



Asia-Pacific

Working together in a changing climate

城市气候变化风险:对城市相关领域的影响及其应对措施

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IPCC 亚洲第五次评估 – Ch14

可观察到的气候变化

- 变暖的趋势及其不断增加的极端温度已经初现端倪

可预见的气候变化

- **热带和温带气旋** -未来在各个地区可能有所变化,其频度和强度不确定.
- 季风在东亚,南亚和东南亚都可能有所加强

影响 & 脆弱性

- 迅速的城市化进程,工业化和经济发展所产生的种种压力,会进一步使气候变化复杂化
- 在亚洲各个地区对于食品制造和食品安全有不同影响,很多地区的生产力会下降
- 海平面上升会淹没低洼地带,尤其对于水稻产区会造成影响
- 由于不断增长的对水的需求以及良好管理的缺失,在大部分地区,对于水资源的需求会有所增加
- 海岸和海洋系统以及非洲的珊瑚礁会承受越来越大的压力
- 极端天气事件对人类的健康,安全,生计和贫穷会有越来越大的影响

城市化及其对经济发展的贡献

中国:

- 到2035年，70%的人口会居住在城市地区(发改委2007年研究报告)
- 主要大都市区域的形成：珠江三角洲，长江三角洲，渤海经济开发区，海峡两岸经济区，北部湾经济开发区，中原开发区，哈尔滨长春开发区，四川盆地，大武汉都市圈，关中，大长沙都市圈
 - 占中国陆地面积近十分之一(9.99%),
 - 占全国人口三分之一(35.02%)
 - 占国民生产总值一半以上(52.83%)（2005年）

印度:

- 到2030年，5.9亿人口将居住在城市（为当前美国总人口的2倍），68个城市的人口超过100万。
- 目前城市贡献了全国国民生产总值的58%
- 1.2万亿美元的资本投资将用于满足印度城市发展的需要
 - 将要修建25亿平方米的公路(总量超过前十年的20倍)
 - 将开发9亿平方米的商用和民用空间（相当于每年建造一座芝加哥）

数据来源:

印度工业联盟2013年印度城市化研究报告

理解城市的气候变化风险

脆弱性 = (受气候变化影响的范畴, 敏感性, 适应能力)

风险 = 危险 (可能性和影响) , 脆弱性

城市经济发展领域脆弱性举例

- 旅游业
- 建筑业

为什么旅游业是国家和城市经济发展支柱产业之一

- 到2020年为止，每年高达**16亿人**出国旅行(UNWTO);
- 就总体经济实力而言，旅游业同石油，能源，金融和农业属于同一类别
- 全球范围内，每**10个人**当中就有一个人受雇于旅游或者接待行业;
- 旅游业每天创造**30亿美元**的收入!

旅游业对中国而言意味着什么

根据2010年数据，中国目前是世界第四大入境旅游国家和亚洲最大出境旅游客源国

旅游业总收入	对经济的直接贡献	对经济的直接和间接贡献	直接和间接雇用人数
人民币1.57万亿元	2.6% of GDP	8.6% of GDP	7千6百万 (总劳动力的9.6%)

2010年中国旅游业占GDP比重前十的城市

	城市	GDP总值 (人民币亿元)	旅游业总收入 (人民币亿元)	百分比 (%)
1	厦门	1619	383	24%
2	北京	11865.9	2768	23%
3	上海	14900.93	3400	23%
4	南京	4170	951	20%
5	杭州	5098.66	1025	20%
6	武汉	4500	750	17%
7	天津	7500.8	1200	16%
8	宁波	4214.6	650	15%
9	无锡	5000	748	15%
10	常州	2340	350	15%

气候对旅游业的影响

Mountain and Snow Tourism

IMPACTS

Recent record warm winters in Europe and North America have shortened ski seasons, reduced skier visits and increased snowmaking costs, with greater impacts on lower elevations and smaller resorts.

ADAPTIONS

Water sports resorts can adapt by marketing themselves as year-round destinations, investing in snowmaking systems or developing higher elevation terrain.

IMPACTS

Vacation property values have been impacted at ski destinations in Rocky Mountains of the USA with more variable snow conditions.

RISKS

Snowmaking is the primary climate adaptation of this ski industry. Warmer scenarios in many destinations are projected to test its technological and economic limits in many locations.

IMPACTS

Natural and cultural landscape change has uncertain impacts for alpine tourism in Nepal, China, North America and the European Alps.

IMPACTS

Extended 'green season' tourism will provide an opportunity for mountain destinations to offset winter season losses.

Forest and Lake Tourism

RISKS

Fire seasons will lengthen, and there will be an increase in the number of high fire danger days in Southern Europe, Australia, and Western North America.

IMPACTS

Extended camping and park visitation seasons are projected in higher latitude destinations like Canada, Northern USA, and Scandinavia.

IMPACTS

Low water levels on reservoir lakes in Western USA and the Great Lakes have impacted boating, marinas and sport fishing. These impacts are expected to intensify at these and other lake tourism destinations.

Forest and Lake Tourism

The extent to which ecosystem change will alter nature-based tourism remains uncertain. Longer fire seasons will restrict access to national parks and other natural areas more often and pose greater risks to tourists and tourism infrastructure. Rising temperatures will change lake habitats, affecting fishing tourism as well as water quality for swimming.

Biodiversity and Ecotourism

RISKS

Biodiversity is critical for ecotourism, and the reduction of wildlife abundance or loss of species is anticipated to affect visitation in many destinations.

IMPACTS

Tourist surveys found that environmental change resulting from warmer climate change scenarios reached a threshold where a large percentage of tourists would no longer be interested in visiting the impacted destination.

IMPACTS

Tourist responses to environmental change remain uncertain and will vary among key markets. E.g., expert economists versus mass tourists, regional versus international visitors).

IMPACTS

Changes in the quality and types of wine grapes that can be grown are expected to impact the growing global wine tourism industry.

RISKS

In sub-Saharan Africa, up to 40% of mammal species in national parks are likely to become endangered by 2050, assuming they are unable to migrate. Loss of high profile species like in some parks like Kalahari, Addo Elephant, and Serengeti could have a major impact on international tourism.

Biodiversity and Ecotourism

As species adapt to climate change, the geographic distribution of ecosystem and biodiversity will evolve. Tourism will decline where iconic species are extirpated at a destination. This risk has inspired some tourists to see species like polar bears in Churchill, Canada while they still can ('last chance tourism').

Urban Tourism

RISKS

Urban heat island increase the effect of heatwaves that have been found to stimulate travel to coastal and mountain destinations.

RISKS

UNESCO estimates climate change threatens 46 cultural World Heritage sites, including many archaeological sites, churches, mosques, temples, and fortresses that are major tourist attractions in cities.

IMPACTS

Mitigation requirements of the aviation sector will affect air travel costs. Although international tourists have shown to be resilient to minor airline increases, the impacts are expected to be greater on low-cost carriers that serve much of the short urban holiday market.

Urban Tourism

City visits are a leading market of global tourism. Across the world, city destinations are exposed to a range of climate change impacts, including heatwaves, water shortages, storms and disease outbreaks. In addition, the tourism waterfronts of many coastal cities are at risk from sea-level rise.

Coastal and Island Tourism

IMPACTS

Sea level rise poses a risk to major coastal tourism infrastructure, resorts and attractions around the world. Erosion of beaches will reduce the attractiveness of many coastal destinations, reducing the prime coastal resorts can charge for accommodation and the value of coastal vacation properties.

ADAPTIONS

The insurance industry is already begin to adapt to climate change. Property insurance in high-risk areas, such as coasts in tropical cyclone regions, is anticipated to increase. Unsustainable areas will influence tourism development.

IMPACTS

Islands are among the most water scarce destinations in the world and climate change is expected to reduce freshwater resources. Water costs for tourism will increase and tourists may need to become more efficient with its water use, with high water use tourism (e.g., golf tourism) restricted in some areas.

IMPACTS

It is anticipated that as tourists from temperate nations adapt their travel patterns to take advantage of new domestic opportunities closer to home, demand for subtropical and tropical destinations will decline.

IMPACTS

If more stringent global action mitigation policies are gained, more significant decreases in tourist arrivals are projected for small island developing states.

Coastal and Island Tourism

Rising sea levels and more extreme weather threaten beaches and coastal infrastructure enjoyed by hundreds of millions of tourists each year. While adaptation can protect at-risk infrastructure, beach nourishment is not affordable for most coastal destinations even when sustainable sand resources are available.

Ocean and Marine Life Tourism

ADAPTIONS

The reduction of season is expected to promote an already rapid increase in Arctic cruises. Much improved search and rescue capabilities are needed to develop this market safely.

IMPACTS

Furges of fish and marine mammals will change as the oceans warm, impacting sport fishing and marine animal watching.

RISKS

Coral reefs show thousands of visitors each year for scuba diving and snorkelling. 2°C of warming by 2050-2100 would see reef structures degrade with important consequences for dive tourism operators and destinations. Shipwrecks and artificial reefs can provide alternative attractions for recreational divers.

IMPACTS

Coastal tourism is among the most sensitive intensive and will be influenced by future mitigation policies related to marine transport as well as air travel.

Ocean and Marine Life Tourism

The combination of rising water temperatures and increasing ocean acidification, caused by the absorption of carbon dioxide, spell particular peril for reef ecosystems and the dive tourism they support. Warming sea temperatures will also change the ranges of key sport fish and marine mammals.

城市旅游目的国的气候变化风险

	经济价值	气候影响	风险
伦敦	2010年，伦敦吸引了1530万来自其他国家的游客	• 气温升高 • 洪水	• 健康和安全问题 • 对满意度和目的国选择所产生的负面影响
纽约	每年纽约有约4700万游客。2011年，游客总数达到5000万，总消费达345亿美元	• 极端天气更为频繁 • 更多暴雨天气 • 冬季降水增多，夏季减少	• 健康和安全问题 • 对满意度和目的国选择所产生的负面影响
曼谷	2013年预计有598万游客。跨境交易消费为全球第四，2013年总额大约为143亿美金	• 洪水 • 对海岸线的侵蚀及其某些海滩的完全消失	• 健康安全问题 • 游客直接减少
北京	2011年，旅游业总收入达到136亿美金	• 气温升高 • 更多的极端天气状况	• 健康安全问题 • 气温升高造成的相关污染
上海	2010年旅游业总收入达到464亿美金	• 气温升高 • 对海岸线，湿地和岛屿的侵蚀	• 健康安全问题 • 由于某些海滩的丧失而减少对游客的吸引力
厦门	2014年厦门预计接待5200万中外游客	• 温度增加 • 对海岸线，湿地和岛屿的侵蚀	• 健康安全问题 • 由于某些海滩的丧失而减少对游客的吸引力

建筑业及其面对气候变化的脆弱性

- 根据中国官方统计数字，2009年，建筑业对经济的直接贡献为国民生产总值的13%。中国60%的经济总量来自建筑及其同建筑相关联的行业
- 在2011年，北京建筑业生产总值为总生产总值的4.3%，上海为3.7%（中国官方统计数字）
- 国际劳工组织推算到2006年底，大约3600万流动工人从事建筑业劳动（占总量的40%）。

脆弱性体现的各个方面：

- 基础设施
- 极端天气状况造成的经济损失
- 工人的健康安全问题

已经采取了哪些行动？

- 确定重点领域
- 正在逐步开发综合应对政策措施
- 如旅游业等支柱产业正开始研发更为系统的思维模式
- 雇主和雇员的意识有所加强

中国国家应对战略：首要任务

旅游业和其他相关工业

通过下列方式保证工业安全：

- 加强劳动保护措施，保证极端天气和气候状况下的安全
- 定期对重点工业部门发布天气信息警报
- 加强旅游业，采矿业，交通和其他相关工业的事故预防和控制体系，并研究应急预案，保证服务设施能够有效管理风险。

可持续性发展和对重点旅游资源的保护，具体措施如下：

- 对于气候，水文，土壤，生物和其他自然资源的整体评估
- 项目设计和旅游设施的建设中考虑气候适应性这一因素
- 保证采取保护性措施，防止由于气候和天气变化而造成旅游资源的丧失。冬季和海滩旅游区以及其他依赖天然资源的旅游资源应该具备更强的应对能力。我们应该做出努力，更好的保护受气候变化影响景区及其文化和自然遗产。
- 在气候变化引发的积极和消极的影响下，为旅游产业发展寻求机会，例如土地使用(生态旅游-造林)，生物多样性和气候形态。
- 同时推广那些不太容易受气候影响的旅游产业。

试点省份：

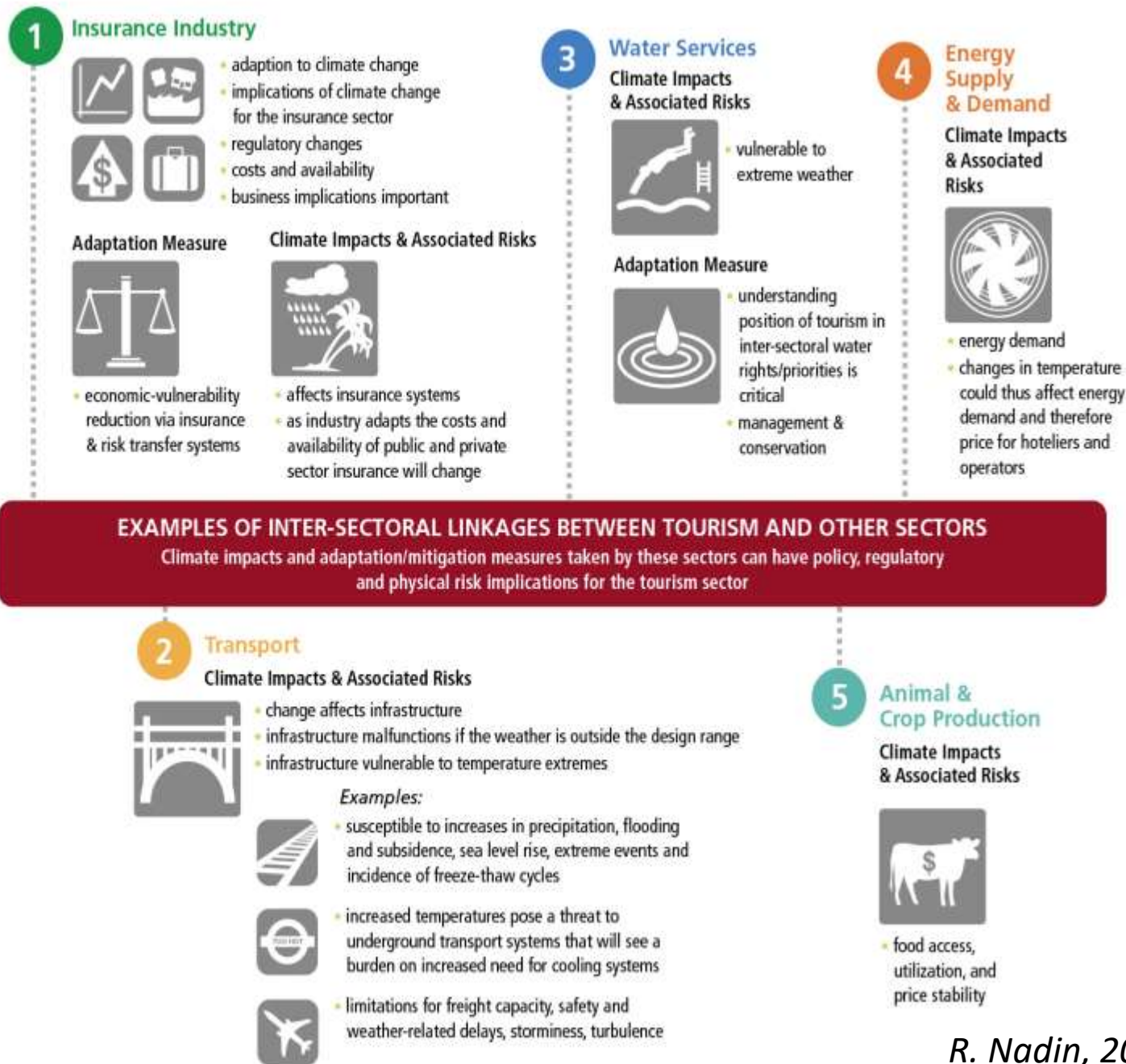
- 暂未确定试点省份。

气候变化在其他领域的影响和应对措施:行业关联和旅游业

Climate Change impacts on other sectors

Adaptation response measures (policy, regulatory)

All adaptation response measures, regardless of sector, have limits by other sectors



让工人远离热浪的侵袭



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让工人远离热浪的侵袭

应对热浪的策略:

热浪侵袭前	•告诉处于潜在危险中的工人高温压力的征兆，症状和危险。 •制定一套应对热浪的行动方案。 •给每位新工人一段适应期。 •与当地媒体和气象部门保持沟通。 •在条件允许的情况下，安装降温系统和保持通风。
热浪侵袭中	•鼓励工人保持体内水平衡。 •保证工人能进入“凉快区域” •保证工人在一天中最热的时候能够调整工作计划。 •建议工人穿轻薄且透气的衣服。 •定期检测工人的健康状况。
热浪侵袭后	热浪过后，我们重新检查工地管理的策略。 抽查工人和项目经理了解哪些既有措施有效，哪些有待改进。通过这种方法可以在工地上实施更为有效的措施，从而进一步预防由极度高温引发的健康问题。

接下来的步骤

我们需要做到以下方面:

- 翻译亚洲第五次评估报告中有关已观察到的/预测的气候变化及其对旅游业和建筑行业影响。
- 需要让私营企业全面参与进来,从而使城市的各行业获得有关影响,风险和脆弱性的整体性评估。基于此,决策者们能够权衡利弊和应对全局。
- 定性变量 – 这些是必要的模拟数据,帮助我们了解除气候变化之外,规则,政策,文化和社会规定如何影响行为习惯及其面对多重压力的脆弱性。
- 促进部门间理解气候变化影响的含义和应对下列事务的措施:
 - 运作成本
 - 对劳动力的影响
 - 有能力从营业中断中恢复
 - 目的地营销
 - 地产值(度假区地产)
 - 游客/客户的行为变化
 - 可保险性
 - 流动性成本
- 有关目前适应政策有效性和相关措施的评估正在进行



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Thank you!
非常感谢!

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