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可持续发展委员会

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联合国系统各实体目前正在进行的有关能源的方案和活动、
关于协调这类活动和关于促进联合国系统内能源与可持续
发展之间联系所需的安排的一览表

秘书长的报告

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导 言

1. 新能源和可再生能源及能源利用促进发展委员会(能源委员会)1996年2月第二届会议请会议秘书长编写联合国系统各组织在能源领域活动的报告以供委员会1998年第三届会议审议。可持续发展委员会1996年第四届会议要求秘书长编写一份报告供其1997年第五届会议审议,报告要列出目前正在进行的面向能源的方案和活动的一览表,并酌情提出促进联合国系统内能源与可持续发展之间联系可能需要的适当安排的建议。¹ 经济及社会理事会(经社理事会)1996年常会请秘书长在编写可持续发展委员会所要求的报告时,参考这份报告和新能源和可再生能源及利用能源促进发展委员会的意见。²

2. 本报告是应上述要求,是根据内部编辑的资料和联合国系统各实体提供的资料编写的。本报告也利用了能源委员会的投入。大纲已经1996年9月12日日内瓦举办的特设机构间能源小组讨论通过。特设机构间小组后续会议查明和讨论了促进联合国系统内各实体之间就能源与可持续发展领域加强联系的未来行动和安排的建议。本报告包含了活动的说明、评价和结论。

一、联合国系统内有关能源的方案和活动一览表

A. 联合国系统有关能源的活动的政策

3. 联合国系统能源领域的政策和方案是联合国总目标的主要构成部分。1981年在内罗毕举行的联合国新能源和可再生能源会议制定了一个明确的有关能源政策。联合国环境与发展会议(环发会议-1992年里约热内卢)讨论了能源问题促成确认:

“能源对经济和社会发展以及改善生活素质极为重要。但是目前社会大部分能源的生产和适用方式,如果技术保持不变,而且总量大幅度增加,就不能持续下去。越来越需要以有效的能源生产、输送、分配和消费,以及无害环境的能源系统,特别是新能源和可再生能源为主,来控制温室效应气体和其他气体及物

质的大气层排放。所有能源的利用方式都必须照顾到大气层、人类健康和整个环境”。³

1992年在里约热内卢通过和开放签字的《联合国气候变化框架公约》(气候公约)的执行牵涉到各缔约国的能源政策。后来的主要会议都一直把能源当做促进可持续发展的重要因素之一来处理。1994年在巴巴多斯举行的小岛屿发展中国家可持续发展全球会议通过了《巴巴多斯宣言》和《小岛屿发展中国家可持续发展行动纲领》，其中载有一章有关能源问题，说明小岛屿发展中国家所面临的种种问题和限制，并就以最有效的方式，确保适当而无害环境的能源供应，满足其社会和经济发展目标的方式和手段，包括可供选择的政策，提出种种建议。

4. 各个政府间机构都讨论到能源政策。能源委员会是政府提名的专家组成的机构，其目前的任务是1992年成立时确定的，就是特别提供发展中国家能源勘探和发展趋势指导，它讨论了一切可再生能源的来源，它也处理诸如能源和物料密度等问题。1992年的任务显然是针对可持续能源发展。为便于审议，秘书长提供了各种深入报告。能源委员会向经济及社会理事会提出报告。联合国秘书处政策协调和可持续发展部(协调发展部)可持续发展司与联合国秘书处发展支助和管理事务部(发展支管部)环境管理和社会发展司协调，提供了实质性的秘书处支助。

5. 一般性地讨论能源问题的其他政府间机构有：可持续发展委员会、联合国环境规划署(环境规划署)理事会(能源和环境方面)、国际原子能机构(原子能机构)大会(原子能和有关的环境问题)、《气候公约》缔约方会议(能源对助长温室效应气体排放方面)和特设政府间气候变化问题小组(该小组由环境规划署/世界气象组织(气象组织)支助负责评价关于气候变化及其对环境和社会经济影响的科学资料，并拟订应付战略。

6. 区域一级对能源政策的讨论是在各区域委员会进行的。各区域委员会都设有能源或能源和自然资源问题常设委员会。亚洲及太平洋经济社会委员会(亚太经社会)由环境和可持续发展委员会负责讨论能源问题。欧洲经济委员会(欧洲经委

会)正在拟订可持续能源发展续战略。

7. 联合国系统能源统计资料由联合国秘书处经济及社会资料和政策分析部(经社分析部)协调,并通过《能源统计年鉴》、《能源平衡和电力概况》等各种出版物提供,而全球能源趋势是通过每年出版的《世界经济和社会概览》来报导的。

8. 联合国环境与发展会议之后,有若干执行组织常常通过向其理事机关提出政策文件的方式,调整其作为活动基础的政策。联合国开发计划署(开发计划署)于1996年编制了开发计划署可持续能源续发展倡议,为其能源活动提供了政策纲领。世界银行的能源活动是根据世界银行董事会核可的目标。全球环境融资已将它从缔约方会议所收到的指导方针“转变成”业务战略,1995年10月全球环境融资理事会会议核可了该项指导方针。科学和技术咨询小组为全球环境融资提供科学和技术建议。

9. 这些政策文件的常见内容配合可持续发展是:促进设计可持续能源途径,促进有效利用能源、促进无污染能源选择;强调使用无害环境技术的项目;和协助发展中国家将满足能源发展目标作为达成可持续农村发展的一种手段。

B. 方案和活动概览

10. 已接获报告的活动有各种各样。本报告附件一开列了这些活动。主要活动分为能源发展、能源供应和能源利用几类。这些方案和活动的执行方法也是多种多样的,不过大体上涉及编制研究报告、技术援助(包括专家在特定领域提供咨询服务)、举办培训讲习班、研讨会、大小型会议,尤其是提供财务援助。分配给每个项目的资金数额从其他组织提供的几百美元到几百美元的财务援助项目不等。世界银行、开发计划署、全球环境融资、原子能机构是能源项目资金的主要提供者。区域开发银行也有支助能源部门发展的大笔贷款方案。

11. 就融资来说,应区分世界银行提供的各种贷款与技术援助。世界银行每年总共承付30亿美元左右,在能源部门项目中,它所涉及的活动最多,其中包括开发矿

物燃料、电力以及可再生能源。能源生产和利用的效率,包括电力发展的需求管理在内,日益受到重视。世界银行促进能源部门改革,提高其竞争力使能源组织和企业达成更高的效率世界银行与开发计划署是能源部门管理援助方案(能源管理援助方案)的共同赞助者。该方案向发展中经济体和转型经济体政府提供技术援助。另一主角是开发计划署,它为各种各样的能源项目提供资金:向其方案国家提供指示性项目融资每年平均2000万美元或者促进捐国和组织对合办项目共同供资。开发计划署管理能源帐户,它吸引了一些公共和私人资金用于能源项目的可行性初步研究。它也从事(同世界银行和联合国系统内外的其他组织)筹集公共和私人资金为能源筹资服务(面向小型能源用户的能源筹资服务)项目提供经费,全球环境融资继续在有关全球环境问题的能源项目增支成本的供资方面发挥重要作用。原子能机构在能源领域也有重要活动--约为7000万美元--除了涵盖有关核电厂的发展和运作、燃料周期、废料处理技术和核子安全以外,强调在电力部门规划决策进程中对各种不同能源在经济、环境和卫生的影响进行评比。

12. 联合国实体在能源周期的各个阶段:能源开发、供应和利用,都十分活跃。在所有三个阶段,都有旨在建设能力提高认识和技术转让方面的活动,有些是作为单独的活动,有些则是较大项目的一部分。提高认识和培训是通过研讨会、讲习班进行,资料的传播则是通过出版物和实地调查,技术转让活动主要是关于提高能源效率或者可再生能源的开发和商业利用,包括进行实验和示范项目。

13. 能源规划,包括电力规划,是作为一个部门活动进行的,但在有些情形下,采取一个更综合的作法,例如将能源政策纳入全盘社会经济发展、能源和可持续农村发展的综合评估,将环境、社会和保健问题纳入能源规划和能源分析、城市地区的能源和环境规划以及综合资源规划作法。

1. 有关能源开发的活动

14. 有几个组织的活动主要是为能源生产、分配、储存和利用的项目的可行性

初步研究提供资金；促进对能源项目共同供资；制订能源部门的投资策略；能源部门开发，包括电力的规划和贷款。

15. 已接获报告的区域一级方案不少；包括能源领域的区域合作方案的执行；可再生资源开发；促进转型期经济体的合伙和商业机会；查明和研究有关煤的洁净开采及利用问题；推动商业项目的实施；举办关于能源开发的政策和策略专家组会议。

2. 有关能源供应的活动

16. 政策发展的活动包括：编制关于开发可再生能源的报告和关于奖励更进一步利用可再生能源的报告；促进、发展和利用洁净煤技术；促进诸如让私营部门参与的同时发电办法，使改良费用低廉的规划技术；促进开发和利用核电力。

17. 区域项目和方案包括：分析煤贸易和煤市场，以期提高区域间贸易和扩大欧洲的煤市场；有关贸易以及提高区域间能源贸易的报告；关于燃木能“热点图”的区域研究报告。

18. 技术援助活动包括协助各国处理能源供应问题，就石油和电力部门能源计划和政策的设计和适用提供咨询服务，支助洁净煤技术的研究和发展，设立可再生能源的制造设施。

3. 有关能源利用的活动

19. 能源部门的许多活动是关于能源效率。就政策发展来说，曾就能源效率和保存，包括需求管理，进行研究，另外收集关于能源生产、贸易和利用的数据并予出版。在示范和传播提高能源效率的工业技术方面提供技术援助。机构和能力建设活动包括：发展和执行可再生能源策略、需求管理、能源效率标准、能源密度指标的发展和应用、能源标记制度、通过业务考绩对能源机构和企业进行高效率管理、人类住区的能源效率、环境影响评估及适当的能源和电力订价。

C. 活动的协调

20. 从现有的资料看来,各种活动之间似有某种程度的合作和协调。经社分析部继续与联合国系统内的各实体就能源数据和资料的收集、分析和应用进行合作和协调,例如统计委员会国际统计方案和协调工作组以及行政协调委员会(行政协调会)统计工作小组委员会等领域以及在《世界经济和社会概览》的范围内研究能源问题。

21. 发展支助管理部与世界银行、开发计划署和全球环境融资在国家、区域和全球各级上进行合作执行各项目。它还同开发计划署和亚太经社会合作执行可持续能源项目,例如提高亚洲农村发展可持续能源服务能力。

22. 提高妇女地位国际研究训练所(提高妇女地位研训所)同各区域委员会、国际劳工组织(劳工组织)/都灵训练中心、发展支助管理部以及联合国系统内外的其他机构进行密切协作和协调,从事研究、编制培训教材和安排培训活动。

23. 政策协调和可持续发展部与联合国系统的其他实体合作,编制新能源和可再生能源及利用能源促进发展委员会报告以及可持续发展委员会及其他政府间机构的报告。

24. 开发计划署和世界银行这些年来一直同能源管理援助方案合作,由后者执行各项目。开发计划署、环境规划署和世界银行都是全球环境融资的执行机构。全球环境融资为那些有全球环境利益的项目提供增支成本资金。世界银行、开发计划署以及联合国系统内外的若干其他实体向能源筹资服务方案共同供资。开发计划署十分积极介入能源筹资服务方案。

25. 在区域一级欧洲经委会同联合国系统内外的许多其他实体合作,以执行能源效率2000年的项目。亚太经社会执行由开发计划署供资的亚洲能源和环境合作方案。开发计划署也同世界银行的亚洲备选能源股合作执行一个项目,可再生能源和能源效率活动即将纳入世界银行在亚太地区贷款业务的主流。

26. 联合国教育、科学及文化组织(教科文组织)发起了一高级别世界太阳能首脑会议进程(太阳能首脑会议),目标在于促进可再生能源技术的发展和部署,作为对可持续发展的贡献。世界太阳能首脑会议进程的推动得到几个伙伴的积极支助,其中包括欧洲经委会、联合国工业发展组织(工发组织)和国际原子能机构(原子能机构)。世界太阳能委员会由16个国家和政府首脑组成。在该委员会的领导和指引下,世界太阳能首脑会议进程成功地导致1996年9月在津巴布韦哈拉雷举行世界太阳能首脑会议。首脑会议通过了《关于太阳能和可持续发展的哈拉雷宣言》以及《1996年至2005年世界太阳能方案》,后者现处于完成阶段。1996年12月在巴黎举行机构间会议作为对世界太阳能首脑会议的后继行动的一部分,以讨论联合国系统对发展和执行《世界太阳能方案》所能作出的贡献。

27. 原子能机构同若干区域委员会、世界银行、开发计划署、世界气象组织(气象组织)和其他国际组织就一个合办机构间项目称为“比较评估不同发电能源的数据基和方法”进行协调原子能机构所从事的这一机构间项目强调综合评比各种不同发电选择的能源链从头到尾的经济环境和卫生的影响。

28. 气象组织与环境规划署就特设政府间气候变化问题小组的工作进行合作。在这期间,联合国粮食和农业组织(粮农组织)一直同拉丁美洲和加勒比经济委员会(拉加经委会)、亚太经社会、世界银行和其他国际组织、欧洲组织以及各开发银行就许多农村发展项目进行合作。工发组织对《气候变化框架公约》秘书处的工作提供下列支助:加入秘书处各个小组对各国气候变化框架公约缔约国会议致信函附件一进行深入审查。

二、能源对于接受可持续发展挑战的作用

29. 能源对于实现达成可持续发展的经济、社会和环境这些相互有关的目标发挥关键作用。此外,从国家安全角度来看,安全和稳定的能源供应是一项重要的考虑因素。和平与国际稳定是可持续发展的先决条件。目前对全世界能源政策采取的做

法特点是强烈强调能源供应,没有充分顾及其社会、经济和环境后果,因此不符合可持续发展需要。

30. 促进可持续发展的能源路线需要从以供应为主导的做法过渡到推行能源效率的做法,特别是在能源最后使用方面和通过无害环境的能源服务满足需求。这点意味到所有行动者、政府、国际社会、私营部门和非政府组织应推行:(a)在能源生产、输送、分配和特别是能源最后使用方面的效率;(b)向能降低环境影响、包括降低温室气体排放量的能源和技术转移;(c)酌情促进、发展和执行为保证其通过而拟订的政策和方案。

31. 即使是大力强调效率、世界能源需求的目前增长速度预计在1995至2000年期间会使总的商业能源需求大量增加,即在2%以下。⁴ 如果不能持续地满足能源需求增长,这种情况可能产生深远的影响。考虑到执行节能措施和可再生能源有效进入全球能源供应比例有关的相隔时间很长、全世界当前的动力市场改组和自由化趋势、资本设备的使用周期长,重新评估强调现代技术的能源系统是一项迫切优先事项。

32. 经济和社会发展水平对所需能源的数量和类型产生强烈影响,同时,能源部门的发展影响到经济增长。在发展中国家,为了提高其日益增长的人口的生活水平,必须大幅度增加能源服务。伴随人均国内总产值增长的能源服务水平的提高,通过增进就业、交通、保健和教育机会,将会对扶贫产生有利的影响。

33. 很多发展中国家中、特别是最不发达国家,迫切需要向农村地区数十亿的人民提供充分、现代能源服务,特别是电力。这方面需要大量的财政、人力和技术资源。应当加强国际合作,以协助发展中国家达成到各项目标,同时确保以无害环境和可持续的方式发展和使用能源。根据开发计划署最近的一份出版物,⁵ 今天发展中国家偏僻的农村地区有很好的机会有竞争力的成本使用可再生能源满足个别家庭、农场或农村小型机械或电力需要。在一、二十年内可能广泛提供的先进可再生能源技术、特别是现代生物质技术有可能以非常有竞争力的成本提供农村地区能

源。因此,农村地区可以吸引工业和吸引劳力密集生物能源工业和廉价生物能源工业创造的农村就业。

34. 由于收入增加以及人口增长,必须大大提高能源效率。在学术界和非政府组织界进行的研究证明,利用现有的技术和知识,可能提高效率可达50%至95%。提高效率可以减少能源费用(包括进口能源有关的费用),扩大能源和减少环境影响。发达国家以及发展中国家均获益。虽然发展中国家目前的能源使用只有经济合作与发展组织(经合组织)成员国的十分之一,但预计将会以快得多的速度增长,以满足其工业、建筑、运输系统和家庭的需要。

35. 工业化的能源使用增加是发展进程的一个并行阶段,带来城市化、电气化和建立其它基本设施,所有这些使所有经济部门的能源密度提高。为帮助降低发展中国家的能源密度,主要是通过加速对节能技术的投资,因为这些技术能减少能源消费和使用具有高度内在能源的原料。增加投资可以加速技术变革,因为对现有的旧设备注入新资本或更替旧设备增加以节能技术生产的产出的比例。为达到此目的,必须采取一项自觉的政策促进采用和传播节能技术和做法。

36. 和可再生能源比较,目前的能源价格有利于常规能源的使用。同时,目前在燃料作价方面的做法不鼓励节能。在多数情况下,很少或没有顾及供应的外在社会和环境成本。在能源部门对常规能源和核动力的补贴往往妨碍广泛的发展和运用可再生能源。⁶ 如果要实行可持续的能源路线,必须通过使用经济 and 财政手段和消除长期补贴,改变政策,以达到价格环境成本的充分内在化。

37. 妇女在实行可持续能源方面发挥一项基本作用,同时强调需求方面的管理和更多地使用可再生能源。为了使妇女能够更容易地参与能源方案 and 项目,在规划能源服务方面应当充分考虑到市区和农村地区妇女的需要和参与。在市区,应当充分考虑到妇女对家庭以及经济生产性活动的能源需要。⁷

38. 能源的产生、输送、分配和使用造成当地、区域和全球环境问题。能源的提炼和生产造成自然资源的减损和毁林。能源的运输可能造成漏油、海洋污染和其

它意外排放。如提炼等转化活动可能排出有害的污染物。消费造成空气和水污染、加剧温室效应和有害的副产品,包括固体废料和核废料。

39. 矿物燃料(煤、石油和天然气)在未来很长时间内将继续主宰发达国家和发展中国家的能源供应情况。因此,需要通过更好的设计和管理、通过实行自愿以及强制性的手段减少当地保健危险和环境污染以及温室气体的排放,来减少其持续发展和使用对环境产生的影响。关于煤的使用,需要进一步研究、发展和应用消除硫和氮的氧化物以及煤气化的改良技术。这点将需要大量人力和物质资源、科学知识和专门知识、尤其是财政专门知识。

40. 日益提倡发展和更多地使用天然气,因其温室气体排放较低以及对环境造成的不良影响较少。在发展中国家,主要的问题是供应不足。在有供应的情况下,分配网络特别薄弱,在很多情况下甚至不存在。政府间气候变化问题小组表示,天然气通风以及输气管和分配系统漏气产生的甲烷排放量很大。⁸ 天然气的喷焰和排气估计约占世界天然气产量的5%。⁹

41. 虽然水电发展的增长将受到环境关切事项的限制,可是,目前的使用数量足以对世界初级能源造成重大需求的可再生能源——传统生物质和水电份额在能源供应比例中将继续增加。生物质的每年消费量是47 EJ¹⁰ 至55 EJ,¹¹主要用于发展中国家的做饭和取暖,也用于小型工业和一些大型的使用。在可再生能源——全球密集能源设想中,¹² 到2025年,商业生物质份额预计为145 EJ,到2050年为206 EJ;在这项设想中,预测现代化生物质的使用迅速增加(1990-2025年每年10%),因为它带来多重利益。预计太阳热能和光电能、风能以及地热能等可再生能源的份额也会增加,并对世界商业能源消费量提供重大的份额。

42. 在过去几十年,对于核动力、尤其是建立新的发电厂的接受减少。民意调查的审查认为,公众对核能的关注着重以下问题:怀疑经济必要性,害怕大型灾难,核废料的储存和裂变材料的滥用等。多数国家已停止核动力的扩展。对于安全和扩散问题的持续关注将限制核动力发展。¹³

43. 然而,由于对矿物燃料的使用引起的温室气体排放日益关注,目前更加注意核能源的增加使用。政府间气候变化问题小组认为,如果对反应堆安全、辐射废料的运输和处置以及扩散等关切事项找出普遍接受的对策,核能源可以取代世界上很多地区定量矿物燃料发电。¹⁴

44. 能源的发展和使用是高度资本密集的。对发展中国家发展和使用能源的资本需要作出了估计。可是,这些估计数并非详尽无遗,但这些指示性数字明确表示需要很大。世界银行在一份关于70个发展中国家和转型经济体的电力扩充方案研究报告中估计,从1989年到1999年,发展中国家电力需求的平均每年增长率约为6.6%。这样,将要在1999年把总发电能力提高到855十亿瓦特,按1989年美元价值计算累计费用为7 450亿美元,--按现值美元计算几乎1兆美元--其中大部分将是外汇。¹⁵

45. 世界能源理事会估计,在1990-2020年期间,对发展中国家电力部门的投资按1990年美元价值计算为2.4兆至4.4兆美元,占了发展中国家在同一时期内所有能源投资的64%至79%。这个数字转化为电力部门单独计算每年为800亿至1500亿美元。即使是按照以生态为主导的估计数,即考虑到所有建议的环境、全球升温、卫生等的估计数,每年需求仍然非常高。还有其它方面竞相争取财政资源。¹⁶

46. 经社分析部在其1996年世界经济和社会概览中,为发展中国家未来电力需要的一个可能规模制订了一项设想,在这项设想中,即使是按每年6%的保守增长率计算,在1994--2010年期间,发展中国家将需要增加1170十亿瓦特的装置发电能力。假定每十亿瓦特的平均总系统费用约为16亿美元,总投资额则约为1.87兆美元,每年平均约为1170亿美元(接近国内总产值的2.5%)。此外,还需要大量投资更替老旧的发电厂以及投资改进效率和减少矿物燃料使用对环境产生的影响。¹⁷

47. 满足发展中国家能源部门的投资要求将需要一项适合不同国家情况和政策优先事项的筹资战略。然而,几乎所有国家的一项共同点是有很大会通过增加价格支付长期的边际费用,向最后使用者收回成本。通过向家庭收取较低的“生命线费率”,但向其它使用者收取较高的费用,可以保障穷人的需要。这样可以每年至少

腾出约1 000亿美元补贴(几乎等于每年投资费用),同时减少需求的增加,因为这些增加往往使大家过高地估计能力要求。¹⁸ 改进维修、复原和加强现有发电厂可以大大降低扩大服务的边际成本(世界银行估计,输送给最后用户的电力大约只等于装置的能力的40%,而在发达国家则超过装置能力的80%)。¹⁹ 确定全部(或几乎全部)收回成本原则可以更多地采用外国筹资作为按照完全商业性原则、在适当的管理环境内运作的公共或私营本国企业的公债筹资。在这些情况下,可以利用外国直接投资。由于最不发达国家利用这些机会的可能较低,它们将继续要依靠官援起码满足其能源部门部分的资金需要。农村电气化由于供应的单位成本要高得多,也将需要依靠也可能由官援援助的公共补贴。可以利用全球环贷支付逐步增加的能源项目费用,以减少这些项目对全球升温产生的影响。

三、评价目前的能源活动与可持续发展间的联系

48. 多年来许多组织的活动均突出能源与发展之间——近来则为能源与可持续发展之间——的相关性。联合国环境与发展会议之前的政策和任务表明了这种趋势,而会议之后更是如此。联合国新能源和可再生能源会议(1981年,内罗毕)对许多组织的方案和活动已产生重大的影响;当石油价格涨到最高点的时候,许多组织已采行或扩大了新能源和可再生能源领域的方案和项目,作为《发展和利用新能源和可再生能源内罗毕行动纲领》执行工作的一部分。但是,对新能源和可再生能源的兴趣很快就告大幅度消退,尤其是1980年代中期石油价格下降以后。

49. 从1980年代中期以来,由于人们对日益增加使用矿物燃料的环境影响——包括这些燃料造成的温室气体的排放——开始表示关切,并普遍意识到有必要维持可持续发展的能源系统,对新能源和可再生能源的兴趣开始涌现。这一趋势在大会第46/235号决议中最好地反映了出来,其中设立了新能源和可再生能源及利用能源促进发展委员会,大会指出该委员会除了执行《内罗毕行动纲领》外,还将审议能源与环境的关系。许多实体已在从事这项任务。大会第47/190号决议通过联合国环境与发展会

议的报告；核可了《21世纪议程》并通过《气候公约》和使之开始生效以后，进入了将能源与可持续发展联系起来的阶段。联合国各组织在不同程度上调整了它们的方案和项目以反映《21世纪议程》的目标。

50. 可再生能源的道路是有挑战性的，因此需要包括联合国系统在内的所有有关行动者步调协调一致，这是很明显的。第一章和本报告附件清楚指出联合国正就受到广泛活动支持的国家的要求和优先次序参与这些活动。一般而言，这些活动似乎与可持续能源的道路并不产生抵触。人们对能源效率的日益注意及有关的需求方管理和价格政策证明了这些积极的发展。此外，目前有几个组织在帮助推广和传播洁净能源技术，包括净煤技术在内。

51. 对进一步采行和使用新能源的支持正在增加，重点特别放在使农村人口加强取得能源服务方面。在能力建设和机构发展方面，能源规划活动正越来越多地同范围更广的社会-经济或环境规划活动及计划执行工作联系起来。

52. 从活动的层次来说，特别重要的是以下方面的发展。全球环境融资的业务大力强调无害环境的技术，特别是与减少温室气体排放到大气之中相关的技术；这点看来有利于发展可再生能源。世界银行通过其贷款和技术援助方案，已成为向环境方案和项目提供资金的最大单一来源。该行现在正将社会和环境包括能源的范畴结合到其业务内；因此，所有的能源项目都要审查其社会和环境的影响。该组织正在处理能源的开发和使用及可再生能源的开发和使用所产生的污染问题。为使发展合作活动配合可持续发展，开发计划署其中一部分的工作特别着重于可持续能源方面，方式是持续寻求更有效的能源模式和朝着可持续能源的方向作出重大的转变。它将能源项目联系到与减贫、性别平等和环境的可持续性有关的总体方案目标方面。联合国粮食及农业组织(粮农组织)继续强调有必要调动能源投入以满足通过可持续方式达成粮食生产链的需要。教科文组织倡议的世界太阳能首脑会议引起了在政治上对可再生能源的潜力的高度注意，其区域筹备过程已制订了数百个项目的方案概要。

53. 联合国及其组织的活动与能源部门的总体投资数相比，虽然资金很少，但在

促成可以符合可持续准则的新的发展并成为其模式方面起到了重要作用。很显然的,联合国在能源领域拥有巨大的科技潜力,可以有效地用来支助发展中国家和转型经济国家的可持续能源发展。如新能源和可再生能源及利用能源促进发展委员会已经指出²⁰ 并经本报告确认的,到目前为止,并未制订出一个共同的战略作为整个系统的参考构架和配合各项活动。由于可持续能源方面的挑战是巨大的,制订和采行共同的战略可增加联合国寻求用于支助可持续发展的能源系统的各项活动的一致性和效力。

四、评价能源活动的合作与协调

54. 根据现有资料,看来能源活动的合作与协调的情况令人感到鼓舞,但事实上这种合作协调都是临时性的。就一般的政策发展而言,所缺少的是共同的战略。虽然可持续发展机构间委员会可处理能源问题,但是缺少有系统的机构间对话。机构间参与编写新能源和可再生能源及利用能源促进发展委员会的报告和参与其会议的情况是零星的。

55. 能源统计活动由经社分析部充分协调,在政府间一级则由联合国统计委员会协调。

56. 全球环境融资的设立强化了和有系统地协调了世界银行、开发计划署和环境规划署之间的合作,其他的联合国实体也在其中参与执行具体一定项目。

57. 开发计划署和世界银行作为两大出资组织,多年来一直在可再生能源方案领域合作,主要是通过能源部门管理援助方案。教科文组织连同联合国系统内外的若干伙伴,通过全球太阳能首脑会议的筹备过程和首脑会议的召开本身,获得了政治高层对更广泛使用可再生能源的有力支持。这种合作可能形成更广泛的全系统性可再生能源方案的基础。从教科文组织倡议的得到政治高层支持的全球太阳能首脑会议产生的全球太阳能方案可构成这一全系统性方案的一个重要因素,联合国之外的其他实体或许会愿意参与这一方案。亚太经社会、原子能机构、世界银行和气象组

织正就由原子能机构协调的机构间比较评估不同发电能源的数据基和方法项目进行合作,以便在支助可持续发展的电力部门的规划和决策过程中增进对不同能源的比较评估能力。

58. 在区域一级,各区域委员会随时可以投入协调政策发展工作和全系统对执行工作的参与。欧洲经社会和亚太经社会似已全力进行。不过,各区域委员会与各区域开发银行间有合作的余地。

59. 在国家一级针对当地的情况利用不同的方式进行协调。这项工作可从共同的战略和更多的经验交流而获得利益。

五、未来的行动建议和提议

60. 全世界的能源系统必须对可持续的发展工作有所贡献。这就要求如本报告第三节所说的,促使当前的能源系统作出重大的改变,但是只有当所有涉及的活动者、政府、国际资本市场、能源投资者、工业界、国际组织、科学和研究机构以及非政府组织都为共同的目标作出贡献时,才能实现这点。

A. 制订共同战略

61. 联合国虽然从投入能源投资的资金数量来说,并不是一个很大的伙伴,但在制订能源战略来说却可起到重要的作用,这项战略将为联合国系统--包括布雷顿森林机构--与能源有关的活动提供一个参考构架。这种战略将促进以平衡而相互加强的做法处理可持续发展的经济、社会和环境方面的问题。它将就可持续能源的开发促进同联合国系统以外的有关角色,特别是同涉及能源和私人部门的非联合国政府间组织的伙伴关系。

62. 共同战略将考虑到以下方面:会议(从1981年联合国新能源和可再生能源会议到1996年联合国人类住区会议(生境二)期间所有重要会议;《气候公约》范畴内正在进行的讨论;和诸如世界太阳能首脑会议(1995年,哈拉雷),关于“电力、保健

与环境：用于帮助决策的比较评估”的国际专题讨论会(1995年,维也纳),电力与环境高级专家专题讨论会(1991年,赫尔辛基)之类的有关国际会议会议)结果;新能源和可再生能源及利用能源促进发展委员会的报告;以及联合国各组织制订的最近政策和战略。共同战略将对它们的执行工作提供更协调一致的全系统性反应。

63. 共同战略将建立在到目前为止在能源领域进行机构间合作与协调方面所获得的经验的基础之上,并指出未来增进其效力的手段和方法。

64. 或可通过机构间协商在一定的时限内制订出关于这种共同做法的具体提议,包括其可能的范畴和方式(可斟酌让不属于联合国的有关活动机构参与)而后通过新能源和可再生能源及利用能源促进发展委员会及可持续发展委员会提交经济及社会理事会/联合国大会审议和核可。关于这种共同做法提议的具体制订方式应考虑到是否能得到财政和工作人员资源。

B. 新能源和可再生能源及利用能源促进发展委员会的作用

65. 目前新能源和可再生能源及利用能源促进发展委员会是联合国内处理能源讨论的所有方面的唯一机关。委员会应继续在1997年以后在促进能源领域的联合国政策讨论方面起到有用的作用。但是,该委员会的运作方式可加以调整,以增进其效力。做法可包括:

- (a) 促使更多政府派代表参加;目前并非所有区域都已指派其代表;
- (b) 更广泛散发报告;
- (c) 促使更多联合国组织(包括各区域委员会)参加委员会的工作,包括编写报告;
- (d) 建立委员会与涉及能源问题的非联合国组织如国际能源机构(能源机构)和世界能源会议(能源会议)之间的联系;
- (e) 改变委员会的报告方式,使它能够通过可持续发展委员会向经济及社会理事会报告(委员会的某些报告已经以这种方式处理)以期确保在可持续发展的讨论当

中更多地结合委员会的工作。还有必要确保委员会的工作考虑到可持续发展委员会的有关要求。

C. 加强机构间合作

66. 必须在全球区域和实地各级促进更有效的安排,以推动能源领域的机构间合作与协调。做法可包括:

(a) 使能源成为可持续发展机构间委员会议程上的经常项目,并确保同行政协调会其他机关碍包括最近各次全球会议之后后续建立的工作队碍与能源有关的工作挂钩;

(b) 召开有关组织的特设会议,最好是紧接着其他会议召开或在举行其他会议时附带召开(如可持续发展机构间委员会或新能源和可再生能源及利用能源促进发展委员会),以期:

- (一) 按照上文第61至64段所建议的制订共同做法;
- (二) 讨论各项安排,以对决策过程碍包括在新能源和可再生能源及利用能源促进发展委员会和可持续发展委员会中的决策过程碍提供全系统性的支助;
- (三) 促进整个联合国系统政府间机关与理事机关之间的更大政策连贯性;
- (四) 交换资料和讨论从各种项目和活动获得的教训;
- (五) 促进数据的可对比性。

(c) 讨论旨在增进联合国系统在能源领域的资料交换能力的具体安排。其中可能包括建立关于与能源有关活动、方案和经验的电子数据基,该数据基最后可能与联合国系统内现有其他有关数据基联接起来。

注

¹ 《经济及社会理事会正式记录,1996年,补编第8号》(E/1996/28),第一章,B节

第4/15号决定第19段。

² 《大会正式记录第五十一届会议正式记录,补编第3号》(A/51/3,Part II)第五章,B.1节,第1996/44号决议,第1段。

³ 《联合国环境与发展会议的报告》,第一卷,《会议通过的决议》,(联合国出版物,出售品编号:C.93.I.8和更正)决议1,附件二,第9章,第9.9段。

⁴ 秘书长关于可持续发展主要趋势的报告(E/CN.17/1997/3)。

⁵ J. Goldemberg和T. B. Johansson(编辑),《能源作为促进社会-经济发展手段》(开发计划署,1995年,纽约)。

⁶ 据估计,仅是非经合组织国家对常规能源和核动力的补贴每年就数达2 700至3 300亿美元。参看A.de Moor,“补贴和可持续发展,21世纪议程财政问题专家组第三次会议会议记录,”(联合国,1996年,纽约)。

⁷ 提高妇女地位研训所与劳工组织/都灵中心合作编写了一份题为“妇女、新能源和可再生能源”的多媒体培训一揽子材料。培训一揽子材料以不同的目标群体为对象:发展规划人员、高级官员、工程师、能源方案管理员、非政府组织代表和国家、区域及国际一级的社区工作者。

⁸ 《1995年气候变化,影响的适应和减少气候变化:科学--技术分析》剑桥大学出版社,1996年,剑桥),第19.2.2.1节。

⁹ 1995年估计的世界天然气总产量约为21 200亿立方米,不包括喷焰的或回收使用的天然气(英国石油公司《世界能源统计审查》1996年6月)。

¹⁰ 《新的可再生能源--未来指南》伦敦,(世界能源理事会,1994年)。

¹¹ D.O.Hall等,1993年:生物质能源:供应前景,载于《可再生能源:燃料和电力来源》(T. B. Johansson等编),岛屿出版社,华盛顿特区。

¹² T. B. Johansson等编,可再生能源:燃料和电力来源,岛屿出版社,华盛顿特区,1993年。

¹³ 同上,气候变化1995年(19.2.4节)。

¹⁴ “减少气候变化的政策和措施”(政府间气候变化问题小组编写的技术文件,1996年12月)。

¹⁵ E.Moore和G.Smith“1990年代发展中国家电力资本开支”,工业和能源工作文件第21号,(华盛顿特区,世界银行)。

¹⁶ R.K.Pachauri等,“资助能源发展:发展中国家的挑战和要求,圆桌会议第四场:资助能源发展--优胜者和失败者?”《世界能源理事会第十六届大会会议记录》,(1995年10月8日至13日,东京)。

¹⁷ 《1996年世界经济和社会概览》,(联合国出版物,出售品编号E.96.II.C.1)。

¹⁸ 同上。

¹⁹ 《1994年世界发展报告》,(1994年,纽约和牛津,牛津大学出版社)。

²⁰ 见《经济及社会理事会,正式记录,1996年,补编第4号》(E/1996/24)。

Annex

ENERGY-RELATED PROGRAMMES AND ACTIVITIES WITHIN THE UNITED NATIONS SYSTEM

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
DPCSD	I. <u>Policies and mandates of the entity</u> Decisions of CNRSEED, CSD, ECOSOC and General Assembly on energy, environment and sustainable development; Furthering the development and use of new and renewable sources of energy; Promoting efficiency of energy use as well as energy exploration and development in developing countries. II. <u>Overview of programmes and activities</u> A. <u>Energy development</u> Monitoring and analyzing global energy trends and prospects and their impact on the environment; Monitoring and analyzing developments in new energy technologies for both conventional and new and renewable sources of energy; Preparing studies on these topics for consideration by intergovernmental bodies; Dissemination of relevant information. Organizing seminars and workshops on energy exploration, renewable sources of energy and interface with environment. Undertaking studies aimed at increased understanding of the environmental and socio-economic impact of various policy options and strategies. B. <u>Energy supply</u> Exploring and monitoring the mobilization of new sources of financing for sustainable energy projects and programmes. C. <u>Energy use</u> Undertaking studies of energy efficiency and conservation, including demand-side management, and submitting results/findings to intergovernmental bodies.	Regular budget as specified under DPCSD Contributions from extra-budgetary resources

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
DESIPA	I. <u>Policies and mandates of the entity</u> Promoting and carrying out work in linking energy statistics with environmental statistics including development of environmental indicators II. <u>Overview of programmes and activities</u> A. <u>Energy development</u> Continuing cooperation and coordination within the UN system - Statistical Commission Working Group on International Statistical Programmes, the ACC Subcommittee on Statistical Activities - and other international organizations including IEA/OECD and Eurostat in refining existing methodologies in the collection and dissemination of energy statistics; Organizing meetings and consultations for such proposes. B. <u>Energy supply</u> Organizing training, seminars and workshops and study tours in energy statistics with a view to enhancing the capacity of national institutions in developing countries to collect and process energy statistics. C. <u>Energy use</u> Developing and applying energy intensity/efficiency indicators. Publishing production and consumption data of different forms of energy including electricity in statistical compendia such as Energy Statistics Yearbook, Energy Balances and Electricity Profiles; Preparing studies in concepts and methods; and analyzing global energy trends such as global oil markets for publication in the World Economic and Social Survey.	Regular budget as specified under DESIPA Contributions from extra-budgetary resources

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
DDSMS	Promoting the development and application of new and renewable sources of energy, such as solar, wind, biomass and geothermal energy; Establishing or strengthening the capacity of national institutions in energy planning policy making and in establishing national information systems and energy data information processing capacity; Providing technical support and consultancy services to develop national capacity for energy project evaluation and analysis of energy technologies. II. <u>Overview of programmes and activities</u> A. <u>Energy development</u> Preparing studies on new technological developments, techniques and strategies for identifying, evaluating and developing conventional and renewable sources of energy; Demonstrating through pilot projects and advisory services the feasibility of utilizing new and renewable sources of energy in rural areas; Surveying resource potential and developing geothermal energy; Facilitating the transfer of modern technology for increased energy efficiency to developing countries. Organizing interregional seminars, workshops and symposia on energy development, planning and environment; Providing training of technical manpower in different aspects of energy development, including exploration, technological evaluation, energy policies and management, etc., and disseminating specific project and technical reports. B. <u>Energy supply</u> Exploring potential multilateral and bilateral sources for funding technical assistance projects and providing advisory services on project funding.	In addition to regular budgetary resources, programme activities are mostly funded by extra-budgetary resources Among countries receiving DDSMS support are Belize (petroleum, \$633,000), China (coalbed methane, \$9.3 million; geothermal, \$2.7 million; energy efficiency, \$60,000), Korea, DPR (energy efficiency, \$1.6 million), Egypt (wind power, \$260,000), Ghana (LPG substitution for fuelwood, \$57,000), India (oil recovery, \$1.5 million), Namibia (energy database, \$75,000), Oman (coalfield, \$1 million), Paraguay (small-scale hydropower, \$50,000), Russia (gas marketing, \$170,000), Sudan (rural solar, \$1.2 million), Uganda (geothermal, \$0.5 million).

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UN organizations ESCWA	Cooperating with UNDP, World Bank and other regional and international institutions in implementing projects in energy supply funded by them. C. <u>Energy use</u> Providing technical assistance and organizing workshops and study tours on rationalizing energy end-use, promoting demand-side management and other efficiency measures Providing technical assistance to foster the efficient management of energy institutions and enterprises through enhanced operational performance. I. <u>Policies and mandates of the entity</u> Providing support to developing countries in the region in energy development and supply; Strengthening energy institutions in least developed member countries; Promoting new and renewable sources of energy; and Promoting regional cooperation in energy development and supply.	II. <u>Overview of programmes and activities</u> A. <u>Energy development</u> Preparing studies on energy situation and trends, as well as trends in the oil industry in the region; Preparing overviews of the international oil markets conditions and their implications for ESCWA, and exploring their potential impact on the energy situation in individual countries. Providing technical assistance in energy exploration and development, like recent projects on oil and natural gas development in Jordan and Yemen (in Jordan focusing on review of exploration and drilling activities and investigation of oil potential).

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ESCWA (continued)	<u>B. Energy supply</u> Providing technical assistance in small-scale new and renewable energy technologies (solar and wind) in the region, including country pilot projects such as biogas pilot project in Yemen, and preparing related studies; Organizing seminars and training workshops to review latest developments and conducting training programmes on construction and operation of biogas plants. Providing technical assistance to community development projects (Syria), such as integrated biogas family-size systems with water treatment, solar drying and fish farming; Preparing working papers on development of renewable energy resources in the region with special emphasis on financial requirements and utilization of appropriate technologies, and undertaking assessment and prospects analyses for implementing pilot projects. Preparing studies on the technical and economic aspects of the establishment of a regional electricity network and prospects for interregional cooperation in this field; Organizing expert group meetings on the establishment of a regional electricity network and prospects of its connection with electricity grids in neighboring countries. <u>C. Energy use</u> Promoting the regional approach for efficient use of energy; Formulating and implementing concrete proposals and programmes for demonstration projects at the regional level of energy conservation and of more efficient use of energy in specific sectors. Working on the proposals to set up a regional mechanism for coordinating energy policies and for identifying priority areas at the national level, and reporting to the Commission on progress in this area; Preparing studies and organizing expert group meetings on institutional requirements and modus-operandi of a proposed gas network and on the establishment of a regional gas network.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ESCWA (continued) ESCAP	Preparing studies on the impact of privatization on power generation in the region, as well as the functioning of independent production in selected ESCWA member states. Undertaking assessment of energy pricing systems in the region. I. <u>Policies and mandates of the entity</u> A thematic programming approach has been adopted by ESCAP and energy issues are to be discussed in the new Committee on Environment and Sustainable Development. Energy planning was considered a priority in the context of sustainable development, with environmental concerns integrated into energy policy and planning ; also stressed was the need for the formulation and adoption of effective energy efficiency policies, including the promotion of clean coal technologies. With the increasing severity of air pollution in large cities, ESCAP stressed the need for promoting pollution-free energy options as well as energy efficient technologies. II. <u>Overview of programmes and activities</u> A. <u>Energy Development</u> Preparing issue papers and reports of meetings for consideration by intergovernmental bodies and publishing energy resources development series and electric power data series and bulletins. Organizing ad hoc expert meetings, workshops and seminars on energy, environment and sustainable development. Implementing the Programme for Asian Cooperation on Energy and the Environment (PACE-E), with element "Energy and Environment Planning" implemented by the Asian Institute of Technology, focusing on training in sample design and data processing, application of sectoral energy use assessment and demand scenario to evaluate the potential for energy conservation and fuel switching, and the application of methodologies and procedures for integrating environmental concerns into energy planning and policy analysis.	For activities between 1993-96: Regular budget, \$30,097 UNDP funded PAC-E, \$2.53 mn French contribution to EEP: \$257,739 Australian contribution to CDU: \$2.05 million Japanese contribution on energy conservation/efficiency: \$478,762 Total Extra-budgetary: \$5.86 mn

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ESCAP (continued)	<u>B. Energy supply</u> Within the PACE-E programme, executing the following elements: 1. Training in coal development: coal production, utilization, coal technology and environment; 2. Natural gas and petroleum development: focusing on the strategic potential and implication of utilization of natural gas and the promotion of natural gas utilization in the energy market; 3. Electric power system management: focusing on private sector participation in power generation and its consequences on environmental quality; demand side management in integrated resources planning of the power sector and environment impact assessment; and the role of popular participation in electric power development; 4. Rural energy: integrated rural energy-environment planning for sustainable development and assessment of methodologies in countries of the region 5. New and renewable sources of energy: holding the renewable energy symposium and regional workshops and seminars on wind and geothermal energy development. In addition to the PACE-E programme, ESCAP implemented the man-power training component of the project Rehabilitation of the Phnom Penh Power System. <u>C. Energy Use</u> Promoting energy conservation and energy efficiency; more specifically, within PACE-E, organizing regional workshops and meetings on (i) national strategies and regional cooperation in energy efficiency promotion; (ii) urban transport strategies; (iii) energy conservation and efficiency centers; (iv) energy efficiency standards and (v) the role of consumer organizations and NGOs in promoting energy efficiency. In addition, the regional workshops discussed energy efficiency standards for commercial buildings and related legislation and the promotion of investment in domestic manufacturing of energy-efficiency appliances. Additional extra-budgetary activities include (i) organizing workshops in ten locations to promote commercial energy conservation consulting services in ESCAP region; (ii) providing training programme for energy efficiency center managers from transitional and developing ESCAP countries; and (iii) Promoting effective utilization of petroleum energy in Central Asia through sub-regional seminar.	Implemented by the Joint Coal Board of Australia Implemented by CH4 Group of New Zealand In cooperation with Australia and China Project funded by UNDP and executed by the World Bank

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ESCAP (continued)	In the area of coal utilization, following training courses were organized or planned: (i) Coal Production, Utilization and Environmental Protection (will have completed 5 training of 4-6 weeks by the end of 1997); (ii) Executive Seminar on Coal Technology and the Environment (will have completed 5 seminars of 1-2 weeks by the end of 1997); (iii) Coal Technology and Environmental Management (will have completed 2 four-week training); (iv) National Workshops on Coal Technology and the Environment (will have completed at least 8 national 2/3-day workshops by the end of 1997). Similar activities are expected to be continued beyond 1997. In the power sector, a training course, five national workshops and a regional workshop on demand side management (DSM) in integrated resource planning (IRP) of the power sector were organized. These events emphasized on the efficient utilization of electricity through DSM.	
ECE	I. Policies and mandates of the entity Undertaking an extensive exchange of information, views and experiences between member states on general energy problems, national objectives and policies; promoting the transition of Eastern European energy systems to a market economy and their integration into the world energy markets; elaborating a sustainable energy development strategy for the ECE region in order to secure reliable, efficient and environmentally sound production, conversion and use of energy in ECE member countries; promoting the implementation of such a strategy by means of enhanced cooperation within the framework of ECE and with other international bodies in order to achieve an optimal use of experiences and resources. II. Overview of programmes and activities A. <u>Energy Development</u> Analyzing different ways and means of market adaptation of the energy economies to promote the transition of central and eastern European energy systems from central planning to market economy; facilitating exchange of experiences through meetings, workshops and publications. Identifying and considering problems related clean coal mining and utilization; promoting and accelerating the implementation of commercial projects; promoting partnerships and business opportunities in economies in transition.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ECE (continued)	Identifying and examining the problems related to the process of transition to market conditions of the coal industry of the economies in transition, focusing on productivity, costs, demonopolization and privatization of coal industry, environmental impact assessment and development of vertical structures with electric power sector; organizing workshops in economies in transition on coal industry structures and management, utilization of low grade fuels, briquetting and smokeless fuels production, coal mining legislation, reassessment of coal and mineral deposits under market conditions; and geodynamic zoning. Analyzing the issue of integrating the LPG industry in the energy markets of economies in transition B. <u>Energy supply</u> Assisting countries in transition in dealing with electric supply issues through national reports, informal meetings and workshops, focusing on (i) possibilities of refurbishing fossil-fired power stations; (ii) principles and modalities of a programme activity on central European interconnections; (iii) future development of combined production of electric power and heat; and (iv) restructuring of electric power industries. Conducting a survey of incentives for renewable energy in the ECE region and organizing workshops to promote international exchange of experiences and cooperation for the use of renewable sources of energy in transition countries. Preparing reports and studies on increasing transparency of the international coal trade, and on short-, medium-, and long-term coal demand and supply trends and other associated developments. Examining policy, prospects and strategic aspects of interconnections of the electric power transmission systems between ECE countries. Analyzing gas trade and gas markets with a view to enhancing interregional trade and extension of gas networks in Europe	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ECE (continued)	C. <u>Energy use</u> Organizing workshops, technical meetings and training seminars on pricing and tariff policies and designs of gas and electricity, gas contracting principles and practices, and project analysis and management for gas industry. Introducing and updating an energy-labelling system and processes aimed at the energy efficiency of buildings and appliances; creating a more transparent market for energy-saving goods and avoiding technical barriers to trade. Organizing studies, expert meetings and seminars on energy efficient standards. Implementing "Energy Efficiency 2000" projects through expert meetings, training courses, publications, trade fairs and demonstrations in order to reduce the energy efficiency gap between actual practice and best technologies, between ECE countries, in particular between the formerly centrally planned economies and the market economies, and enhance trade and cooperation in energy efficient, environmentally sound technologies and management practices. Conducting studies and reviews to facilitate exchanges of information and views on energy efficiency and conservation in electric power systems, gas and end-use of gas, focusing on household installations and appliances. Devising a sustainable energy development strategy in the ECE region in order to secure reliable, efficient and environmentally sound end-use of energy. Assisting the economies in transition in using on a wider scale such economic tools as tariffs, market-oriented prices, incentives and tradeable permits in order to develop sustainable energy systems. Collecting and publishing data on energy production, trade and use and computerizing, retrieving and disseminating energy data.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ECA	I. <u>Policies and mandates of the entity</u> Formulating integrated energy policies into overall socio-economic development strategies and providing advisory services on such an integrated approach. Promoting sustainable development and utilization of natural resources and energy through formulation of strategies for inter-country cooperation in the context of Agenda 21. II. <u>Overview of programmes and activities</u> A. <u>Energy Development</u> Implementing strategies for the development of natural resources and energy; promoting the development and utilization of indigenous energy sources; and providing related technical assistance and advisory services to member countries. Also preparing studies on these subjects. Cooperating with other entities of the UN system, regional and international organizations on emerging energy and environmental issues. Organizing expert group meetings on the policies and strategies for the development of national and energy resources and preparing studies on the guidelines for petroleum legislation Undertaking study of the economic viability of manufacturing turbines and generators for mini-hydro in African member-states. B. <u>Energy supply</u> Exploring the possibilities for electricity interconnections in East Africa and provide technical assistance for this purpose. Preparing studies on the potential contribution of new and renewable sources of energy and on the viability of photovoltaic energy for rural areas; providing technical assistance as required.	Ad-hoc expert group meeting (\$22,600) Including ECE, UNEP, World Bank, OAU, and WEC. Study (\$23,000)

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ECA (continued)	C. <u>Energy use</u> Analyzing energy use, environmental impact of emerging energy trends and related policy issues; providing advisory services on maximizing efficiency of production, conversion, distribution and end use of energy. Providing technical assistance on generation of awareness on environmental issues and appropriate policy issues. Strengthening national and sub-regional institutions in capacity building through technical assistance, workshops and study tours. I. <u>Policies and mandates of the entity</u> Providing advice to member states on energy matters, and promoting cooperation with the Latin American Energy Organization(OLADE) and the existing sub-regional institutions for integration of Central America.	Advisory service to Central American governments
ECLAC	II. <u>Overview of programmes and activities</u> A. <u>Energy Development</u> Preparing studies and providing technical assistance on restructuring of the oil and electricity industry in member states. Preparing studies on the potentials of new and renewable sources of energy in the region , and promoting the development of specific energy sources, such as geothermal in the region. B. <u>Energy supply</u> Providing advisory services on the design and application of energy plans and policies in the petroleum and power sectors. C. <u>Energy use</u> Undertaking study of the interrelationship between energy, economic growth and development and environment, and providing technical assistance to member states. Preparing studies and providing advisory services on improving management techniques in the energy sector. Preparing studies on the methodologies and analytical instruments for energy studies and evaluation, and providing technical assistance to member countries.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNEP	I. Policies and mandates of the entity UNEP has a broad mandate to stimulate and promote environmental activities as outlined in its Medium Term Programme and based on the relevant chapters of Agenda 21. UNEP Governing Council also adopted decisions on cooperation and linkages with other UN bodies on environmental matters. A unique feature of the UNEP energy programme is the Collaborating Center on Energy and Environment, which is managed as a UNEP project with the overall objective of supporting UNEP's energy activities in terms of direct programme support, underlying research and implementation of national and regional activities with the general mandate. II. <u>Overview of programmes and activities</u> A. <u>Energy Development</u> Two national studies in India and China on incorporation of environmental concerns in national energy policy. Energy development activities undertaken by UNEP include: (i) Energy Environment seminar for Latin America (jointly with OLADE). (ii) National workshop in India on "Efficiency strategies for the power sector for a sustainable development", jointly with the Government of India and the Energy Management Center. (iii) Power sector reform focusing on the environmental and social implications of the reform process undertaken in a number of countries. (iv) Integrated Resource Planning, jointly with the University of Campinas, Brazil, to develop a manual for integrated resource planning training programmes specifically focusing on developing countries. In addition, UNEP is also implementing GEF energy-related climate change projects and providing various kinds of technical assistance and capacity-building to a large number of developing countries on projects related to climate change.	UNEP funding of \$380,000 (India) and \$500,000 (China). UNEP contribution \$20,000. UNEP input \$5,000. GEF funding

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNEP (continued)	<u>B. Energy supply</u> Since 1992, UNEP has been working with IAEA on the "Nuclear Power Plant Sites Emergency Preparedness and Response Database". UNEP has also prepared surveys and studies on environmentally sound technologies and is undertaking case studies to raise awareness about successful applications of sustainable energy technologies in the electricity, transportation and industry sectors. <u>C. Energy use</u> Linking with its Cleaner Production Programme, UNEP is undertaking pilot projects that attempt to remove barriers to implementing energy efficiency in industry. It is also preparing a guidance document for policy-makers and industry decision-makers in developing countries considering setting up (or participating in) voluntary programmes to promote energy efficiency. <u>I. Policies and mandates of the entity</u> Promoting acceleration and enlargement of the contribution of atomic energy to peace, health and prosperity throughout the world. A significant addition in the activities of the IAEA since 1992, in response to the environmental concerns expressed by the UNCED in Rio, has been the initiation of the programme on Comparative assessment of Energy Sources which, besides covering technical and economic aspects, takes into account the environmental and human health impacts of the full energy chains of different energy sources of electricity generation. This programme is being pursued by the IAEA within the framework of the inter-agency DECADES project (Data BASES and Methodologies for Comparative Assessment of Different Energy Sources for Electric Generation). <u>II. Overview of programmes and activities</u> <u>A. Energy Development</u> Carrying out assessment of uranium resources and developing strategies for their exploitation and utilization through Ad hoc expert group meetings, technical assistance, advisory services and publications; Providing technical assistance and support in exploration of geothermal energy resources using isotopic tracer techniques; Promoting information exchange on improved advanced nuclear power plant designs; providing support to developing countries in implementing nuclear power programmes; promoting nuclear power technology know-how and transfer;	The total annual expenditure on the energy-related programmes and activities of the IAEA is about \$70 million. It is difficult to split this expenditure into categories of Energy Development, Energy Supply and Energy Use as there is considerable overlap of activities under different headings
IAEA		

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
IAEA (continued)	Providing technical cooperation and support on nuclear fuel cycle and waste technology (covering raw materials for reactor fuels, spent fuel and radioactive waste). Building up and enhancing national capacity for energy, electricity and nuclear power planning and decision making; strengthening national capacity for comparative assessment of energy systems and for defining sustainable energy policies; building up and strengthening regulatory organs, national nuclear research organizations, and infrastructure for radioactive wastes management. B. <u>Energy supply</u> Undertaking comparative assessment of energy sources; assessing the health and environmental impacts and risks of energy systems; provide related technical cooperation and support. Assessing investment requirements and levelised electricity generation costs of nuclear power plants and alternative options; Assessing greenhouse gas emissions from full energy chains of different energy sources and analyzing greenhouse gas emission mitigation strategies for the energy and electric power sectors; preparing studies on these aspects for consideration of intergovernmental bodies (e.g. IPCC and FCCC); Analyzing costs of pollution abatement systems for electric power plants. C. <u>Energy use</u> Providing technical cooperation and support on nuclear safety (covering safety of nuclear installations, radiation safety and safety of radioactive waste management). Providing technical assistance on the control of radionuclide dispersion and environmental protection; mitigation of emissions from fossil fired power plants (use of electron beam process for removal of sulphur and nitrogen oxides). Preparing studies and publications on energy, electricity and nuclear power status and trends; distributing data bases on technologies in different energy chains for electricity generation; distributing computer tools for comparative assessment of energy systems; distributing technology and safety information on all aspects of nuclear fuel cycle and radioactive waste management.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
FAO	I. <u>Policies and mandates of the entity</u> FAO's member countries have repeatedly requested through both global and regional fora for assistance in implementing the Nairobi Programme of Action on New and Renewable Sources of Energy and, more recently in the adoption of the Agenda 21, which calls for an energy transition to enhance rural and agricultural productivity. FAO's energy activities aim at assisting developing countries to meet their energy requirements in agriculture, forestry and fisheries, as a means of achieving sustainable rural development. FAO maintains that a transition from the present energy supply of mainly firewood and animal and human power to a more diversified and sustainable base and a better use of commercial energy is key to improving the living conditions of rural populations. II. <u>Overview of programmes and activities</u> A. <u>Energy Development</u> FAO's energy activities emphasize the need to develop and promote renewable sources of energy adapted to the socio-economic needs of rural populations, and the efficient use of conventional energy sources. FAO's technical assistance activities recognize that agriculture, forestry and fisheries have a double role and potential as energy consumers and as energy producers in the form of renewable energy. An integrated approach is adopted for the assessment, planning and implementation of energy and sustainable rural development, an approach that is at the core of the world of Latin American and Caribbean Working Group on Rural Energization for Sustainable Development. B. <u>Energy supply</u> Preparation of an assessment of the future energy requirements of agriculture in African countries; wood energy data and projections are a major component of FAO's energy activities. Regional studies and wood-energy "hot-spot" maps are products available from these efforts. Conducting wood energy planning and training of energy, forestry and agricultural officers, such as the Regional Wood-Energy Development Programme for Asia.	In addition to the UN secretariat, FAO collaborates with many different regional and international institutions in energy and rural development projects, including UNDP, ECLAC, ESCAP, WEC, IEA, UNESCO, UNEP, AfDB, SIDA, SEI and OLADE Carried out jointly with AfDB.

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
FAO (continued)	Provision of assistance to a number of Asian and Latin America countries in the organization of National Consultative Meetings on Energy for Rural Development. Adoption of a multi-component strategy, which includes (i) conservation through more efficient use of fuelwood; (ii) increasing productivity of existing forest resources by creating high-yield fuelwood plantations; and (iii) inter-fuel substitution. Sponsoring different regional wood energy networks in Latin America and Asia, such as the Regional Wood-energy Development Programme for Asia. Involvement in renewable sources of energy such as solar, wind, geothermal and hydro. A significant number of projects have been implemented in fields such as solar drying, cooling and communications, wind pumping and water lifting and greenhouse heating with geothermal energy. C. <u>Energy use</u> Efficient energy use. Promotion of fuel-efficient cooking stoves has been under way for many years. Agro-mechanization (low fuel consumption systems; minimum damages to soils), efficient energy and water use in irrigation, and energy efficient fishing vessels. Studies of residual heat from power plants established in rural areas for use as process heat in agro-business is also under study.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNESCO	I. Policies and mandates of the entity Responsible for the development of education, science, social sciences, communication and culture for the benefit of humanity. Promoting solar and other renewable, environmentally-friendly energies, applying a multi-disciplinary approach. Attaching paramount importance to the social dimension of renewable energy as a measure of providing basic energy services to the many who still have no access to them, particularly electricity. In November 1994, the Executive Board approved the creation of a World Solar Commission with the mandate to "advise the Organization, the participants in the World Solar Summit Process and all other interested parties on measures for reinforcing global and regional cooperation in the promotion of renewable sources of energy in order to ensure that the resources available for activities in this field are being allocated in such a way as to maximize their effect, having regard to the present and future needs of Member States." II. Overview of programmes and activities A. <u>Energy Development</u> Organized in Paris in 1993 a High-Level Expert Meeting on "The Sun in the Service of Mankind", launching the process for the holding of a World Solar Summit. The World Solar Summit Process (WSSP) extended over a period of three years and included a series of expert and ministerial-level regional meetings to take stock of the prevailing situation, identify priority areas for the extended use of renewable energies and review basic documents prepared for the World Solar Summit. The Summit took place in September 1996 in Harare, and adopted the "Harare Declaration on Solar Energy and Sustainable Development" and "World Solar Programme 1996-2005: an Outline". B. <u>Energy supply</u> C. <u>Energy use</u> Compilation of the World Solar Programme 1996-2005, which includes projects of national, regional and global levels of high priority. Global level projects include (i) Global Renewable Energy Education and Training Program; (ii) Rural Electrification; (iii) Water Desalination and Purification; (iv) International Renewable Energy Information and Communication System; (v) Industrial Policy, Market Penetration and Technology Transfer	In cooperation with European Commission, the International Energy Agency and the International Solar Energy Society

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNESCO (continued)	For the last eight years UNESCO has organized a summer school on rural electrification for participants (engineers, technicians, government officials and professors) commissioned by their respective governments, institutions or centers, coming from developing countries and having in common the use of the French language. Since 1993 UNESCO has been developing a learning package on energy conservation, energy and environment, energy planning and policy, and renewable sources of energy. This Energy Engineering Learning Package is directed to advanced undergraduate and postgraduate students, as well as practising power and energy engineers in industry; to date eight volumes have been published.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNIDO	Energy and environment constitutes one of the most important thematic priorities in UNIDO's work programme. Implementation of international agreements is a key work area within its priority which includes assistance to developing countries and economies in transition in meeting the requirements of the UN Framework Convention on Climate Change and the Montreal Protocol. UNIDO is an implementing agency of the Multilateral Fund for Implementation of the Montreal Protocol and executes GEF projects in cooperation with UNDP. <u>II. Overview of programmes and activities</u> <u>A. Energy Development</u> Industry and energy is a central theme of UNIDO's work. UNIDO's technical assistance programmes address both the supply side, through provision of energy for industry, and the demand side, by improving industrial energy end-use efficiency. Some 60-energy related projects are currently under way, supporting a broad series of initiatives at the policy, institutional and enterprise levels to increase efficiency in power generation and end use of energy, and to provide a solid foundation for the widespread introduction of renewable energy technologies. <u>B. Energy supply</u> UNIDO works with energy ministries and departments, utilities, and private energy companies to raise awareness of new and innovative ways of financing more efficient power generating capacity through build-own-operate(BOO) and build-own-transfer(BOT) schemes. This particularly concerns hydropower projects in Latin America and coal plants in Asia. UNIDO provides technical assistance to power authorities and industrial energy R&D centers, focusing on clean coal and more energy-efficient technologies, improving access to gas supplies, and modern refinery technologies. In addition, UNIDO promotes the development of renewable energy technologies, including biomass, solar, wind, hydropower, hydrogen fuel systems and sources of marine energy.	UNIDO's total programme funding for its technical assistance in energy at any given time during the past ten years has been in the order of \$20 million divided equally between energy supply and industrial energy demand

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNIDO (continued)	Given the importance of coal as a cost-effective energy resource in many developing countries, UNIDO is promoting the use of clean coal technology, such as increased application of coal beneficiation, gasification and fluidized bed combustion to increase operating efficiency and reducing emissions. In Africa UNIDO is promoting the use of biomass for industrial energy and supporting local manufacture of the necessary equipment for biomass conversion and use. UNIDO also encourages the development of the manufacturing sector devoted to renewable energy, such as the wind turbine industry in Egypt. To stimulate investment in renewable energy technologies, UNIDO disseminates information on the application of such energy sources as solar, wind and sustainable biomass. A specialized Center for the Application of Solar Energy (CASE) has been set up in Australia to provide an effective service to commercialize solar energy. The Center provides rapid and cost effective support and advice on technologies and markets giving entrepreneurs the confidence to invest in solar and other renewables. <u>C. Energy use</u> Work focuses on technical assistance to improve industrial energy end use efficiency. This includes: energy auditing, provision of customized technical and cost information through experts' services, training, workshops and seminars, information packages including guidelines and manuals, feasibility studies and investment promotion. Primary focus is on energy intensive industries such as iron and steel, non-ferrous, pulp and paper, cement, glass and ceramics, petrochemicals, fertilizers, textiles and food processing. Methodological tools, including a spreadsheet-based, assessed inventory of energy efficient industrial technologies and processes (which includes both industry-specific as well as cross-cutting measures such as cogeneration), has been prepared by UNIDO. These tools have been developed in response to the need to provide sound technical and cost data to energy planners on the impact of accelerating the penetration of energy efficient industrial technologies in developing countries and countries with economies in transition on reducing both the costs of energy inputs and emissions of atmospheric pollutants including greenhouse gases. The tools can also be used by teams preparing National Communications to the COP of the Climate Convention as well as in the identification of activities which could be implemented jointly under the Climate Convention.	Industrial sectors covered include iron & steel, textile, paper & pulp, glass, ceramics, cement, plastic and food processing

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
WHO	The WHO Global Strategy for Health and Environment establishes several objectives that encompass activities relating to energy development and use, including those aimed at improving technical capabilities for monitoring and assessment of environmental risks to health and for the management of such risks through their prevention, abatement and control. <u>II. Overview of programmes and activities</u> A. <u>Energy Development</u> C. <u>Energy use</u> Among WHO's programmes and activities related to energy development and use are the following: 1. Assessment of air quality in urban areas which relate to the emissions from motor vehicles, industries and energy sources and providing monitoring data and information. 2. Energy supply 3. In the areas of water resources development, including dams/reservoirs for hydropower generation, WHO is actively involved in the promotion of environmental management for vector control. 4. Assessing the health risks associated with the use of biomass for cooking and heating through a series of activities concerned with awareness raising, health risk assessment, technology transfer, and capacity building. 5. Carrying out activities in the area of radiation protection, including preparedness and response in radiological emergencies. A network of collaborating centers - Radiation Emergency Medical Preparedness and Assistance (REMPAN) has been established to provide this assistance. 6. Provide in-depth reviews and guidance to developing countries on the use of solar technologies in the rural health sector, focusing on the provision of vaccine refrigerators for the EPI Cold Chain.	Co-sponsored with UNEP under GEMS/Air A joint activity of WHO, FAO, UNEP and UNCHS under PEEM

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
WMO	WMO continues to assume the role as the authoritative scientific voice in matters relating to atmosphere, water and climate in the world arena as outlined in the WMO Long Term Plans. This is based on relevant chapters in the Agenda 21 and in the implementation of the decisions taken by the Conference of the Parties to the Framework Convention on Climate Change. Coordination and linkages with other international energy related organizations and programmes are assured through the process under the Climate Agenda <u>II. Overview of programmes and activities:</u> <u>A. Energy development</u> WMO is promoting sustainable energy production and use in several programmes primarily funded through regular budgets, supplemented by extra-budgetary resources such as the CAEA trust fund, UNDP projects and GEF. WMO energy-related activities include: (i) provision of guidance material and implementation of several training seminars, focusing on use of climate information in development of new and renewable sources of energy such as biomass, hydropower, solar and wind energy. (ii) support to development of energy-related activities within the framework of the UNEP/WMO Intergovernmental Panel on Climate Change. (iii) contribution to the development of methods for comparative assessment of environmental impacts of different energy sources within the framework of the inter-agency DECADES project. <u>B. Energy supply</u> Different forms of energy production, including hydropower, bio energy, solar and wind energy, draw on resources which are more or less directly dependent on climate conditions. A major thrust in WMO programmes is the provision of guidance material and capacity building in the needs and requirements for services to the energy sector. <u>C. Energy use</u> Provision of guidance material and support to training in energy conservation, especially in urban and building development within the framework of a Tropical Urban Climate Experiment (TRUCE).	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNU	UNU has a mandate to carry out research, advanced training, and dissemination of knowledge on pressing global issues that are the concern of the United Nations and its specialized agencies. Environment forms one of the four Programmes Areas of the UNU, and issues pertaining to energy fall under this area. In this field, UNU is concerned with the promotion and development of renewable energy sources for sustainable development. Particular attention is paid to training and capacity building in developing countries. <u>II. Overview of programmes and activities</u> A. <u>Energy Development</u> B. <u>Energy supply</u> C. <u>Energy use</u> In 1996, UNU participated in the organization of the High-level Expert Meeting on Solar Energy in East and South-Asia, which formed a part of the World Solar Summit Process, with the objective of promoting regional cooperation in the development and utilization of solar energy, including photovoltaic, solar thermal, wind, wave and other renewable sources of energy. UNU provides training in solar energy utilization which started in 1995. In geothermal energy, UNU has a long-standing collaborating relationship with the National Energy Authority of Iceland, and has conducted the six-month UNU Geothermal Training Programme without interruption since 1979. By 1995, a total of 163 scientists and engineers participated in the programs which offers training in geothermal exploration, borehole geology, geophysical exploration, borehole geophysics, reservoir engineering, chemistry of thermal fluids, geothermal utilization and drilling technology. UNU also provides training in renewable energy systems. By 1995, a total of 9 courses were conducted with the total participation of 61 fellows from 19 countries.	Jointly with UNESCO, the Japan Solar Energy Society and Akita Organizing Committee By Anna University, India 85% of funding from the Government of Iceland Indian Institute of Technology, India, UNU budget

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
INSTRAW	I. <u>Policies and mandates of the entity</u> INSTRAW pays particular attention to research, training and capacity-building at national and global levels to ensure the involvement of women in environmentally sustainable energy programmes and projects. INSTRAW has a special role in the area of non-technological factors affecting the diffusion process of new and renewable sources of energy. Women's issues are central to the economic, social, cultural and environmental aspects of the diffusion process. INSTRAW provides an important service by collecting information on non-technical aspects of the adoption of new and renewable sources of energy, analyzing it and making it available to international aid agencies as well as governments and NGOs. In this regard, INSTRAW also undertakes research and training programmes. II. <u>Overview of programmes and activities</u> A. <u>Energy development</u> B. <u>Energy supply</u> C. <u>Energy use</u> In the area of women and energy use and development, INSTRAW conducts catalytic research and training activities in close collaboration and co-ordination with agencies within and outside the UN system. The Institute collects, analyses and disseminates information and documentation concerning women and energy; helps identify areas where research and training activities can make a critical difference in the field of women and energy; and promotes, through TCDC, the integration of issues relevant to women into energy policies, programmes and projects, primarily through the conduct of participatory training seminars on "Women and New and Renewable Sources of Energy" at national, regional and international levels in cooperation with the UN organizations and national counterparts. Based on seven years of research (INSTRAW) on women and energy, and on insights gained from the training experiences at ILO-Turin Center, INSTRAW has developed an innovative training package on "Women and New and Renewable Sources of Energy" to promote the integration of women's needs and their participation into the various phases of programmes and projects related to new and renewable sources of energy. The package is aimed at different target groups, including planners, senior officials, engineers, energy programme managers, representatives of NGOs and women's organizations and community workers.	In cooperation with national counterparts, INSTRAW has adopted participatory and self-reliant techniques in applying the innovative training package. Three national training seminars (Dominican Republic, Egypt and Tanzania), one sub-regional workshop for the Mediterranean region (former Yugoslavia-Slovenia) and Arabic-speaking African countries (Libya) and one regional training seminar for Africa (Ethiopia, ECA headquarters) were conducted between 1989 to 1991.

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNDP	<u>I. Policies and mandates of the entity</u> Energy is required in meeting any and all of the basic needs. Through more efficient use of energy and increased utilization of renewable sources of energy, energy can become a critical tool to achieve UNDP's primary programme goals. As part of its efforts to refocus development cooperation activities towards sustainable human development, UNDP began to refocus its analysis of the energy sector, and produced in 1996 "UNDP Initiative for Sustainable Energy" (UNISE). UNISE gives emphasis to two fundamental elements for sustainable energy: (i) the aggressive pursuit of more efficient patterns of energy use, especially end use, to get more energy services and higher benefits out of existing energy resources; (ii) support for a major shift towards the use of new and renewable energy which, ultimately, is the only sustainable source of energy. UNISE focuses on promotion of activities in the following area (i) mobilizing support for indigenous capacity building; (ii) creation of supportive legal, institutional and regulatory climates for sustainable energy development and energy efficiency; (iii) contributing to technology leapfrogging through innovative demonstration projects; and (iv) supporting the formulation and implementation of national energy action programmes. <u>II. Overview of programmes and activities</u> <u>A. Energy Development</u> UNDP seeks to reorient conventional, supply-driven approaches to energy towards sustainable energy, making energy services an instrument to socio-economic development as they impact poverty reduction, environmental protection, generation of livelihoods and gender equity through intensive focus on energy efficiency and renewable sources of energy. Priority Programmes areas have been developed at the global, regional and national levels, including the following: 1. Operationalization of UNISE to assist UNDP Country Offices in implementing the sustainable energy concepts in Country Cooperation Frameworks through core and non-core programmes to mainstream sustainable energy concepts.	Ongoing projects include: 1) Electrification: Haiti Energy Account \$87,500 IPF \$22,750 2) FINESSE: various countries a) energy efficiency Netherlands \$370,000 Energy Account \$75,000 b) renewable, Asia/Philippines Netherlands \$599,528/\$450,000 c) renewable, SADC Netherlands \$868,390 OPEC fund \$185,000 4) Rural electrification: a) APEC: Japan: \$790,000 b) Syria: Japan \$ 553,700 c) Kenya: Netherlands \$20 mn, GEF \$ 4mn, KPLC \$500,000 5) Renewable: a) Vietnam: Netherlands \$4,500,000 b) Sudan: OPEC Fund \$800,000 IPF 1,000,000 c) Honduras: OPEC Fund \$75,000 d) Nepal: Netherlands \$8,500,000 6) Energy efficiency: a) Yemen: OPEC Fund \$234,000 IPF \$464,840 7) Cooperation: a) South-East Asia Japan \$273,060

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNDP (continued)	2. Building global partnerships for sustainable energy as part of the Rio process working with key stakeholder governments, energy research groups, the private sector, utilities and NGOs. 3. Assisting in the dissemination and commercialization of renewable energy to provide rural energy services. 4. Demonstration for technology leapfrogging to bring information and experience on cutting edge sustainable energy technology to developing countries 5. Promoting energy saving in industrial, utility and commercial applications as a cost effective source of "new" energy for developing countries. 6. Supporting the analysis and development of legislative, institutional and regulatory frameworks to provide a setting for private sector involvement in financing and developing energy in a manner compatible with long term, sustainable socio-economic growth.	Programme linkages with the SEED/GEF Latin American regional Hemispheric Cooperation support and linkages with APEC energy process.

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNDP (continued)	B. <u>Energy supply</u> C. <u>Energy use</u> Most UNDP sustainable energy projects take the demand-side approach, where small-scale energy users are provided with energy services, and whereby use is made of environmentally benign energy technologies. Key features of the programme activities include the following: 1. Energy Account which serves as financing mechanism through which sustainable energy projects are financed with technical assistance from UNDP. 2. The Financing Energy Services for Small-scale Energy users (FINESSE) which supports activities designed to create the conditions and mechanisms for the credit sector to on-lend to small scale energy users. 3. UNDP-GEF focuses on the reduction of greenhouse gases through demonstration projects using energy efficient technologies and reducing market barriers to non-carbon based energy technologies. 4. UNDP/World Bank joint activities, such as cooperation with the Asia Alternative Energy Unit of the World Bank to provide assistance to developing countries in Asia to enable them to deliver technically feasible and economically viable renewable energy and energy conservation services to residential, commercial and industrial users. 5. UNDP/DDSMS joint design and implementation of sustainable energy projects, such as the jointly designed proposal for "Enhancement of Capacity for Sustainable Energy Services for Rural Development: Asia Region" and the jointly implemented project "Rural Solar Energy Development, Sudan".	Main contributors are the Netherlands, Japan and OPEC Financed through the Energy Account

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
GEF	GEF energy related programmes and projects are prepared and executed within the Operational Programmes set up in the GEF Strategy and in response to guidance form the Conference of the Parties to the United Nations Framework Convention on Climate Change. the relevant Operational Programmes are (i) removing barriers to energy conservation and energy efficiency; (ii) promoting the adoption of renewable energy by removing barriers and reducing implementation costs; and (iii) reducing the long-term costs of low greenhouse gas-emitting energy technologies. <u>II. Overview of programmes and activities</u> <u>A. Energy development</u> B. <u>Energy supply</u> C. <u>Energy use</u> GEF projects are implemented through its three Implementing Agencies - UNDP, UNEP and the World Bank. Energy related projects funded by GEF as of July 1996 are listed below region by region. 1. Africa: Benin, Mali, Mauritania, Mauritius, Morocco, Senegal, Tanzania, Tunisia, Uganda, Zimbabwe. Projects covering: energy efficient building technology, household energy, wind power, biogas plant, sugar bio-energy technology, solar water heating, photovoltaic pilot phase for rural electrification and for household and community use, carbon sequestration, and sustainable and participatory energy management. 2. Asia & Pacific: China, India, Indonesia, Pakistan, Philippines, Sri Lanka, Thailand. Projects covering: development of coal-bed methane resources, small hydro power, renewable small power, geothermal fuel efficiency in road transport, electricity energy efficiency, capacity building in renewable. 3. Europe: Hungary, Lithuania, Poland, and Romania. Projects covering: geothermal, coal to gas project, energy efficiency and capacity building for GHG emissions reduction through energy efficiency. 4. Latin America and the Caribbean: Brazil, Costa Rica, Jamaica, Mexico, Peru. Projects covering: biomass integrated gasification, wind power, demand side management, high efficiency lighting, and energy conservation.	Regional total: \$39.80 millions Regional total: \$237.10 million Regional total: \$44.17 million Regional total: \$25.70 million

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
World Bank	<u>I. Policies and mandates of the entity</u> The World Bank group promotes economic and social progress in developing countries by helping raise productivity so that people live better and fuller lives. In addition to its regular investment portfolio, the World Bank invests in projects with primarily environmental objectives. The World Bank is also an implementing agency of the Global Environmental Facility (GEF) and the Multilateral Fund for the Montreal Protocol (MFMP). The World Bank provides loans and technical assistance to developing countries in all aspects of the energy sector, including power supply and power sector restructuring, gas system development, rural electrification, hydropower development and regional electric interconnection. It also prepares studies on related technical and policy issues, including energy efficiency and energy conservation measures. The world Bank supports economic development of alternative energy sources such as mini-hydro, wind and solar energy, as well as geothermal and biomass. <u>II. Overview of programmes and activities</u> <u>A. Energy development</u> The World Bank provides loans and technical assistance aimed at the development of the energy sector of developing countries. A sample of such projects is given below to give an overview of their content and objectives. Energy Resource Development (Poland): improves the convertible currency earnings of Poland by increasing domestic production of natural gas and encouraging energy conservation for all forms of energy and fuel substitution through energy price reform.	\$250 million, IBRD

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
World Bank (continued)	Heat Supply Restructuring and Conservation (Poland): supports implementation of a comprehensive restructuring of the energy sector, commercialization and privatization of restructured enterprises and of petroleum exploration and production, introduction of a regulatory framework and improvement in energy pricing policies; other project components including district heating, energy conservation and energy-efficient equipment and systems Coal Environment and Social Mitigation (India): assists Coal India in making coal production more environmentally and socially sustainable. Caltex Ocean Gas and Energy Limited (China): build and operate a cavern storage and terminal facility with 20,000 cubic meter capacity for liquefied petroleum gas. Kazgermunai (Kazakhstan): develops the reservoir of an oilfield in Akshabulak to produce 23,000 barrels a day peak production.	\$340 million, IBRD \$65 million, IBRD \$31.3 million, IFC \$65.7 million, IFC
	<u>B. Energy supply</u> Alternate Energy (India): promotes and commercializes investment in wind farms and solar photovoltaic power systems thorough the provision of below-market loans to investors in these systems, primarily from the private sector. Other components includes public education programmes on renewable technologies. Renewable Resources Development (India): promotes commercialization of renewable resources technologies by financing private sector investments in alternate energy subprojects, including irrigation-based small hydros, wind farms, and solar photovoltaic systems. It expands bagasse-based paper mills and creates marketing and financing mechanisms for the sale and delivery of alternate energy systems. Ertan II Hydroelectric (China): the construction of a dam on the Yalong river, an underground powerhouse complex. Other components include consulting services for engineering, procurement and power pricing. Leyte-Luzon Geothermal (Philippines): assists in meeting the rapidly growing demand for electrical power using technology that substantially reduces greenhouse gas emissions.	\$26 million, GEF \$75 million, IBRD \$115 million, IDA \$550 million, IBRD \$30 million, GEF

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
World Bank (continued) AfDB	C. <u>Energy use</u> Energy Sector Rehabilitation (Burundi): promotes rational energy policies and efficient management of energy resources; improves energy efficiency through reforms in the pricing structure of electricity, petroleum products and woodfuels; develops efficient institutions in the sector and improves the quality of public investment; expands access to electricity, and support charcoal efficiency and improved stove programs. District Heating Rehabilitation (Estonia): promotes energy efficiency and the economy by supporting the conversion and replacement of small boilers for use of peat and wood, to be harvested and used in an environmentally sustainable manner. Other components includes wastewater reduction, and installation of new substations with heat meters. Promotion of Electricity Energy Efficiency (Thailand): comprises a five year demand side management plan, which seeks to build institutional capability in the power sector and throughout the economy. <u>I. Policies and mandates of the entity</u> The AfDB set up the African Energy Programme (AEP) in 1992 to carry out an in-depth analysis of the African energy situation. The AEP is a three-phased programme, with phase I aimed at developing regional energy specific analytical tools, phase II reflecting on the future energy development prospects and phase III focusing on sub-regional and regional project preparations and on providing support to institutional capacity building. <u>II. Overview of programmes and activities</u> The Afdb has generated a wide range of outputs through implementation of phases I and II activities. These include energy sector analytical tools, regional analytical reports on biomass, oil and gas, electricity, coal, renewable energy and nuclear. Also produced are a range of issue specific reports on energy resource assessment, household energy, agriculture and energy, energy and the environment. Each set of outputs contains specific conclusions drawn upon observable past and postulated future trends, and recommendations on policy measures targeted at increasing the quantity and quality of AfDB's energy services.	\$23 million, IDA \$38 million, IBRD \$9.5 million, GEF

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ADB	<u>I. Policies and mandates of the entity</u> The ADB's Medium-Term strategy stresses its role in catalyzing and augmenting external capital flows into developing member countries (DMCs) through increased cofinancing and through encouraging DMCs to adopt policies creating an environment suitable for attracting external capital. Country strategies in turn define the priorities for ADB's operations. In the energy sector, the ADB's recommended policy initiatives focus on enhancing private sector participation to fund the large scale energy investments of the 1990s; energy efficiency, both on supply and demand sides; and closer integration of environmental considerations in energy development. <u>II. Overview of programmes and activities</u> <u>A. Energy development</u> ADB actively encourages the DMCs to adopt market-related prices for hydrocarbons. ADB emphasizes that oil price stabilization funds be phased out. ADB's approach maintains that natural gas pricing should approximate the realistic market prices of alternative fuels. Pricing of coal should follow the same principle, based on prices of internationally traded coals. In the power sector, the ADB's approach has been to encourage DMCs to recover the full cost of supply, including the cost of capital, while simultaneously focusing on optimal efficiency of supply by stipulating both tariff covenants and efficiency covenants. Will also encourage washing and beneficiation of coal and blending of coal to minimize problems relating to the emission of particulates and SOx. Will promote the use of clean coal technologies, such as fluidized bed boilers, integrated gasification and combined cycle plant and coal gasification. Will continue to extend its support for technically and economically feasible and environmentally sound hydropower projects that form part of a country's least cost energy development plan.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
ADB (continued)	B. Energy supply ADB has consistently advocated improvements in power subsector load forecasting and least-cost planning techniques to avoid excessive capacities and reserve margins. ADB also accorded high priority to reducing auxiliary consumption of generating units as well as transmission and distribution losses. Will encourage utilities to rehabilitate and retrofit in a cost-effective manner their older generating units and substations to optimize efficiency. Efficient and economic O&M practices as well as load management efforts will receive special encouragement. Promotion of technologies such as cogeneration and private sector involvement would be specially encouraged. ADB's assistance to rural energy planning would focus on (i) the role of fuelwood in energy planning for rural areas; (ii) augmentation of fuelwood supplies from commercial fuelwood plantations, and (iii) fuelwood use efficiency. ADB will support sustainable fuelwood production by promoting incentives such as land use policy reforms, security of property rights, and improved benefit sharing arrangements. ADB would give priority to assisting schemes that are economically and financially viable rural electrification projects. C. Energy use ADB also promotes a widespread acceptance of demand-side management (DSM). ADB encourages utilities to incorporate into their energy planning models the key elements of integrated resource planning. ADB will also promote the establishment of energy service companies to undertake energy efficiency improvements in the premises of consumers. It will encourage simultaneous shifts in government policy and related legislative changes	Projects aiming to improve energy efficiency and protect the environment accounted for about 30 per cent of ADB's lending in the energy sector in 1992.

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
DPCSD	Special Section on Coordination of Activities Cooperation with other UN entities in the preparation of reports to intergovernmental bodies.	
DESIPA	Continued cooperation and coordination with entities within the UN system and other international organizations in refining existing methodologies in the collection and dissemination of energy statistics	
DDSMS	Cooperation with UNDP, World Bank and other regional and international institutions in implementing projects funded by them.	
ESCAP	Executing a project (Programme for Asian cooperation on Energy and Environment) financed by UNDP; Plans to implement the Asian component of Energy Efficiency 2000; collaborating in DECADES project.	
ECLAC	Cooperation with OLADE and the existing sub-regional institutions for energy integration of Central America; Plan to implement the regional component of Energy Efficiency 2000	
ECE	Cooperating with other regional commissions in particular in the implementation of energy Efficiency 2000 project in their respective regions; Cooperation with UNESCO in the World Solar Summit Process.	
ECA	Cooperation with other entities of the UN system, regional and international organizations on emerging energy and environmental issues, such as Energy Efficiency 2000 project; Participating in the senior advisory group meetings on the redesign of UNEP energy and transport policies; cooperating with the World Bank in the preparation and servicing of a workshop on environmental sustainability and energy development; Cooperation with OAU and the World Energy Council in the preparation of the First Pan-African Energy Minister Conference.	
ESCWA	Participation in the organization of meeting, conferences and substantive contributions as well as regular contacts for coordination of activities; Implementation of joint energy projects.	

UN organizations	Energy-Related Programmes and Activities	Funding & Operation
UNEP IAEA UNDP UNU WHO UNESCO	Coordination is achieved in many activities through jointly organizing, funding or executing events or projects. In addition, some of UNEP's projects inherently provide a framework for coordination. For example, the Global Environmental Information Exchange Network (INFOTERRA) is one of the most comprehensive information exchange networks in the world, designed by UNEP to stimulate and support the exchange of scientific, technical and environmental information within and between nations. It is comprised of 173 National Focal Points, processes approximately 50,000 queries annually, and links approximately 8,000 national and international institutions and experts from various sectors. Coordinating the joint inter-agency DECADES project on Comparative Assessment of Energy Sources; Coordinating preparation and convening of the International Symposium on Electricity, Health and the Environment; cooperating with development banks and other international institutions on integrated approach to energy and electricity planning; contributing to IPCC and FCCC work; cooperating with UNESCO in the World Solar Summit Process. Cooperation with the World Bank in the implementation of ESAMP for studies in energy sector, including natural gas, petroleum, and power sub-sectors, as well as household energy requirements; Cooperation with World Business Council for Sustainable Development in the design and implementation of energy and water in selected countries; Cooperation with other multilateral institutions, bilateral donors and the private sector in the FINESSE programme. Cooperation with DDSMS on the feasibility for establishing a network of centers of excellence on new and renewable sources of energy. Cooperating with other UN bodies on Inter-Agency Risk Assessment of Large Industrial Complexes and Energy Production Systems (IAEA, UNIDO and UNEP) Cooperating with other entities within the UN system and on a bilateral basis in the World Solar Summit Process.	