

Energy, Ecosystems and Livelihoods Initiative

Scoping Paper

Updated: January 2007



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Globally, energy systems are changing. These changes are driven by a number of factors such as development imperatives, security concerns, and environmental externalities. The Energy, Ecosystems and Livelihoods Initiative will enable IUCN to influence this process of change positively by bringing relevant knowledge to decision makers as well as by convening stakeholders. Our goal is to support and accelerate the transition to energy systems that are ecologically sustainable, socially equitable, and economically efficient while making full use of the best available technologies and governance arrangements.

Energy, Ecosystems and Livelihoods Initiative

1. Background

Energy is a critical environmental issue. Increased awareness of the negative externalities – particularly climate change – from the current energy mix has galvanized the international community into action culminating in the ratification of the Kyoto Protocol of the UN Framework Convention on Climate Change. Though largely recognized as not sufficient to stabilise the global climate, the Kyoto Protocol establishes a significant step for global action on what is possibly the most significant threat to the future well-being of life on planet Earth and, importantly, it has established the basis for capping overall carbon emissions and pricing those emissions through market-based mechanisms. Thus the means are available to internalize

some of the negative externalities of energy production and consumption into global markets – a critical step to curbing emissions. IUCN is currently scoping out its future work on climate change in a related piece of work. Annex 4 describes the relationship between the Energy Initiative and the Climate Change work.

While climate change dominates as the most significant indirect impact on biodiversity from energy production and consumption, direct impacts associated with energy systems are also important – such as habitat loss and fragmentation from energy infrastructure and production and species impacts from pollution and collision. Annex 5 provides an initial analysis of different energy supply options using a driver, pressure, state, response framework. The relationship between energy and the environment will change with shifts in the mix of energy production and consumption patterns. Ecosystems negatively affected by shifts in energy systems (e.g. towards more intensive cropping for bio-fuels) may not be able to provide the range of goods and services which they currently provide or potentially could provide. These impacts on the provisioning of goods and services from ecosystems is further likely to impact on people – particularly those who rely most directly on nature for their livelihoods.

Energy is thus also a critical development issue. 1.6 billion people in the world lack access to electricity and over 2 billion people depend on biomass fuels for cooking and heating (UNDP, 2005). These people have a legitimate right to and need for increased energy services which are affordable, healthier, more reliable, and more sustainable. Energy issues are particularly challenging for developing countries in sub Saharan Africa where high energy costs are putting a tremendous amount of pressure on economies that are not only very fragile but also have little capacity to adapt to change. For example, about 80% of the energy balance in Burkina Faso is provided for by the natural vegetation and some 85% of the population depend on natural resources for their livelihood. Thus developing sound national energy development policies requires transparent processes that provide for equitable participation from all stakeholders.

It has been demonstrated by Goldemberg (2005) that ... *energy has a determinant influence on the HDI [Human Development Index], particularly in the early stages of development...* The same study also demonstrated the declining returns to human development and economic growth from increased energy consumption after approximately 1,000 kilograms of oil equivalent per capita. In other words higher energy consumption generates limited growth or human development in developed countries (and could arguably result in declines in human development and growth if externalities of consumption are taken into account), but increased access to energy is essential for growth and human well-being in developing countries. In this context, the current global distribution of energy – with the richest billion people consuming over 50% of supply and the poorest billion using only 4% – clearly must change significantly if we are to meet development targets such as the Millennium Development Goals which, though they do not explicitly include energy, are reliant upon energy for their fulfilment.

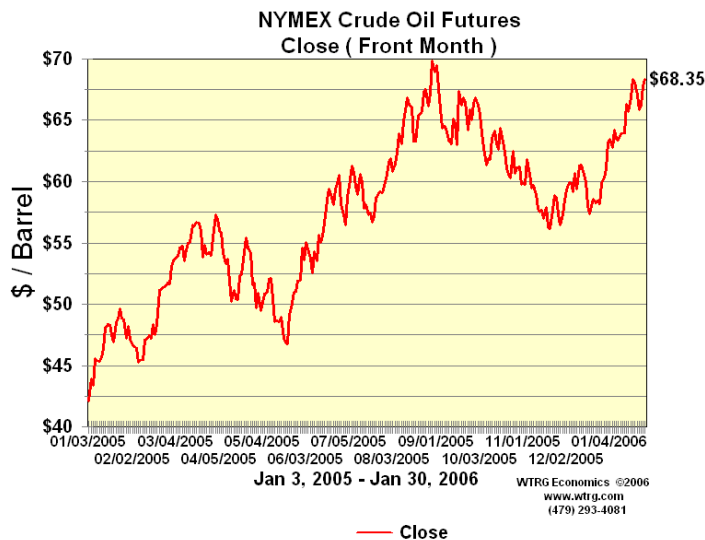
Furthermore, as is made clear in the Women's Major Group Discussion Paper for CSD-14 "Engendering the Energy and Climate Change Agenda" (WMG, 2006), it is evident that *although everyone has energy needs, in many communities women suffer the most from 'energy poverty' because they are responsible for supplying their families with food, fuel and water, often without the benefit of basic modern infrastructure. Thus, any transition to more sustainable energy sources will require decision-makers to also consider social concerns, including the gender-differentiated needs and impacts of proposed sustainable energy initiatives.* More information about women's energy needs is available in Box 1.

Box 1. An Overview of Women's Energy Needs

- Clean fuels and equipment for cooking, heating and productive uses – to address indoor air pollution which is responsible for more than 1.6 million deaths per year due to pneumonia, chronic respiratory disease and lung cancer;
- Motorised equipment for grinding, pumping, agriculture, and transportation – to address health issues related to strenuous daily tasks such as planting, irrigating and harvesting crops, grinding grains, and hauling water; and
- Electricity for lights, appliances, communications and computers – to enable women to undertake home-based enterprises and improve their knowledge base.

Source: Women's Major Group Discussion Paper for CSD-14 "Engendering the Energy and Climate Change Agenda" (WMG, 2006)

Security of energy supply is another factor driving change in the energy systems of the early 21st century. In 2005 alone disruptions from natural disasters (Hurricanes Katrina and Rita), civil unrest (Iraq and Nigeria), politics (Iran, Venezuela and Russia), accidents (BP refinery explosion, Texas City) and speculation caused crude oil prices to rise more than 60% over the course of the year (NYMEX, 2006).



Increased crude oil prices have, in turn, spurred increases in other energy prices such as coal and natural gas. They have also helped trigger shifts in both energy production and consumption patterns. Renewable energy options such as ethanol and biofuels are increasingly seen as more secure options to oil and gas, as is nuclear – an option which had been declining in popularity for a number of years. Analysts in the commodities markets estimate that growing demand for ethanol in Brazil (over half of the 1.7 million cars bought in Brazil in 2005 were flex-fuel models) could mean that as much as 55% of Brazilian sugarcane may be allocated to ethanol in 2006/07 (McNeill, 2006). In Europe, a recent survey (Eurbarometer, 2006) of attitudes towards

energy indicates that 48% of the nearly 30,000 European citizens surveyed favoured the development of solar power options (compared to 12% option for nuclear energy).

On the consumption side, a number of countries have recognized the need to enhance energy efficiency. Notably, China's 11th Five-Year Plan (2006-2010) calls for a 20% reduction (from the end of 2005) in industrial energy consumption per unit of GDP. In the US, President Bush called for Congress to promote energy conservation measures (and more US-based production – indicating concern about security) in his 2006 State of the Union address. Renewables are also gaining public support.

2. The Way Forward for IUCN

Society is moving towards new energy systems which will be based on alternative sources of supply, innovative distribution systems, and different consumption patterns. Over the coming years societies throughout the world will be making choices about their energy futures and the outcomes of these choices will have significant consequences (positive and/or negative) for the integrity and diversity of nature and natural resources. What is not yet clear is which technologies and trends will emerge as dominant in future energy systems. IUCN has a role to play in influencing, encouraging and assisting societies to follow energy options which conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable, efficient and ecologically sustainable. We can do this by:

- Informing the process of change by bringing knowledge to the table; and
- Convening the range of stakeholders who need to be represented at the table.

To be effective in this role we need to:

- **Understand the likely future(s) of energy production, distribution and consumption including implications of the application of technologies for energy efficiency and for new options for producing energy:** to inform the prioritization of interventions.
- **Analyse the likely implications of such futures for ecosystems and the goods and services they provide:** to inform the prioritisation of interventions and develop appropriate indicators of progress and impact.
- **Identify the change agents and leverage points:** to inform the prioritization of interventions and to build alliances and networks
- **Inventory our knowledge and expertise in all components of the Union:** to identify and fill gaps and to build the capability to mobilize our knowledge and expertise efficiently and effectively.

- **Identify opportunities for mobilizing change:** to build our experience and credibility through robust national processes which inform decisions and enable broad stakeholder participation in critical decisions and through effective influencing strategies in key international fora.

The goal of the Energy, Ecosystems and Livelihoods Initiative is to support and accelerate the transition to energy systems that are ecologically sustainable, socially equitable, and economically efficient while making full use of the best available technologies and governance arrangements. The initiative will build on IUCN's core attributes of being the world's leading authority on conservation, of having a unique global union of over 1,000 government and NGO members and networks of over 10,000 experts, of working worldwide on biodiversity, ecosystem services and human wellbeing, and of using collective knowledge, innovative approaches and convening power to provide conservation solutions. Additionally, our UN observer status offers us a unique position at key international decision making fora. The initiative will build on the work and experience of members such as Corporation OIKOS, WWF International, Conseil patronal de l'environnement du Québec, the International Institute for Sustainable Development, and Polskie Towarzystwo Przyjaciół Przyrody pro Natura. The Initiative will also seek to establish contacts with organisations working in the field of energy and biodiversity such as the International Sustainable Energy Organization ISEO, the Stockholm Environment Institute, and the Energy Research Institute. It will also leverage the skills and expertise of the commissions such as experience in the World Commission on Protected Areas and the Commission on Ecosystem Management in managing change in an ecosystem context, the Species Survival Commission's expertise in monitoring, assessing and managing impacts on species and their habitats, and the Commission on Environmental, Economic and Social Policy's experience with developing and implementing sound stakeholder engagement processes.

The Initiative will initially be organised into three phases which are outlined in Table 1 and elaborated in the Work Plan in Annex 1. The aims of the initial three phases are, however, to establish IUCN as a credible and sought-after convenor of energy fora and source of relevant and vital energy and biodiversity knowledge. Thus by the completion of the initial three phases (end 2007) the Initiative will have developed into a viable component to IUCN's work with an annual turnover of about 2 million CHF. Products of the first three phases of the initiative will include:

Knowledge Products

- Publication on energy futures and the implications for ecosystems for IUCN and the general public (2006)
- Guidelines on convening stakeholder-based decision-making support fora for national level decision-makers (2007)
- Tools for assessing and managing biodiversity impacts of energy production, distribution and consumption for companies in strategic sectors (to be defined in phase 2) (2007)
- Visual tools for clearly communicating the relationships between energy, nature and human well-being (2007)
- Case studies on the relationships between energy, nature and human well-being (2007)

Empowerment Products

- Stakeholder-based decision-making support fora in five countries and/or regions (to be identified in phase 2) with stakeholders from government, civil society, the scientific community, the private sector and a cross-section of community groups and users (e.g. urban/rural, energy producers/consumers, male/female) (2007)
- Stakeholder-based global decision-making support fora with stakeholders from government, civil society, the scientific community, the private sector and a cross-section of community groups (e.g. urban/rural, energy producers/consumers) (2007)

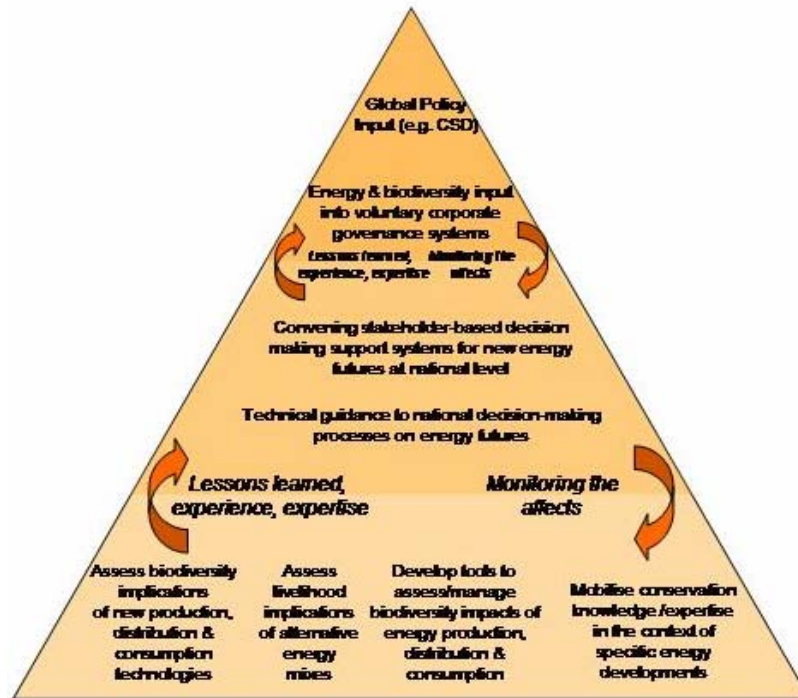
Policy Products

- Socially and environmentally optimal energy policies in five countries, regions and/or communities where the stakeholder fora were convened (2007)
- Socially and environmentally optimal global energy policy recommendations based on the conclusions of the stakeholder fora.
- Improved decisions at the intergovernmental level (CSD 15, UNFCCC)

Table 1. Overview of the Initial 3 Phases of the Leveraging Initiative

Phase	Outline of Work Elements	Timing
1	<p>Initiation</p> <ul style="list-style-type: none"> - Establish the Initiative's structure (see Section 3) - Establish contacts with relevant experts/organizations (including potential funding sources) - Convene brainstorming workshop to understand energy futures, identify change agents, and map out leveraging points - Commission work to consolidate information on energy futures, change agents and leverage points - Initiate survey of IUCN knowledge and expertise related to energy - Set criteria to choose countries/regions/communities for developing & testing stakeholder-based decision making support systems for new energy futures - Develop criteria for choosing communities and companies to work with on assessing the biodiversity and livelihood implications of different energy options, on developing tools for assessing and managing impacts, and on mobilizing conservation knowledge and expertise in the context of key energy developments. - Liaise with the climate change situation analysis work - Develop a communications and influencing strategy (internal & external) 	Q1-Q4 2006
2	<p>Consolidation of Information & Positioning IUCN</p> <ul style="list-style-type: none"> - Finalise work on consolidating information on energy futures, change agents and leverage points - Produce a data-bank of IUCN knowledge and expertise related to energy and biodiversity - Identify key knowledge and expertise gaps and initiate contacts with strategic partners to fill those gaps (e.g. through key policy fora) - Identify and initiate links with pilot countries/regions/communities for developing and testing stakeholder-based decision making support systems for new energy futures (e.g. through key policy fora) - Identify communities and companies to work with on assessing the biodiversity and livelihood implications of different energy options, on developing tools for assessing and managing impacts, and on mobilizing conservation knowledge and expertise in the context of key energy developments (e.g. through key policy and industry fora) - Fundraise for specific pilot projects (both national decision-making fora and site-specific assessments and tools) - Communications 	Q1-Q2 2007
3	<p>Implementation</p> <ul style="list-style-type: none"> - Mobilise networks of knowledge and expertise in pilot countries/regions/communities to develop and test stakeholder-based decision making support systems for new energy futures - Convene stakeholder-based global decision-making support forum with stakeholders from government, civil society, the scientific community, the private sector and a cross-section of community groups - Undertake assessments (of biodiversity and livelihood implications), develop tools for assessing/managing biodiversity/livelihood implications, and mobilise conservation knowledge/expertise. - Draw policy-related lessons from pilot experiences for CSD 15 and other relevant policy fora and influence these fora. - Draw programme-related lessons from pilots into publications - Extend pilots - Secure funding for continued work on energy and biodiversity - Communications 	Q3-Q4 2007

The Work Elements of the three phases include interventions at three levels (see Box 2 for examples) – site (local), national and international. The site level work will primarily entail assessments of potential implications for biodiversity and livelihoods of different energy options and technologies, the development of assessment and management tools, and the mobilization of knowledge and expertise to inform decisions regarding specific developments. The site level work will be the foundation of knowledge and experience on the energy-biodiversity interface (including livelihood implications) for the Initiative. It will be designed to build on ongoing and past experience of IUCN and will generate revenues by providing services to a range of stakeholders including the private sector.



Box 2. The Three Levels of the Energy and Biodiversity Leveraging Initiative Work

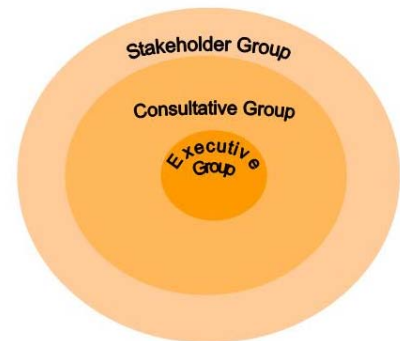
The national level work will largely be comprised of convening stakeholders in decision making support system fora for designing energy futures and providing technical guidance (through, for example, energy audits) to national governments. These services will initially be funded through the Italian grant, but it is expected that as IUCN develops its credibility and niche, we will be able to charge national governments for the services or raised resources from donor funds. The national level work will provide a basis for IUCN's international policy interventions. The national level work will largely be comprised of convening stakeholders in decision making support system fora for designing energy futures and providing technical guidance (through, for example, energy audits) to national governments. These services will initially be funded through the Italian grant, but it is expected that as IUCN develops its credibility and niche, we will be able to charge national governments for the services or raised resources from donor funds. The national level work will provide a basis for IUCN's international policy interventions.

At the international level, the Initiative will provide input into global policy processes discussing energy related matters particularly in 2007 (such as CSD 15) based on experience and knowledge built up through the national and site (local)-level work, and draw lessons from the policy discussions into the national and site-level. At the international level, the Initiative will provide input into global policy processes discussing energy related matters particularly in 2007 (such as CSD 15) based on experience and knowledge built up through the national and site (local)-level work, and draw lessons from the policy discussions into the national and site-level work. Additionally, the Initiative will mobilize to influence voluntary corporate governance systems using experience gained through the work with the private sector and through insights obtained through national decision-making processes.

3. Proposed Structure for the Initiative

The Interim Committee proposes a three-tiered structure for the Initiative (see Box 3):

- An Executive Group: 5-8 individuals actively engaged in guiding the initiative;
- A Consultative Group: 15-20 individuals informed regularly of progress and involved when needed for specific expertise or where there is specific interest;
- A Stakeholder Group: over 20 individuals representing critical stakeholders (donors, partners, communities, members, governments) who will be kept informed of progress and asked for specific advice or comment where relevant or needed.



Initial thoughts on members of each Group are available in Annex 2 and draft terms of reference for each group are available in Annex 3.

Regarding the “home” for the Initiative, the Initiative will be coordinated by Andrea Athanas of the Business and Biodiversity Programme in close collaboration with the Environmental Law Centre.

This proposal is based on past experience, linkages to potential partners and networks, and interest in future development of the initiative. From April-September 2006, the Initiative will be overseen more closely by the Executive Group with assistance in implementation from the Global Programme Team.

Box 3. Proposed Organisational Structure

References

Eurbarometer (2006) “Attitudes towards Energy”. European Commission.

Goldemberg, (2003) “Development and Energy” in Bradbrook, Adrian J. and Ottinger, Richard L. (Eds.) (2003). *Energy Law and Sustainable Development*. IUCN, Gland, Switzerland and Cambridge UK. Xxi + 231pp.

ISEO “Blueprint for the Clean, Sustainable Energy Age” (2000) and “The Global Mechanism for Bundling the Forces towards the Transition to the Clean, Sustainable Energy Age” (2004)

McNeely, Jeffrey A, (2003) “Energy and Biodiversity: Understanding complex relationships” in Bradbrook, Adrian J. and Ottinger, Richard L. (Eds.) (2003). *Energy Law and Sustainable Development*. IUCN, Gland, Switzerland and Cambridge UK. Xxi + 231pp

McNeill, (2006) “Sugar Prices Boom, More Cane Seen Used for Biofuel” on www.planetark.com, 31 January 2006.

NYMEX (2006) “Crude Oil Futures January 2005-January 2006” www.wtrg.com/daily/clfclose.gif.

UNDP (2005) *Energizing the Millennium Development Goals*. UNDP, New York USA.

Women’s Major Group Discussion Paper for CSD-14 (2006) “Engendering the Energy and Climate Change Discussion” <http://www.wedo.org/library.aspx?ResourceID=89>.

Annex 1. Work Plan

	Feb 06	Mar 06	Apr 06	May 06	Jun 06	Jul 06	Aug 06	Sep 06	Oct 06	Nov 06	Dec 06	Jan 07	Feb 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
Initiation																							
- Establish the Initiative's structure (see Section 3)																							
- Establish contacts with relevant experts/ organizations (including potential funding sources)																							
- Convene brainstorming workshop																							
- Commission work to consolidate information on energy futures/implications, change agents & leverage points																							
- Initiate survey of IUCN knowledge and expertise related to energy																							
- Set criteria to choose countries																							
- Develop criteria for choosing communities and companies to work with																							
- Liaise with the climate change situation analysis work																							
- Develop communications / influencing strategy																							
Consolidation of Information & Positioning IUCN																							
- Finalise work on consolidating information on energy futures, change agents and leverage points																							
- Produce a data-bank of IUCN knowledge and expertise related to energy and biodiversity																							
- Identify key knowledge and expertise gaps and initiate contacts with strategic partners to fill those																							
- Identify and initiate links with pilot countries																							
- Identify communities and companies to work with																							
- Fundraise for specific pilot projects																							
- Communications																							
Implementation																							
- Mobilise networks of knowledge and expertise in pilots																							
- Draw policy-related lessons from pilot experiences for CSD 15 and other relevant policy fora																							
- Draw programme-related lessons from pilot experiences together into guidelines publications																							
- Extend pilots																							
- Secure funding for continued work																							
- Communications																							

Annex 2. Proposed Members for the Groups

Executive

1. Ger Bergkamp
Water
2. Jeff McNeely
Chief Scientist
3. Josh Bishop
Economics Advisor
4. TBD
WESCANA
5. Dick Ottinger
CEL
6. Lorena Aguilar
IUCN Gender Advisor
7. Andrew Ingles
Asia Regional Office
8. Robert Hofstede
SUR
9. Julio Montes de Oca
ORMA
10. Earl Saxon
Climate Change

Consultative

1. Scott Hajost
US
2. Aime Nianogo
Burkina Faso
3. Rocío Córdoba
ORMA
4. Vladimir Moshkalo
Russia
5. Stephen Kelleher, Nils Hager
Forest Programme
6. Wang Xi
China (CEL)
7. Daniel Klein, Thomas Griebler and
Alegjandro Iza
ELC
8. Clive Wicks
CEESP SEAPRISE
9. Chris Flavin
Worldwatch Institute
10. Gustav R Grob
ISEO - International Sustainable
Energy Organisation for Renewable
Energy and Energy Efficiency
11. Amory Lovins
Rocky Mountain Institute
12. Nik Lopoukhine
WCPA
13. Annemarie Goedmakers
CEM
14. Holly Dublin
SSC
15. RK Pachauri
Asian Development Bank

16. Pachuri
The Energy Research Institute

Stakeholder

IUCN Members/Partners

1. Association Francaise du Fonds
Mondial pour la Nature
2. Association pour la Sauvegarde de
la Nature Néo-Calédonnienne,
Nouvelle-Calédonie
3. Canadian Institute for Environmental
Law and Policy
4. Canadian Institute of Resources
Law
5. Centre permanent d'éducation à la
conservation de la Nature
6. Michael Cloghesy, President
Conseil patronal de l'environnement
du Québec
7. Assheton Carter
Conservation International
8. Corporación OIKOS
9. Ashok Khosla
Development Alternatives
10. Annalisa Grigg
Fauna and Flora International
11. Federazione Italiana dei Parchi e
delle Riserve Naturali
12. Fondation Nicolas Hulot pour la
nature et l'homme
13. Fundación Ambiente y Recursos
Naturales
14. Fundación RIE – Red Informatica
Ecolista
15. International Institute for
Sustainable Development
16. Landvernd, Landgraeoslu-og
umhverfisverndarsamtok Islands
17. McGill School of Environment
18. Natural Resources Defense Council
19. Polskie Towarzystwo Przejaciol
Przyrody pro Natura
20. Regroupement national des conseils
régionaux de l'environnement du
Québec
21. Francisco Dahlmeir
Smithsonian Institution
22. TNC
23. Paul Steele
WWF International
24. WWF Osterreich
25. WWF Switzerland

IUCN Commissions

26. CEESP SEAPRISE network

27. CEL Climate Change and Energy Working Group
28. WCPA Climate Change Task Force
29. SSC – Holly Dublin
30. Annemarie Goedmakers, CEM
31. CEC

Communities/Civil Society

32. Alliance to Save Energy
33. American Council for an Energy-Efficient Economy
34. Wiert Wiertsema, Senior Policy Advisor, Both ENDS
35. Global Village Energy Partnership
36. Institut d'Énergie et de l'Environnement des Pays Francophones (IEFP)
37. Jim Barrett
Redefining Progress
38. Monique Barbut
UNEP
39. Paul Suding UNEP Risoe Centre on Climate, Energy and Sustainable Development
40. Christoph Frei
WEF (Energy Industries)
41. Smart Communities Network
42. Inter-American Development Bank
43. European Development Bank
44. International Standards Organisation

Academia/Research Institutions

45. Daniel Kammen, UC Berkeley
Center for Renewable and Appropriate Energy
46. Carol Werner
Energy and Environment Study Institute
47. Alden Meyer
Union of Concerned Scientists
48. Institute for Alternative Futures
49. Wuppertal Institute for Climate, Environment, and Energy

Government

50. Norway
51. Brazil
52. China
53. Costa Rica
54. Denmark
55. Germany
56. India
57. Sweden

58. Russia
59. European Union
60. African Microhydro Knowledge Network

Private Sector – Producers

61. Ryan Waddington
Ziff Brothers Investments (USA)
62. Energy Resources of Australia (Uranium production)
63. BHP Billiton (WMC owners) (Uranium production)
64. Uranium Information Centre (Australia)
65. British Nuclear Fuels
66. Cameco (Nuclear Energy)
67. Hydro Quebec
68. BC Hydro
69. Anglo Coal
70. Erica Dholoo
IPIECA
71. E+Co
72. e7 Sachin Kapila
Shell International
73. Kit Armstrong
Chevron
74. Chris Herlugson
BP
75. Steiner Eldoy
Statoil
76. Eskom
77. Norwegian Petroleum Directorate
78. WaveEnergy AS
79. Hydro

Private Sector – Distribution

80. IPLOCA

Consumers

81. GoingGreen (UK car retailer)
82. Consumers International

Private Sector - Finance and Insurance

83. SwissRe
84. André Abadie/Hendrik Jan Laseur
ABN Amro
85. EBRD
Group Director: Peter Reiniger; Nat Res: Kevin Bortz, Power & Energy Utilities: Tony Marsh Energy Efficiency: Jacquelin Ligot
86. Reid Detchon/ Mohamed El Ashry
UNF

Annex 3. Elements of the Terms of Reference for the Groups

Executive

1. Provide overall oversight and guidance including taking decisions on project-related matters (within the proposed framework and in keeping with IUCN processes) such as the allocation of budget and the choice of pilot sites and countries.
2. Review and approve relevant documents and products.
3. Assist with establishing and maintaining contacts with key partners.
4. Advise management of progress and provide guidance on issues requiring management decisions such as policy interventions.
5. Meet on a regular (quarterly, at a minimum) basis.
6. Provide support to the Coordinator on a continuous basis throughout the project.
7. Term: 1 February 2006 - December 2007

Consultative

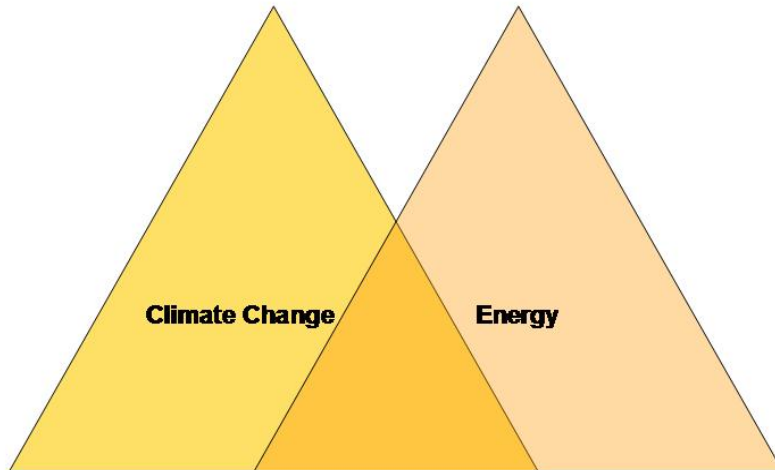
1. Advise the Executive Group and Coordinator on the overall direction of the project.
2. Promote the project in appropriate forums as the opportunity arises.
3. Review papers and proposals as requested by the Coordinator and/or Executive Group
4. Participate in a list-serve which is managed by the coordinator, communicating and exchanging information and analyses
5. Term: 1 February 2006 - December 2007

Stakeholder

The purpose of the stakeholder group is to bring interested parties together to share experiences and information relevant to the Leveraging Initiative – essentially creating a learning network which will benefit those involved in the Group as well as the overall quality and delivery of the Initiative. The Group will be open invitation meaning that any who are interested are welcome to join. The group will not necessarily meet formally, but will instead be invited to various events in which the Initiative will be featured or providing input. If a large number of Stakeholder Group members are present at a single event, the Initiative will consider convening them for a meeting. The Group will, however, have the opportunity of regular contact through a list-serve and will be advised of progress in the Initiative, and asked for input throughout.

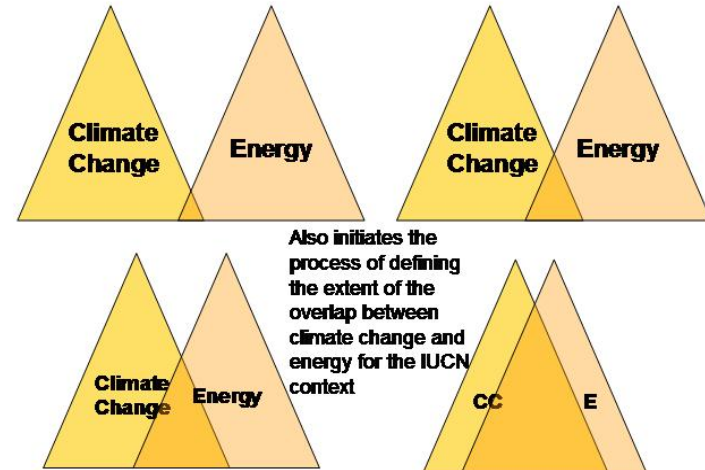
Annex 4. Overview of the Relationship between the Energy and the Climate Change Work

Climate Change and Energy Situation Analyses



Note, the issues mentioned are examples only to illustrate the potential areas to be explored by the situation analyses

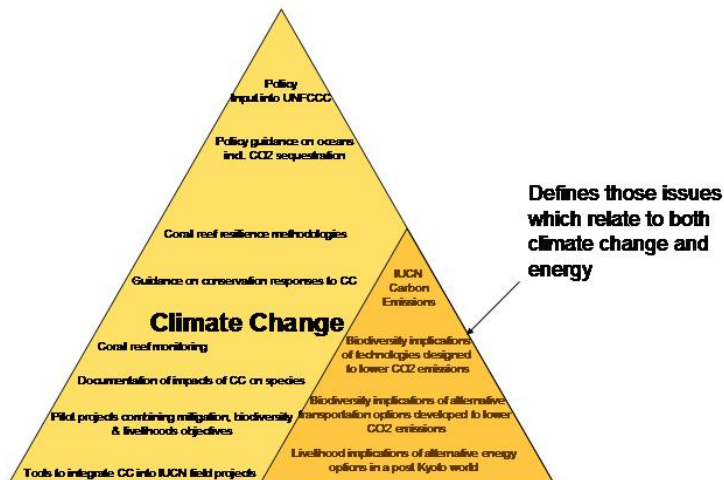
Climate Change Situation Analysis



Also initiates the process of defining the extent of the overlap between climate change and energy for the IUCN context

Note, the issues mentioned are examples only to illustrate the potential areas to be explored by the situation analyses

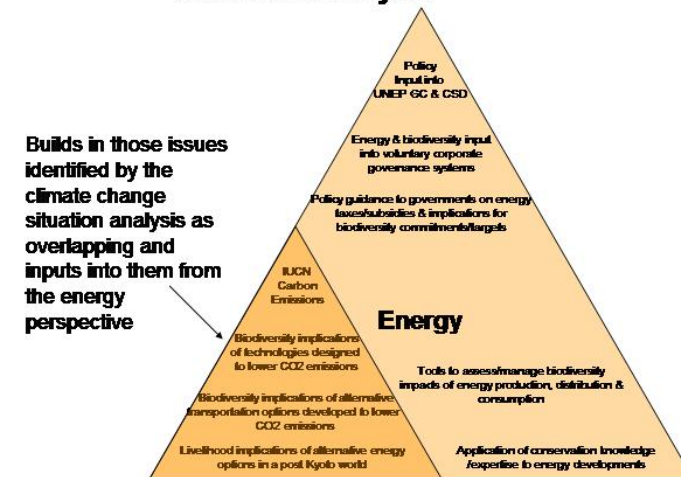
Climate Change Situation Analysis Happens First



Defines those issues which relate to both climate change and energy

Note, the issues mentioned are examples only to illustrate the potential areas to be explored by the situation analyses

Energy Situation Analysis Builds on Climate Change Situation Analysis

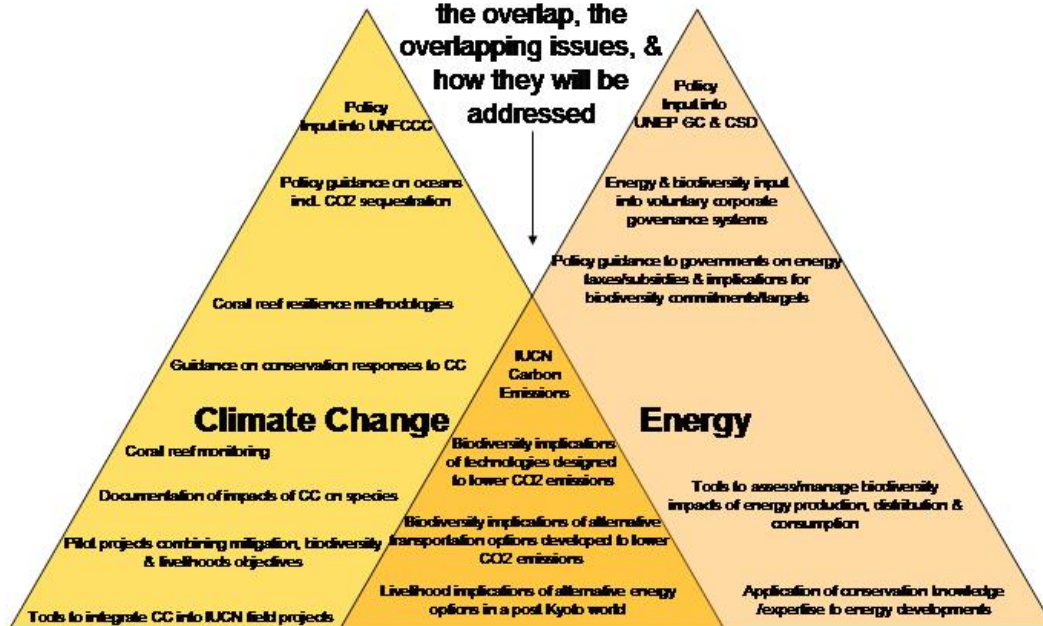


Builds in those issues identified by the climate change situation analysis as overlapping and inputs into them from the energy perspective

Note, the issues mentioned are examples only to illustrate the potential areas to be explored by the situation analyses

Climate Change and Energy Situation Analyses

Define the extent of the overlap, the overlapping issues, & how they will be addressed



Note, the issues mentioned are examples only to illustrate the potential areas to be explored by the situation analyses

Annex 5. Initial analysis of different energy supply options based on a driver, pressure, state, response framework

Driving Forces

Global energy production is entering/has entered a state of change. Concerns about climate change, insecurity of supply, increased demand (particularly from the booming economies of China and India), bottlenecks in production (refinery capacity), and a series of natural disasters have resulted in significant increases of fossil fuel prices generally and oil prices specifically (from about \$20/barrel in the 1990s to over \$60/barrel in 2005). Increased prices have given rise to a renewed interest in renewable options - particularly biomass (on the industrial level), hydrogen, solar, and wind and have reopened debate about hydro and nuclear energy alternatives. But price increases are also driving change within the fossil fuels sector of energy production – making once marginal “new hydrocarbons” more economically viable, sustaining investments in new (cleaner) coal and gas technologies, and stimulating oil and gas exploration in more remote (and sensitive) areas of the world. Increased demand from China and India is also changing the dynamics within the hydrocarbons industry – with the entry of new players in the business.

	Pressures	State	Impacts	Responses
Oil	<p>Exploration in remote areas opens wilderness to settlement, exposes biodiversity to direct, indirect, primary and secondary impacts of Operations. Ecosystems likely to be affected: arctic, deserts, deep sea and coastal ?? tropical forests??</p> <p>Increased overseas operations of Chinese and Indian companies may challenge industry standards which have largely been set by groups of Western companies.</p> <p>Continued contribution to carbon emissions - climate change - significant biodiversity implications (below)</p>	<p>Depending on the ecosystem, changes in the state of biodiversity could include habitat fragmentation and loss, reduced productivity/services from ecosystems, reduction in species diversity / endemism, population disturbance (e.g. migratory or breeding patterns), introduction of non-native invasive species, potentially catastrophic short-term and/or local affects on ecosystems from spills</p>	<p>Resulting changes in human welfare could include impacts on ability to generate livelihoods from traditional resource management practices,</p>	<p>Corporate: low-footprint operations, compensation for impacts, and HSE standards to minimize risk of spills. Explore biodiversity offsets options Government: design concessions to minimize potential pressures, regulations to ensure best practice operations Explore biodiversity offsets options NGO: advocacy against operations in sensitive environments, technical advice on standards Communities: role in decision-making, informing others of potential impacts</p>
Gas	<p>Similar to oil. Additionally, loss of biodiversity from associated infrastructure (pipelines – fragmentation, and LNG/GTL terminals, though these are likely to be in industrial areas...except where gas is located in particularly remote areas) Note: carbon emissions low at point of use, but high over entire production chain as processing</p>	<p>Similar to oil with reduced risk from spills.</p>	<p>Similar to oil</p>	<p>Similar to oil Also – government: regulations requiring gas capture from existing oil fields (e.g. no-flares) to reduce pressure for opening new gas fields.</p>

	Pressures	State	Impacts	Responses
	is energy-intensive. Thus still carbon emission issues.			
Coal	Similar to oil and gas - more significant footprint (direct impacts) from mining operations and transport requirements, and higher carbon emissions (being reduced through carbon capture technologies). Waste disposal also an issue with potential pollution, as is pollution from use of coal (below).	Habitat loss, fragmentation, pollution affects on ecosystems and species, disturbance of species populations (and potentially whole groups of endemic species) from operation's footprint	Similar to oil and gas	Corporate: best practice to minimize footprint, carbon capture technologies, HSE standards to minimize risk of spills Government: requirements for carbon capture and low-sulfur coal to minimize pollution at point of use.
new hydrocarbons (oil shale/ tar sands)	Similar to coal – significant footprint from mining operations, transport, and waste disposal. Significant carbon emissions from processing requirements. Impacts from operations in previously remote areas possible	Similar to coal	Similar to coal	Similar to coal
Wind	Location in areas which may also be important to migratory birds. Additional direct impacts from footprint of wind farms (land clearance, sea-bed disturbance).	Disturbance of migratory patterns, loss of individuals to collisions (?population impacts – questionable?), habitat loss/ fragmentation from footprint	To be discussed	Companies and government: appropriate siting of wind farms Explore biodiversity offsets options
Solar	Pollution from disposal and production waste, land take for centralized solar power facilities	Habitat loss, ecosystems degradation (?possible) from silicon waste, what about the process of producing silicon?	To be discussed	Companies: developing solar panels which don't use silicon or minimize its use Governments: making solar an economically option
Hydrogen	Carbon emissions from energy intensive production of hydrogen (except where other renewables are used)	To be discussed	To be discussed	To be discussed
Wave/Tide	Altered flow patterns of sediment on the ocean floor	Displacement of species and habitat loss	Impacts on fisheries or other resource harvests Loss of scenic beauty with recreational implications	Government and company: careful siting of wave and tide power facilities
Biomass (industrial)	Conversion of landuse to biomass production (plantation forestry, high-yield energy crops) Displacement of agriculturally productive land to biomass production	Habitat loss Ecosystem degradation Habitat fragmentation Species population affects Genetic affects? (mono-crops)	Increased price of agricultural products (potential localised food shortages? E.g. if biomass were to become an export commodity displacing local food production), increased price and/or declining	Companies: invest in developing technologies which use residues and waste rather than energy crops Government: promote residue-waste technologies

	Pressures	State	Impacts	Responses
			supply of other products (e.g. paper) which rely on biomass	
Biomass (subsistence)	Unsustainable harvesting of natural resources for fuel	Habitat loss and fragmentation Species loss or declines, erosion of ecosystem services	Loss of other biodiversity important to livelihoods and life support systems Health impacts from low-energy burning of biomass	Companies: contribute to alternate energy solutions for communities relying on subsistence biomass Governments: invest in alternate energy solutions for communities relying on subsistence biomass
Geothermal	To be discussed	To be discussed	To be discussed	To be discussed
Hydro	Large dams significantly change water flows and alter hydrodynamics of a river and its basin	Dams and their associated reservoirs impact freshwater biodiversity by: <ul style="list-style-type: none"> · Blocking movement of migratory species up and down rivers, causing extirpation or extinction of genetically distinct stocks or species. · Changing turbidity/sediment levels to which species/ecosystems are adapted in the rivers affects species adapted to natural levels. Trapping silt in reservoirs deprives downstream deltas and estuaries of maintenance materials and nutrients that help make them productive ecosystems. · Filtering out of woody debris which provides habitat and sustains a food chain. · Changing conditions in rivers flooded by reservoirs: running water becomes still, silt is deposited, deepwater zones, temperature and oxygen conditions are created that are unsuitable for riverine species. · Providing new habitats for waterfowl in particular for overwintering or in arid regions which may increase their 	Loss of access to species and systems which may be critical to livelihoods Health impacts from introduced diseases	<ul style="list-style-type: none"> · Avoid the coincidence of environmental impacts of dams with areas rich in biodiversity — ‘hotspots’ · Avoid blocking migratory species · Maintain natural seasonal and daily river flow cycles · Maintain discharge volume as much as possible · Sustain water quality — temperature, oxygen, sediment & other levels · Avoid cumulative effects of dams — limit their number and proximity · Take into account the impacts of other human activities when planning dams · Apply high environmental impact assessment standards · Involve environment staff early and at high levels in planning and construction · Enhance delivery and conservation in extant dams · Decommission ineffective dams & restore river ecosystems and species · Use landscape management to make dams more effective and to protect biodiversity · Establish protected areas to

	Pressures	State	Impacts	Responses
		<p>populations.</p> <ul style="list-style-type: none"> · Possibly fostering exotic species. Exotic species tend to displace indigenous biodiversity. · Reservoirs may be colonised by species which are vectors of human and animal diseases. · Flood plains provide vital habitat to diverse river biotas during highwater periods in many river basins. Dam management that diminishes or stops normal river flooding of these plains will impact diversity and fisheries. · Changing the normal seasonal estuarine discharge which can reduce the supply of entrained nutrients, impacting the food chains that sustain fisheries in inland and estuarine deltas. · Modifying water quality and flow patterns downstream. · The cumulative effects of a series of dams, especially where the impact footprint of one dam overlaps with that of the next downstream dam(s). · Other human activities, including agriculture, forestry, urbanisation and fishing, although these are primarily land-based 		<p>enhance the efficiency of dams and conservation of biodiversity</p> <ul style="list-style-type: none"> · Improve needed knowledge bases through research · Explore and reduce the impacts of dams on terrestrial biodiversity <p>Explore biodiversity offsets options</p>
Nuclear	<p>Risks to biodiversity associated with waste</p> <p>High energy use in construction</p> <p>Secondary footprint issues associated with mining of source material</p>	<p>Habitat loss</p> <p>Species impacts</p> <p>Significant ecosystems impacts in the case of accidents or inappropriate waste disposal</p>	Health hazards	<p>Careful siting of facilities</p> <p>Source materials from non-sensitive environments</p> <p>Explore biodiversity offsets options</p>