

# 宜居城区和低碳生活方式 – 北欧实例 Livable Districts and Low Carbon Lifestyles – Examples from the Nordics

亚洲开发银行- 国际低碳发展论坛, 北京, 2018年12月

*ADB – International Forum on Low Carbon Development, Beijing Dec. 2018*



北欧可持续发展 — 一家来自哥本哈根、专注于可持续发展的咨询公司

**Nordic Sustainability** Copenhagen-based consultancy focused on sustainability



## 我们的关注领域 OUR FOCUS AREAS

### 战略 STRATEGY

- 城市/国家/企业的可持续发展  
City / national / corporate sustainability

### 分析 ANALYSIS

- 可持续发展目标的执行  
SDG Implementation
- 影响评估  
Impact analyses

### 思想领袖

### THOUGHT-

### LEADERSHIP

- 变革管理  
Change management
- 最佳实践案例  
Best-practice cases

## 北欧-全球 NORDIC – GLOBAL



关注：国际组织、城市、  
私营部门

Focus: International  
organisations, cities,  
private sector

## 此次演讲人 SPEAKERS TODAY



**Sven Beyersdorff**

合伙人

Partner



**Brita Staal**

高级顾问

Senior Advisor



# 城市化 Urbanization

## 主要趋势 Megatrend in cities



到2050年 - 世界上66%的人将居住在城市  
(联合国)

By 2050 –  
66% of the world will  
live in cities (UN)



为实现可持续和更  
高生活质量而  
密集化发展

**Densification** for  
sustainability &  
higher quality of life

# 生活质量 Quality of life economy

## 创新经济中提高生产力的关键 Key for productivity in creative



**50%**

与自然接触将使解决问题方面的表现提高50%  
higher performance on problem solving task after time in nature

**18%**

为员工提供自然光和流通新鲜空气的窗户可使生产力提高18%  
higher productivity for workers who have natural light and windows that let in fresh air

**15%**

办公室布置绿植可使生产力提高15%\*  
higher productivity if plants are in the office\*



# 发展议程 Development Agenda

可持续发展目标 (SDG)  
SUSTAINABLE DEVELOPMENT GOALS  
(SDGs)

SUSTAINABLE DEVELOPMENT GOALS



# SDG与可持续发展 SDGs & Sustainability



城市可持续发展趋势  
SUSTAINABILITY TRENDS IN CITIES



12 万亿美元的商业机会  
\$12 trn business  
opportunity

Cities	
Affordable housing	Building resilient cities
Energy efficiency - buildings	Municipal water leakage
Electric and hybrid vehicles	Cultural tourism
Public transport in urban areas	Smart metering
Car sharing	Water and sanitation infrastructure
Road safety equipment	Office sharing
Autonomous vehicles	Timber buildings
ICE vehicle fuel efficiency	Durable and modular buildings

# 挑战 Challenge

# 城市管理者发挥引领作用 City officials need to navigate

城市管理者需要了解的情况  
CONTEXT FOR CITY-OFFICIALS



宜居城市- 行动领域  
LIVABLE CITIES - AREAS FOR  
ACTION

1. 将自然融入城市，实现宜居街区 and 气候韧性  
Nature in cities for livable districts & resilience
2. 可持续的社会化生活方式  
Social & sustainable lifestyles
3. 城市战略和街区规划  
Urban strategy & district planning



# 来自北欧的三方面启示    Inspiration from the Nordics in 3 areas:

1. 将自然融入城市，实现宜居街区 and 气候韧性    Nature in cities for livable districts & resilience
2. 可持续的社会化生活方式    Social and sustainable lifestyles
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# 提问

## Audience Question

来宾中有哪位所在的街区存在洪涝问题？  
Who among audience has issues with  
flooding in their districts?



例 Example:

## 气候韧性Climate Resilience: 哥本哈根的“气候区域” Copenhagen's Climate Quarter

- 100年内水位将上升1.6米  
Water levels will rise 1.6m over 100 years
- 利用基础设施和公园网络集水  
Using infrastructure & network of parks to collect water

与亚洲的相关性

**Relevance for Asian context:**

- 经济可行 Financially sound project
- 更高的生活质量 Increased quality of life
- 受欢迎的公园环境 Attractive park space









例 Example:

气候影响和娱乐性能

Climate Impact &  
Recreation:

鹿特丹“绿色屋顶”项目  
Rotterdam's Green

- 鹿特丹有14.5平方公里的平面屋顶  
Rotterdam has 14.5km<sup>2</sup> flat roofs
- 适合生物多样性、储水、发电及娱乐等性能  
的多种屋顶类型  
Variety of roof types for biodiversity, water  
storage, electricity, recreation

与亚洲的相关性：

Relevance for Asian context:

- 让闲置空间发挥更大作用  
Large impact from unused spaces
- 气候变化适应力  
Climate change resilience

## OPPORTUNITIES FOR A SUSTAINABLE ROTTERDAM ROOFSCAPE

Rotterdam has a unique roof landscape created by historic events. After the 2nd world war, a lot of flat roofs have been built ranging from low rise buildings in the harbour to high rise buildings in the city centre. Rotterdam consists of 14.5 km<sup>2</sup> of flat roofs. All these roofs – From flat to inclined and from large to small – offer much more possibilities than expected. The municipality of Rotterdam wants to encourage citizens to actively use their rooftops. With joint forces, a colourful and unique roof landscape can arise in Rotterdam.

In a busy city with a high density, the roof landscape provides space for a multifunctional use. A potential that demands to be exploited. Rotterdam has challenges in terms of water storage, cooling and greening the city and generating sustainable energy. The roofs of the city offer plenty of space to deal with these challenges. The Rotterdam roof landscape is also perfectly suitable for urban activities, such as private terraces and public rooftop parks.

### DIFFERENT TYPES OF SUSTAINABLE ROOFS



Green roofs are vegetated roofs. These can be extensive; for example a sedum roof or a grass roof. An intensive green roof is accessible and contains a broad mix of plants.



Blue roofs buffer extra rainwater in times of heavy precipitation. These roofs often have a special collecting system below a layer of vegetation.



Red roofs are actively used for purposes such as sports, parties, meetings and receptions.



On yellow roofs sustainable energy is generated, e.g. with solar panels or urban wind turbines.

















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# 提问

## Audience Question

来宾中有谁从事城市中健康和消费相关议题的工作？

Who among audience works with health & consumption-related issues in cities?



例 Example:

## 交通 Transport:

哥本哈根自行车桥

## Copenhagen's Bicycle Snake & Highways

- 全市750公里的超级公路  
750km of super highways throughout city
- 60%的5公里内出行由自行车承担  
60% of trips <5k by bike

与亚洲的相关性

**Relevance for Asian context:**

- 减少污染/拥堵  
Less pollution/congestion
- 对健康的益处  
Health benefits
- 自行车出行成为时尚  
Biking seen as "cool"









例 Example:

## 北京自行车公路 – 大规模应用

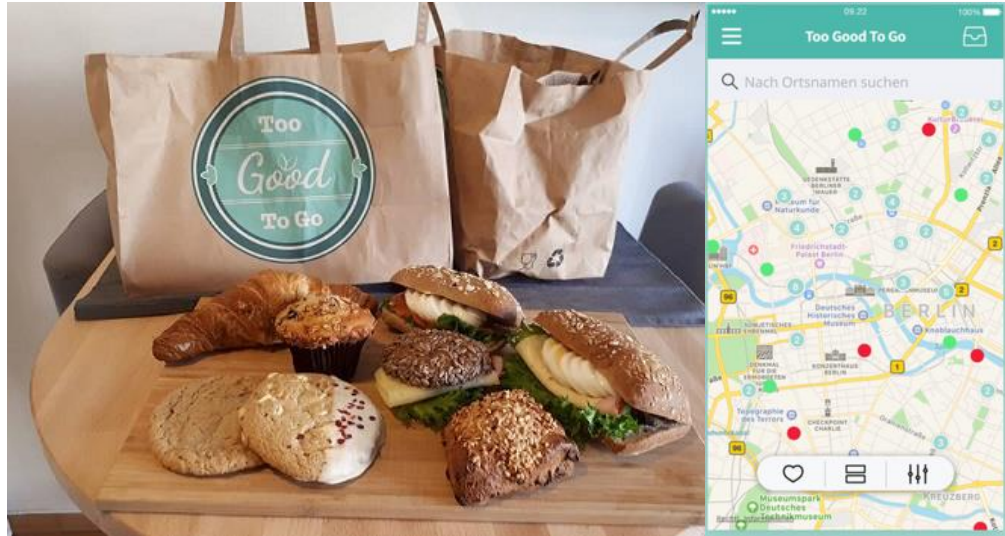
Beijing Bicycle Highway – large scale adaptation





## 例 Example: 食物浪费 Food Waste:

TGTG小程序 Too Good to Go



- 通过手机app将要扔掉的食品回收给有需要的人  
Phone app to get food that would otherwise be thrown away

### 相关性Relevance:

减少食物浪费、提高消费者意识  
Less food waste and greater consumer awareness

&

食品银行 “Food Central”



- 一些北欧城市以“食品银行”的形式解决工业食品浪费问题  
Foodbank for industrial food waste in some Nordic cities

### 相关性Relevance:

为弱势群体和公共机构提供食品  
Food for vulnerable communities and public institutions



例 Example:

## 娱乐和能源设施的结合

## Recreation & Energy:

哥本哈根电厂滑雪场

Copenhagen's Power Ski Slope

- 6.4亿美元的焚烧发电厂  
\$640mio incineration Power Plant
- 屋顶建为滑雪坡  
Ski slope on roof
- 为62,500个家庭供电  
Powering 62,500 homes

与亚洲的相关性

**Relevance for Asian context:**

- 中心区供能和社会效应  
Energy in central location and social purpose
- 工业建筑的多功能利用  
Dual-use of industrial building





# 电厂 Power Plant





电厂 – 工程最后阶段

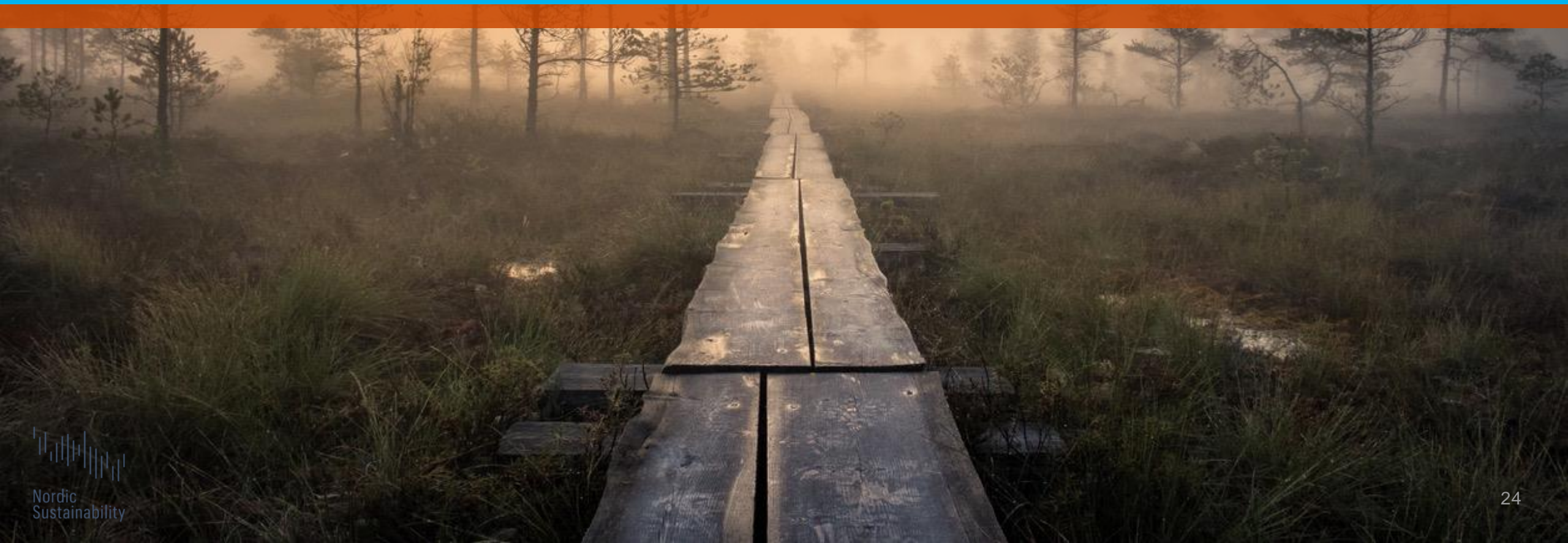
Power Plant - Final stages of construction





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# 提问 Audience Question

来宾中有谁所供职的城市制定有十年规划？  
Who among the audience works in a city  
with a 10 year plan?





例 Example:

## 城市战略City strategy: 奥斯陆2019城市气候中心 Oslo Municipality Climate capital 2019

- 目标：减少排放、提高生活质量  
Objective: Reduce emissions & improve quality of life
- 温室气体排放到2020年和2030年分别减少50%和95%  
Lower GHG emissions by 50% by 2020, and 95% by 2030
- 2020年实现公共交通“0化石燃料”目标，2019年实现中心城无车化  
All public transport fossil-free by 2020, and car-free center by 2019

与亚洲的相关性

**Relevance for Asian context:**

- 明确的减排政策作用重大：自2012年实现35%的减排  
Clear emissions policies work: 35% decrease since 2012
- 全市的共同努力  
Integrated efforts across city



# 影响可持续城市生活的能力

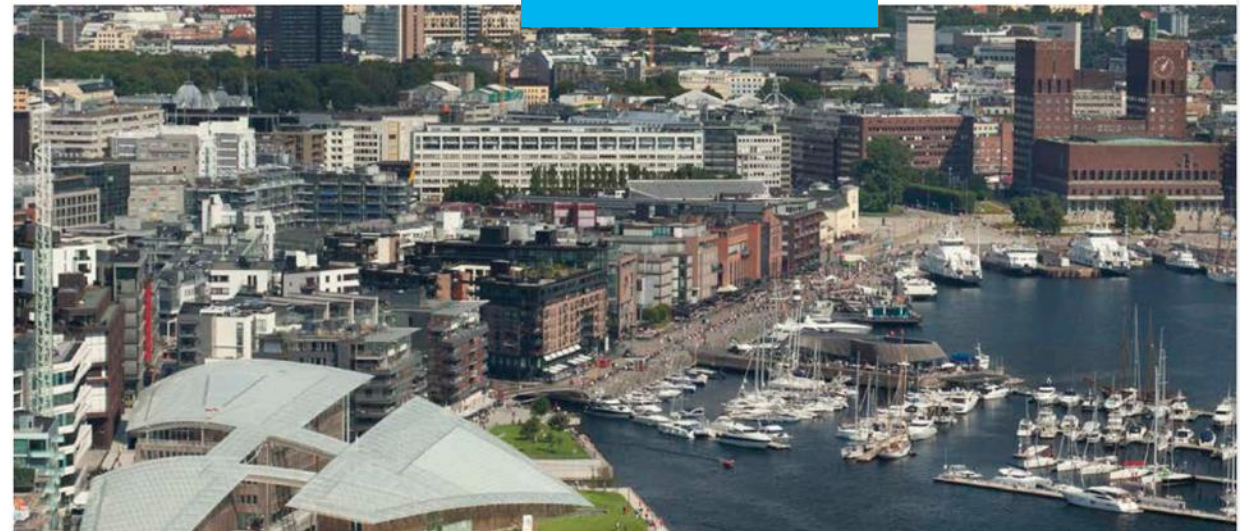
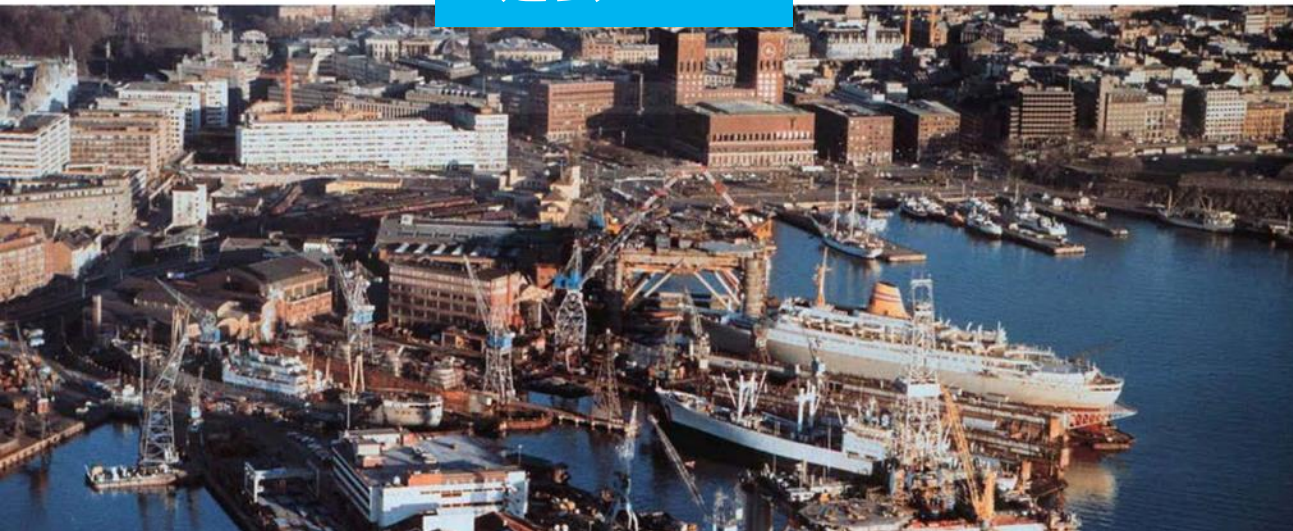
## Affecting ability of sustainable living in cities



过去 Past



将来 Future





例 Example:

## 气候战略Climate strategy:

焚烧发电中的  
能源和碳捕捉与封存

## Incineration for energy & CCS

- 世界上第一个采用不可回收废弃物进行碳捕获和封存的尝试  
World's first carbon capture and storage from non-recyclable waste piloted
- 将减少奥斯陆12%的化石燃料二氧化碳排放  
Would cut 12% of Oslo's fossil CO2 emissions
- 目的：捕获~40万吨二氧化碳/年  
Aim: capture ~400ktons CO2/yr

与亚洲相关性

### Relevance for Asian context:

- 来自市属发电厂的重大创新  
City-owned plant that brings major innovation





例 Example:

## 街区规划

### District planning:

### 斯德哥尔摩皇家海港

### Stockholm's Royal Seaport

- 新基础设施项目：12,000套新建房屋和35,000个工作场所  
New infrastructure project: 12,000 new homes, 35,000 work places
- 目标：到2030年实现碳中和
- 生物气产量提高50%
- 实现房屋20%的供能来自太阳能  
Aim: carbon-neutral by 2030
- 50% increase biogas prod.
- 20% solar energy for houses

与亚洲的相关性

Relevance for Asian context:

- 重新定位“旧区”  
Repurposing of "old" district
- 生态友好型街区 = 仅增加5%的成本  
Eco-friendly district = only 5% cost increase









“城市的存在是为了给人类提供好的生活，而不只是满足生存”

“A city exists for the sake of a good life,  
not for the sake of life only”

亚里士多德  
*Aristotle*



# 一切由您来决定 It's up to you

# 可持续发展与生活质量 Sustainability & Quality of life

这里仅举8个实例 – 还有更多例子值得借鉴

8 EXAMPLES – MANY MORE OUT THERE

欢迎联系我们了解更多详情  
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## Example: Climate Resilience: Copenhagen's Climate Quarter

- Water levels will rise 1.6m over 100 years
- Using infrastructure & network of parks to collect water
- Results:**
  - Financially sound
  - Increased quality of life
  - Attractive park space



## Example: Food Waste: Too Good to Go

- Phone app to get food that would otherwise be thrown away
- Result:** Less food waste and greater consumer awareness



## & "Food Central"

- Foodbank for industrial food waste in some Nordic cities
- Result:** Food for vulnerable communities and public institutions



## Example: Climate strategy: Incineration for energy & CCS

- World's first carbon capture and storage from non-recyclable waste piloted on city owned plant
- Aim to capture approximately 400 000 tons of CO2 per year
- Results:**
  - Will cut 12 percent of Oslo's fossil CO2 emissions



## Example: Climate Impact & Recreation: Rotterdam's Green Rooftops

- Rotterdam has 14.5m2 flat roofs
- Variety of roof types for biodiversity, water storage, electricity, recreation
- Results:**
  - Large impact from unused spaces
  - Climate change resilience



## Example: Recreation & Energy: Copenhagen's Power Ski Slope

- \$640mio incineration Power Plant
- Ski slope on roof
- Results:**
  - Powering 62,500 homes
  - Energy in central location and social purpose



## Example: District planning: Stockholm's Royal Seaport

- New infrastructure project: 12,000 new homes, 35,000 work places
- Aim: carbon neutral 2030
- 50% increase biogas
- 20% solar energy for houses
- Results:**
  - Repurposing of "old" district
  - Learning: Eco-friendly district = 5% cost increase



## Example: Transport: Copenhagen's Bicycle Snake & Highways

- 750km of super highways throughout city
- 60% of trips <5k by bike
- Results:**
  - Less pollution/congestion
  - Health benefits
  - Biking seen as "cool"



## Example: City strategy: Oslo Municipality Climate capital 2019

- Objective: Reduce emissions & improve quality of life
- Lower GHG emissions by 50% by 2020, and 95% by 2030
- All public transport fossil-free by 2020, and car-free center by 2030
- Results:**
  - Learning: clear emissions policies drive results
  - 35% decrease in emissions since 2012

