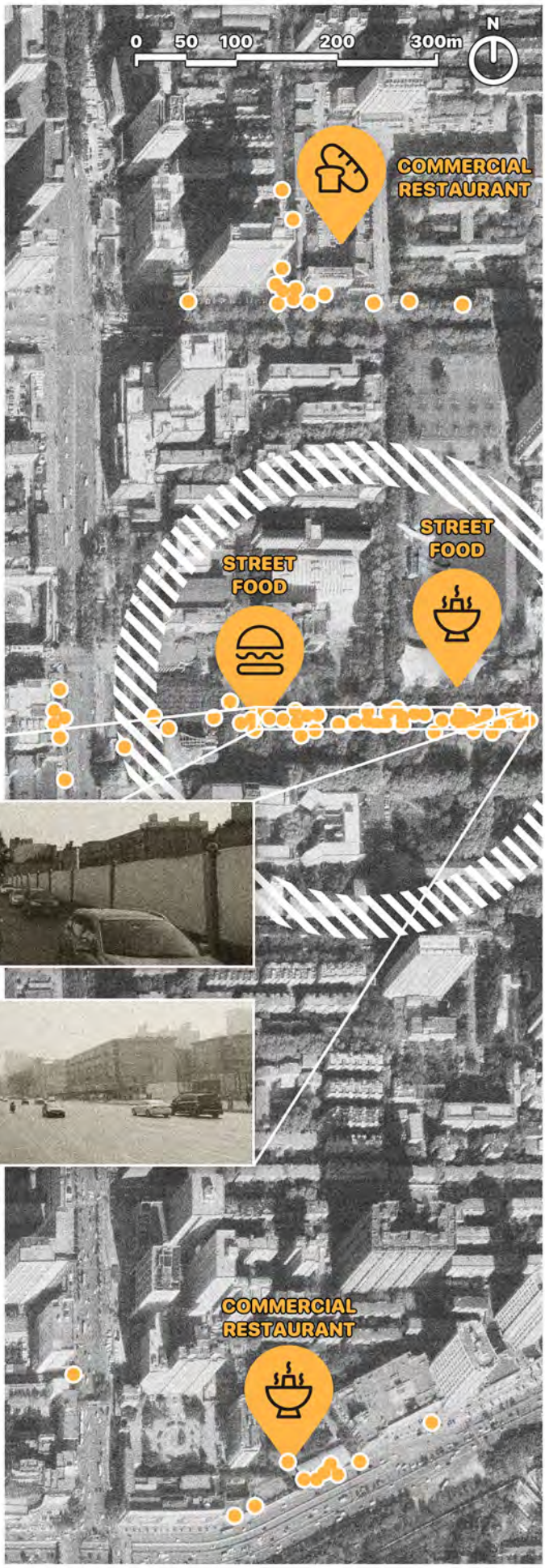
DISCOVER
FOOD SPOTS

IMPROVE
FOOD SPACE CONDITIONS

IMPROVE
DINING EXPERIENCE

RECYCLABLE
DESIGN
BIODEGRADABLE
PACKAGING

contain visual symbols



1. Diaz, E. M. (2017, December 22). Photo by Edwin Macalopú Diaz on Unsplash. Retrieved from https://unsplash.com/photos/yLBm7eVr4t0

STEP2
CONNECT

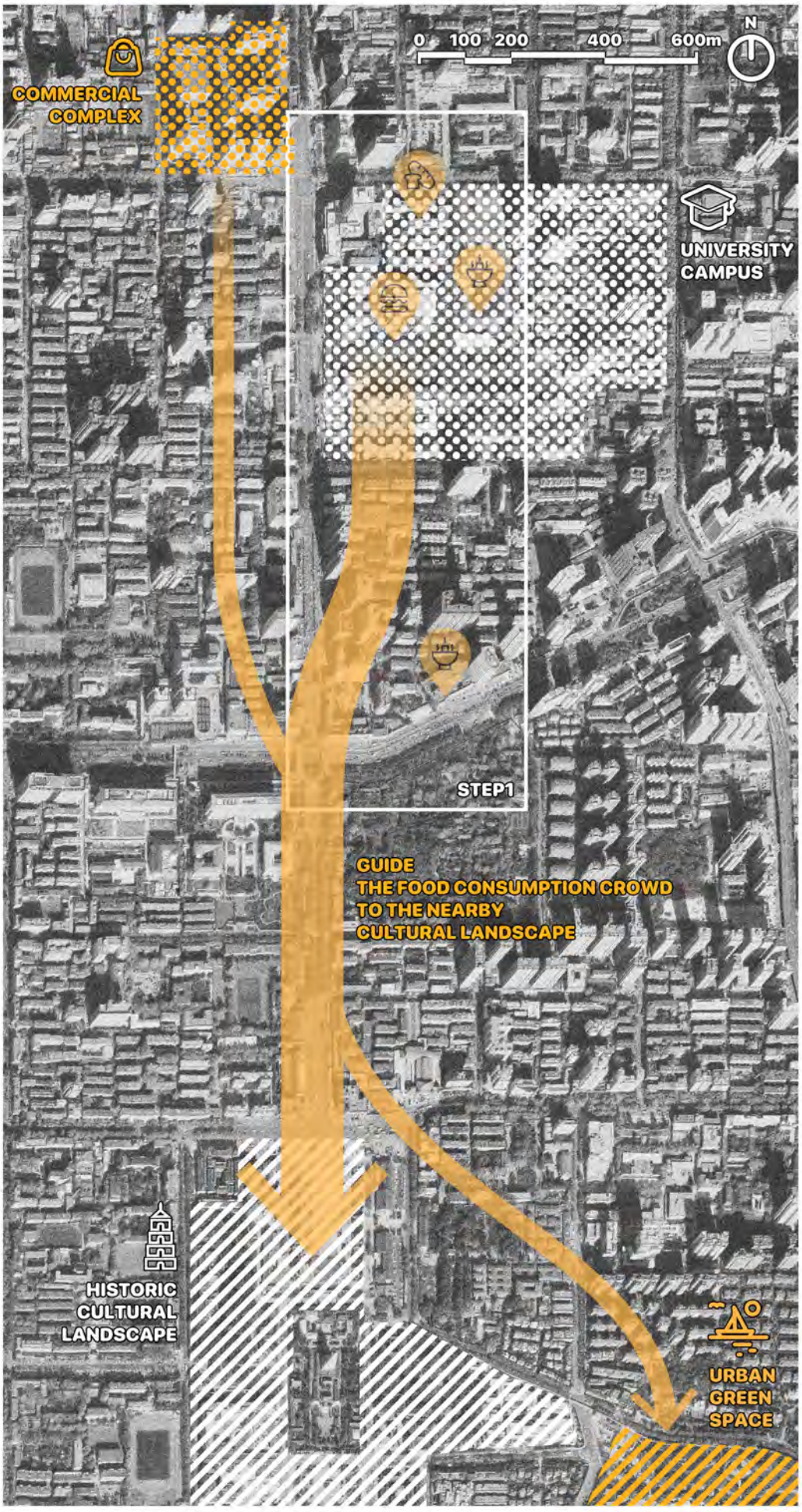
BLOCK SCALE

CONNECT FOOD SPOTS

COMBINE WITH SURROUNDING UNIVERSITY CAMPUSES

LINK TO BUSINESS DISTRICT

POINT TO CULTURAL POINTS



1. 诚意侯 . (2012). 南京 : 从九华山到台城 . Retrieved from http://blog.sina.com.cn/s/blog_53928e100101bz1z.html

STEP3
LOOP

CITY SCALE

CONNECT GOURMET ROUTES

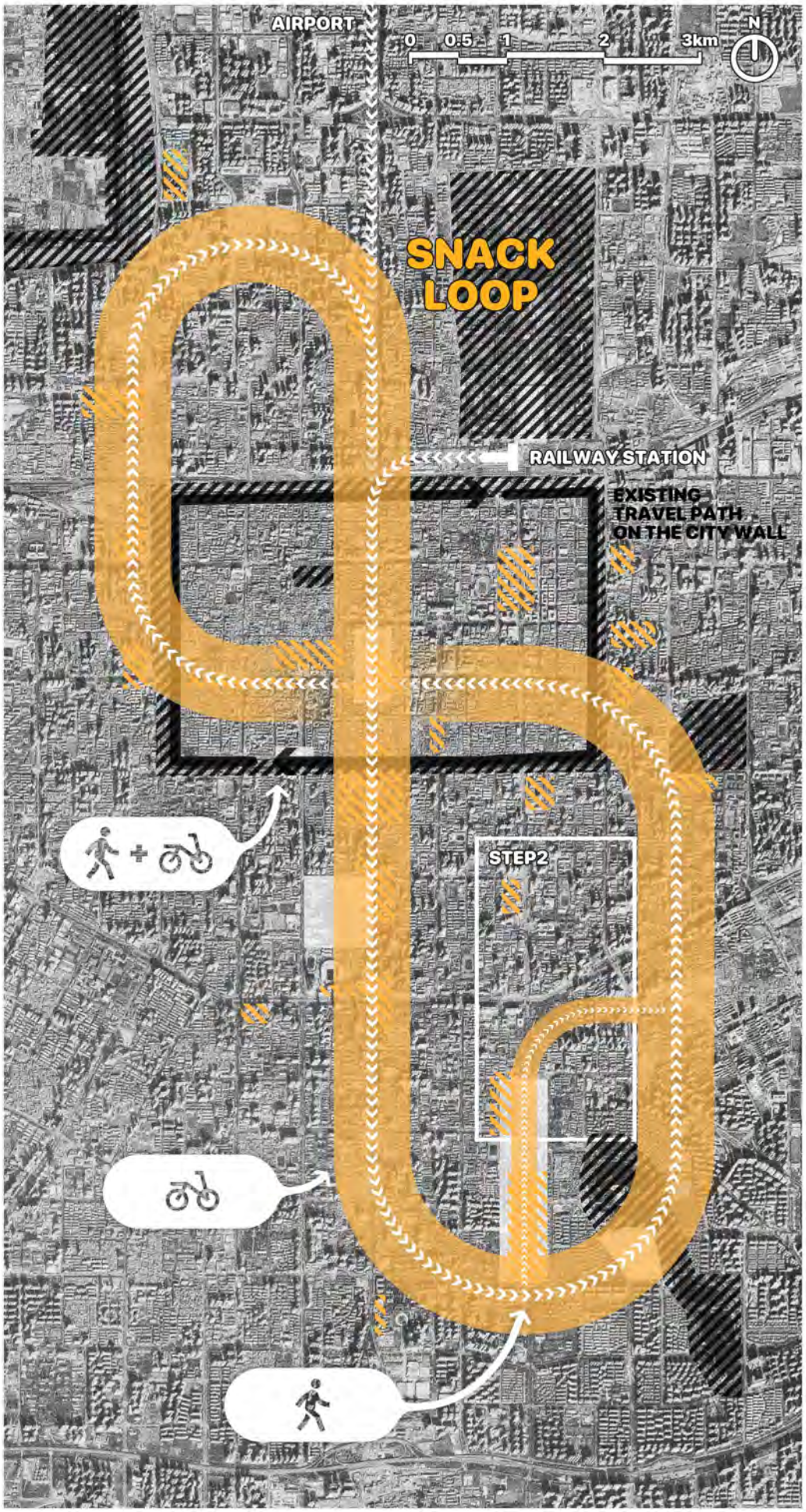
CONNECT WITH CITY WALL

CONNECT WITH TRANSPORTA-TION HUB

CONNECT WITH CULTURAL HERITAGE AREA

FORM A LOOP

ENCOURAGE WALKING OR CYCLING

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1. Quiroga, J. (2019, December 27). Photo by Javier Quiroga on Unsplash. Retrieved from https://unsplash.com/photos/7KgHovYgJEE

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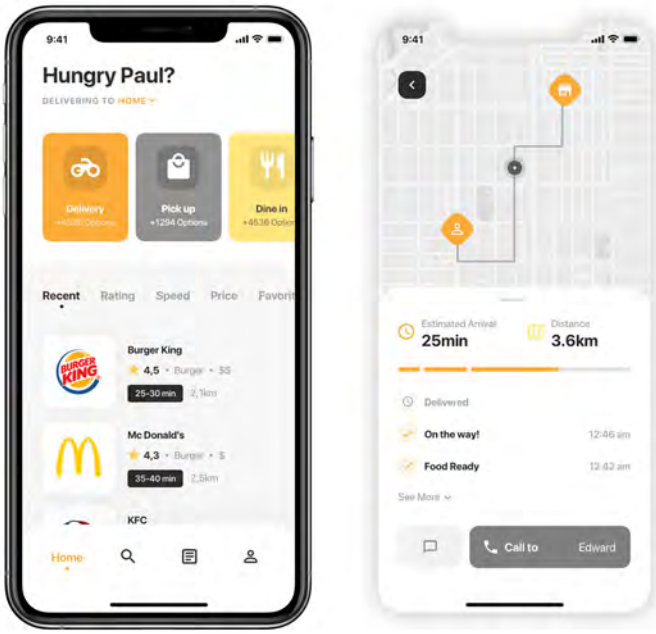


2

NEW EXPERIENCE METHODS
NEW CULTURAL GROWTH
NEW URBAN ENVIRONMENT

Xi'an has cooperated with TikTok and other Internet companies to create a tourism brand image on the short video platform and achieved great success.

This shows that today's network is an important driving force for food tourism and cultural development. Under the design framework of "FOOD LOOP", Internet social media will play a greater role.

From tidal food gathering blocks, to university campuses, from street environment improvement to the integration of cultural heritage areas and ecological landscapes, this fusion model can stimulate people's desire to explore. Also, they can participate in the city-wide food consumption process and increase the utilization rate of hidden snacks. So that visitors can appreciate the local historical architecture, immerse in the local culture while looking for hidden food.

This will bring new experiences and expand the cultural tourism market. With the support of the Internet and the media, these advantages will be magnified. Ultimately, these measures can make the entire food utilization process in Xi'an much more efficient, thereby improving the environment of the entire city.

1. Graham, S. (2016, January 30). Photo by Scott Graham on Unsplash. Retrieved from https://unsplash.com/photos/5fNmWej4tAA
2. UI8 LLC. (n.d.). UI Kits. Retrieved May 20, 2020, from https://ui8.net/ui8/products/nibble-ios-ui-kit

CHAPTER III

经济观察网 . (n.d.). Retrieved May 22, 2020, from https://dy.163.com/v2/article/detail/F507DM7P0519CQQ3.html

HEALTHY CITY FROM THE PERSPECTIVE OF RESILIENCE!

CONTENTS

WUHAN, CHINA

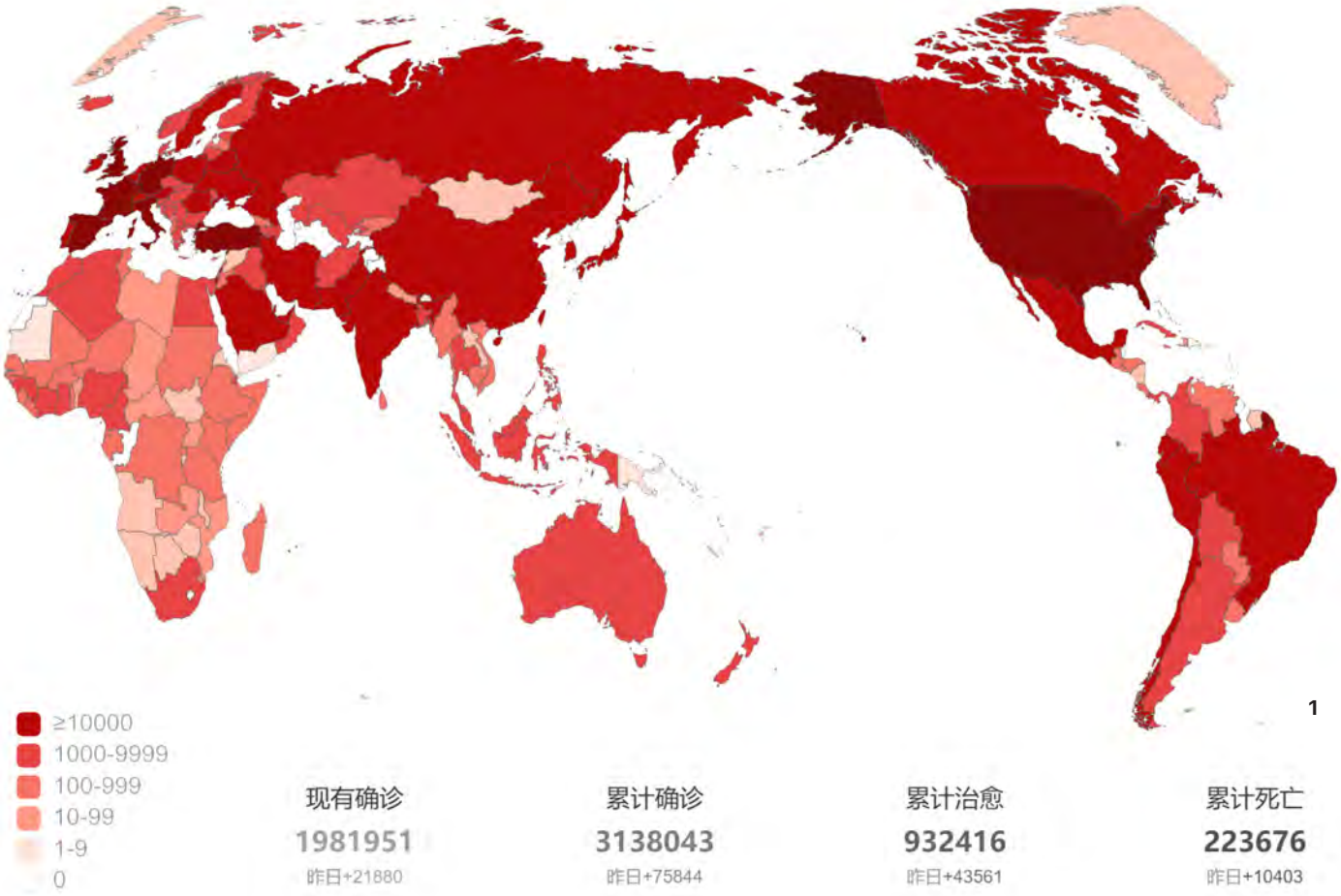
Wuhan, composed of the three towns of Wuchang, Hankou, and Hanyang, is the capital of Hubei Province. The three towns, separated by the Yangtze and Hanshui rivers,a re linked by bridges, and because these municipalities are so closely connected by waterways, Wuhan is also called the "city on rivers."

Being the largest inland port on the middle reaches of the Yangtze River and a major stop on the Beijing-Guangzhou Railway, Wuhan is one of China's most important hubs of water and rail transportation and communications.

Wuhan has an old history and rich cultural traditions. It began to prosper as a commercial

town about two thousand years ago, when it was called Yingwuzhou (Parrot beach). From the first century to the beginning of the third century, the towns of Hanyang and Wuchang began to take shape.

During the Song Dynasty (960-1279), the area became one of the most prosperous commercial centers along the Yangtze River. By the end of the Ming Dynasty (1368-1644), Hankou had become one of the four most famous cities in China. Today, Wuhan is the political, economic, and cultural center of Central China. It boasts of one of China's leading iron and steel complexes -- the Wuhan Iron and Steel Corporation. Wuhan is also a city with a strong revolutionary tradition.



1

COVID-19 SWEEPS THE GLOBE

The Health Commission of Hubei Province, where Wuhan is the capital, said the virus' death toll climbed by eight in the province, but the total confirmed cases of the novel coronavirus disease (COVID-19) in Wuhan and Hubei remained at 50,005 and 67,800 on Wednesday.

The mortality of COVID-19 is relatively low, which is closer to the level of influenza compared with SARS. However, it is highly infectious!

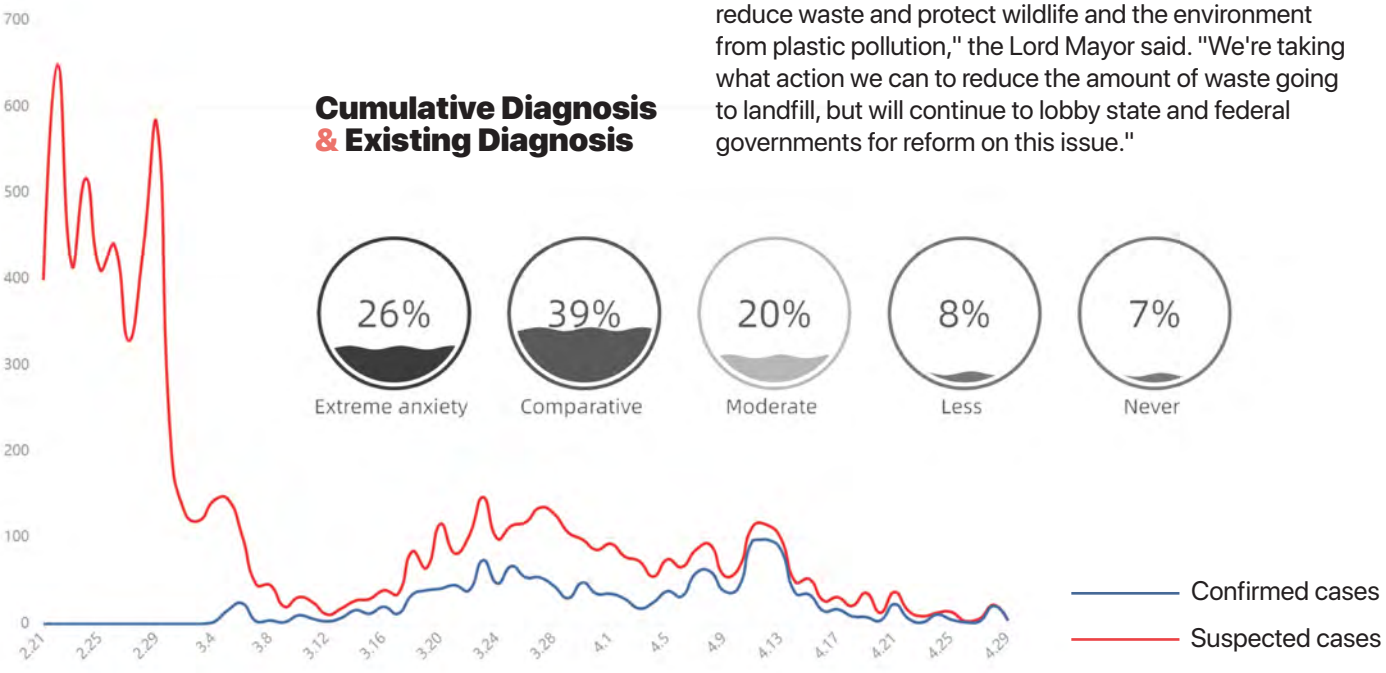
EPIDEMIC	PERIOD	REGION	PEOPLE DEAD	MORTALITY	INFECTIVITY
EPIDEMIC	*2019-*	*China & 24 Countries*	2500k+	1%-2% (估)	1.5-3.5 (估)
H1N1 Flu	*2019-10*	*world wide*	150-300k	0.03%	1.5
SARs	*2003-04*	*China & 26 Countries*	800	10%	3.0
HK Flu	*1968-70*	*Southeast Asia USA*	1000-4000k	~0.2%	2.0
Asia Flu	*1957-58*	*China USA Europe*	1000-2000k	~0.2%	1.8
Spanish Flu	*1918-19*	*world wide*	25000k	10%	2.0

1. 疫情实时大数据报告 . (n.d.). Retrieved May 2, 2020, from https://voice.baidu.com/act/newpneumonia/newpneumonia/?from=osari_pc_3

CHINA UNDER EPIDEMIC SITUATION

The Health Commission of Hubei Province, where Wuhan is the capital, said the virus' death toll climbed by eight in the province, but the total confirmed cases of the novel coronavirus disease (COVID-19) in Wuhan and Hubei remained at 50,005 and 67,800 on Wednesday.

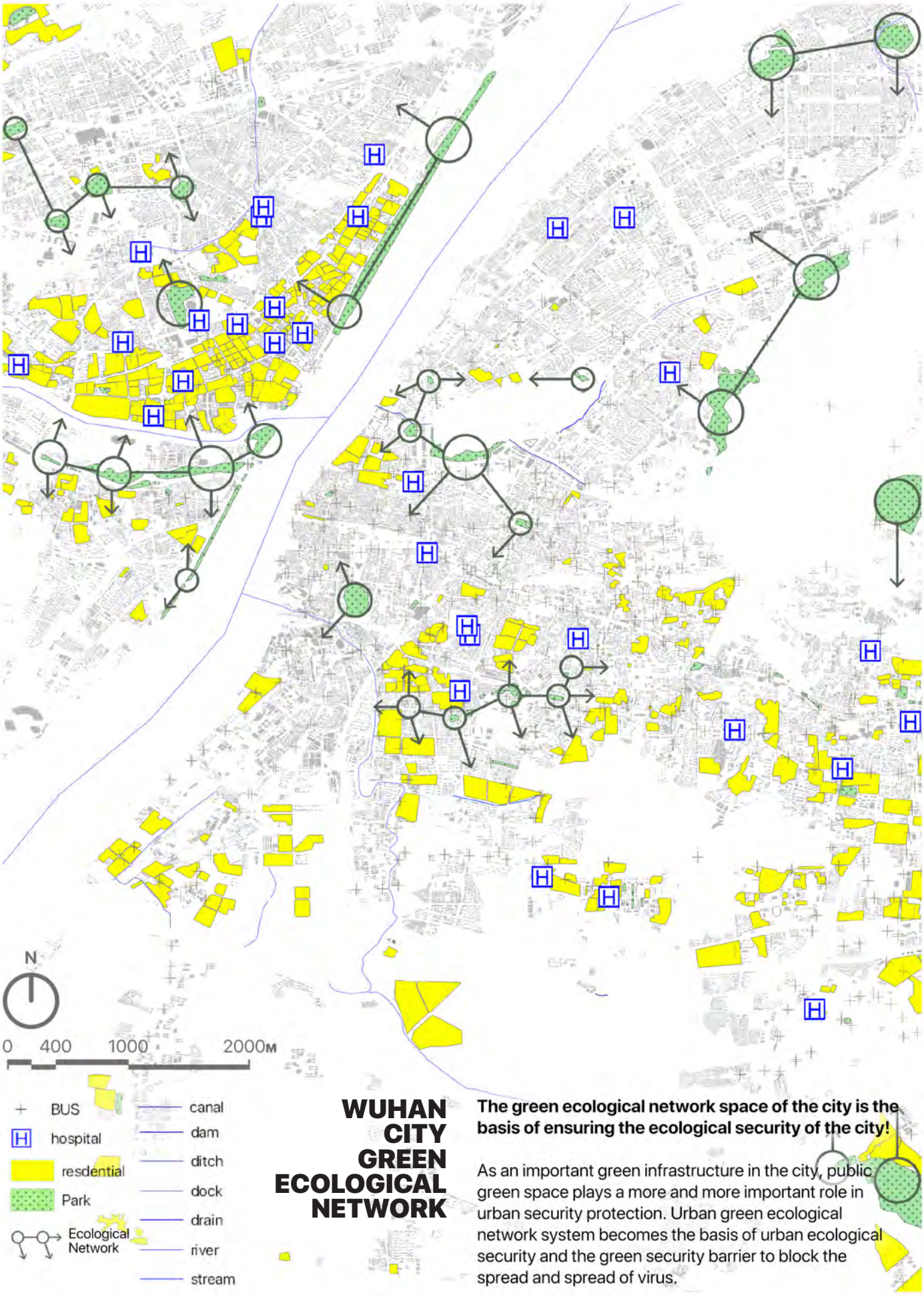
Diagnosis Trend



"These are vending machines with a twist that will encourage Sydneysiders to be even better at recycling plastic bottles and aluminium cans," said Sydney Lord Mayor Clover Moore. "The machines offer a small reward for people who make the effort to recycle. We're trialling these reverse vending machines and I hope this new idea will capture the attention of our residents and visitors."

"Container deposit schemes significantly increase recycling, reduce waste and protect wildlife and the environment from plastic pollution," the Lord Mayor said. "We're taking what action we can to reduce the amount of waste going to landfill, but will continue to lobby state and federal governments for reform on this issue."

1. 武汉疫情医务人员 . (n.d.). Retrieved May 20, 2020, from http://glbnews.com/url.html?p=https://www.publimetro.cl/cl/social/2020/01/28/coronavirus-alemania-japon-china-wuhan-hubei-munich-nara.html

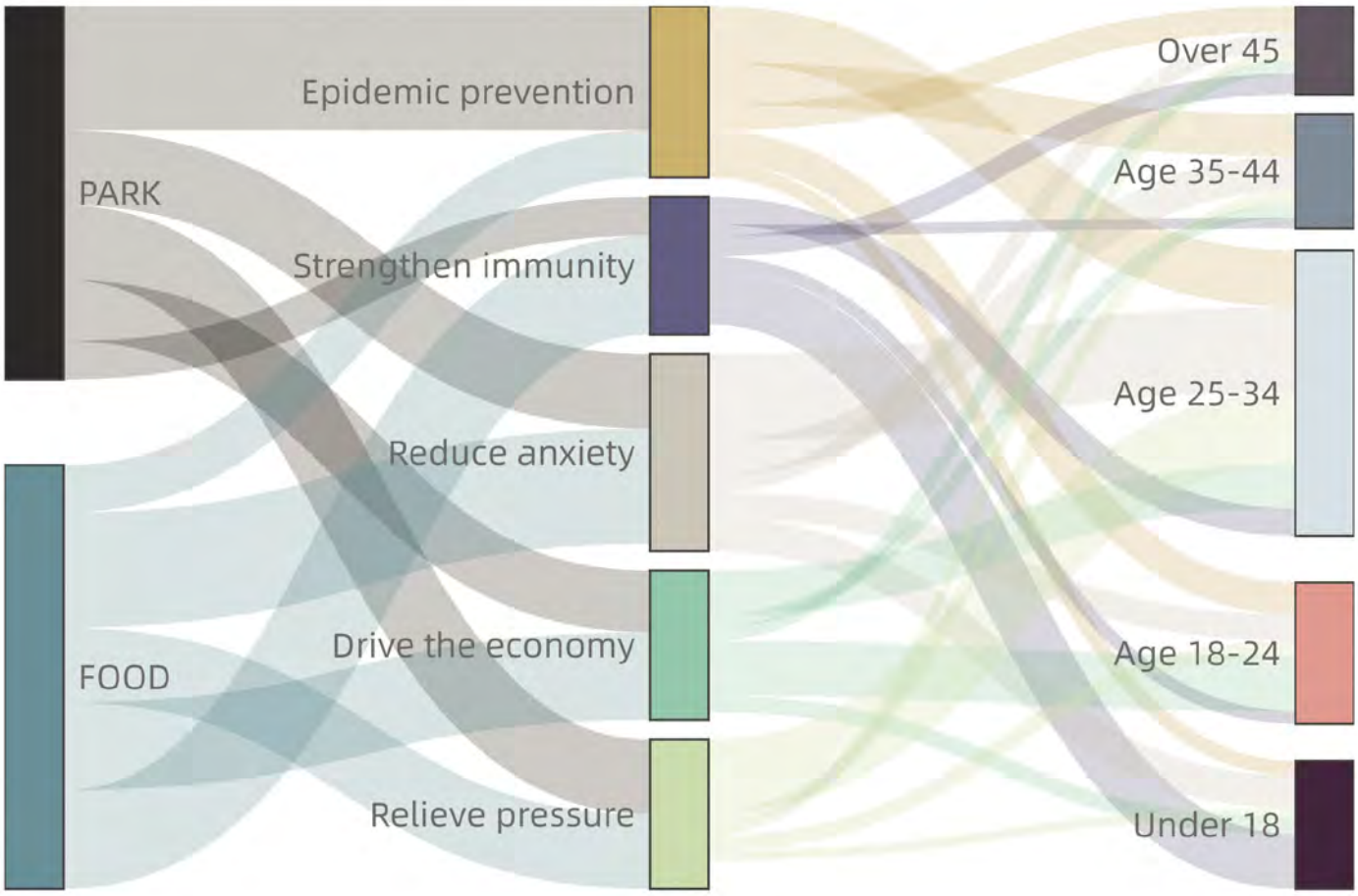


WUHAN CITY GREEN ECOLOGICAL NETWORK

The green ecological network space of the city is the basis of ensuring the ecological security of the city!

As an important green infrastructure in the city, public green space plays a more and more important role in urban security protection. Urban green ecological network system becomes the basis of urban ecological security and the green security barrier to block the spread and spread of virus.

FOOD & PARK & EPIDEMIC



Since December 2019, there has been an unexplained pneumonia outbreak in Wuhan!

Novel coronavirus is associated with the epidemic of pneumonia in Wuhan. The intermediate host may be a wild animal in the Southern China market of Wuhan. The severity of the disease depends on the variation of virus and the government's control measures.

Wuhan plans to spend more than 1 billion yuan on nationwide screening!

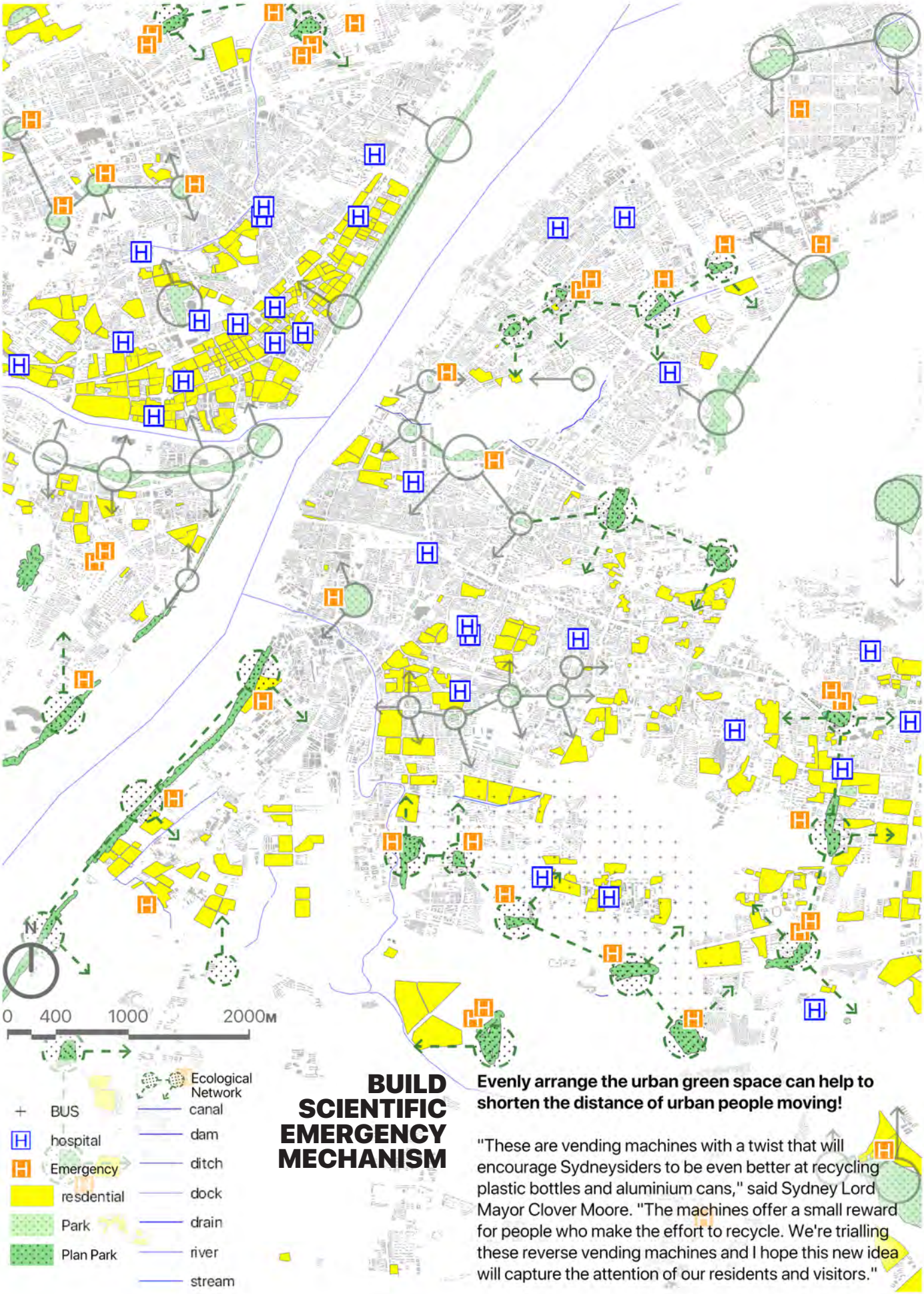
This nucleic acid test will focus on the key points and be organized and implemented in a scientific and orderly way. The objects of detection are residents and temporary residents who have not been tested for new coronavirus nucleic acid in the whole city. Priority should be given to the residents of epidemic, old and densely populated areas.

The nucleic acid test is carried out in the area, and each area is responsible for organizing the residents, employees of enterprises and institutions, and relevant personnel of stores and business households within its jurisdiction to sample and test. Each region shall timely master the completion of nucleic acid sampling coverage within its jurisdiction to ensure no omission or repetition.

According to the City of Sydney, around 15,000 bottles and cans across Australia are thrown into landfill waste or littered every hour, instead of being recycled -- about 58 percent of all recyclable material annually. To help minimise this waste, it is trialling Envirobank "reverse vending machines"

1

1. 疫情实时大数据报告 . (n.d.). Retrieved May 2, 2020, from https://voice.baidu.com/act/newpneumonia/newpneumonia/?from=osari_pc_3



BUILD SCIENTIFIC EMERGENCY MECHANISM

Evenly arrange the urban green space can help to shorten the distance of urban people moving!

"These are vending machines with a twist that will encourage Sydneysiders to be even better at recycling plastic bottles and aluminium cans," said Sydney Lord Mayor Clover Moore. "The machines offer a small reward for people who make the effort to recycle. We're trialling these reverse vending machines and I hope this new idea will capture the attention of our residents and visitors."

EMERGENCY FANG CANG SHELTER

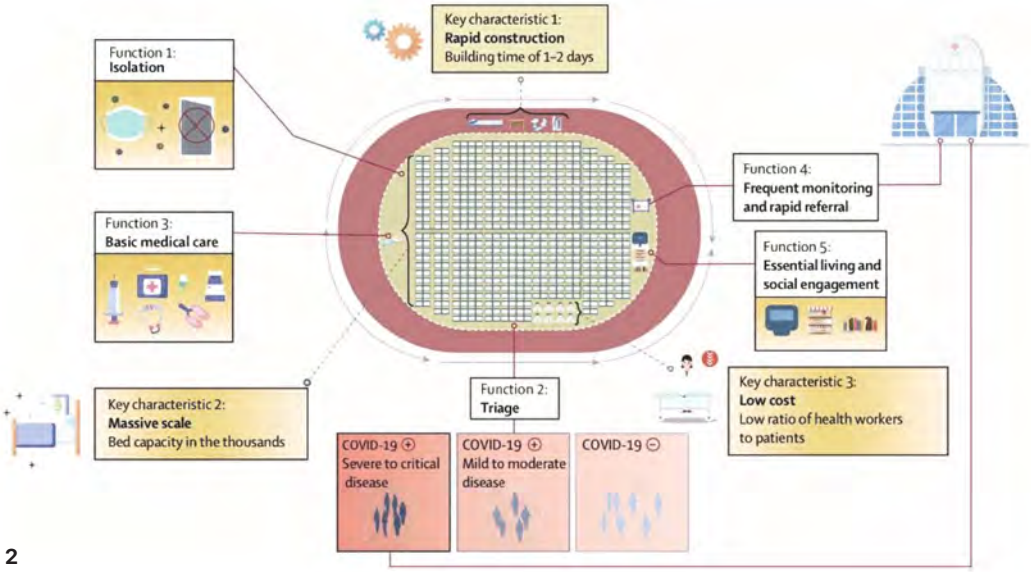
Novel coronavirus pneumonia (COVID-19) patients were rebuilt in a shelter hospital in Hubei, Wuhan, China. There are 16 similar hospitals in Wuhan, each of which can accommodate hundreds of mild patients. After these hospitals are put into use, the epidemic situation in Wuhan has eased.

Excerpts From Important News Reports

It is a key measure taken by the authorities at a critical time," said Wang. "Unlike field hospitals during wartime or quake-relief efforts, the makeshift hospitals in Wuhan are unprecedented in China.

Characteristics & Essential Functions of Fang Cang Shelter Hospitals

16 Similar Hospitals In Wuhan



2

The "shelter hospital" is generally composed of medical functional unit, ward unit, technical support unit and other parts.

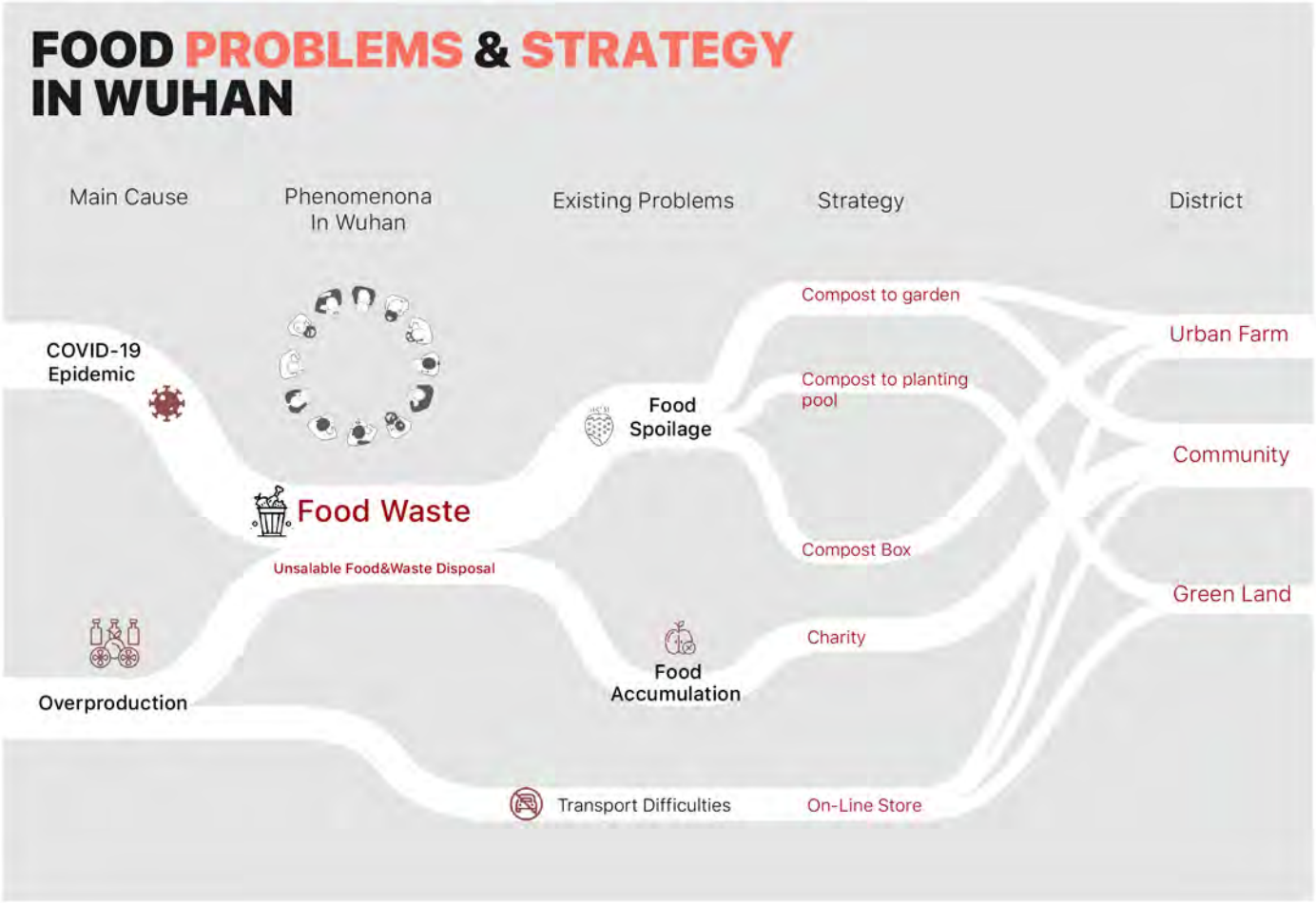
It is a modular medical equipment, which has many functions such as emergency treatment, surgical treatment, clinical examination and so on. It is widely used in various emergency treatment, military field hospital and other fields.

1. Hôpital Fangcang. (n.d.). Retrieved May 20, 2020, from https://fr.wikipedia.org/wiki/H%C3%B4pital_Fangcang
2. Fang cang shelter. (n.d.). Retrieved May 20, 2020, from https://tech.163.com/20/0403/16/F9A637DP00097U81.html


EAT. DRINK. REPOSE
DELICIOUS FOOD
FOOD GATHERING PLACE
楼打卡小吃
美食集市
得閑飲茶食飯
美×食×集×市
铁板
FOOD COUR
美食集市
轻轨一号
Transit Line 1
CHILLI CHICKEN
2F 人气美食
1F 打卡小吃
BEFORE
BEFORE
BEFORE
BEFORE
自集来了

(n.d.). Retrieved May 20, 2020, from https://weibo.com/p/1005052609612777/photos?from=page_100505

FOOD STREET WITHOUT PEOPLE
AS A RESULT OF COVID-19 OUTBREAK IN WUHAN



It Is Necessary To Change Food Scraps&Waste To Foodscape Garden!

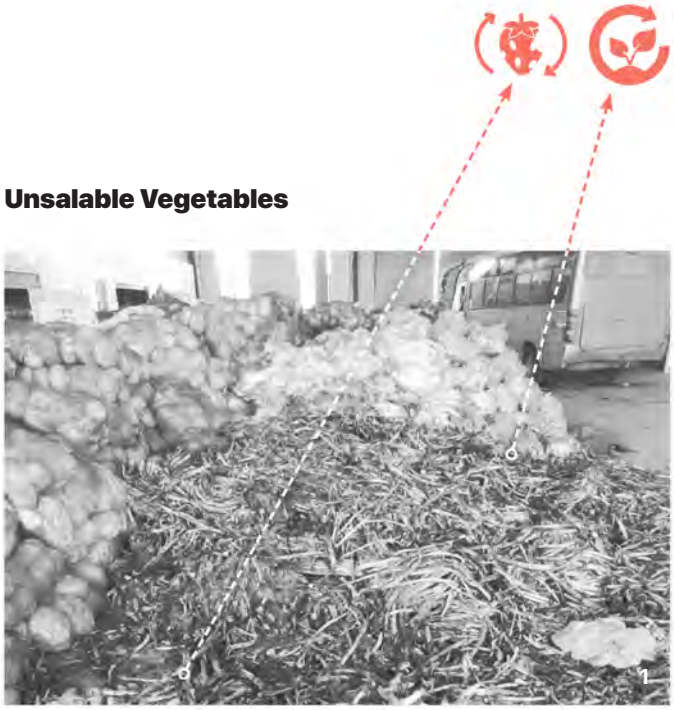
It is worth noting that, on the one hand, the vegetable farmers can only watch the vegetables rot in the field, on the other hand, people have to buy fruits and vegetables at a higher price, and even there are places where they can't buy fruits and vegetables.

Logistics is the biggest obstacle in the present epidemic. Due to the impact of the epidemic, many places are closed to villages and roads, and a large number of agricultural products cannot be transported out; the customers who receive vegetables dare not go or can not go; what's more, since the epidemic, everyone is generally isolated at home, the resumption of work of enterprises and schools is pushed again and again. The demand for agricultural products other than the catering industry and grain is significantly reduced.

Some unsalable vegetables are rotting in piles, so we need to find solutions to deal with them.

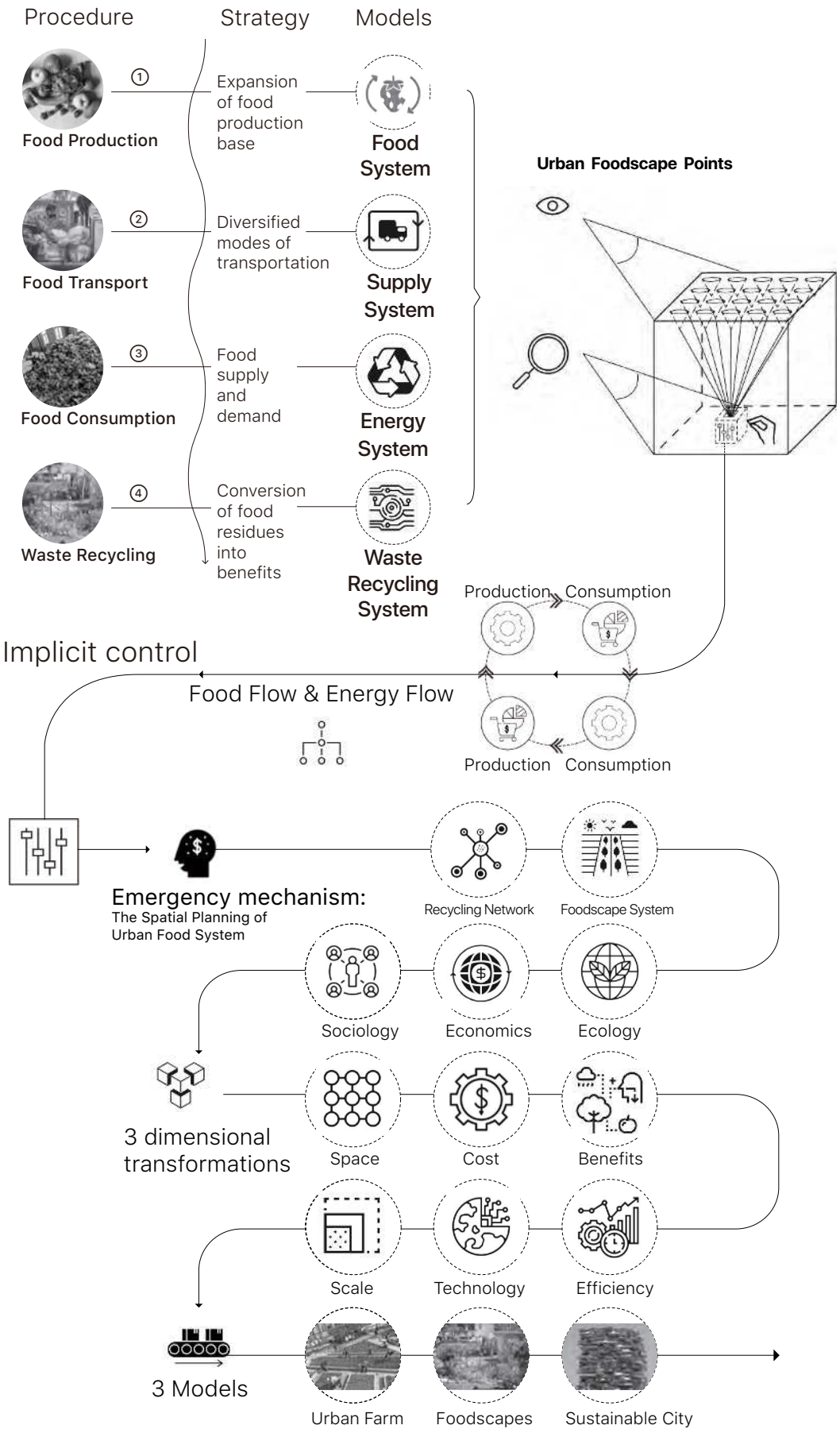
Since the beginning of the epidemic, there has been information about vegetables that can't be transported out and sold, which can only be stored or even allowed to rot in the ground. For the large-scale vegetable farmers, the Spring Festival, which is the peak season, is challenging to sell vegetables, which is unexpected.

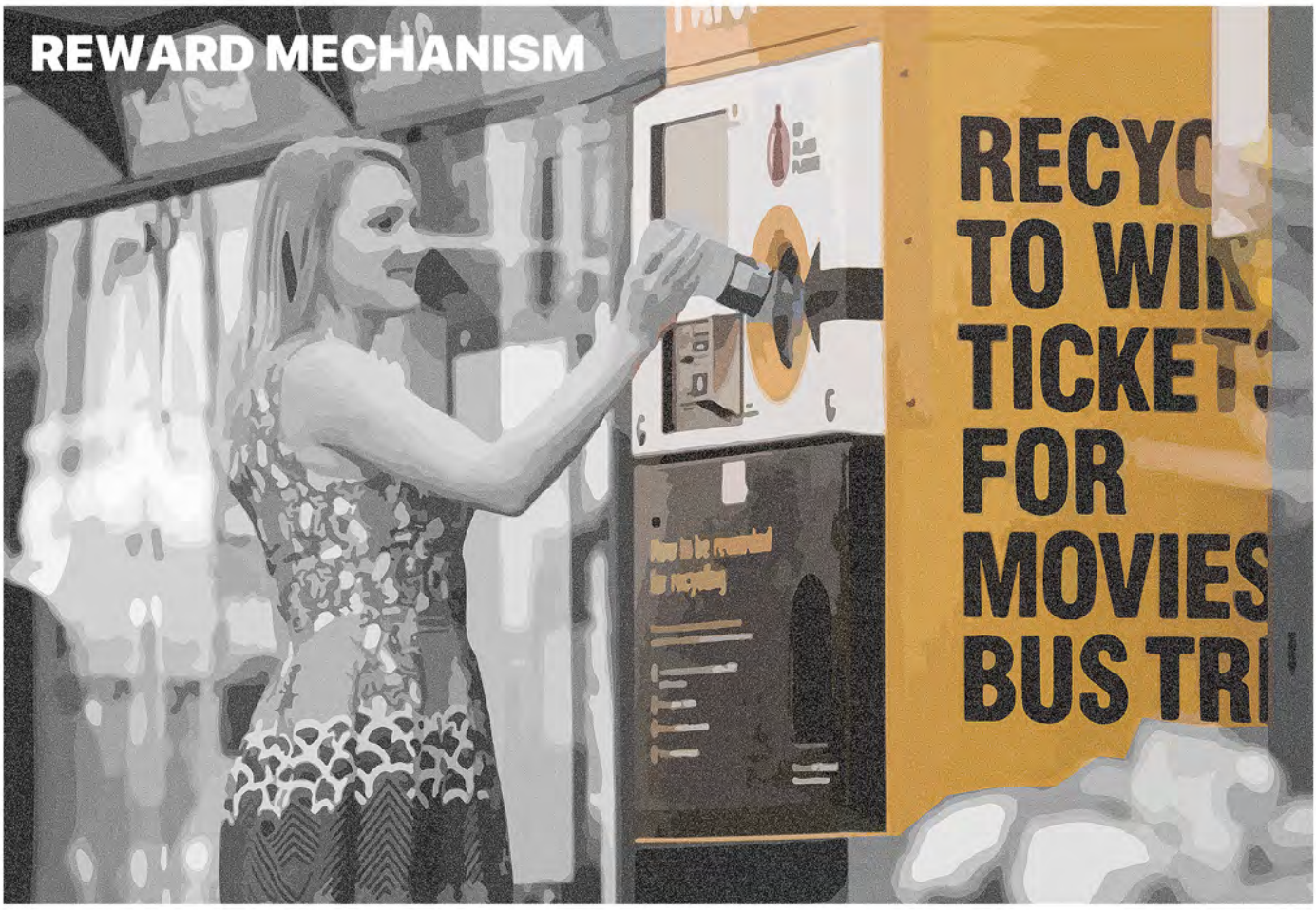
Unsalable Vegetables



1. 新闻中心首页 _ 新浪网 . (n.d.). Retrieved May 20, 2020, from https://news.sina.com.cn/

THE SPATIAL DEVELOPMENT STRATEGY OF THE COMMUNITY FOOD SYSTEM THEORETICAL MODEL





It Is Urgent To Change Food Plastic Waste Treatment!

According to the City of Sydney, around 15,000 bottles and cans across Australia are thrown into landfill waste or littered every hour, instead of being recycled -- about 58 percent of all recyclable material annually. To help minimise this waste, it is trialling Envirobank "reverse vending machines".

Provide incentive mechanism to relieve the pressure of scenic spots or garbage concentration areas.

"These are vending machines with a twist that will encourage Sydneysiders to be even better at recycling plastic bottles and aluminium cans," said Sydney Lord Mayor Clover Moore. "The machines offer a small reward for people who make the effort to recycle. We're trialling these reverse vending machines and I hope this new idea will capture the attention of our residents and visitors."

"Container deposit schemes significantly increase recycling, reduce waste and protect wildlife and the environment from plastic pollution," the Lord Mayor said. "We're taking what action we can to reduce the amount of waste going to landfill, but will continue to lobby state and federal governments for reform on this issue."

The Health Commission of Hubei Province, where Wuhan is the capital, said the virus' death toll climbed by eight in the province, but the total confirmed cases of the novel coronavirus disease (COVID-19) in Wuhan and Hubei remained at 50,005 and 67,800 on Wednesday.

Interactive System

1. Trent University Urban Farm. (n.d.). Retrieved May 20, 2020, from https://www.zinco.ca/case-studies/trent-university-urban-farm
2. Archinect News Articles tagged "nature." (n.d.). Retrieved May 20, 2020, from https://archinect.com/news/tag/46281/nature/45

FOOD SYSTEM & SUSTAINABLE DEVELOPMENT

1

It Is Necessary To Establish A Sustainable Food System !

On the one hand is urban expansion, on the other hand is rural waste. Two phenomena caused by urbanization lead to another result that is often ignored - food crisis. During the epidemic, the food system is damaged, so it is urgent to establish a new food system under the production planning.

Space has been sold and planned as a value-added resource, and production has been transformed from "production in space" or "production in space" into direct production space itself.

The community food system must be an efficient resource-saving system that can meet the current and emerging food demand while protecting scarce resources. Innovation to improve land, water and energy productivity is essential for efficient food systems. Besides, we should not only do an excellent job in resource recycling, but also be alert to the food system efficiency caused by food loss and waste.

The Post Epidemic Era

The contradiction between sustainable urban development and excessive resource consumption calls for a new sustainable food system.

Human beings are experiencing an unprecedented urbanization process, accompanied by an explosion of population and food demand crisis, urban expansion and production space crisis, and production models and consumer energy crisis. The contradiction between sustainable development cities and over-consumption of resources requires an entirely new sustainable food system. In the post epidemic era, the food system is closely connected with urban planning.

2

1. (n.d.). Retrieved May 20, 2020, from https://weibo.com/p/1005052609612777/photos?from=page_100505
2. (n.d.). Retrieved May 20, 2020, from https://weibo.com/p/1005052609612777/photos?from=page_100505

EGI
EDIBLE GREEN INFRASTRUCTURE

Using EGI to ensure the safety of healthy food system

EGI (edible green infrastructure) edible green infrastructure can improve the ability of disaster resistance, adaptability and buffer in urban resilience, ensure the safety of healthy food system and promote a more active lifestyle.

When the city is faced with a sudden disaster, the transportation network for food transportation will become more vulnerable, and urban residents will face the risk of food shortage for a short time before the transportation network is restored.

Therefore, in order to improve the risk of urban response to disasters and ensure the material supply of resilient cities, we need edible green infrastructure (eg) and follow the principle of intensive and mixed use of G's functions, Planning various forms of g1g, such as edible green walls and facades, edible roof gardens, vegetable rainwater gardens and so on, can not only improve urban resilience in response to disaster risks, but also increase the sources of access to healthy food; 2) promote healthy and active lifestyle; 3) promote social cohesion.

1. Trent University Urban Farm. (n.d.). Retrieved May 20, 2020, from https://www.zinco.ca/case-studies/trent-university-urban-farm
2. Archinect News Articles tagged "nature." (n.d.). Retrieved May 20, 2020, from https://archinect.com/news/tag/46281/nature/45

Foodscape GARDEN

A Wholly New Paradigm of Urban Living by Change Food Scraps into Urban Garden!

A community garden can not only deal with the waste of food materials in this special period as a result of COVID-19 outbreak in Wuhan, but also draw the distance of urban residents, provide children with the third class to learn natural science knowledge, and create a more harmonious and safe social environment.

We compost rotten food, turn it into usable nutrients, plant new agricultural and sideline products, return to urban farms, communities and the shelves of supermarkets, and turn it into our daily food.

We want to maximize the benefits of food conversion.

CHAPTER IV

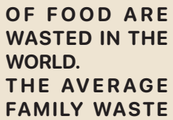
ALMOST A BILION PEOPLE ARE STARVING, WHILE WE WASTE 1/3 OF THE FOOD WE PRODUCE.

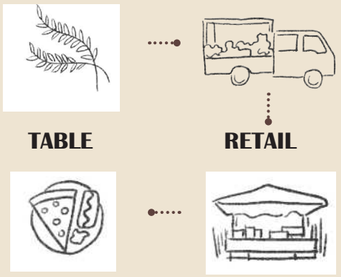
FOOD WASTE

食物浪费

SHOCKING FACTS ABOUT THE FOOD INDUSTRY

EVERY YEAR, 1.3 BILLION TONS OF FOOD ARE WASTED IN THE WORLD.
THE AVERAGE FAMILY WASTE 850KG OF FOOD A YEAR.





AGRICULTURAL PRODUCTION WASTE OF ENVIRONMENTAL RESOURCES

FRESH WATER	LAND	ENERGY	GREENHOUSE GASES
70%	33%	30%	20%

WHAT WE CAN DO TODAY?

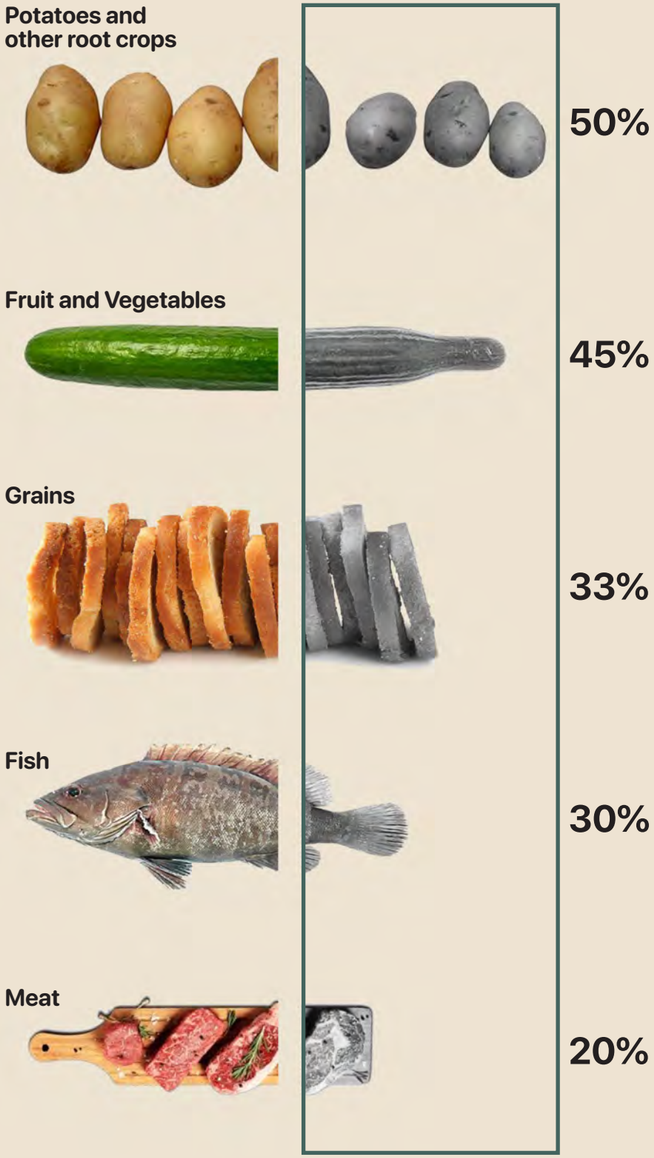
WE WILL NEED MAJOR INNOVATIONS ON HOW WE EAT AND FARM.

UNFOLD ▸

SHANGHAI TRADITIONAL RESTAURANT REVIVAL
Explore The Most Environmentally Friendly Food

WASTE OF PERISHABLE PRODUCTS

Total waste per food category, in percentage of amount produced.



CARBON EMISSION
ALONG THE DIFFERENT STAGES OF THE FOOD VALUE CHAIN

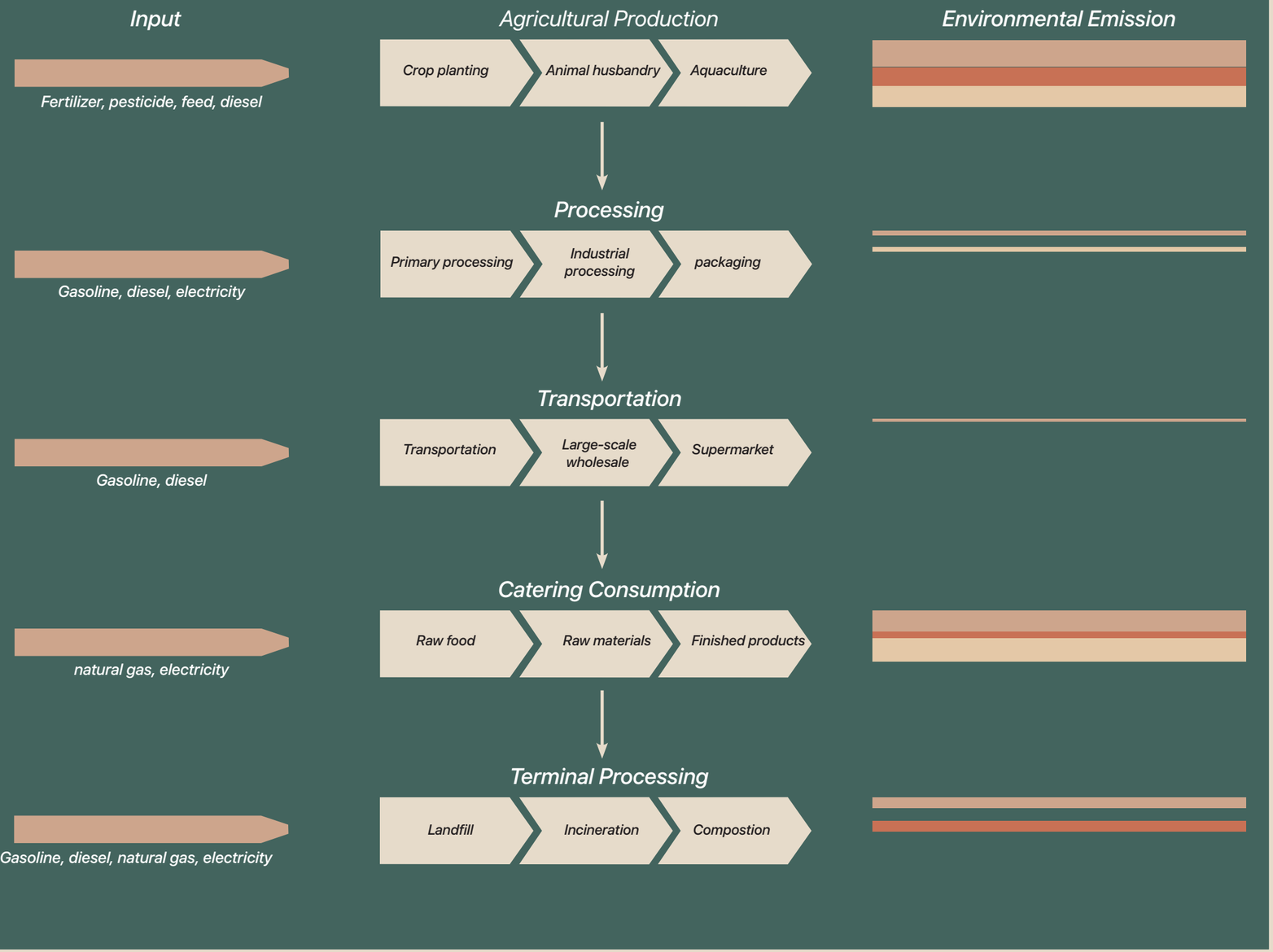
REFERENCE

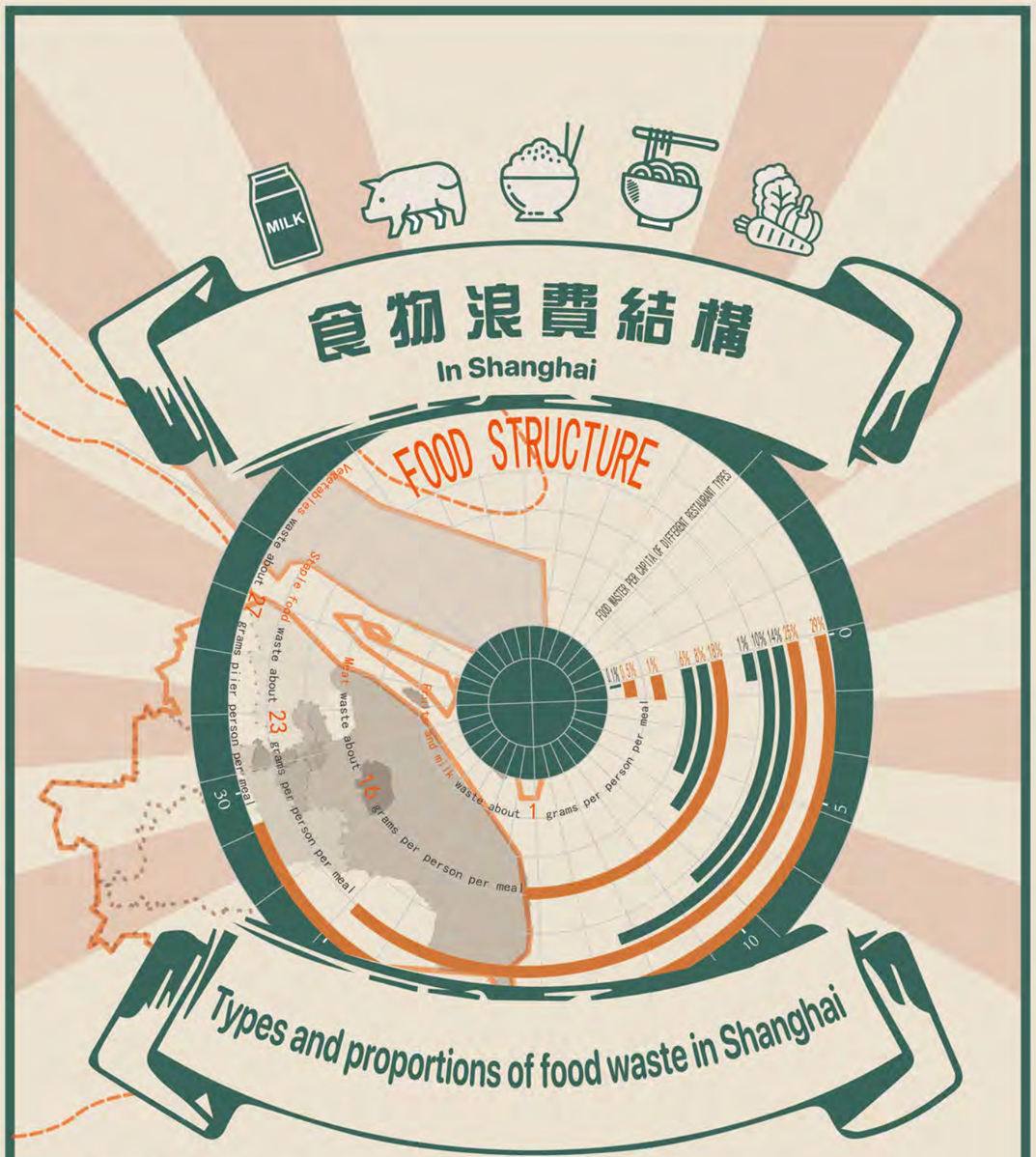
US Department of Agriculture.Food Yields: Summarized by Different Stages of Preparation. Washington D C: USDA Agriculture Research Service, 1975.

US Department of Agriculture. USDA Table of Cooking Yields for Meat and Poultry. Maryland: USDA Agriculture Research Service Beltsville Human Nutrition Research Center Nutrient Data Laboratory, 2012.

LEGEND

Atmosphere
Soil
Water





Daily food waste

1100t 7%

The daily output of food waste in Shanghai is 1100 tons, accounting for about 7% of the total domestic waste in Shanghai.

FOOD WASTER PER CAPITA OF DIFFERENT RESTAURANT TYPES 25%

The second category is the main food, accounting for 25%, of which rice and pasta waste a lot.

上海

30°40′ - 31°53′ N 120°51′ - 122°12′ E

REPORT ON FOOD WASTE IN SHANGHAI

The problem of food waste in urban catering industry is very serious in China, especially in Shanghai. We will conduct in-depth analysis on the current situation and driving factors of food waste in Shanghai through questionnaire survey, personnel interview and other survey methods.

How serious!

食物结构

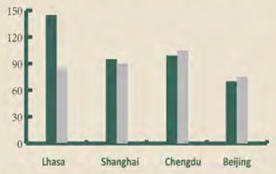
RESTAURANT FOOD WASTE

In terms of the structure of wasted food, the per capita waste of vegetables is the highest, about 27 grams per person per meal, accounting for 29% of the total waste. The second is the main food, which is about 23 grams, accounting for 25%, of which rice and pasta waste is relatively high, accounting for 14% and 10% of the total waste respectively. The lowest percentage of waste is fruits and milk, account-

PROPOTION OF PEOPLE WASTING FOOD

79% of the families had discarded edible food in varying degrees, and only about 21% of the residents said they had never discarded it.

REPORT ON FOOD WASTE IN SHANGHAI



In general, the food waste per capita of tourists in four cities is 103 grams per meal, significantly higher than that of local residents, 88 grams per meal.

THE REASON

壹 For office workers, too busy at work or too little time at home, forgetting to eat is the main reason for wasting food.

贰 In restaurants, the purchased food is often unable to be eaten, and the waste of food on the table is more serious.

叁 In convenience stores and small and medium-sized supermarkets, 73% of fresh food products are off shelves in advance due to the near shelf life.

食物浪费报告

二零一八年的

UNFOLD

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Explore The Most Environmentally Friendly Food

III

Wheaten food, especially steamed food, originated in China, is a kind of yeast food. Wheaten food plays a vital role in the traditional Chinese diet.

Natural yeasts, such as grains, fruits, or hops, form a starter with other microbial communities, mix with flour and water to make sourdough, and add edible alkali to make Chinese wheaten food. The dough formed by mixing acid dough and alkali dough can be used as the starting dough of the next dough and can be recycled, which is called old fat.

Chinese wheaten food is environment-friendly and efficient food, which has the advantages of simple preparation, convenient carrying, and energy saving.

FERMENTATION TECHNOLOGY OF CHINESE WHEATEN FOOD

中式面食 发酵技术

CHARACTERISTICS OF HIGH EFFICIENCY AND ENERGY SAVING OF CHINESE WHEATEN FOOD

Simple production process

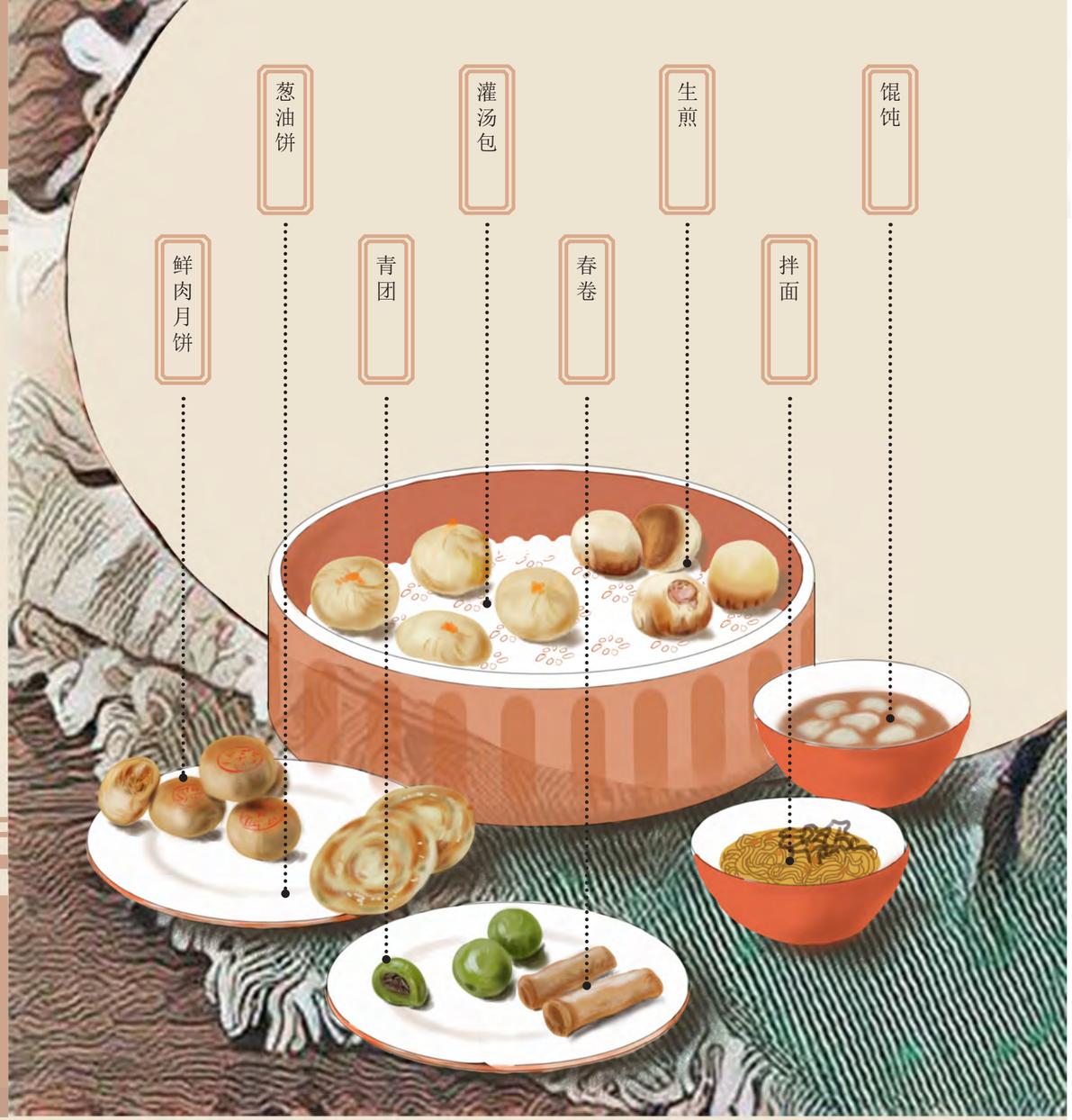
First

Second

Third

Easy to carry

Small storefront



Pork Mooncakes: The stuffing of fresh meat moon cake is mainly pork with crispy skin and powder.
Green Onion Pie: The main ingredients are flour and scallion. The taste is fragrant and salty.
Sweet Green Rice Ball: After steaming, it's green and soft skin, with sweet but not greasy bean paste filling and light wormwood fragrance.
Soup pouches: Soup pouches are beautiful in form and unique in content.

Spring Rolls: Spring roll is filled with dried noodles and skins. It is fried.
Fried Plain Bun: There are many kinds of fillings, such as fresh pork, chicken, shrimp and so on.
Noodles: The method is to mix the drained noodles with the food with sauce, and sometimes add some ingredients to eat.
Wonton: Make the skin with water and noodles, and wrap vegetables, or meat, or sugar, or honey, etc. in the skin, and cook with water.

UNFOLD ▸

IV

SHANGHAI TRADITIONAL RESTAURANT REVIVAL
Explore The Most Environmentally Friendly Food

WHAT IS THE MOST EFFICIENT DIET?

$$U_F = U_a(E, n, z, f(t), q_{eat}) - U_b(f(t), z, q_{eat}) - U_C(q_{eat}, w, f(t))$$

We use mathematical models to simulate various food types, hoping to get the most efficient diet type. After entering the relevant parameters, we found that traditional food has obvious advantages over fast food and luxury dining.

E is energy, N is nutrition, Z is metabolic index, UF is catering efficiency, food characteristics are f(t), intake is qeat, w (t) is pollution parameter, and energy produced by food intake is Ua (E,n,z,f(t),q_eat), the energy consumed by food metabolism and other processes is Ub (f(t),z,q_eat), and the pollution caused by food residues is UC (q_eat,w,f(t)).

HOW TO DETERMINE CONSUMERS' DINING EFFECTIVENESS?

$$U_C = U_1(q_{eat}) - f(\beta) \times \alpha_{fw} \times U_2(q_{waste}) - f(\beta) \times U_3(\beta;\ q_{eat}, t, m, g, f(p))$$

We use a mathematical model to simulate various restaurant catering behaviors, hoping to obtain the individual consumers' diet performance in different restaurant occasions. In the process of simulation, we found that the waste behavior of a single consumer has a great relationship with its consumption occasions, in which the waste behavior of a single consumer in the traditional diet is lighter.

UC stands for consumer efficacy. The satiety effect of food intake is U1 (q_eat), and the negative effect of food waste on consumers is U2 (q_waste), U2 (q_ waste) size and consumer The level of awareness of the waste problem is related. The definition of afw represents the level of consumer awareness of the problem of food waste, where αfw -[0, 1].

The comprehensive response of consumers to the special state or environmental information (referring to different occasions or dining places) at the time of eating is U3 (β; q_eat, t, m, g, f (p)), where β stands for the special state or environment information of the consumers when they are eating, t stands for the length of the meal, m stands for the consumption level, g stands for the intensity of the dining staff, the definition f (p) stands for the effect of the dining area, and the f (β) stands Consumer's utility response coefficient in different situations, where β represents the different situations where consumers are.

UNFOLD

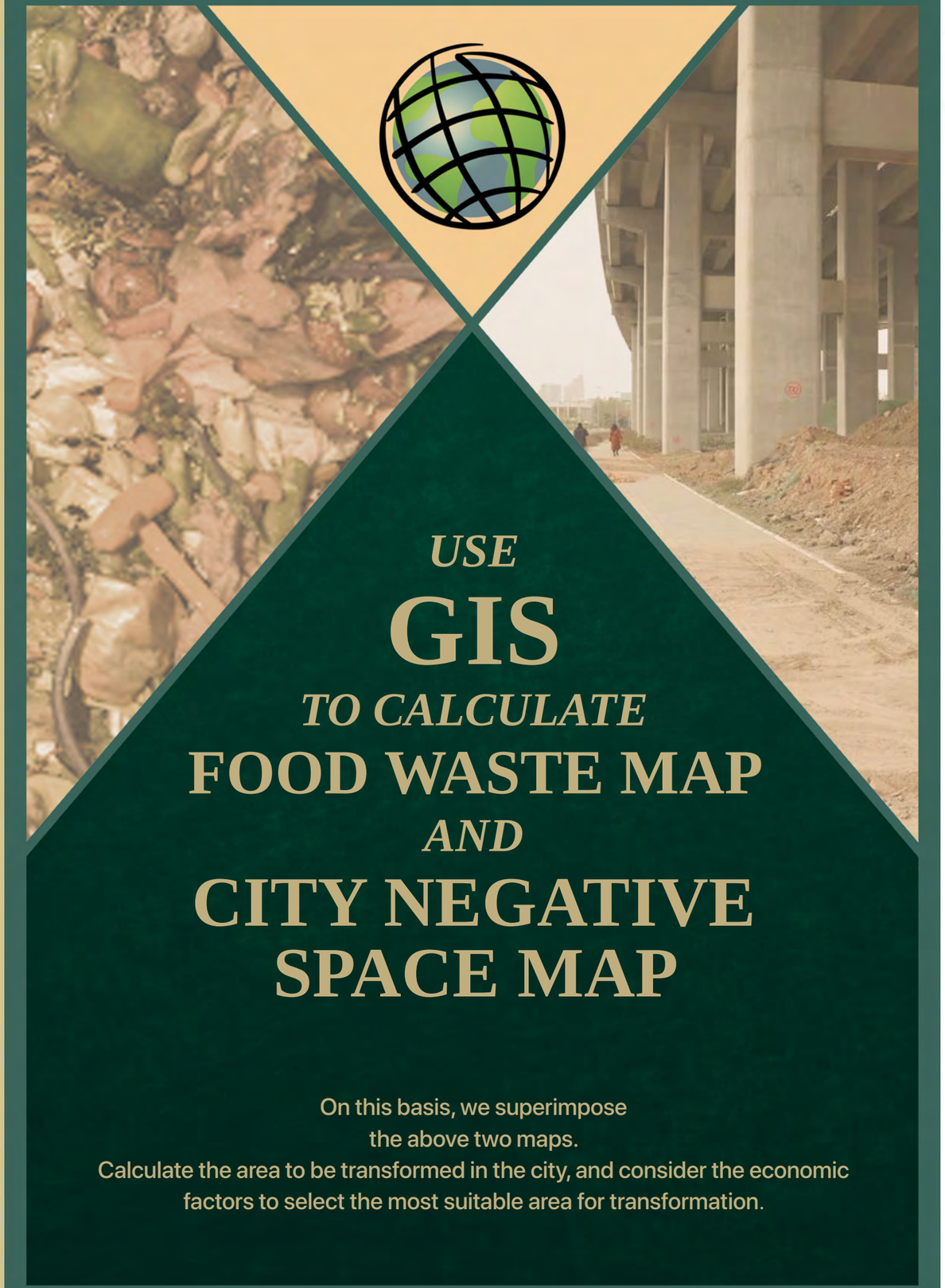
SHANGHAI TRADITIONAL RESTAURANT REVIVAL
Explore The Most Environmentally Friendly Food
V

TRADITIONAL RESTAURANTS ARE THE MOST EFFICIENT SINGLE RESTAURANTS

$$U_S = \left[U_1(q_{eat}) - f(\beta) \times \alpha_{fw} \times U_2(q_{waste}) - f(\beta) \times U_3(\beta;\ q_{eat}, t, m, g, f(p)) \right] \times \left[U_O(\gamma; g(p), s, g, b, m) - U_C(\gamma; g(p), s, g, b, d, m) \right]$$

We use a mathematical model to simulate restaurant monomers that sell different foods, hoping to get the most efficient single restaurant. In the process of simulation, we found that traditional restaurants have the advantages of small footprint, short service time, high food efficiency and other advantages, showing the highest monomer performance.

US is the individual performance of the restaurant, [U 1 (q_eat)-f (β) × α_fw × U2 (q_waste)-f (β) × U3 (β; q_eat, t, m, g, f (p))] For consumer performance, UO (γ_1; g (p), s, g, b, m) is the restaurant flow index, UC (γ_2; g (p), s, g, b, d, m) is Competitive restaurant flow index, γ is a special parameter of the restaurant, and is related to the type of store and the type and ratio of the type of meal sold, s is the store area, b is the number of people per unit time, and d is the distance between the competitive store and the restaurant.



USE

GIS

TO CALCULATE

FOOD WASTE MAP

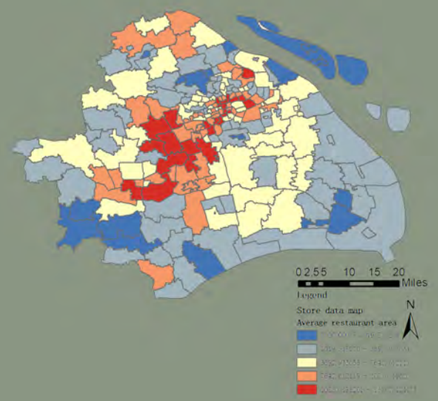
AND

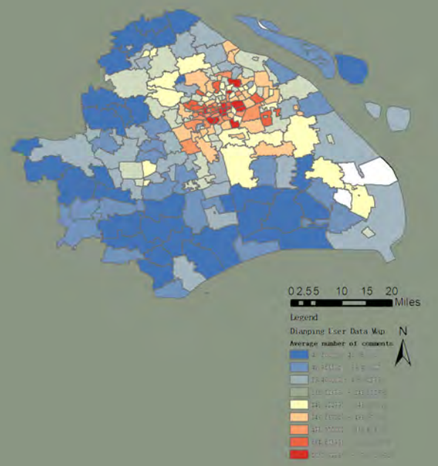
CITY NEGATIVE SPACE MAP

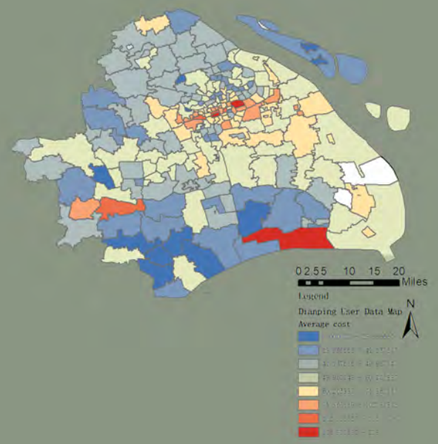
On this basis, we superimpose
the above two maps.
Calculate the area to be transformed in the city, and consider the economic factors to select the most suitable area for transformation.

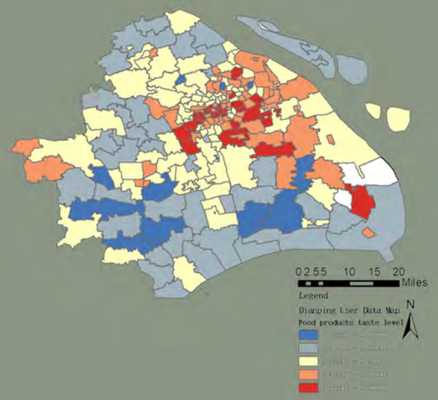
UNFOLD

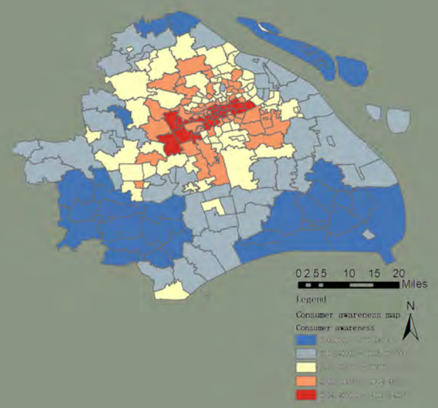
SHANGHAI TRADITIONAL RESTAURANT REVIVAL
Using Mathematical Models And GIS To Get
Traditional Restaurants Intervened In The City Interface

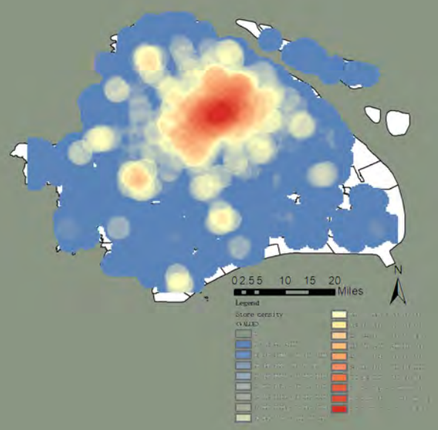


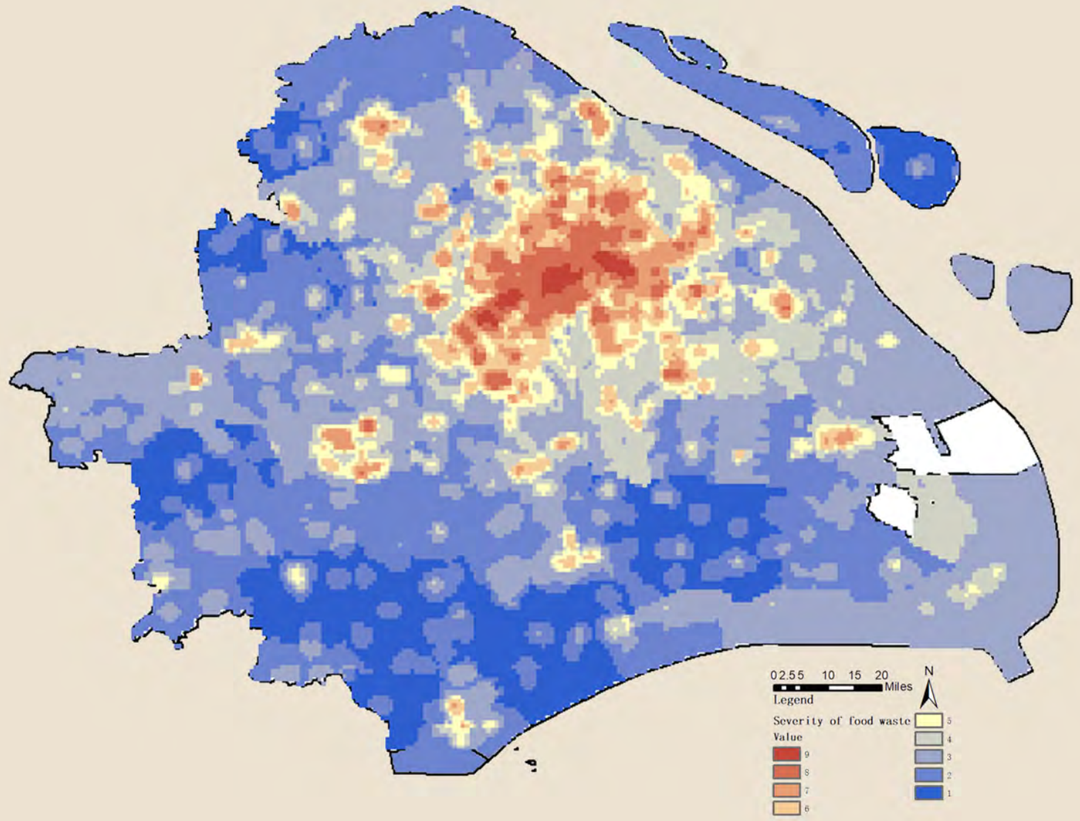












UNFOLD

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Using Mathematical Models And GIS To Get Traditional Restaurants Intervened In The City Interface

II

- Put the evaluation elements, price elements, and consumer group elements, which is mentioned in the previous mathematical model, in GIS and analyze them.
- Use the weighted overlay analysis performed with the point density of all restaurants in Shanghai.
- Then we get the result.

The different grades represent the feasibility of the transformation, which coincide the old Shanghai center that is economically prosperous and has a large number of high-class restaurants. Houses there are old and there are many gray spaces. It is the most suitable area for embedding traditional restaurants.

UNFOLD

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Using Mathematical Models And GIS To Get Traditional Restaurants Intervened In The City Interface

III

We superimposed the space under the bridge in the Shanghai city, the gray space outside the building, the unreasonable high-density space, the abandoned factory building and the barren river bank to get the negative space in Shanghai city.

UNFOLD ▸

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Using Mathematical Models And GIS To Get Traditional Restaurants Intervened In The City Interface

IV

SUPERIMPOSED ANALYSIS *of*

REFORM SCOPE

Superimposing food waste map and city negative map, we get the final results. Overall, Shanghai's urban planning and design are among the best in China. But serious food waste and much negative space provide us with many transformation spaces.

INTERVENTION INTO THE MALL

Intervention in shopping malls is one of the four prototypes we thought to get traditional restaurants entered the urban interface.

By expanding its influence in shopping malls, traditional restaurants can not only complement low-efficiency diets such as high-end catering and fast food, but also serve the wider population, promote a new diet and consumption concept, and gradually expand their influence.

prototype

INTERVENTION INTO THE OLD NEIGHBORHOOD

Intervention in old neighborhoods is one of the four prototypes we thought to get traditional restaurants entered the urban interface.

Through the establishment of a large number of model restaurants in old and backward high-density blocks, traditional restaurants can not only increase the proportion among all , but also contribute to alleviating the shortage of restaurants in old blocks and improving the diet structure of nearby residents.

prototype

UNFOLD

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Using Mathematical Models And GIS To Get Traditional Restaurants Intervened In The City Interface

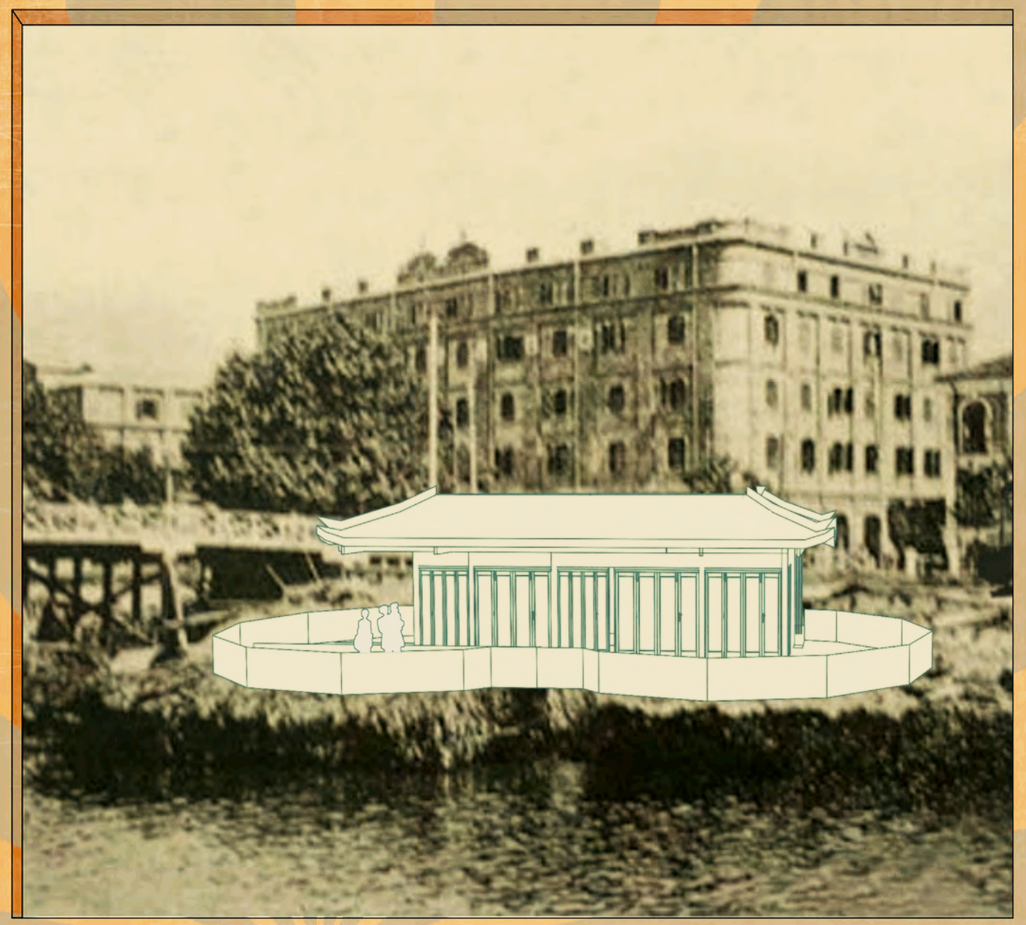
V

TO ACT AS AN INDEPENDENT ATTRACTION

To act as an independent attraction is one of the four prototypes we thought to get traditional restaurants entered the urban interface.

Recently, a retro trend has become popular among young people, and the design of new Chinese styles has also become fiery. Through exquisite design, traditional restaurants can be turned into online celebrity brands, and they can intervene as independent individuals in urban interfaces.

prototype



INTERVENTION INTO THE ABANDONED OUTER SPACE OF THE CITY

Intervention into the abandoned urban space is one of the four prototypes we thought to get traditional restaurants entered the urban interface.

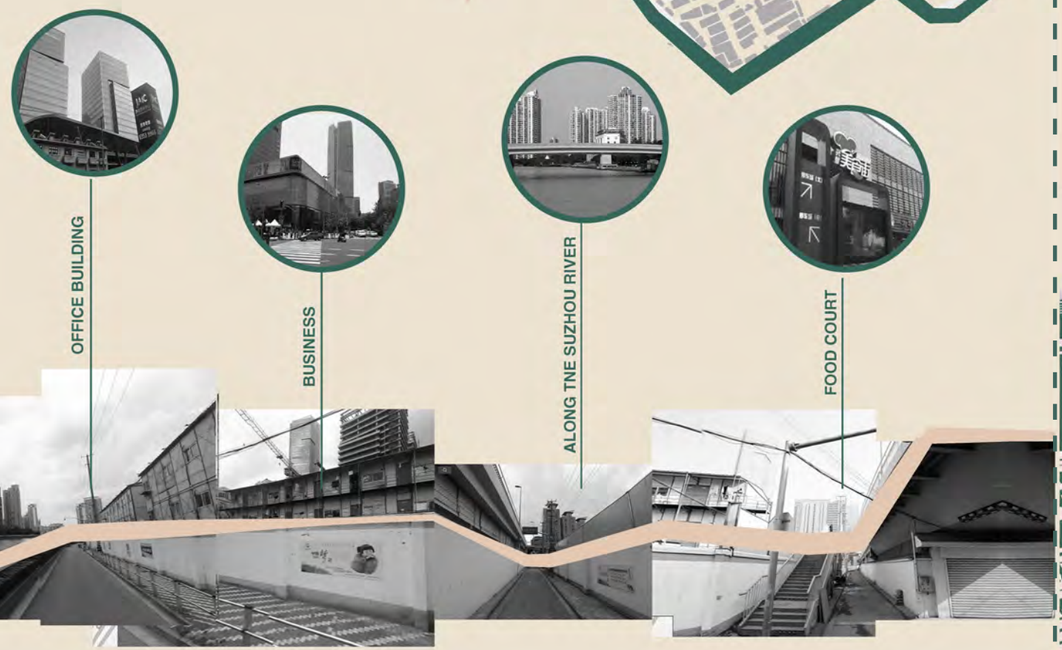
By building new traditional restaurants next to construction waste or abandoned riverbanks, the dilemma of unused use in abandoned sites can be solved, and the use of reasonable external design makes the waste space gradually available, reducing the cost and revitalizing the abandoned site.

prototype

SITE LOCATION

A grey space along the river bank

The site we selected is located in Jingan District, Shanghai, next to Suzhou River block. Along the river bank, there are a large number of gray space of industrial waste plants, while on the other side of the block are densely populated office buildings, which have a great demand for daily food.



SITE LOCATION

The independent new fashion space

Nanjing road is the most famous commercial street and one of the most famous tourist attractions in Shanghai. At the same time, Nanjing Road's time-honored restaurants in Shanghai are numerous. A variety of modern restaurants are attached to fashion landmark buildings on both sides..

UNFOLD

SHANGHAI TRADITIONAL RESTAURANT REVIVAL

Using Mathematical Models And GIS To Get Traditional Restaurants Intervened In The City Interface

VII

CHAPTER V

FOOD TOURISM MAPS


上海
SHANGHAI CITY FOOD TOURISM MAP
内环
外滩
东方明珠
巨鹿路
十六铺码头
淮海路
南北高架路
世博大道
迪士尼
中华艺术宫
上海绕城高速
FOOD IN SHANGHAI
小笼包
馄饨
生煎包
蟹粉汤包
烧麦
锅贴
菜饭团
豆腐皮包子
N
0 2 5 10 km
SCENIC SPOT
ROUTE


成都
CHENGDU CITY FOOD TOURISM MAP
FOOD IN CHENGDU
鱼头火锅
麻婆豆腐
麻辣鱿鱼须
香辣花蛤
红烧鳝段
剁椒鱼头
鸭舌
蚂蚁上树
麻辣田螺
串串香
冒菜
辣炒鸡丁
干锅田鸡
豆腐泡
毛血旺
青羊宫
人民公园
宽窄巷子
人民中路
科技馆
蜀都大道
天府广场
文殊院
电视塔
西御街
人民南路
武侯祠
府河廊桥
N
0
300
600
900m
SCENIC SPOT
ROUTE


WU'HAN CITY FOOD TOURISM MAP
武汉
FOOD IN WU'HAN
蒸虾
肉烧卖
三鲜豆皮
面窝
煎包子
糊稀汤
热干面
鸭脖
江滩公园
长江二桥
过江隧道
阿斌三鲜豆皮
归元寺
靓靓蒸虾
长江大桥
蔡林记
周黑鸭
黄鹤楼
阿三生煎
湖北省历史博物馆
洪湖糊汤
武汉大学
N
0 1 2 3 km
SCENIC SPOT
ROUTE

REFERENCES

(n.d.). Retrieved May 20, 2020, from https://weibo.com/p/1005052609612777/photos?from=page_100505

[Photograph]. Retrieved from http://sc.chinaz.com/tupian/170417238543.html

[Photograph]. Retrieved from https://www.hatdot.com/meishi/3042910.html

[Photograph]. Retrieved from http://tommykane.blogspot.com/2018/10/plastic-junk.html?m=1

Aguilar, P. (2019, January 16). Photo by Pedro Aguilar on Unsplash. Retrieved from https://unsplash.com/photos/1PCJkDXyJjY

Altamonte Mall Friendly Confines Sports Restaurant And Bar Lake. (n.d.). [Photograph]. Retrieved from https://ww23.imgsin.org/barnes-and-noble-altamonte.html

Archinect News Articles tagged "nature." (n.d.). Retrieved May 20, 2020, from https://archinect.com/news/tag/46281/nature/45

At-Risk Teens Grow Hope in Community Garden (2017,Mar 21) Retrieved May 1,2020, from https://www.guideposts.org/inspiration/people-helping-people/at-risk-teens-grow-hope-in-community-garden

Breakfast presente el pan croissant. (n.d.). [Photograph]. Retrieved from https://es.pngtree.com/free-png-vectors/croissant

Campbell, T. (n.d.). Large amount of food supply goes to waste, with much at the consumer level in restaurants and homes. [Photograph]. Retrieved from https://phys.org/news/2018-03-food-safe-decision.html

CANELÉ du JAPON – 大阪のブランディングデザイン事務所 8otto. (n.d.). Retrieved May 21, 2020, from http://8otto.com/works/caneledujapon

Cartoon food. (n.d.). [Illustration]. Retrieved from https://588ku.com/image/katonglingshi.html

Diaz, E. M. (2017, December 22). Photo by Edwin Macalopú Diaz on Unsplash. Retrieved from https://unsplash.com/photos/yLBm7eVr4t0

Endocrine System vector images, illustrations, and clip art. (n.d.). Retrieved from https://www.istockphoto.com/za/illustrations/endocrine-system

Fader, J. (2017, December 19). Photo by Julie Fader on Unsplash. Retrieved May 22, 2020, from https://unsplash.com/photos/1KWncoLB1V8

Fang cang shelter. (n.d.). Retrieved May 20, 2020, from https://tech.163.com/20/0403/16/F9A637DP00097U81.html

Farmers work at the Bowery Farming Inc. indoor farm in Kearny, New Jersey. Photographer: David Williams/Bloomberg (2018, December 12) Retrieved May 1,2020, from https://www.bloomberg.com/news/articles/2018-12-12/uber-ceo-and-alphabet-invest-in-urban-farming-startup

Fedulov, D. (2020, March 10). Photo by Food Photographer David Fedulov on Unsplash. Retrieved from https://unsplash.com/photos/RmWRZIZCInM

Golden badge. (n.d.). [Illustration]. Retrieved from http://90sheji.com/yuansu/0-0-0-0-1.html?pid=17643393

Google Maps

Gourmet Galleta Ilustración Bocadillo. (n.d.). [Illustration]. Retrieved from https://es.pngtree.com/freepng/gourmet-cookie-illustration_4504962.html

Green space is good for mental health (2019, Aug 21), Retrieved May 1,2020, from https://www.ncl.ac.uk/press/articles/latest/2019/08/greenspacegood/

Graham, S. (2016, January 30). Photo by Scott Graham on Unsplash. Retrieved from https://unsplash.com/photos/5fNmWej4tAA

Gualtieri, S. (2019, October 12). Photo by Sarah Gualtieri on Unsplash. Retrieved May 21, 2020, from https://unsplash.

com/photos/tr9GO9WXNRI

Hermes Rivera. (2017, May 23). Photo by Hermes Rivera on Unsplash. Retrieved from https://unsplash.com/photos/R1_ibA4oXiI

Herrmann, S. (2019, July 16). Photo by Sebastian Herrmann on Unsplash. Retrieved May 21, 2020, from https://unsplash.com/photos/_Wt8n8MZwV0

Hobi. (2019, May 7). Photo by Hobi industri on Unsplash. Retrieved from https://unsplash.com/photos/S1KFSOiuW0U

Hôpital Fangcang. (n.d.). Retrieved May 20, 2020, from https://fr.wikipedia.org/wiki/H%C3%B4pital_Fangcang

Larigakis, J. (n.d.). Poster [Photograph]. Retrieved from https://society6.com/product/plastic-wave1816773_print?utm_source=Pinterest&utm_medium=Social

LFaaaa 云端听风 . (n.d.). Retrieved from https://720yun.com/t/c2a2bapd9ur?scene_id=803808

Liu, G. (2014, April 03). Food Losses and Food Waste in China: A First Estimate, by Gang Liu. Retrieved May 24, 2020, from https://ideas.repec.org/p/oec/agraaa/66-en.html

Plashchynski, S. (2018, February 16). Photo by Siarhei Plashchynski on Unsplash. Retrieved from https://unsplash.com/photos/vP3G46hrjno

Plastic Cat Cage. (n.d.). Retrieved May 22, 2020, from https://www.indiamart.com/proddetail/plastic-cat-cage-4479545197.html

Q. (2015, June 29). 西安浐灞国家湿地公园的翠鸟 _ 湿地中国 _www.shidi.org. Retrieved May 22, 2020, fromhttp://www.shidi.org/sf_E7D3717BB161463CB1B55F0FF6310CF5_151_chanbawetland.html

Quiroga, J. (2019, December 27). Photo by Javier Quiroga on Unsplash. Retrieved from https://unsplash.com/photos/7KgHovYgJEE

Shanghai Nongtang Culture. (n.d.). [Photograph]. Retrieved from http://www.ucxinwen.com/image/66388034603.html

Shes, V. (2019, January 15). Photo by Victoria Shes on Unsplash. Retrieved from https://unsplash.com/photos/hbNOsm2eM1M

Suzhou River Old Photo. (n.d.). [Photograph]. Retrieved from http://blog.sina.com.cn/s/blog_548212d30101bkl1.html

The problem of stray animals and the ways of its solving, Retrieved May 1,2020, from https://gogetfunding.com/the-problem-of-stray-animals-and-the-ways-of-its-solving/

Trent University Urban Farm. (n.d.). Retrieved May 20, 2020, from https://www.zinco.ca/case-studies/trent-university-urban-farm

UI8 LLC. (n.d.). UI Kits. Retrieved May 20, 2020, from https://ui8.net/ui8/products/nibble-ios-ui-kit

Wang, S. (2019, August 22). Photo by Stan Wang on Unsplash. Retrieved from https://unsplash.com/photos/fFO5DsFV5gk

诚意侯 . (2012). 南京 : 从九华山到台城 . Retrieved from http://blog.sina.com.cn/s/blog_53928e100101bz1z.html

打卡成都最著名的百年老茶馆，在茶香中遇见老成都味道 _ 盖碗茶 . (2020, February 20). Retrieved from https://www.sohu.com/a/374422330_396605

干货 : 中国的食物损失及浪费量 _ 研究 . (2018, August 13). Retrieved May 23, 2020, from https://www.sohu.com/a/246952063_292626

回民街摄影图片 . (n.d.). Retrieved from http://www.kaimalo.com/img/0b3d3e9c6ddb1f3c8dbb.html

经济观察网 . (n.d.). Retrieved May 22, 2020, from https://dy.163.com/v2/article/detail/F507DM7P0519CQO3.html

抗击疫情 _ 朝阳在行动 _ 在特殊的日子里 感受别样的温暖 , 新华社记者 肖艺九摄 ,Retrieved May 1,2020, from http://shuangta.nen.com.cn/system/2020/03/18/020992775.shtml

垃圾分类是新潮流？其实垃圾做的衣服更时髦！ (2019, Jul 4) Retrieved May 1,2020, from https://www.sohu.com/a/324783380_100286250

牛签签串串香 . (n.d.). [Photograph]. Retrieved from https://www.sohu.com/a/231980246_355437

山东频道 - 凤凰网 . (n.d.). Retrieved May 22, 2020, from http://sd.ifeng.com/

手指断了 a. (n.d.). Chengdu [Photograph]. Retrieved from https://weibo.com/niehuizheng?is_all=1

搜狐 . (n.d.). Retrieved May 22, 2020, from https://www.sohu.com/

她用 5 年，将废土地变“小森林”，计划将在上海建 2040 处社区花园 _ 堆肥 . (2018, October 24). Retrieved May 23, 2020, from https://www.sohu.com/a/270882673_753478

王昕歌 . (n.d.). South Gate Garden [Photograph]. Xi'an.

武汉疫情医务人员 . (n.d.). Retrieved May 20, 2020, from http://glbnews.com/url.html?p=https://www.publimetro.cl/cl/social/2020/01/28/coronavirus-alemania-japon-china-wuhan-hubei-munich-nara.html

新闻中心首页 _ 新浪网 . (n.d.). Retrieved May 20, 2020, from https://news.sina.com.cn/

一大波候鸟"集结"西安，再现迁徙的视觉的盛宴！ . (2017, November 22). Retrieved May 22, 2020, from https://www.sohu.com/

疫情实时大数据报告 . (n.d.). Retrieved May 2, 2020, from https://voice.baidu.com/act/newpneumonia/newpneumonia/?from=osari_pc_3

应用领域 . (n.d.). Retrieved May 21, 2020, from http://www.wxqcjs.com/yyly

展商新闻首页   新闻中心   展商新闻 . (n.d.). Retrieved May 23, 2020, from http://www.ie-expo.cn/Press/Exhibitors/article20160215305.html

张盼盼 , Panpan, Z., 王灵恩 , 白军飞 , 刘晓洁 , 成升魁 , ... Shaopeng, F. (2018). 旅游城市餐饮消费者食物浪费行为研究 . 资源科学 , 40(6), 1186–1195. https://doi.org/10.18402/resci.2018.06.09

朱毅毅 . (2017, October 21). 成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mnaW

朱毅毅 . (2018, December 14). 没人能不流着口水想乐山 [Photograph]. Retrieved from http://33s.co/mmYX

朱毁毁 . (2018, October 25). 人间成都（下） [Photograph]. Retrieved from http://33s.co/mmJX

朱毁毁 . (2019, January 4). 打捞耿家巷 [Photograph]. Retrieved from http://33s.co/mmQW

朱毁毁 . (2019, March 19). 老城是成都的茶渍 [Photograph]. Retrieved from http://33s.co/mmUT

朱毁毁 . (2019, May 16). 成都的奇幻在哪里？[Photograph]. Retrieved from http://33s.co/mjfU

Under the COVID-19 epidemic, the common problem faced by different countries and regions —— food shortage, stimulates us to reflect on the place of food in urban life. Through our investigation on Shanghai, Xi'an, Wuhan and Chengdu, four cities that featured by different and distinctive food culture, exploration of the distribution pattern and potential of grain origin, delivery chain, processing chain and retailors in these cities, we intend to take urban green space as carrier to improve efficiency of food production, absorption and processing, alleviate food problems under social crisis and improve the city's ability to respond to social emergency.

Shanghai / Xi'an / Wuhan / Chengdu