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# Hydropower Development in East Asia & Pacific Region

Current & Planned Future World Bank Activities

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世行东亚太平洋地区

现有及将来拟进行的水电业务

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# Outlines 提纲

- Regional Context 地区背景
- Overview of World Bank's contribution to hydropower development and its institutional/social/environmental impacts 世行开展的水电业务及其对机构、社会和环境的影响
- World Bank's Energy Assistance Strategy in EAP 世行在东亚太平洋地区的能源援助战略
  - How and what we can do to help sustainable development of hydropower 世行在水电可持续发展领域如何提供帮助？提供什么帮助？



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# Regional Context地区背景



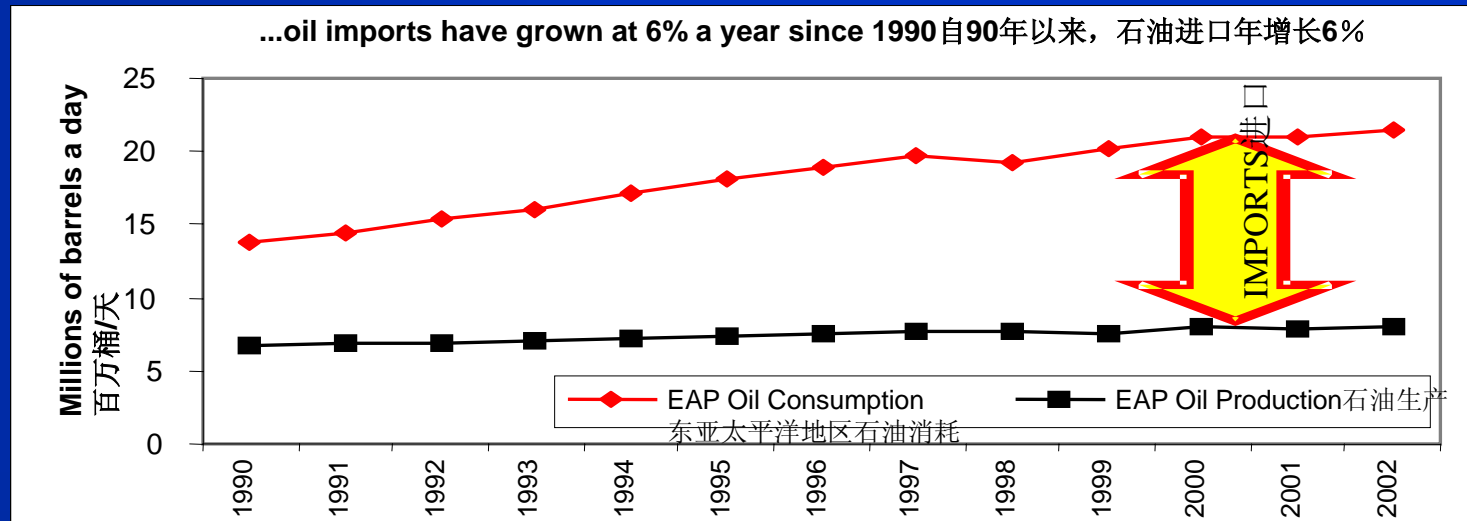
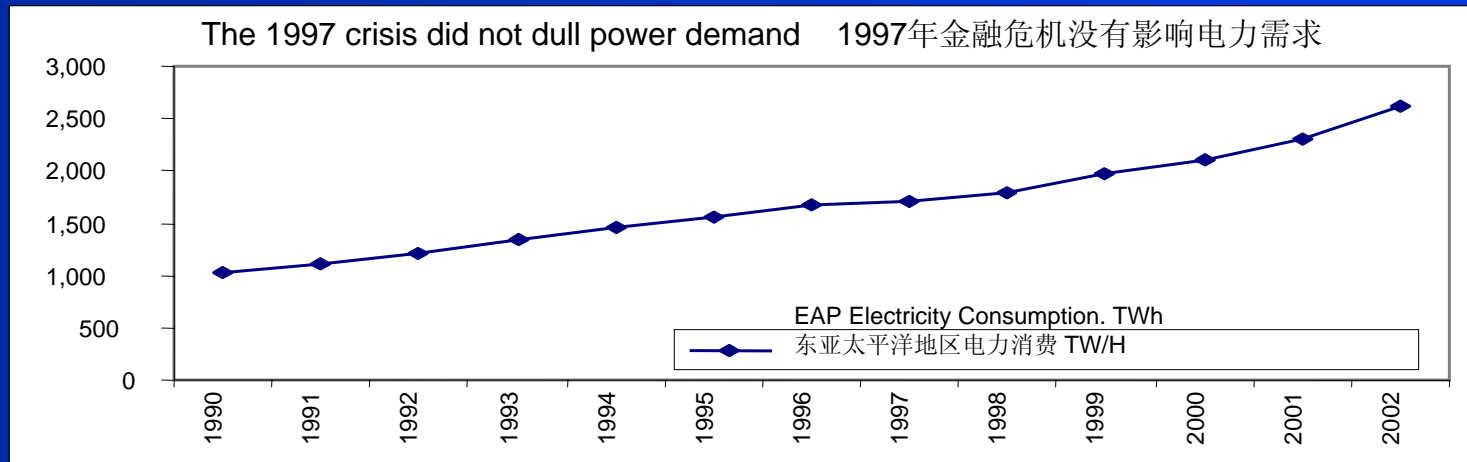
The mountain is still young 群山尚年轻

The region is vibrant in both economic growth and urbanization  
亚洲地区经济增长势头强劲，城市化发展速度迅猛



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# Regional Context地区背景

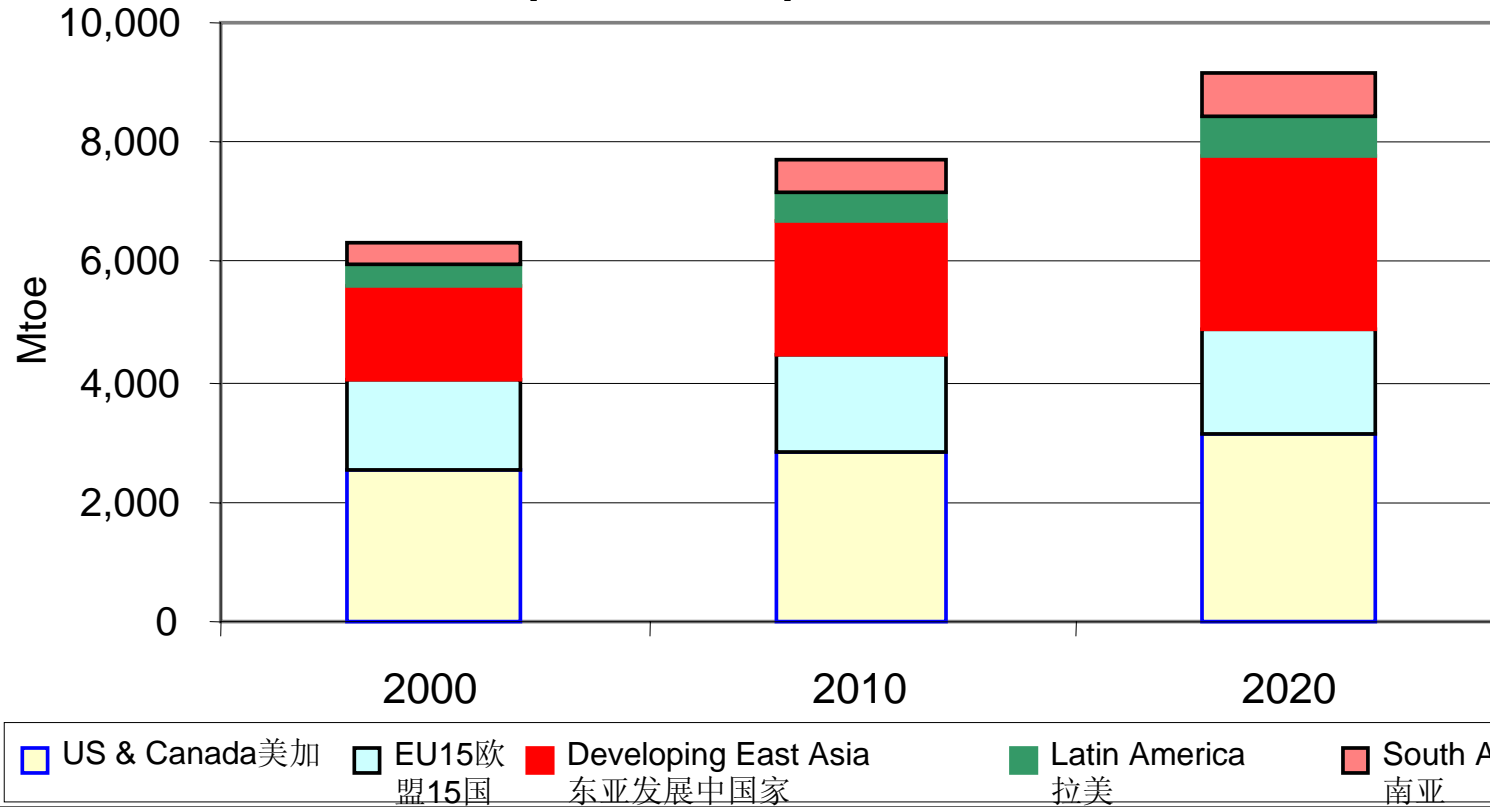




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# Regional Context 地区背景

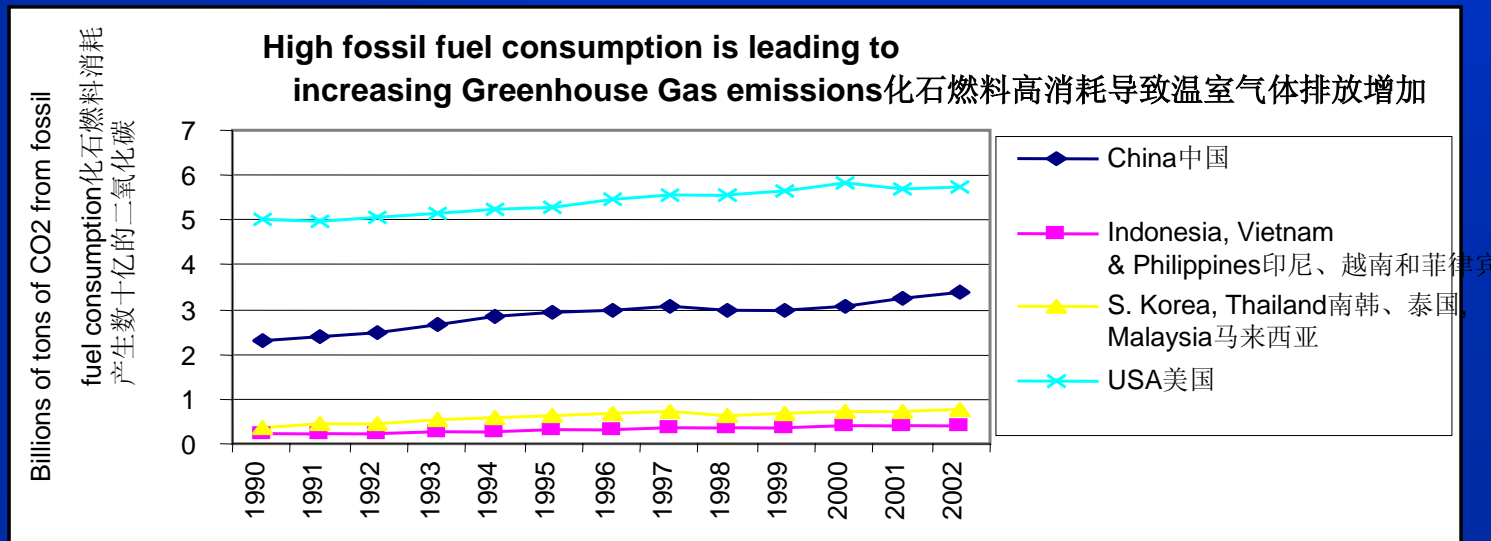
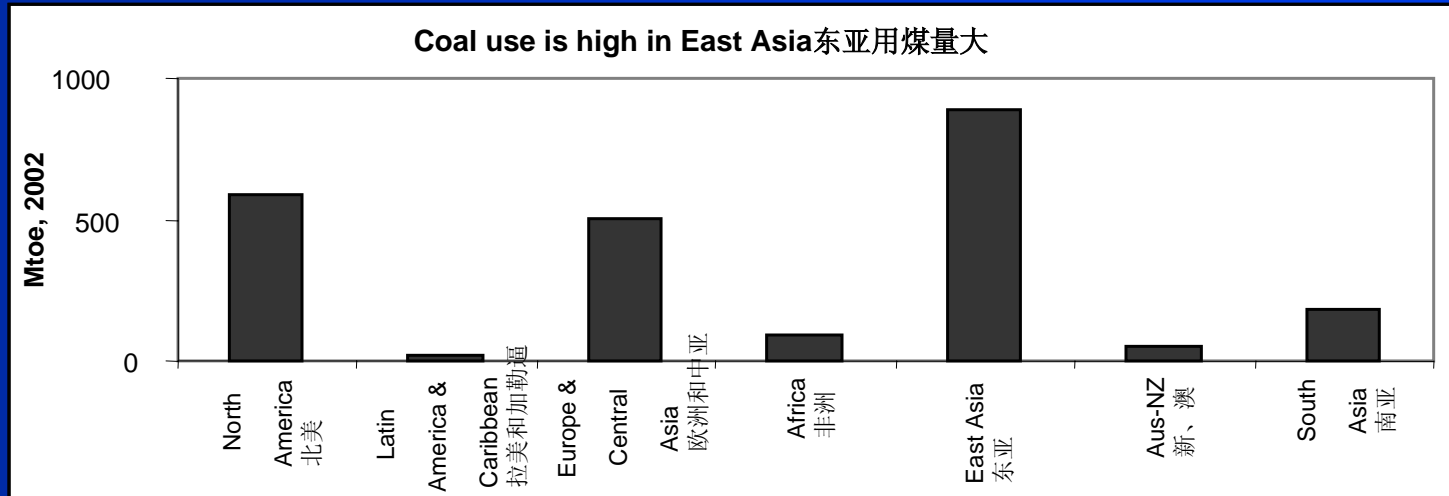
**Energy demand is expected to grow fastest in East Asia (IEA 2002) 东亚能源需求将增长最快**





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# Regional Context 地区背景

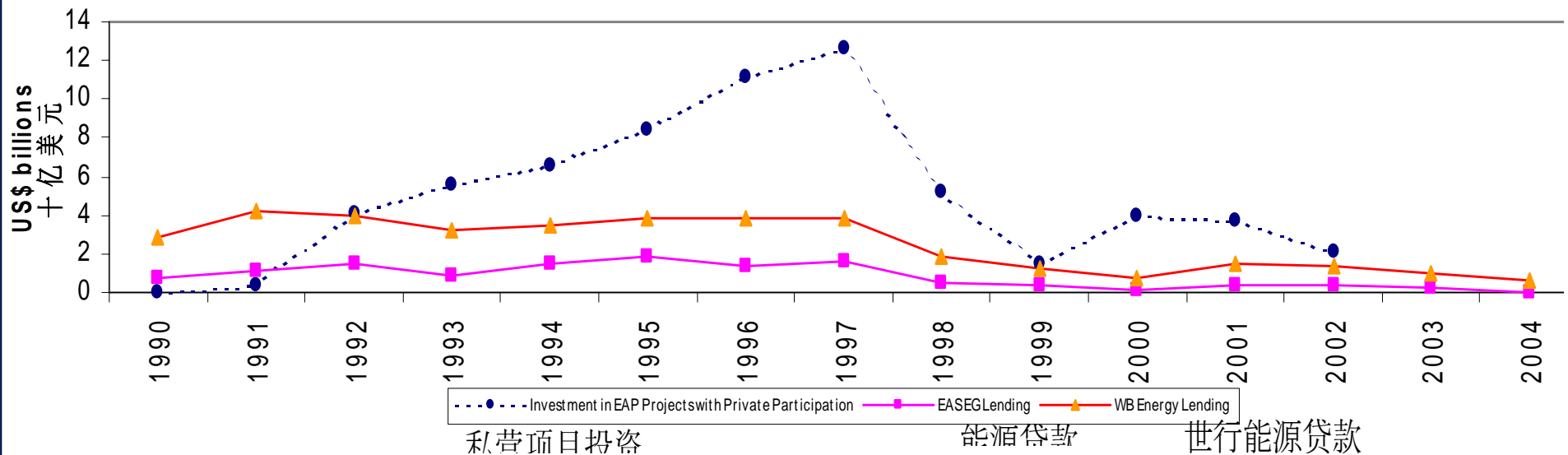




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# Regional Context地区背景

...but the 1997 crisis did dampen the private sector's initial high interest...WBG needs to respond 1997的金融危机影响  
私营部门在开始时候的投资兴趣...世行需要作出相应反映



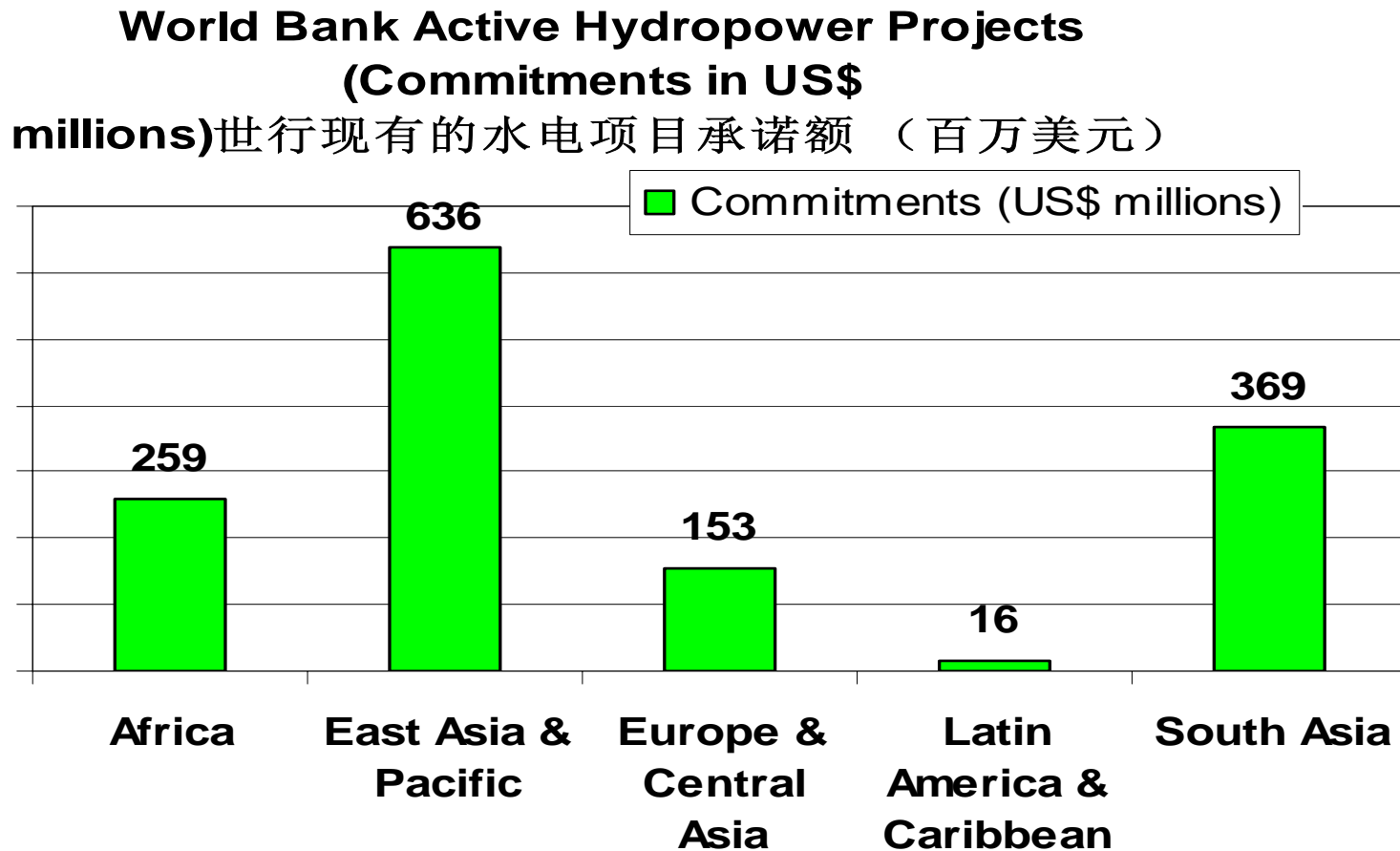
Multilateral re-engaging in viable water resource infrastructure development including hydropower, but taking into account social & environmental considerations.  
多边机构重新进行可行的水资源基础设施项目，包括水电，但同时更加重视社会和环境的影响



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# WB's Contributions and Impacts

## 世行的贡献和影响





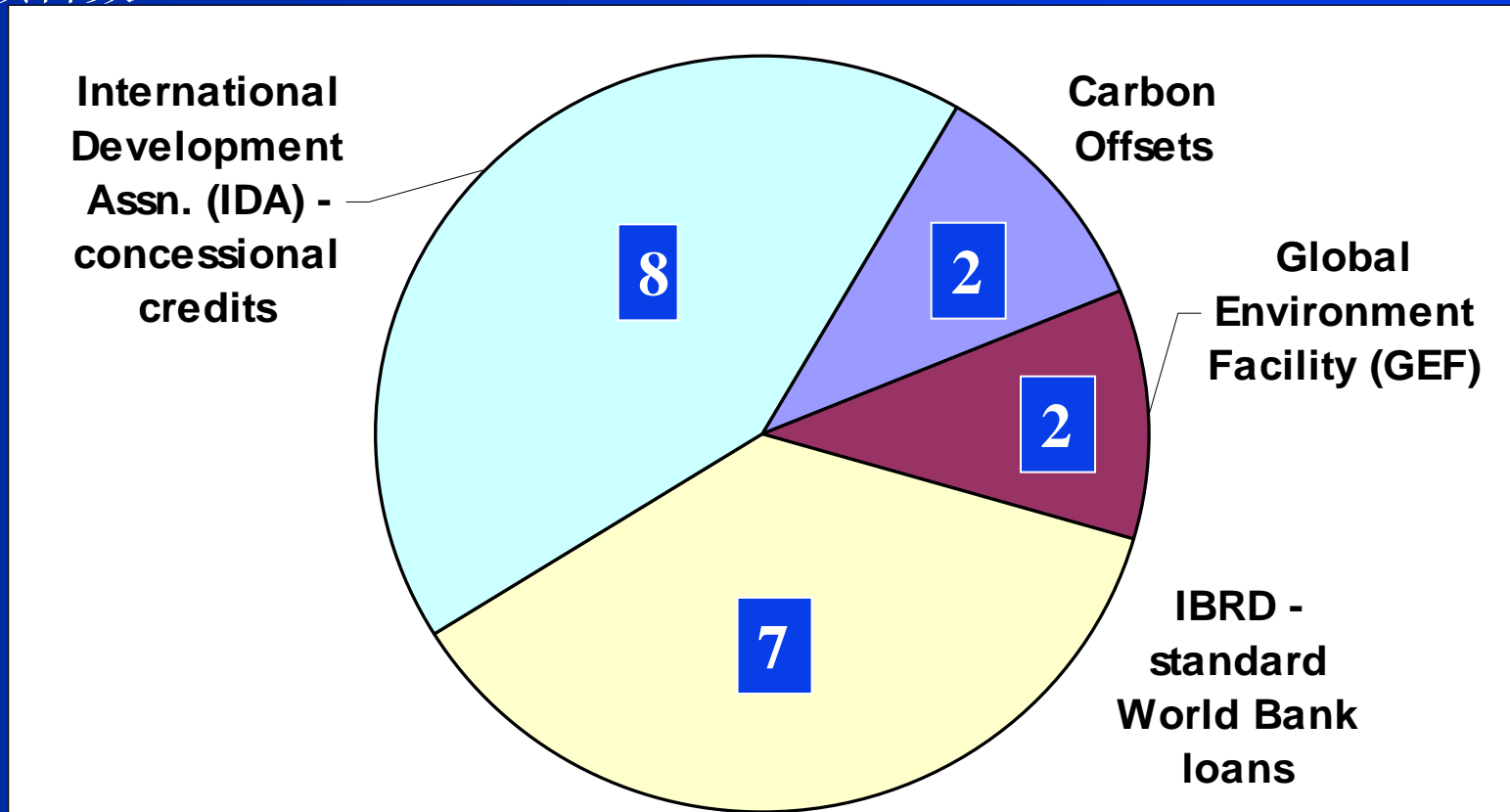


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# WB's Contributions and Impacts

## 世行的贡献和影响

- **Number of Active Hydropower Projects - by Product Line** 现有的水电项目数





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# WB's Contributions and Impacts

## 世行贡献和影响

### Bank-Financed Hydropower Projects in China

Project Name 项目名称	Installed capacity (MW) 装机容量	Total cost (\$m) 总投资 (百万美元)	Bank Financing (\$m) 世行资助 (百万美元)	People resettled 移民数	Remarks 注
Lubuge Hydropower	600.00	567.00	141.40	818	
Yantan Hydropower	1210.00	986.86	51.94	43176	
Shuikou Hydropower	1400.00	1011.20	240.00	84239	2 loans
Daguangba Multipurpose	240.00	193.00	67.00	27586	
Xiaolangdi Multipurpose	1800.00	2294.00	1000.00	184080	3 loans
Ertan Hydropower	3300.00	2940.00	780.00	45812	2 loans
Tianhuangping Pumped Storage	1800.00	720.30	300.00		
Tongbai Pumped Storage	1200.00	904.10	320.00	1283	
Hubei Hydropower Development	222.00	222.41	105.00	5771	
Yixing Pumped Storage	100.00	582.74	145.00	506	
<b>Total</b>	<b>11872.00</b>	<b>10421.61</b>	<b>3150.34</b>	<b>393271</b>	



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# WB's Contributions and Impacts

## 世行贡献和影响

- Introduced project appraisal method which allows incorporation of environmental externalities when comparing development alternatives; 引进了项目评估法，在对不同开发方案进行比较时，将环境因素纳入其中
- Introduced modern project management practice (competitive bidding, relationship between owner /contractor /supervision bodies); 引入了现代项目管理方法（竞争性招标，理顺业主/合同方和监理方的关系）
- Developed jointly with Chinese counterpart a disciplined approach to hydropower development with adequate attention to social and environmental sustainability including a poverty alleviation dimension wherever needed; 与中方共同发展了有效的水电开发方式，充分考虑社会和环境可持续性，同时还包括扶贫
- Used resettlement as development opportunities – Shuikou (Fujian China) example. 开发式移民，如福建省水口项目



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## WB's Energy Assistance Strategy in EAP 世行东亚太平洋地区能源援助战略

- Support economic growth by **helping clients meet energy demand** in a sustainable manner 帮助客户国, 以可持续方式, 满足能源需求, 支持经济增长
- Improve energy sector's ability to **mobilize investment** through deepening of reform and public-private partnerships 深化改革和公共及私营部门合作, 提高能源行业融资的能力
- Promote **renewable energy and energy efficiency** 促进可再生能源发展, 提高能源效率
- Scale up investments to increase **access** to modern energy services 扩大投资规模, 提高现代能源服务准入
- Promote **regional trade** of energy 促进地区能源贸易



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## WB's Activities for Hydropower Development in EAP 世行东亚太平洋地区在水电领域的活动

- Current Pipeline and Possible Future Hydropower Projects
  - some examples 目前滚动计划内项目和将来可能进行的水电项目
  - Nam Theun 2 – project preparation at advanced stage  
Nam Theun二期项目准备阶段即将完毕
  - China Renewable Energy Scale-up Project (includes small hydro rehabilitation in Zhejiang) – project preparation at advanced stage  
中国可再生能源规模扩大化项目（包括浙江小水电改造）准备阶段即将完毕
  - Greater Mekong Sub-region (GMS) hydropower development  
大湄公河流域水电开发
  - Vietnam hydropower development program  
越南水电开发项目
  - Timor-Leste Ira Lalaro project  
东帝汶Ira Lalaro项目



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## WB's Activities for Hydropower Development in EAP 世行东亚太平洋地区在水电领域的活动

### ■ What can we do to help ?我们能做什么？

- Joint efforts with governments/clients for environmental and social safeguards – can we rely more on country systems?与政府/客户国携手共抓环保和社会事宜—可否更多地依靠本国的系统体制？
- Financial assistance in project pipeline preparation – pre-feasibility study;对项目准备的财务援助—预可研
- Leveraging private financing through IBRD/IDA investments, provision of credit enhancement support such as guarantees (MIGA, PRG, PCG), in addition to policy dialogue;除政策对话外，通过IBRD/IDA投资，提供信贷支持，如担保（MIGA, PRG, PCG）吸引更多的私营投资



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## WB's Activities for Hydropower Development in EAP 世行东亚太平洋地区在水电领域的活动

### ■ What can we do to help ? 我们能做什么 ?

- Channeling grants (GEF, Carbon financing, other trust funds) to improve commercial viability; 争取赠款（全球环境基金，碳基金及其他赠款）提高商业效益
- Leveraging regional energy resources through energy trade – Strategic framework for GMS grid interconnection and power trade .通过能源贸易，如大湄公河电网联网和电力交易战略框架，增加地区能源资源



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## WB's Activities for Hydropower Development in EAP 世行东亚太平洋地区在水电领域的活动

### ■ Carbon Financing 碳资助

- Hydropower generates emissions reduction by displacing fossil fuel generation 水电代替化石燃料发电，减少排放
- Emission reductions are calculated relative to a baseline (“without project” case) and subject to validation by an independent validator 减排计算相对于基线而言，需要得到独立验证机构的验证





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## WB's Activities for Hydropower Development in EAP 世行东亚太平洋地区在水电领域的活动

### ■ Carbon Financing 碳资助

- Price of carbon emission reduction credits depends on: 碳减排得分的价格取决于:
  - Risk and risk-sharing 风险和风险分摊
  - Supply and demand within market segment 市场供需
  - Negotiation of an Emission Reduction Purchase Agreement (known as ERPA) 协议谈判
- Piloting projects in China 中国的示范项目
  - Gansu Xiaogushan Hydropower Project (98 MW) 甘肃小孤山水电项目 (98MW)
  - Shanxi Jincheng Coal Bed Methane Project 山西晋城煤层气项目



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# Conclusion 结论

If harnessed in a sustainable way, hydropower as a renewable energy source can and should play an important role in meeting the demand growth of water and energy, reducing carbon emissions and ensuring energy supply security in the region. 水电作为一种可再生能源，若以可持续方式开发经营，应可以满足水和能源不断增长的需求，减少碳排放，确保地区能源供应安全。



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Thank You !