RECAST Urumqi: Facilitation of Sustainable Mega-City Development through Energy Resource Efficiency

RECAST Urumqi：提高能效 – 促进大城市可持续发展

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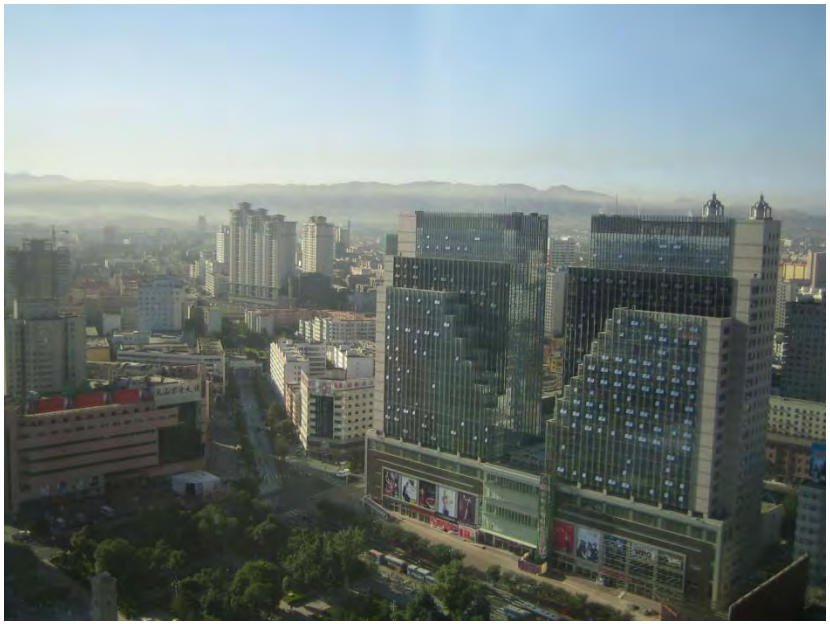
Kick-Off Conference in Heidelberg, June 30, 2009
项目启动会议，2009年6月30日于海德堡



Energy Efficiency: The Challenge
能源效率：目前面临的挑战

Climate 气候

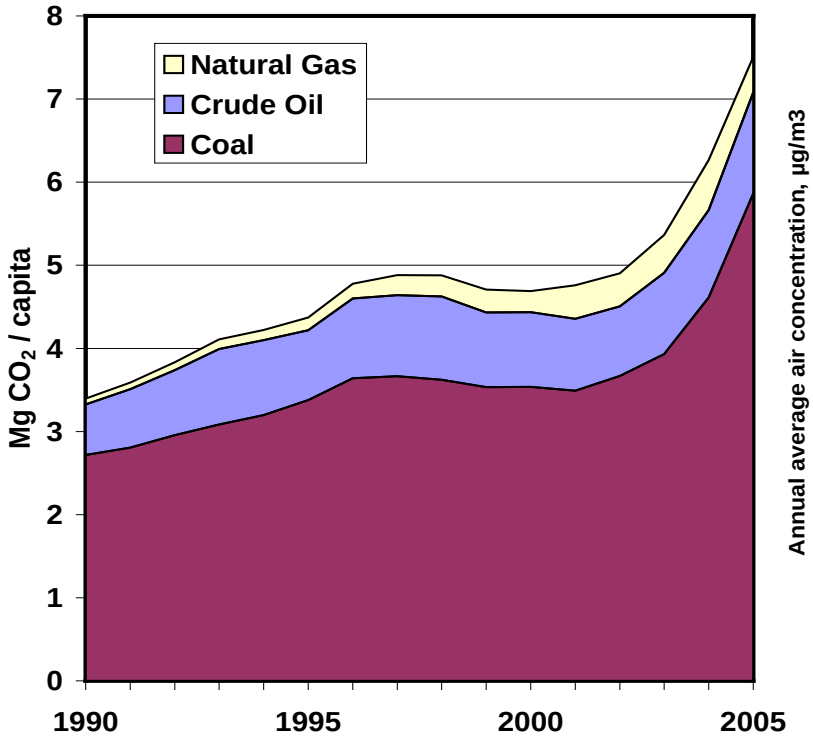
Xinjiang per capita CO_2 emissions are close to EU average and are rising

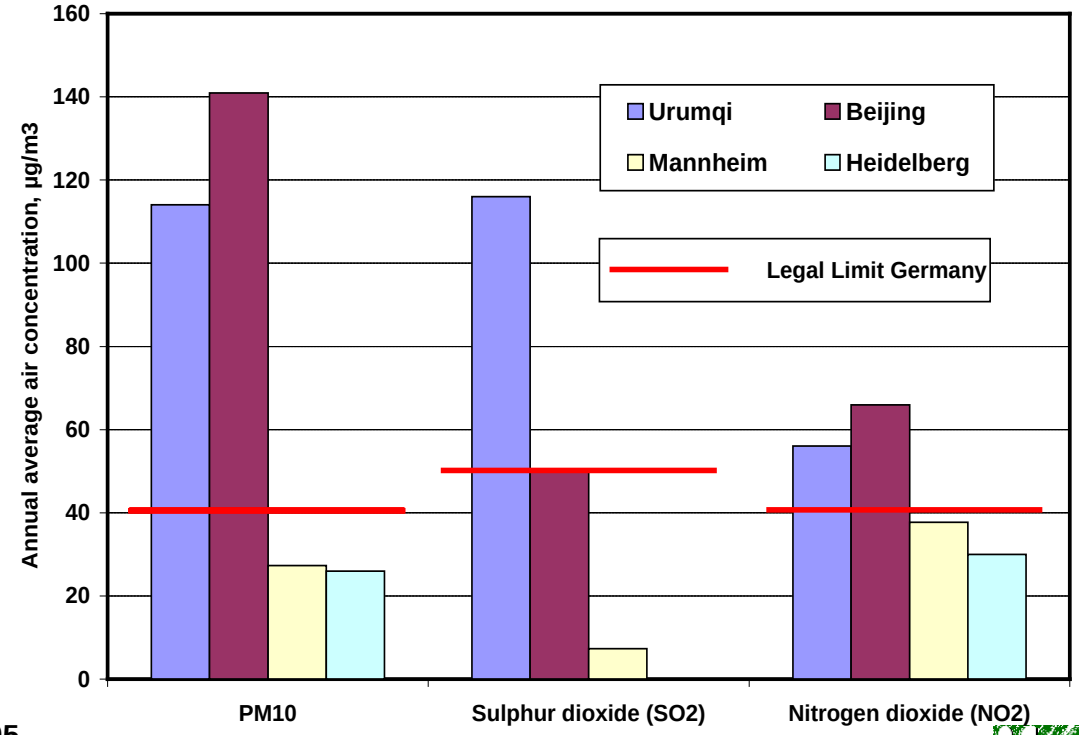
新疆人均二氧化碳排放已经接近欧盟平均水平，同时还有上升的趋势

Air quality 空气质量

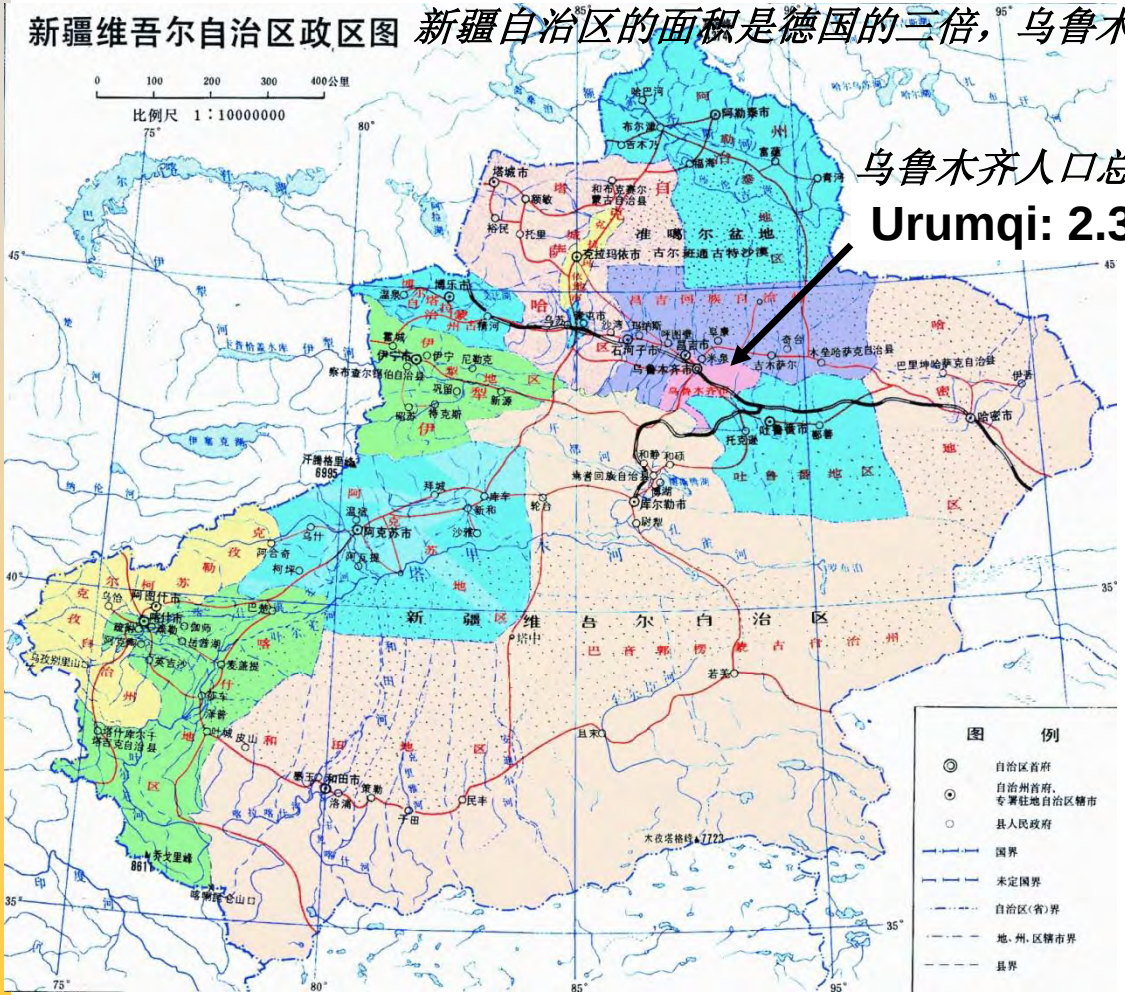
The concentration of air pollutants exceeds safe levels

空气污染物浓度已超过安全水平





Xinjiang province has 3 times the size of Germany
Urumqi area equals 1/3 of the state of Baden-Württemberg



新疆自治区的面积是德国的三倍，乌鲁木齐市的面积是德国巴登符滕堡州的三分之一

乌鲁木齐人口总数为233万，每平方公里人口密度为196人

Urumqi: 2.33 Mio residents (196 per km²)

Identical scale

相同比例尺

Baden-Württemberg: 11 Mio residents (300 per km²)

巴登符腾堡州人口总数为1100万，每平方公里人口密度为300人

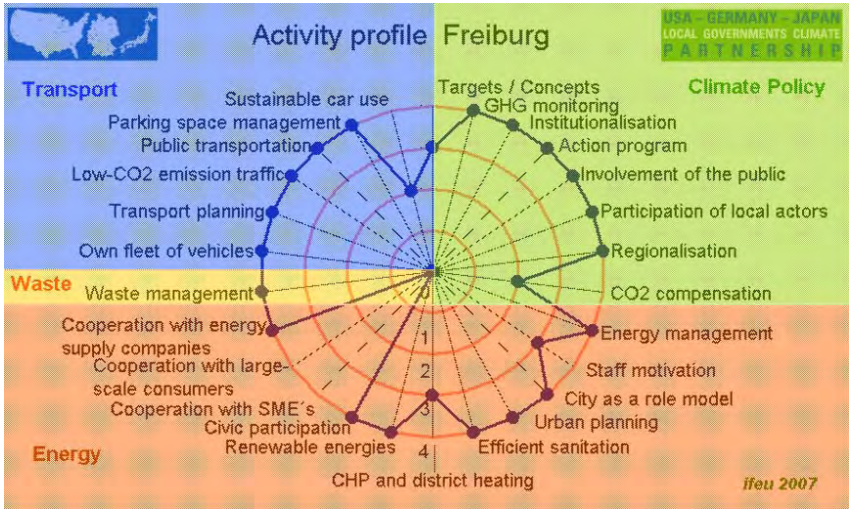
RECAST Urumqi Energy Efficiency: Objectives
RECAST Urumqi: 能效目标

Overall objective: to develop… 总体目标：发展…

- Strategies and technologies for an effective use of energy resources
  能源有效利用的技术和战略
- Strategies and technologies to expand the use of renewable energy
  广泛应用可再生能源的技术和战略
- Measures to reduce the emissions of air pollutants 空气污染物减排的措施和手段
- Options to reduce greenhouse gas emissions 温室气体减排的方案

Benchmarking activities in Urumqi 在乌鲁木齐的实现标杆分析和管理

- Using benchmark system of *Local Governments Climate Partnership*
  *地方政府间气候保护合作*的标杆系统
- Tabulation and display of energy use and CO_2 emissions
  能源消耗和二氧化碳排放的平衡表及图表
- Selecting a manageable set of indicators
  选定能源管理指标



RECAST Urumqi: Sino-German interests
RECAST Urumqi: 中德利益分析

- **Interests of the German side 德方利益**

- To learn how the rapid Chinese economic development works in the field of efficient energy utilization 通过高效利用能源来学习中国经济高速发展的运行规律
- To learn about the Chinese approach to implement new measures 学习中国实施各项措施的方式方法
- To exchange and compare experiences in energy utilization 交流并对比中德能源使用的经验
- To help German companies to get involved in concrete projects 帮助德国企业直接参与具体环保项目
- To offer the opportunity for trade shows 提供商机

- **Anticipated interests of the Chinese side 中方利益(预测)**

- To learn about the German commitment to CO_2 reduction and its economic implications 学习德国履行二氧化碳减排的义务和承诺及其经济相关性
- To learn about the German approach to efficient energy utilization 学习德国高效利用能源的方式方法
- To learn about the German approach to implement new measures 学习德国实施各项措施的方式方法
- To exchange and compare experiences in energy utilization 交流并对比中德能源使用的经验
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Tasks and Deliverables
任务及研究成果

- **Modeling and scientific analysis 建立模型和科学分析**

- Preparing a detailed and accurate model of current and future energy flows
  建立一个详尽准确的模型来描述现在和未来能量流
- Analyzing technological options to improve energy efficiency 分析提高能效的技术方案
- Analyzing economic options (e.g. financing tools) to implement innovative solutions
  分析实现技术革新的经济手段(例如融资工具)

- **Preparation of a sustainable energy concept for Urumqi with stakeholder involvement**
  与各方通力合作为乌鲁木齐市建立能源可持续发展方案

- Determining the stakeholders for the identified measures
  确定执行措施手段的合作各方 (包括法律、政策、技术和财政等)
- Assisting in organizing roundtables to inform and discuss measures to increase the efficient use of energy 协助组织圆桌会议以宣传并讨论提高能效的各项措施手段
- Assisting in the set-up of workshops with members of the public 协助组织与公众的研讨会

- **Lighthouse projects 示范项目**

- Providing a local focus on a specific area for technological development
  展示能源技术发展进步的焦点领域
- Involving German companies in concrete projects 德国企业直接参与各个具体项目
- Offering the opportunity for trade shows 提供商业机会

- **Capacity building 能力建设**

- Training of trainers in Urumqi (e.g. for architects, construction companies).
  在乌鲁木齐进行专业培训 (如设计师、建筑公司等)
- Training in Germany (PhD candidates, junior officials from the City of Urumqi)
  在德国进行专业培训 (博士生、乌鲁木齐市青年政府官员)
- Supporting the exchange of high school students between Germany and Urumqi.
  支持中德高中生的交流互访

Energy Efficiency: Lighthouse Projects
提高能效示范项目

#	Title	Goal
1	Increasing energy efficiency in an existing building complex	Integration of technical know-how, economic factors and stakeholder interests
2	Planning and building a low energy high-rise building	Collaborating with architects in China and Germany, creating a landmark
3	Enhancing renewable energy use (solar, wind, biomass)	Developing 2nd generation wind and solar systems
4	Improving efficiency of combined heat/ power generation (CHP) and distribution	Developing clean coal technologies alongside with efficient distribution system
5	Developing energy efficient transportation system	Analyzing mass transit systems, enhancing CNG and biofuel use

#	项目内容	目标
1	提高既有建筑能效	考虑技术知识、经济因素和各方利益
2	筹建一幢节能高层建筑	与中德建筑设计师合作，创立独特地标
3	广泛应用可再生能源 （太阳能、风能、生物质能）	开发第二代风能和太阳能系统
4	提高热电联产厂的生产效率和分配效率	开发清洁燃煤技术和高效分配系统
5	提高交通系统的能源效率	分析规模运输系统、提高天然气 CNG 和生态油的使用

First Sino-German Workshop on Energy Conservation in Urumqi, January 2007

2007年1月在乌鲁木齐举办的首届中德建筑节能高层研讨会

Energy Conservation in Residences and Public Buildings

- 12 Presentations from German & Chinese Experts
- Participation of many Urumqi stakeholders
- Simultaneous translation allowed for open exchange and candid discussions
- Media coverage, similar format planned for future project meetings
- Papers available at *www.ifeu.de*

民用建筑和公共建筑的节能

- 12位中德专家做了报告
- 与会者包括乌鲁木齐各方合作伙伴
- 同声传译使得与会者可以自由交流和公开讨论
- 技术支持和媒体报道，为远期项目会议提供了参考依据
- 在研究所网站上可以下载相关报告 www.ifeu.de

Sino-German Workshop on Planning for Low Energy Buildings, March 2009
2009年3月在德国海德堡成功举办了中德低能耗建筑规划的专业研讨会

- One week of workshop and excursions 为时一个星期的研讨会和参观
- Excursions to passive house projects in the region Frankfurt
  参观法兰克福被动式建筑项目
- Establishing a mutual understanding of standards and goals
  交流理解双方的节能标准和目标
- Identification of future areas of collaboration 确认未来合作的领域

Case study: Passive house school in Frankfurt-Riedberg
参观法兰克福Riedberg被动式标准的学校建筑

Sustainable Elements for the Development for the Dryland Megacity Urumqi
干旱地区大城市乌鲁木齐的可持续发展

108 page booklet available for download at *www.ifeu.de*

在ifeu网站上可下载108页的研究报告 *www.ifeu.de*

CULTUREBRIDGE ARCHITECTS
文化桥建筑设计有限公司

Nachhaltige Stadtbausteine für die Dryland-Megacity Urumqi

干旱地区大城市乌鲁木齐的城市建设可持续发展

Studie im Rahmen des Projektes RECAST URUMQI im Auftrag des IFEU Institut Heidelberg, gefördert durch das Bundesministerium für Bildung und Forschung (BMBF)
该研究报告是受海德堡能源与环境研究所之委托的研究成果

Regionalisierung
本地化
Ein Konzept richtig und falsch angewendet 方案的正确和错误应用

Wintergarten 冬季花园
Wohnhaus Deutschland 德国住宅

Wintergarten冬季花园
Bibliothek in Tianjin, China天津图书馆，中国

Atrium Garten –
Ein Multifunktions-Hof für jedes Wetter
花园中庭 - 全天候多功能庭院

Atrium Garten – Ein Multifunktionshof für jedes Wetter 11
花园中庭-全天候多功能庭院

Nutzungsverteilung功能分配

Garten und Platz　花园和广场

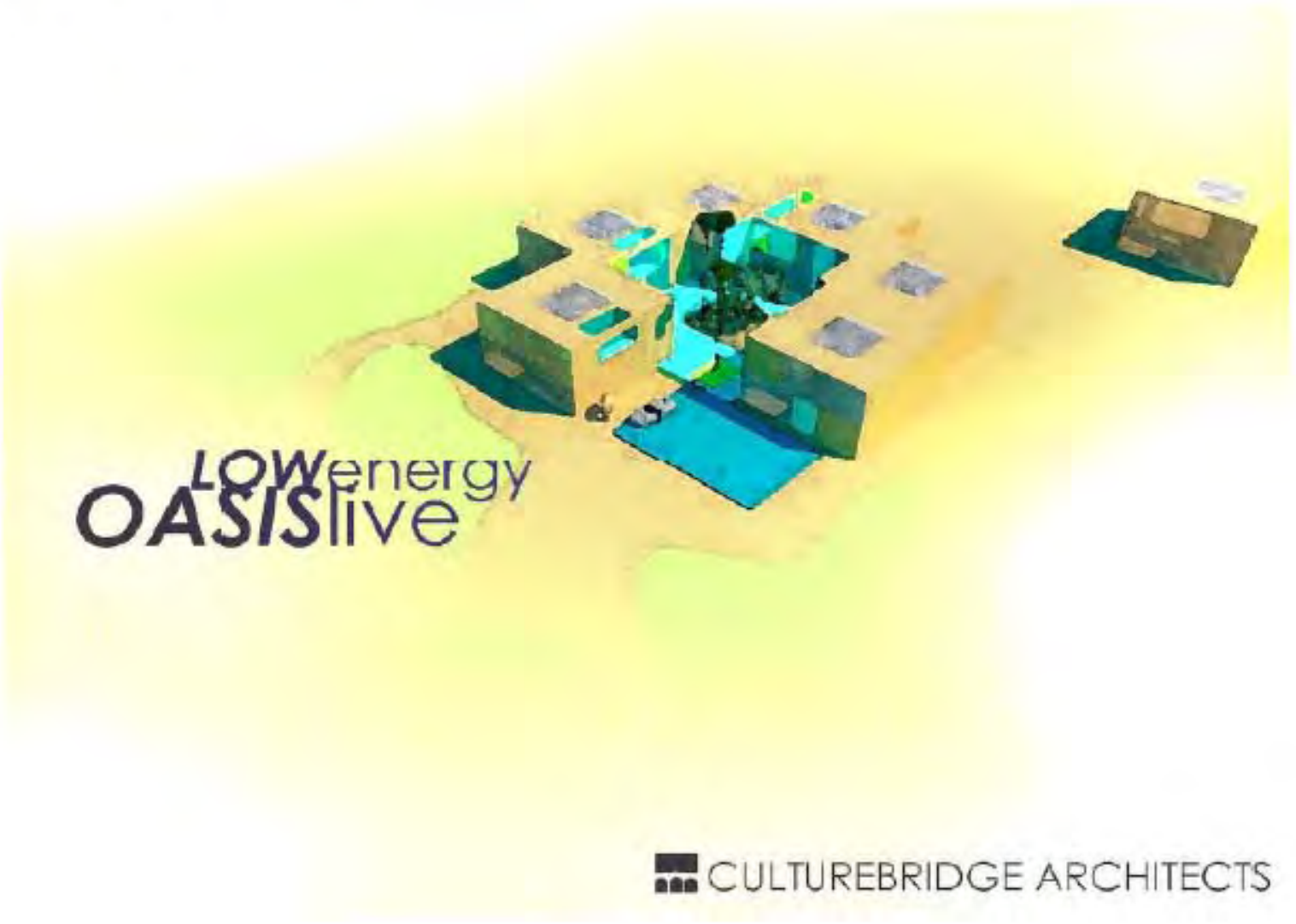
→ immergrüne Bäume 常绿植物
→ natürliche Luftfilterung und Befeuchtung für intensive städtische Nutzung ausgelegt
给密集的城市功能设置自然空气过滤和加湿设备

Loggien 走廊

→ Fortsetzung des Stadtraumes in der Höhe 在高度上延续的城市空间
→ halb-öffentliche Flächen 半公共区域
→ Platz für Erholung, soziale Interaktion und Event 休息和社会活动场所
→ Service Funktionen (Konferenzräume, Restaurants, Cafes) 服务功能（会议室、餐厅、咖啡厅）

Vertikale Stadt –
Hochhaus mit Loggien, Atrien und Plaza
垂直城市 - 带有长廊、中庭和广场的高楼

Vogelperspektive
鸟瞰图



Lighthouse Projects Low Energy Building: Sino-German Collaboration
低能耗建筑中德合作示范项目

- Preparation of recommendations to improve energy efficiency and indoor climate in Dacheng International high-rise, April 2009
  2009年4月 为大成国际办公楼项目提高能效和改善室内气候提出修改意见和建议

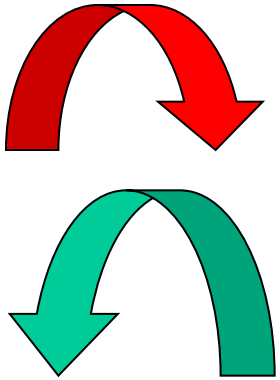
- Planning of renovation conference center of the Construction Committee to passive house standard, July 2009
  2009年7月 与乌鲁木齐市建委合作，按照被动式建筑标准规划改造某培训会议中心

- Capacity building of Chinese experts in Germany, 2009/2010
  2009/2010年 中国专家在德的交流访问

- Contribution to public campaigns in Urumqi to increase energy efficiency of buildings and address climate protection, 2009/2010
  2009/2010年 在乌鲁木齐进行节能减排和气候保护宣传活动

School Partnership: Urumqi Middle School No. 8 and Heidelberg Internationale Gesamtschule (IGH)

中学交流：乌鲁木齐八中和海德堡国际学校



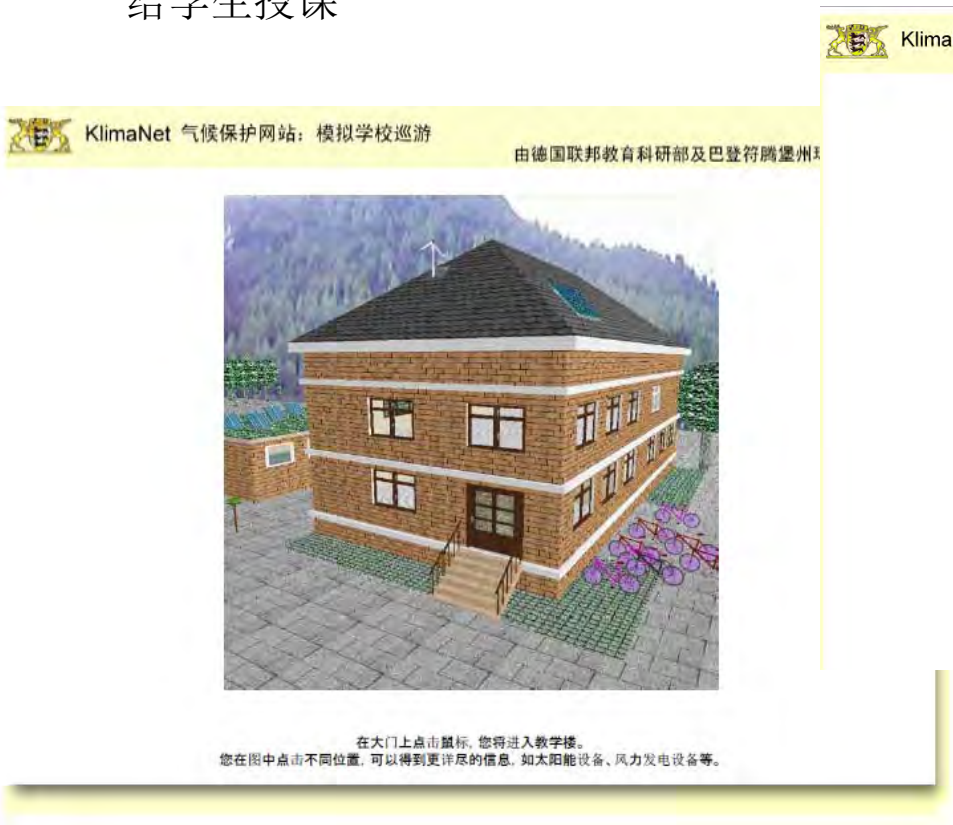
Urumqi Middle School No. 8
乌鲁木齐八中

Heidelberg: Internationale Gesamtschule (IGH)
海德堡国际中学

- Focus on energy efficiency in schools
  提高校园能源使用效率
- Urumqi students and teacher visited Heidelberg in May 2009
  2009年5月 乌鲁木齐八中的师生访问海德堡
- Heidelberg students and teachers will visit Urumqi in July 2009
  2009年7月 海德堡国际中学师生将访问乌鲁木齐

IFEU Provides Support for Teachers and Students
海德堡能源与环境研究所支持学校交流

- Preparation of KLIMANET, a virtual classroom with educational material in German, English and Chinese, available at *www.ifeu.de*
  扩建KLIMANET气候保护网站和学校巡游网站 (*www.ifeu.de)*，作为能源教育的教材
- Providing assistance to Teachers
  给教师提供支持
- Giving lectures in schools
  给学生授课



Promoting Energy Efficiency and Environmental Protection in Industry: Zhongtai Chemical Co. as Example

以中泰化学为例提高工业能效和环境保护

ZhongTai Chemical Company 中泰化学股份有限公司

PVC resin	PVC
Nm calcium carbonate PVC resin	NMPVC
Hydrochloric acid	HCl
Chlorine liquid (industrial)	Cl_2
Chlorobenzene	C_6H_5Cl
Chlorinated paraffin	
Sodium hypochlorite solution	NaOCl
Caustic soda	NaOH

PVC Production in 2007: 379,000 Mg

PVC的2007年产量为37.9万吨

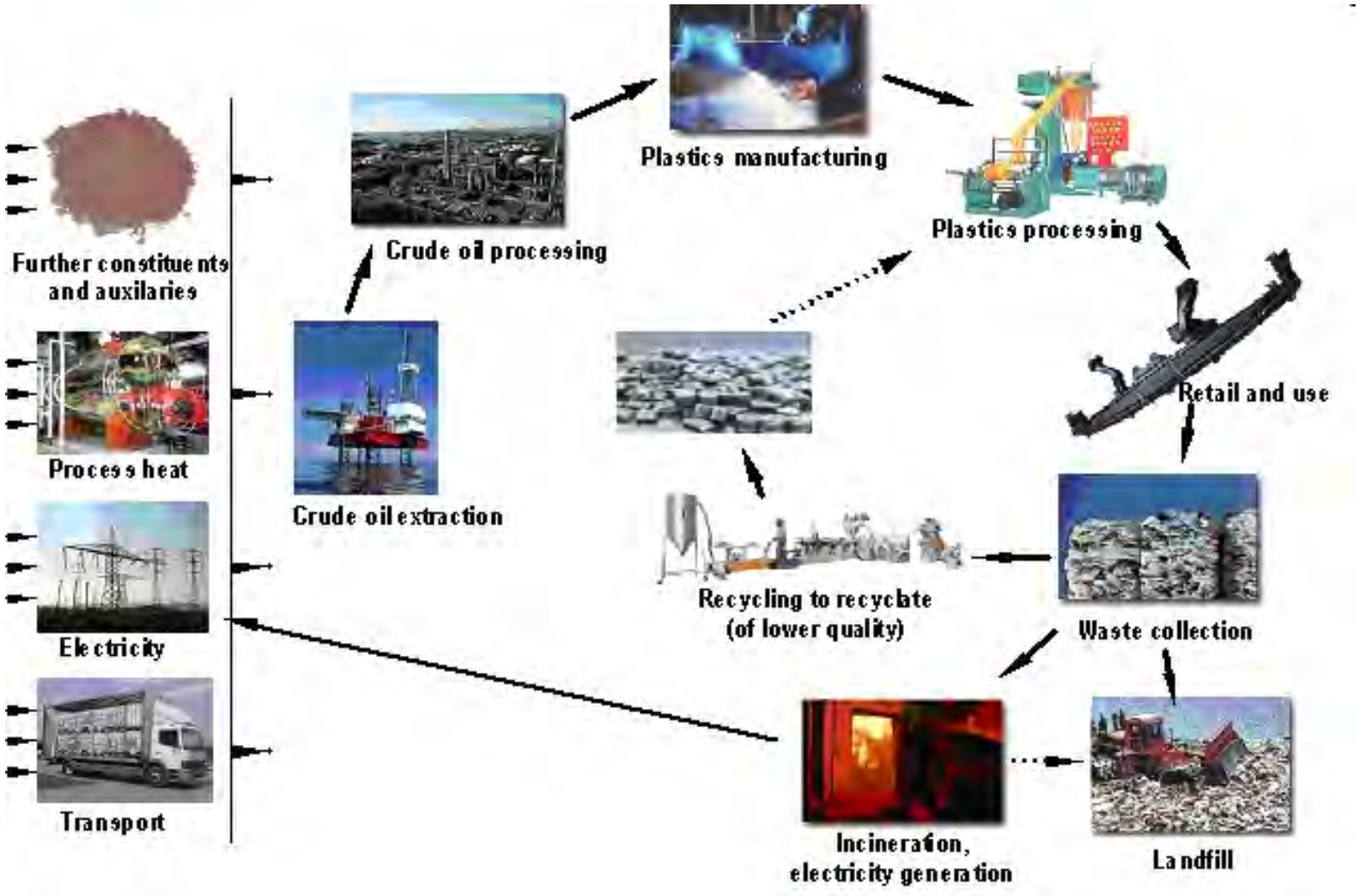
Ecoprofiles for a Sustainable Industrial Production

生态特性说明书：可持续工业生产

- **Ecoprofiles** 生态特性说明书
- **Sustainability reporting** 可持续性报告
- **Life Cycle Assessment (LCA)** 生命周期评估

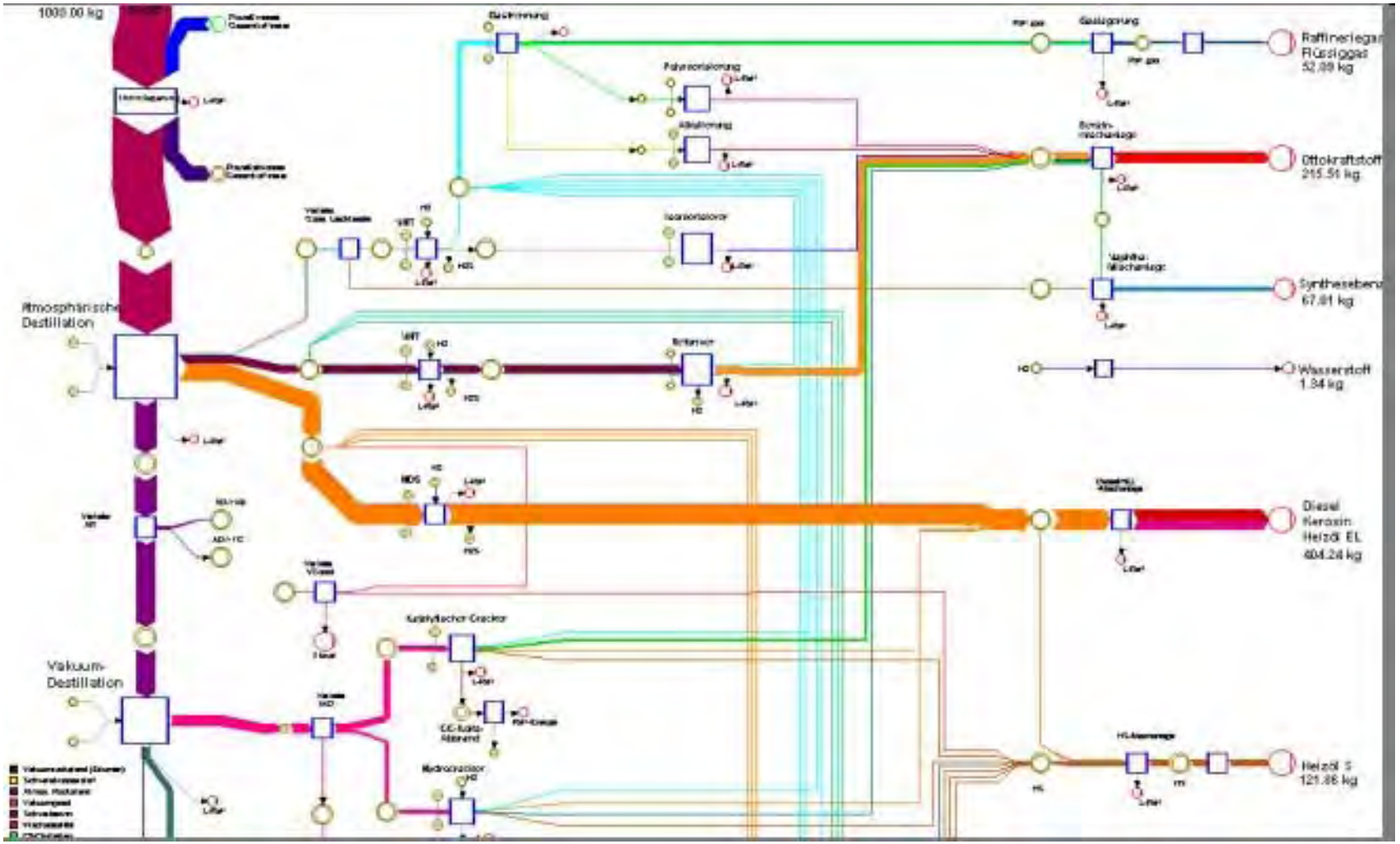
... are well established and suitable tools to measure and improve the environmental performance of companies and of the products they produce. …都是设计完善的测量和改善企业及其产品环境绩效的分析工具

Life Cycle Assessment
生命周期评估



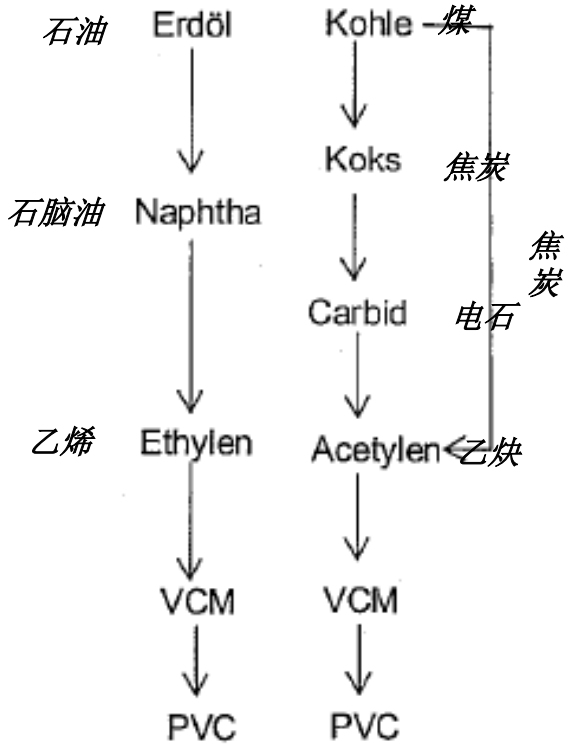
IFEU Software Tool Umberto for Industrial Flow Analysis

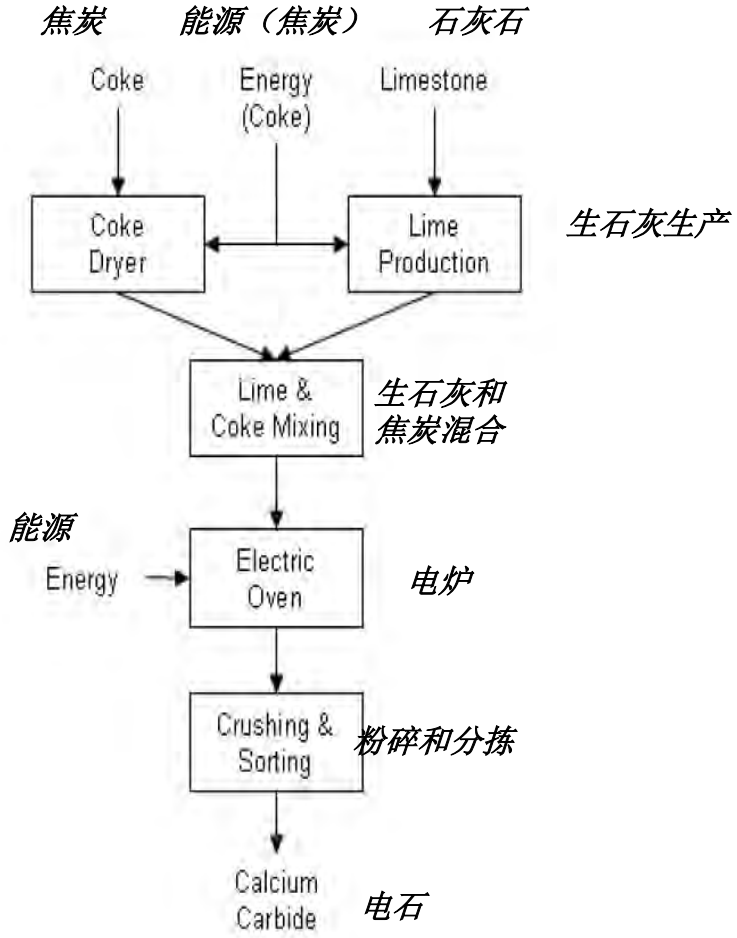
海德堡能源及环境研究所Umberto软件的工业流程分析



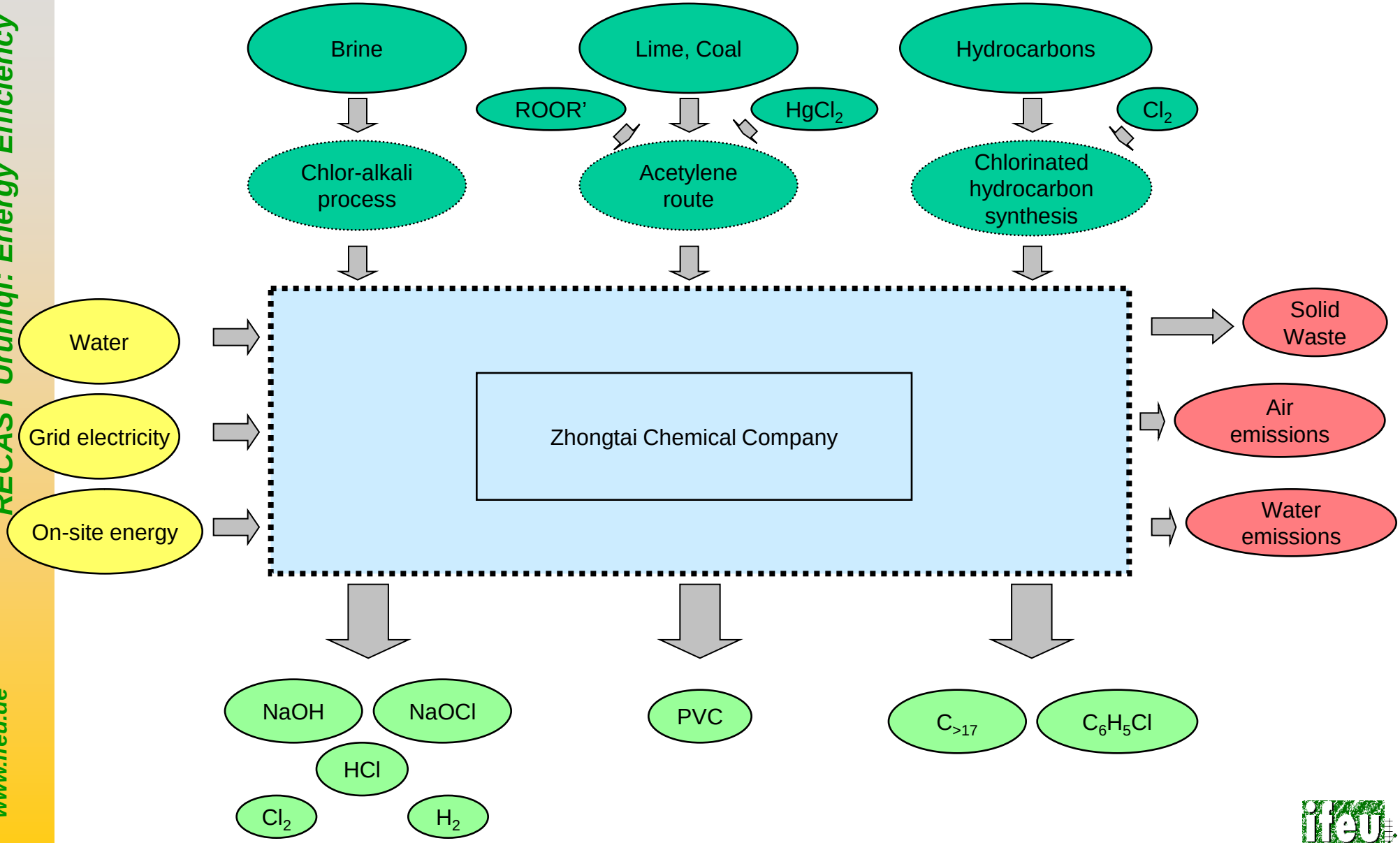
Simplified Module of a Refinery *精炼厂的一个简化分析模块*

Case Study: PVC Production from Oil and Coal
案例分析：以石油和煤为原料的PVC生产

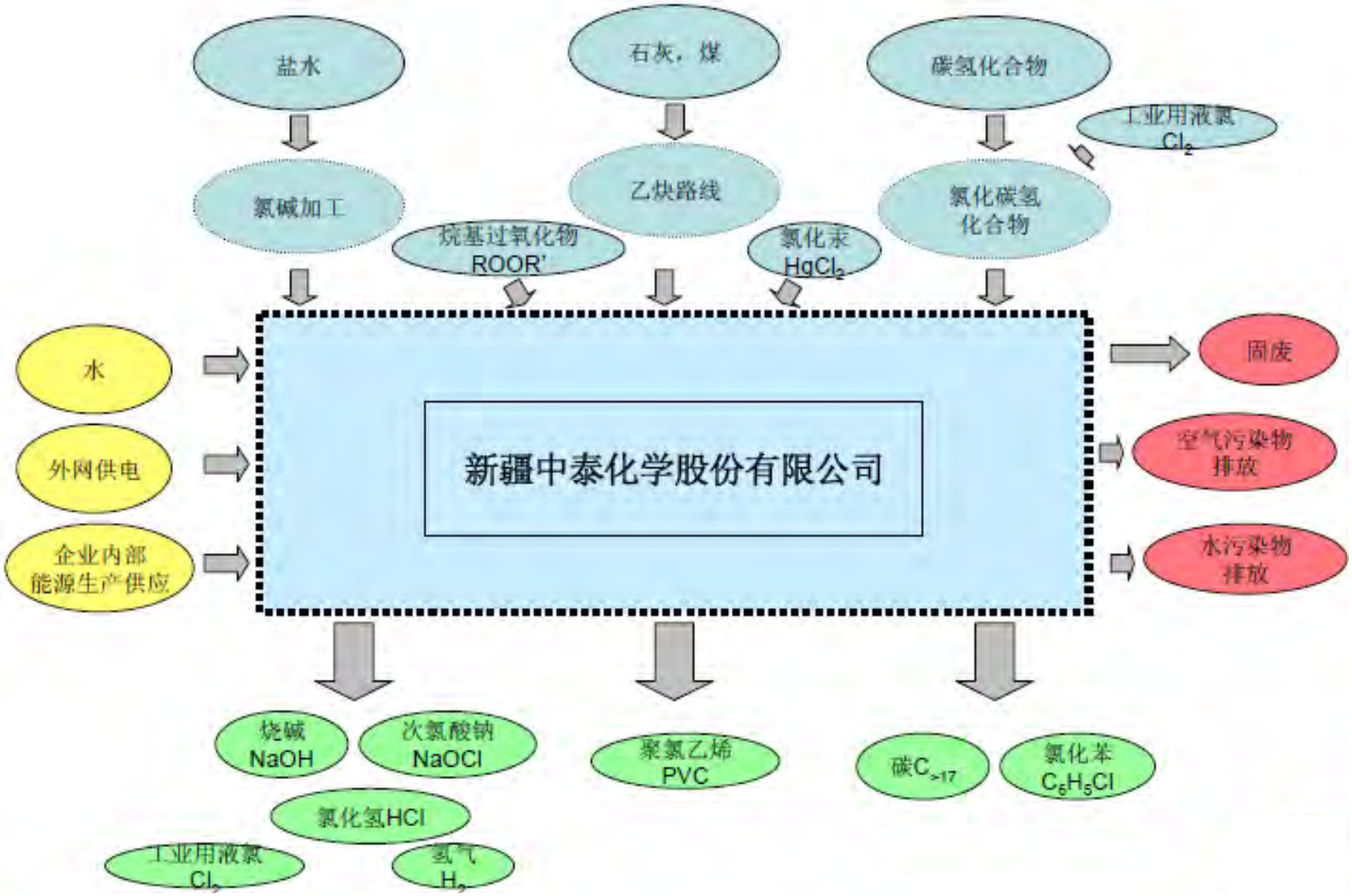




ZhongTai Chemical Company production



图三：新疆中泰化学股份有限公司生产示意图



Why an Ecoprofile of Zhongtai Chemical Company?

中泰化学公司为什么需要生态特性说明书？

- **Transparent assessment of flow of energy and other resources, pollutant emissions and waste**

  能源流和其他资源物质流，以及排放污染物和废物流的透明化和评估

- **Comparison with energy and environmental indicators of other producers (e.g. from Europe)**

  与其它生产厂家（例如欧洲企业）的能源和环境指标进行对比

- **Identify areas for improvements and cost cutting**

  确认改善环境绩效和成本削减的领域

- **Setting benchmarks for future development**

  设定未来发展的目标

- **Setting the stage for sustainability reporting**

  确定可持续发展报告的阶段

- **Helps in communication with customers and government agencies**

  协调客户与政府部门的沟通

- **Provides sound methodology if CDM carbon trading is considered for ZhongTai**
  为中泰化学提供清洁发展机制CDM方法

Outlook for 2010 and beyond
展望2010年及未来

- **Monitoring the efficiency of buildings**
  追踪建筑节能
- **Collaborate with Xinjiang EPB regarding methods for the environmental reporting of companies**
  与新疆环保局合作企业环境报告方法
- **Collaboration with Xinjiang EPB for a long-term sustainable energy plan**
  与新疆环保局合作长期能源可持续发展规划
- **Developing contributions for an energy efficient transportation system**
  为提高交通系统能效做贡献
- **.....and more**
  ……更多

Working Together for a Sustainable World…..

为世界可持续发展齐心协力携手共进