

**A Study on the Construction of  
New Type of Human Settlements in Arid Area of West  
China  
under the Backdrop of Global Climate Change**

**基于全球气候变化下的  
中国西部干旱地区新型人居环境可持续构建研究**

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- **Global climate change leads to the panic of unknown future.**
- 全球气候变化导致人们对于**未知世界**的恐慌。
- **Extreme weather, the melting of glaciers and the perennially frozen ground, the death of coral reef, the rising of sea levels, the change in ecological systems, the increasing incidences of drought and flood and fatal heat waves, etc.**
- 极端天气、**冰川消融**、永久冻土层融化、珊瑚礁死亡、**海平面上升**、生态系统改变、旱涝灾害增加、致命热浪.....
- **The ever humid temperate Shanghai region will gradually become cold and dry, whereas the temperature and humidity in Loess Plateau is possible to increase.**
- 曾经温暖湿润的**上海地区**将趋于**寒冷干燥**，而**黄土高原地区**则有**温度升高及湿度增加**的可能。

# 1. Study of arid area of West China VS global climate change

## 西部干旱地区问题研究与全球气候变化



### ● Problem 问题

Lacking water all the year round; backward economy; poor construction of human settlements; existing infrastructure that cannot meet the basic demand of the local people...

常年缺水，经济条件落后，人居环境建设滞后，现有基础设施条件无法满足当地人民之基本需求。

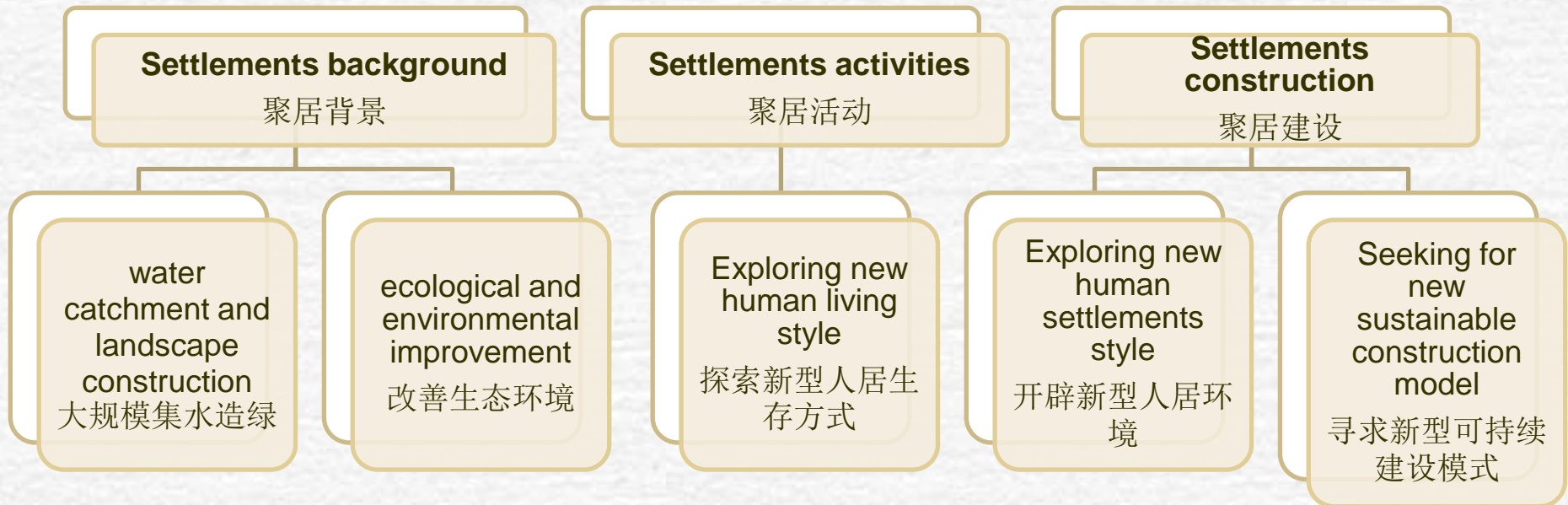
# 1. Study of arid area of West China VS global climate change

## 西部干旱地区问题研究与全球气候变化

### ● Opportunity 机遇

By taking a series of technological and policy measures like water catchment, landscape construction, turning over the ecological degradation, forming a benign cycle, improving human settlement and new development and the optimization of social system, it will **not be a dream** to build the **new oasis** in the Loess.

通过一系列技术和政策措施，在黄土高原创造“塞北江南”并非痴人说梦。



## 2. Reviews of current related studies

### 现有研究及评述

- **Foreign related studies** 国外研究

The soil and water conservation and ecological environment problems of Loess Plateau and western arid area from technical level are the main subjects.

Related research is uncommon.

Research that refers to human inhabitation and settlement ecological environment in Loess Plateau and western arid area is rare.

主要从技术层面关注于黄土高原及西部干旱地区的水土保持及环境生态问题。  
从总体上而言，相关研究并不多见。

涉及到黄土高原及西部干旱地区人类聚居环境生态方面的研究也少之又少。

#### ● Domestic related studies 国内研究

##### Research of settlements background

##### 聚居背景研究

- Conservation of settlements background
- 背景的保护
- Ecological rehabilitation
- 生态修复
- .....

##### Research of settlements activities

##### 聚居活动研究

- Inhabitation lifestyle, custom, culture, industry
- 聚居生存方式、习俗、文化、产业
- Tourism development model in Loess Plateau
- 地区旅游开发模式探讨
- Evaluation indicators of settlements activities
- 聚居活动评价指标
- .....

##### Research of settlements construction

##### 聚居建设研究

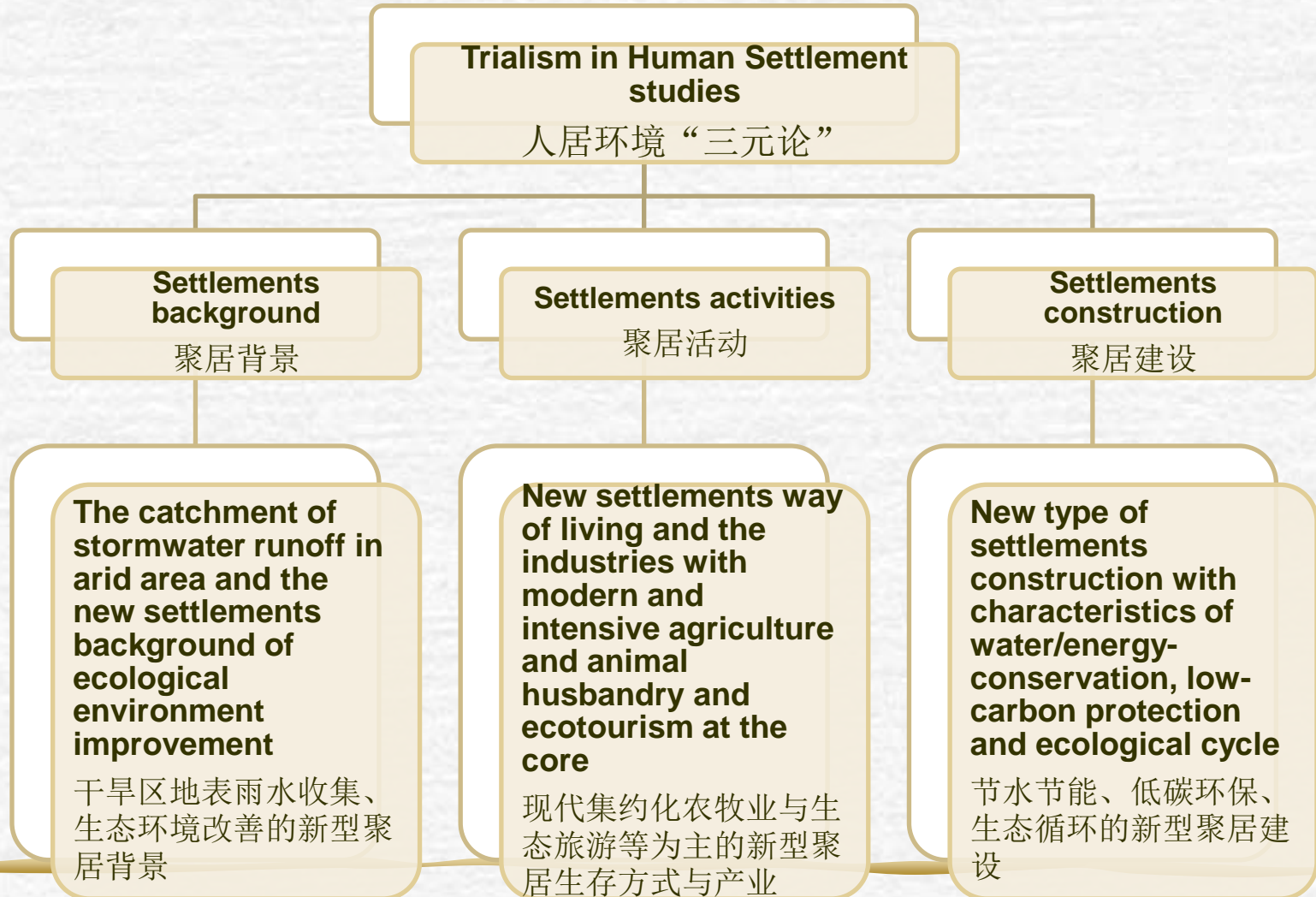
- Human settlements environment in the gully region of the Loess Plateau
- 小流域及沟壑区人居环境研究
- Ecological units of human settlements
- 生态单元模式探讨
- Constructive system of regional architecture
- 窑洞建筑设计
- .....

#### Reviews 评述

- **Lack comprehensive research integrating settlement background, settlements activity and settlement construction, which create a research disjunction and low operability.**
- 缺乏“聚居背景—聚居活动—聚居建设”综合一体的研究。
- **Pay more attention on built human settlements, but ignore the massive rare populated area in arid area of West China.**
- 过多关注已建成人居环境的改建，而忽略了广袤少人区与无人区。
- **Turning point: conduct trinity research integrating settlement background, settlements activities and settlement construction to newly constructed regions, with the leading role of human inhabitation environment and the integration of studies from multi-disciplinary field.**
- 转折点：以人居环境学为引领，融入多学科领域研究成果，以“背景——活动——建设”三位一体地对新建区域的新型人居环境可持续建设进行综合研究。

### 3. The application of "Trialism" in the studies of human settlement construction in arid area in West China

#### “三元论”——人居环境可持续建设的理论指导



# Research framework

## 研究框架



## 4. Case study: “Shanghai Oasis” & sustainable construction “上海绿洲” 案例研究与可持续建设方法及应用

- 4.1 Project Outline 项目概况
- Located in Tianshuibu, Huan County, Gansu Province 位于甘肃甜水堡
- Scale: 330 ha 面积330公顷
- Arid and depopulated 常年干旱，无人聚居



East Gansu  
甘肃省东部

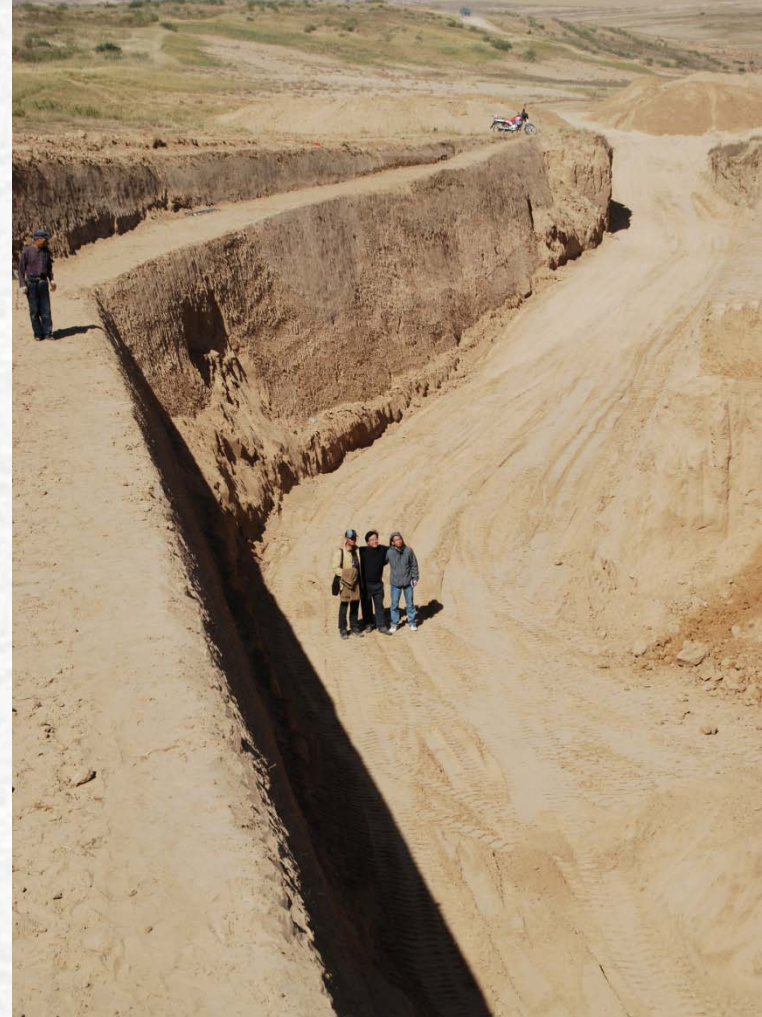
Northwest  
Qingyang  
庆阳市西北

North to Huan  
County  
环县县城以北

Tianshuibu in  
Tianshui Town  
甜水镇甜水堡

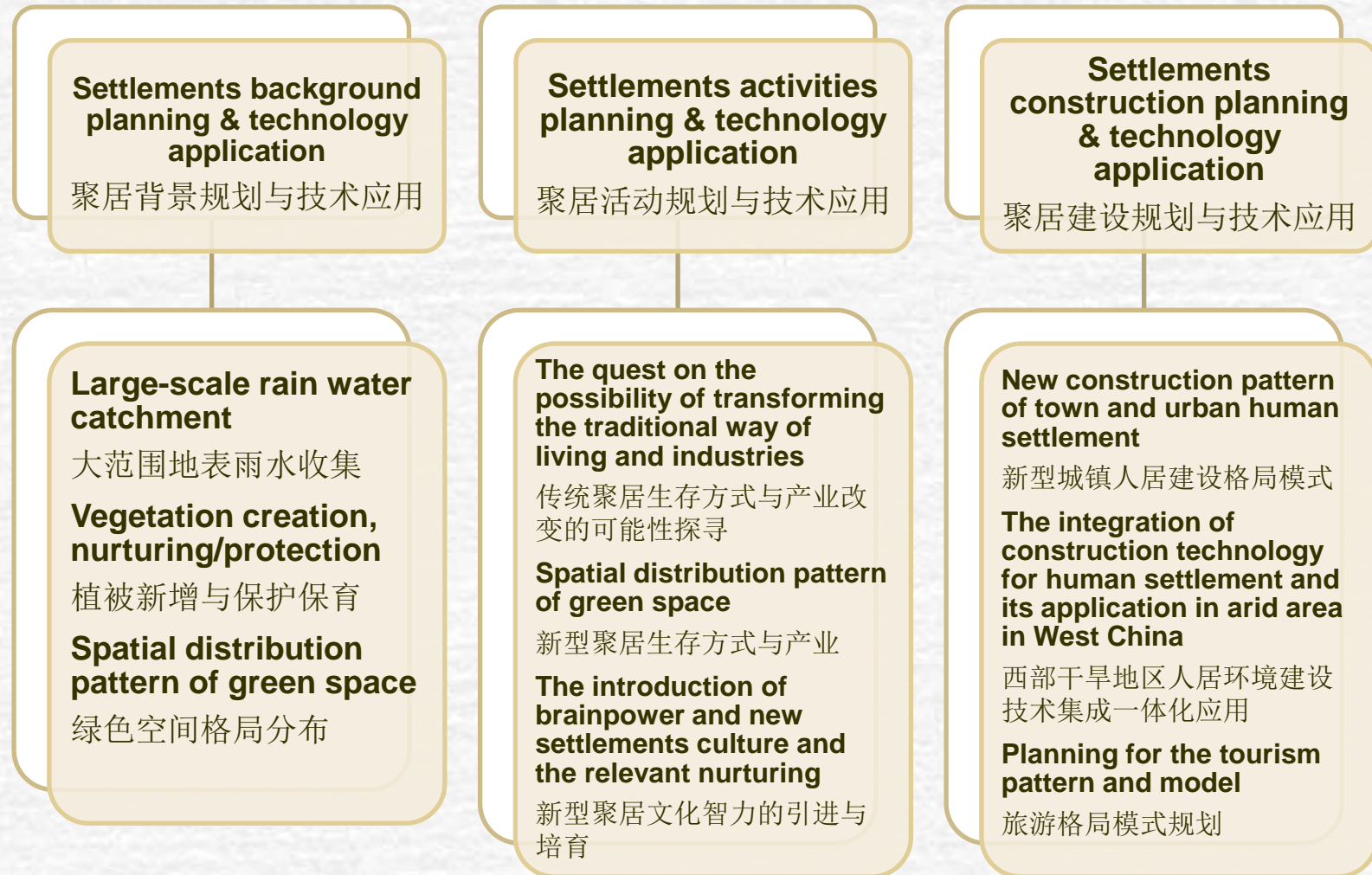
## 4. Case study: “Shanghai Oasis” & sustainable construction “上海绿洲” 案例研究与可持续建设方法及应用

- Site Photos 基地照片



#### ● 4.2 Sustainable planning method and technology application

##### 可持续规划方法与技术应用



## 4. Case study: “Shanghai Oasis” & sustainable construction “上海绿洲” 案例研究与可持续建设方法及应用

- 4.2 Sustainable planning method and technology application  
可持续规划方法与技术应用



Man-made water sumps in the site  
人工蓄水铲洞

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- 4.2 Sustainable planning method and technology application  
可持续规划方法与技术应用

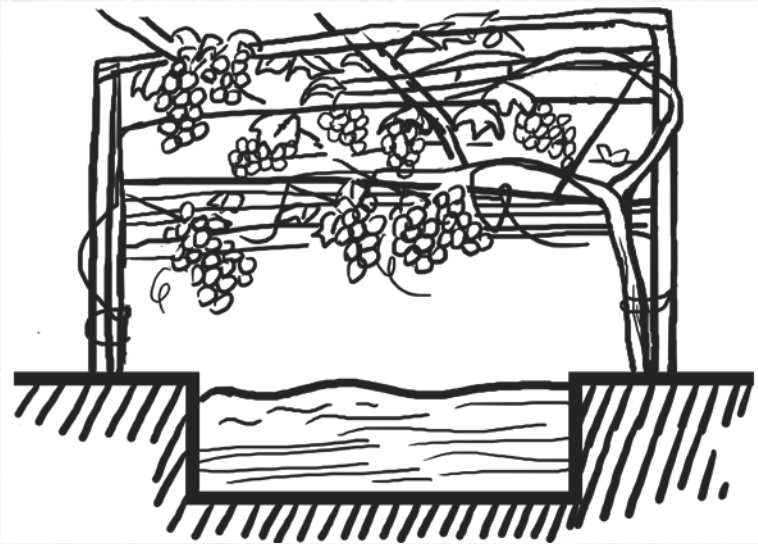


Diagram of grape vines on water surface  
葡萄藤蓄水示意图



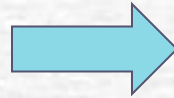
Schematic diagram of cave dwelling hotel  
窑洞宾馆示意图

## 5. Conclusion

### 结论

- The task is great and formidable, and it requires not only massive planning but also the guidance of scientific theories and the comprehensive breakthroughs in relevant technology.
- Taking the “Trialism” of human settlement science as the guidance and the spatial construction of "new model" of human settlement as the basis, the new model of construction of human settlements in arid areas of West China will be found if concrete measures like water catchment, industry restructuring and sustainable technical integration are taken.
- 研究任务的完成是伟大而艰巨的，不仅仅需要宏伟的设想，更需要科学的理论指导与综合的技术突破。
- 以全球气候变化为契机，以人居环境三元论为指导，以“新型”人居环境为空间构建的依据，结合集水造绿、产业重组及多种可持续技术集成，我国西部干旱地区的人居环境建设必将寻找到打破瓶颈的新型范式。

# The future of Loess Plateau is splendid.





**Thanks for Your Attention !**

