A Proposal

By

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10 October 2008

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1.0 BACKGROUND OF THE ASSIGNMENT

The findings of the recent fourth assessment report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) has clearly brought out the seriousness of the climate change issues and the need for taking urgent measures for dealing with them. India is among the countries that are most vulnerable to adverse impacts of climate change with economic losses potentially as high as 5-9% of GDP (Stern Report).

To study these issues in detail, the Indian Ministry of Environment and Forests (MoEF) and the UK Department for Environment, Food and Rural Affairs (Defra) undertook the Indo-UK collaborative research programme on the impacts of climate change in India; the programme being managed on their behalf by Environmental Resource Management Limited. The Phase I of this research programme addressed uncertainties in climate scenarios with application of regional climate models in India and formulated some socio-economic scenarios for India, in line with IPCC guidelines.

The Phase II of this programme will build on the findings and the needs identified in Phase I. The programme will consist of 4 national level projects (2 large and 2 smaller ones) as well as one state level project. The state level project focuses on assessment of vulnerability and adaptation to climate variability and change within either Orissa or Madhya Pradesh with a view to the potential for scale-up of implementation of resulting adaptation processes and practices within the state and elsewhere in India.

With this understanding, Development Alternatives, New Delhi and Environmental Planning and Co-ordination Organisation (EPCO) are jointly submitting their bid to conduct the state-level project in the state of Madhya Pradesh. The project will be supported by an international partnership with the Stockholm Environment Institute's Oxford Centre taking advantage of the weADAPT.org platform for climate vulnerability and adaptation.

2.0 BRIEF ON THE PROJECT CONSORTIUM

Development Alternatives (DA) is a 25 years old research and implementation focused not-for-profit organization registered under the Societies Registration Act. The Climate Change Centre has been established in the organisation since 1990. The Centre has made active contributions to research, advocacy and outreach programmes related to Climate Change Mitigation and Adaptation. In the field of climate change impacts and adaptation, the organization has done pioneering research using cutting edge methodologies. It works with over 30,000 community based organizations and 700 NGOs in managing the DFID supported Poorest Areas Civil Society Programme in 6 states of India. Besides, it is also involved in facilitating the preparation of State of Environment Reports by the state government in 6 states and 2 Union Territories of India. At the field level, the Social Action Group of DA implements rural development projects in the Bundelkhand area of Madhya Pradesh using participatory approaches. These projects range from watershed management, community based interventions, literacy programmes etc. Currently, DA is also conducting vulnerability assessments, adaptation strategies development and communication strategies for the the Bundelkhand area. In this research project, DA will bring forth it’s expertise in conducting vulnerability assessments, conducting state level participatory processes for effective outcomes and extensive familiarity with the field conditions in M.P.
The Environmental Planning & Coordination Organization (EPCO) was established by the Housing and Environment Department of the Government of Madhya Pradesh in 1981. Over the years, EPCO has steadily grown to become the State's premier organization in the field of environment related matters. It has worked closely with the State Government on various projects; yet it has established its own identity as an autonomous organization. It is a think-tank for environmental matters, but is also project oriented. The organization works extensively with the state government, with it’s President being the Ho’ble Governor of Madhya Pradesh and Hon’ble Minister of Housing & Environment Department as Vice Presidents. The organization therefore commands extensive convening power within the state government and it is this strength that it will bring to this consortium. Besides this, the organization is also currently working on other initiatives in the field of climate change adaptation with government departments and will therefore be able to leverage those initiatives also for mutual benefit.

The Stockholm Environment Institute is an independent international research organisation bridging science and policy in core areas of environmental change. The SEI Oxford Centre leads international partnerships through the SEI's Risk, Livelihoods and Vulnerability Programme and the weADAPT.org platform on climate adaptation. The Oxford Centre includes specialists in multi-stressor vulnerability to environmental change, climate adaptation, participatory management and social learning, spatial analysis and visualisation, transport, agent-based social simulation and water management.

Considering the complementary strengths of the consortium partners, we believe that this consortium is highly suitable for the proposed research project. The brief profiles of each of these organisations are attached in Annexure I.

3.0 ASSIGNMENT OBJECTIVES

Based on our understanding, we believe that the overall purpose of this assignment is to gain an in-depth understanding of how climate change induced vulnerability fits within the broader vulnerability context and therefore, how relevant resilience building and adaptation measures can be effectively incorporated within the existing development processes.

To fulfill this purpose, the specific objectives of the assignment will be:

- To conduct impact and vulnerability assessments for understanding climate induced vulnerabilities at household, community and state levels and identifying criteria and best practices of successful adaptation
- To analyse existing adaptation practices and assessing the techno-socio-economic feasibility of options for supporting adaptive practices at various scales in Madhya Pradesh
- To link the research outputs to existing development activities and identifying existing/potential areas for capacity development to effectively support adaptive processes and activities
4.0 PROJECT APPROACH

As already mentioned, the focus of this assignment is to understand the vulnerability of the state of Madhya Pradesh to impacts of climate variability and change and to evaluate the various adaptation options so that they can be further taken up for implementation in the state through research, policy mainstreaming and developmental activities. To achieve this objective, Development Alternatives & EPCO will primarily focus on the agriculture sector. The reason for this is that this sector accounts for a large part of total income generation in the state (About 70% workforce depends directly or indirectly on agriculture\(^1\)). This sector is also likely to be highly affected by climate change, thus impacting a large number of people and their livelihoods.

The key features of the project approach are:

- **State level research for Madhya Pradesh:** Out of the two states mentioned in the Project Specification Document, we will focus solely on Madhya Pradesh. The reasons for this choice are several, the prime ones being outlined as follows

  - **High physical vulnerability to climate change:** Several previous research outputs have fairly clearly indicated that M.P. is among the most vulnerable states in India (TERI 2003; Figure 1). Natural calamities like droughts, floods and hailstorms are a common feature of the state, with at least one part of the state generally being hit by one of these natural calamities. The National Communications of India (2004) also predicts increased climate variability for the state. Such variability and change can cause havoc with the state’s socio-economic systems and needs to be much better understood than at present.

  - **Lower Adaptive Capacity:** Along with high physical vulnerability, the state is also extremely low on adaptive capacity (Refer Figure 2, TERI 2003). Out of 15 states for which the HDI has been calculated, M.P. ranks at a lowly 12, with Orissa at number 11. The state ranks very poorly on most of the social indicators forming the adaptive capacity such as the Inflation and Inequality Adjuster per capita consumption expenditure (Rs. 92/month), a high percentage of people below the poverty line (37.43% as against the national average of 26.10% for India), few households with access to toilet facilities (7.87% against national average of 49.32%), only half the population with access to safe drinking water, just 58% people having road connectivity at village level and a low literacy rate of 58% against the national average of 59%\(^2\).

  - **Better availability of data and secondary literature:** Having been involved in research studies in both the states, it is our experience that the data management system, by both the government and the state level research institutions is much better in M.P than in Orissa. In addition, there is much more secondary literature such as research studies, thesis reports etc available on both physical and social sciences available in M.P. For the purpose of successfully achieving the objectives of this research study, this is a very crucial aspect and needs serious consideration.

  - **Better ability of team to conduct action research and influence policy:** The DA-EPCO team is also much better placed to conduct the study more

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\(^1\) Source: Fifth State of the Environment Report, Madhya Pradesh 2006

\(^2\) Source: National Human Development Report 2001
successfully in M.P. than in Orissa. The reason for is that DA has been working at the grassroots in M.P. for almost two decades and is highly familiar with the field conditions. To effect the action research component, DA also a field office in Tikamgarh district and NGO partners in more than 20 districts. All these partners have very good working relations with the local decision makers. At the state level, EPCO has been the premier think tank organization for the Government of Madhya Pradesh and is often in the centre of policy making. It’s involvement will ensure that the relevant stakeholders can be effectively brought on board to formulate and take forward the outputs of the study.

- **Extensive stakeholder engagement:** Our approach to stakeholder engagement assignments of this nature is not limited to engaging the client for seeking information (data) and collection of past reports. Our approach seeks to proactively engage stakeholders/ stakeholder institutions in a process of dialogue through the course of the assignment via workshops, brainstorming sessions, in-depth interviews, observing on-site conditions together with client, et al. In our experience, such approach yields rich dividends in the form of commitment and ownership of frameworks, models and recommendations made under the assignment. To maximize the benefit of the stakeholder engagements, we will use the Influence-Stake matrix that we have used highly successfully in previous action researches. In this procedure, the decision making and decision influencing capabilities of each stakeholder is critically analysed by studying in depth the constitutional/legislative powers and through focus group discussions/informal interactions with other stakeholders against the stakes of each stakeholder. Based on the inferences drawn, stakeholder mapping is done in the form of an Influence-Interest matrix (shown below)
Based on this matrix, degree of engagement with the stakeholders is undertaken, with the highest being with High Stake-High influence once. For example, in the case of this project, we will make extensive linkages with the M.P. Planning Board that has both a high stake in the findings and high influence to actually put them in practice.

- **Action Research Framework:** The project will be guided by principals of participatory action research in the sense that it will seek to get insights and create knowledge, propose and implement adaptation measures based on the knowledge, facilitate implementation of the proposed measures, observing and documenting the effects of the measures, and reflecting on the effects of the plan for further planning and informed action. To be able to do effectively, we will utilize DA’s field experience and networks of grassroots organisations and EPCO’s networks with the district and state level agencies. Other relevant stakeholders will also be partnered with as and when required.

- **Focus on solutions; their identification, scalability and replication:** As aforementioned, the research will focus on generating information for holistic understanding of the ground realities while directly feeding into state level decision making. It will therefore be kept in mind that the various assessments (impact, vulnerability and adaptation options feasibility assessments) provide fairly conclusive guidance on the way forward for effective adaptation.

### 5.0 PROJECT METHODOLOGY

As per the Project Specification Document, following are the main components of the project methodology:

**A. Set up and mechanisms for effective delivery:**

In order to get the project going, there will be a short scoping phase of the project having the following key activities:

- **i. Situation Analysis**

This activity of situation analysis will run parallel to the Partnership development activity. In this activity, the focus will be on:

- **Analysis of past and on-going initiatives on climate change adaptation in Madhya Pradesh:** We are aware that already several organizations, including government, research and non-government are undertaking research, field implementation or policy projects in Madhya Pradesh. Compiling all this information and analyzing it will help us in doing the stakeholder mapping appropriately and help in identification of stakeholders in the pre-assessment
phase mentioned below and then defining more concretely the scope of this research project and possible inter-linkages with the on-going initiatives of others.

- **Review of Phase – I outputs:** In order to minimize primary data generation and maximize use of available information, the outputs brought out in the Phase – I of the Indo-UK collaborative research project will be thoroughly reviewed. The purpose of this will be to identify what information generated in this phase could be used by us for this research study what kind of data we need to generate that will be compatible with the available information.

**ii. Partnership Development**

The various vulnerability and adaptation studies conducted in other parts of the world have made it amply clear that planned adaptation measures at various scales will need clear policy and institutional support by various actors, including the government. It is DA's experience from facilitating the State of Environment (SoE) Reporting in 8 states and 2 Union Territories of India that matters that have a perception of being an environmental issue are fairly low on priority for most policy makers, partly also due to a lack of understanding. This research, being an action research, we intend to induce simultaneous changes and get learnings within a relatively short time frame of two years. This would require that the prime agents of change like the decision makers in the line departments and district levels develop a good understanding of the issue fairly early and thereby bring to the table their knowledge, experience and resources to identify, assess and demonstrate the required adaptation measures.

The SoE Reporting procedure over the last five years has clearly demonstrated that this cannot be best achieved by doing the research and sharing regularly with the concerned decision makers at various levels. It is rather achieved by actually engaging them to do the research and supporting them by carrying out the system design, capacity building, coordination, monitoring, data management and policy advice. Only certain parts of the research that require extensive field work etc. may be conducted directly by the research agencies, with their active participation.

The same approach is proposed to be followed for this assignment. For doing so, in the scoping phase, a pre-assessment of the relevant institutions / departments will be made through the team’s past knowledge of the state’s functioning machinery as well as discussions with selected people. In the last one year, around three stakeholder workshops have been organized in the state on climate change by agencies such as GTZ, DFID etc. Some of the stakeholders therefore are already quite sensitized on the issue and willing to work on it. The team will therefore, utilize this opportunity. We will organize a **Launch Workshop** of the project, primarily for the stakeholders identified in the pre-assessment. The purpose of this workshop will be

- to launch the project in the state,
- to establish the need for an interdisciplinary inter-departmental team to holistically address the vulnerability and adaptation issues
- to get a commitment from the concerned departments to be a part of the research project
- to identify a broad framework for the research project
Following the workshop, specific individuals from the concerned departments will be identified to be a part of the core research team along with DA and EPCO members. This team will then jointly review the research design, methodology and roles and responsibilities. At this stage, experts from the Stockholm Environment Institute will also provide their inputs into the whole process, more specifically on the research design.

iii. Establishing the Project Management System

In line with the overall approach discussed above and the detailed approach to individual tasks that follow, we believe that one of the most important aspects of this project will be the partnership both between DA, EPCO and SEI and with the relevant government agencies. The effort really will be to ensure the functioning of this partnership in a manner in which it supports a more integrated and strategic outcome. Support and guidance from the MoEF and ERM in co-ordinating with the other research studies will also be crucial to achieve the overall objective of the research studies.

Keeping this in view, it will be important to design a smoothly functioning project management system so that high quality outputs can be generated in a timely manner. We therefore propose an experienced, well-equipped multi-skill project management team. This team would comprise members from DA, EPCO and SEI. Dr. K. Vijaya Lakshmi from DA, who has been managing environmental planning and implementation related projects for the last 16 years is proposed to be the Project Manager. DA will act as the contractor and will be responsible for ensuring timely delivery of the outputs to ERM.

To assist Dr. Vijaya Lakshmi would be a team of sectoral experts. Dr. Thomas Downing from SEI is a world renowned expert on vulnerability and adaptation assessments around the world. Recognising the role and capacity of EPCO in coordinating environmental and climate change planning in the state of M.P., Mr Lokendra Thakker from EPCO will be the expert on policy issues and the relevant research outputs required for them. Mr. Anand Kumar has over 5 years of experience in facilitating 8 state governments for preparation of State of Environment Reports and will play the key and difficult role of engaging the concerned departments for this research study. Mr. Udit Mathur is an environmental economist and has over 5 years of experience in conducting qualitative and quantitative analyses of climate change vulnerability, sectoral climate change impacts, costs and benefits of adaptation measures etc. Besides this core team, at least two-three fairly senior members from concerned government departments will be identified to form part of the core research team.

The core team is backed up by a strong support team (depicted pictorially below). Our experience shows that project of this nature requires an advisory team to assist the core team and provide direction to the project management. We are therefore proposing to set up an additional advisory team comprising of Ms Alka Upadhyaya, the Executive Director of EPCO and the prime policy maker for many sectors in M.P. and Mr. George Varughese, President, Development Alternatives and having over 20 years of experience in social and environmental issues ranging from food security, community development, water resources management and policies at district, state, national and international levels.

In the scoping phase, the entire project team and its management system will be formulated as per the requirements felt to be best suited by the team members.
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The M.P. project will be a prototype in the weADAPT.org climate adaptation platform. weADAPT is a collaborative platform, based on a wiki open source engine, to enable project teams to document climate vulnerability, define adaptation frameworks, evaluate strategies and measures, and communicate risks and opportunities. At present it has some 2000 pages, providing guidance and worked examples on the full range of vulnerability and adaptation. This project will be the first prototype on state-level engagement, providing lessons learned for a wide range of researchers and practitioners, well beyond India.

Figure: Structure of Project Management Team

B. Impact and Vulnerability Assessment

After the scoping phase of the project, impact and vulnerability assessments will be carried out. Our overall approach to Impact and Vulnerability Assessments is that the two agro-climatic zones of the state viz. western M.P. (Malwa) and one region among eastern or north-eastern M.P. (Chambal or Bundelkhand) will be chosen to study impacts on two main crops (wheat as a staple food crop and soyabean as a prime cash crop). While assessments for impacts of climate change on yields of these crops have already been made, we will recalibrate the
models to get agro-climatic region specific impacts. This will provide us with a clear understanding of the specific areas in the state with high severity of impacts. These physical impacts will then be extrapolated in terms of production for the state level.

Details on how this will be done are provided as follows:

i. Impact Assessments

Agriculture: M.P currently produces approximately 16 million tones of foodgrains, accounting for nearly 7.7% foodgrains and 25.9% oilseeds to the national production. The major crops grown in the state are wheat, paddy, maize and jowar among cereals, gram, tur, urad and moong among pulses, while soyabean, groundnut and mustard among oilseeds. Previous studies (TERI, 2003; Phase I outputs) have shown that many of these crops are likely to be affected by climate change significantly. This puts the state at a high level of vulnerability.

As part of the impact assessments on agriculture, we will undertake the following activities:

- **Review of available literature to identify the physical impacts on 2 major crops:** Since wheat forms the main source of staple diets for a bulk of people in the state (thus contributing to food security) and soyabean is one of the major cash crops, we will evaluate the impact studies available on these 2 crops.

- **Impact Assessments based on 2 agro-climatic zones:** We are aware that the results of the available studies may not accurately reflect the situation in Madhya Pradesh, more so in the case study areas. Within the project, we will therefore recalibrate the agricultural models as per the data of the state and identify impacts on particular crops in the specific regions. DA is already doing so with the assistance from Indian Agriculture Research Institute (IARI) and Indian Institute of Tropical Meteorology (IITM) for the wheat crop in the Bundelkhand agro-climatic zone. This will also contribute to the overall analysis. The crop model to be used for the analysis will be InfoCrop model. Data regarding local crop production and soil conditions will be collected from the local agricultural offices and other secondary literature. The crop models will then be calibrated and validated using those local variables as inputs. Then sensitivity analysis will be done with the future climate change scenarios and crop production will be simulated. The output will be impact of future weather conditions on major food crop productivity in each of the identified regions.

For the impact assessments, we will also need inputs from the other two research studies being conducted in Phase II viz. Development and Dissemination of Climate Change Scenarios and Integration of Climate Impacts across the Agriculture and Water Sectors.

- **Extrapolation to State level impacts:** Based on the impact assessments, the total impact on crop production will be extrapolated for the state level. This will be done using appropriate statistical and econometric methods. It may however, be noted that this figure will reflect only the physical impact of climate change on agricultural production in the state, without accounting for any planned or autonomous adaptation measures. On the other hand, this figure will also be good for communication to the policy makers to evoke urgent action as it will
provide the status for determining the status of food security in the state under the climate change/variability scenario.

- **Conversion to digital maps:** It is fairly well recognized that pictorial representation makes it much easier for users to get the holistic picture accurately and faster. To enable easier and more effective communication of the above information to the stakeholders, this information will be converted into digital maps using the Geographical Information System techniques.

**Outputs of Impact Assessments**

- Agro-climatic zones specific impacts on climate change yields for the 2 main crops
- Impact of climate change on crop production of 2 main crops identified for the state as a whole

**ii. Vulnerability Assessments**

The impact assessment will provide us only with the potential physical impacts of climate change without accounting for any adaptation measures. These physical impacts will however, be more meaningful if seen in the context of social impacts that are brought about due to them. Many studies (Seo & Mendelsohn, 2007; Schlenker & Roberts, 2006 etc.) have also amply demonstrated that all the projected physical impacts may not reflect the true picture since farmers and other actors do undertake measures on their own to adjust to the changed conditions, which reduces the potential negative impacts. It is therefore crucial that we take into account these aspects before moving forward with designing any strategies. The vulnerability assessments are meant to understand precisely these issues and we outline our approach and methodology for doing this in the following paragraphs.

Our overall approach to vulnerability assessment is to link the baseline of socio-economic and biophysical vulnerability with processes of adaptation. The first step is to define the actors vulnerable to climate change. Generally this is a hierarchical mapping of social organisation, with livelihoods as a key level of analysis but also reflecting class, gender and social networks. The result will be causal chains of exposure for archetypes of integrated vulnerability. The causal chains also indicate types of interventions that mediate the outcomes. For instance, the progression from a crop failure in a drought to household food deprivation might be mediated by food aid, among many other adaptation measures.

These pathways will be constructed as more formal profiles of vulnerability in a few representative locations to understand how climate induced agricultural sector impacts influence current and future livelihoods. We will thereby be able to derive a quantified and prioritized list of factors contributing to climate change vulnerability in the representative locations. This will provide us the guidance in prioritizing the issues on which the adaptation measures should focus to achieve the maximum impact on reducing vulnerability in the state. It will also guide us in identifying the factors that can be addressed through policy based adaptation measures in the short, medium and long terms.
The objective of the vulnerability assessment will also be to clearly identify the positive drivers that could propel communities to undertake the adaptive processes and the negative drivers posing barriers for the same.

**Choice of Case Study Locations:** The overlay of agro-climatic regions with climate change impacts on agricultural yields and drought will provide us with areas affected by both and a few areas potentially affected by any one of them. Based on a set of criteria such as severity of impacts, potential number of people affected, social indices for the regions, exposure to markets and market forces and governance issues, 2 **case study locations** will be selected for on the field vulnerability assessments. In order to get a wider perspective and an ownership of the process, the criteria for the case studies and the precise locations will be selected through a stakeholders workshop held for the state level officials and other stakeholders from the above selected areas. Active participation of officials from these locations will also help in enlisting their support for the vulnerability assessments as well as the adaptation options identification and assessments.

**Methodology for Vulnerability Assessments**

In order to understand the broader vulnerability context, a systematic process will be followed. Our experience from a SoE process and other solutions focused research studies shows that a purely participatory or a purely analytical approach does not yield very useful outputs. In fact, an integrated approach involving a clever combination of data collection and analysis with the participatory process is much more effective. Our methodology for the same will be:

i. **Stakeholder Workshop:** The design for the vulnerability assessments will be developed in the same stakeholder workshop as mentioned above. This workshop will be organized through the government department members that are part of the core project team, so as to ensure maximum participation and contribution. In the workshop, the focus will be on identifying the various parameters that need to be considered in the vulnerability study and the inter-linkages between the environment, economic, social and political factors based on the specific situation in the state. This will be done using the **PSIR - pressure - state (impact) – response framework.** The PSIR framework provides a systematic categorization of socio-economic, environmental and natural resource information under four headings: Pressure (stresses or agents of change), State (resources assets, environmental quality), and Societal Response. The expected outputs from this workshop will be:

   ▪ Orientation of the local stakeholders on the issue of climate change and the various factors contributing to the vulnerability
   ▪ Identification of the possible inter-linkages between various socio-political-economic factors and thereby the key parameters that need to be incorporated in the vulnerability assessments
   ▪ Garnering of support from local stakeholders for participation in the entire process, including the later stages of adaptation options assessments

ii. **Research Methodology Refinement:** For assessing the real impact of climate change on people, we will follow the definition of vulnerability as “Vulnerability defines the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a hazard.”
(Wisner et al, 2004). The hazard in this case will be impacts on agriculture and water availability due to climate change. Further information on vulnerability and research approaches are available on www.VulnerabilityNet.org and www.weADAPT.org.

iii. **Analytical Framework:** Previous studies done both in India and globally, and our own experience of doing so in the Bundelkhand area of Madhya Pradesh have brought out that it is both the climatic and non-climatic factors that combine to strongly amplify vulnerability; they should therefore be understood in tandem to arrive at the real picture. The link to adaptation planning requires approaches to vulnerability assessment that are oriented to the actors involved and the decision trees of possible exposure and responses. Since the desired outcome of the vulnerability assessments is to identify the crucial contributors to vulnerability in the state, we will undertake a mixed quantitative-qualitative data based study. We do not believe that vulnerability indices that are usually used in many vulnerability assessments would be very useful for this kind of an integrated participatory-analytical approach. We will explore a range of dynamic and participatory vulnerability frameworks, adapting their best features to address climate change, livelihood resilience and development planning. Among the frameworks that appear most relevant are Action Aid’s Participatory Vulnerability Analysis, Provention Consortium’s Participatory Capacities and Vulnerability Assessment and rule-based decision trees based on knowledge elicitation. These frameworks have been used to good effect in many the developing countries.

**Methods:** Recognising the fact that there are multiple determinants/causes of vulnerability, distributed across household, village and policy levels, we will follow a multi-level approach. The various levels and activities thereon will be:

- **Household Level:** At this level, the effort will be to collect current data on various issues as incomes, food security, access to resources, ownership of assets, migration patterns etc. Analysis of this information will help us in classifying the households into various degrees of vulnerability and derive factors contributing to this vulnerability.

- **Community level:** At the community level, Participatory Learning and Action and other Participatory and Reflective Approaches will be deployed to understand the community level dynamics that may contribute to vulnerability. These dynamics include local development issues, identification of needs, problems and solutions, major changes observed within and over the years, relationship between individuals, groups and institutions and linkages with policies. This data will be qualitative, quantitative and even visual and will provide us a relating learning to action, and incorporating programme and policy improvement as an integral part of the learning process. The levels of these exercises will be much more in the 2 case study locations where the intention will be to actually effect changes during the research.

- **District level:** The key stakeholders in the entire process will have to the district level officials, which is the lowest administrative unit and governs all the development processes in communities within the district. They will be engaged through in-depth interviews, documents review, study of their rules and regulations for functioning and involving them in some community level
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assessments. This will provide us with an insight on their perspectives of the vulnerability, inform us of their capacity to understand the issue, guide us to identifying the constraints they face in implementing various types of policy measures and suggestions from them on what should be done about it.

Analysis of this data and information will provide us with holistic information on the various probable region specific causes of vulnerability, which *a priori* and from available literature have been found to depend on factors such as:

- Household access to resources
- Social capital
- Food security
- Livelihood options
- Effectiveness of local governance
- Dependence on the markets for incomes
- Participation in decision making
- State of natural resources in the region
- Physical impacts of climate change
- Access to information
- State and national level policies

The collection of information during the vulnerability assessments will be based on specific indicators for each of the above parameters and any other ones identified in the Stakeholders workshop. The output of the analysis will be:

- a profile of the categories of people that are likely to be having high adaptive capacity, resilient, vulnerable and highly vulnerable.
- Contributions of various factors to the current and future vulnerability of the different categories of people

iv. **Region specific workshops:** While the primary in-depth analysis will be undertaken by the core project team, the findings will be validated and strengthened through regions-specific workshops held where the local stakeholders such as district level officials, local representatives of the line departments, representatives of local NGOs and community members will be invited. In the same workshop, we will also initiate an assessment of the potential adaptation measures to reduce the vulnerability. The expected outcomes of the region specific workshops will be:

- Region specific vulnerability assessments, strengthened by the concerned stakeholders
- List of options for adaptation measures, along with linkages with different policies

v. **Policy Analysis & collation of learnings at state level:** The various vulnerability assessments at case study locations will provide us with data, both qualitative and quantitative. At this stage, a thorough policy analysis will also be done for the various policies that are concerned with the factors affecting the vulnerabilities to identify the specific issues that need to be addressed within these policies.
Overall Outputs of Impact and Vulnerability Assessments Stage

- Differential impacts of climate change on the yields of 2 prime crops in their respective main agro-climatic zones
- Profile of social vulnerability in the representative agro-climatic zones in which the case study locations lie.
- Preliminary list of adaptation options as suggested by the stakeholders in the respective case study locations
- Identification of specific issues within key policies that may be contributing to the vulnerability and need to be addressed

C. Adaptation Planning and Options Assessment

Globally, several techniques such as expert assessments, economic assessments, participatory methods etc. have been used to devise the set of required adaptation options. However policy decisions need much more holistic and concrete information than produced by each of these methods individually. Following on our participatory-analytical integrated approach, we propose to use the following methodology for the Adaptation Planning and Options Assessment Stage:

i. Identification of Traditional Coping measures: Over the centuries, communities have on their developed several coping and adaptation on their own. Many of these practices may be very relevant in the future climate change scenarios also. We will therefore identify these practices and understand them during the vulnerability assessments as well as separately in areas different from the case study locations. We will also evaluate them in terms of their expected effectiveness, contexts in which they may be useful and possibilities to replicate them on a large scale through suitable policy measures.

ii. Commissioning of Rapid Studies to Experts for identifying existing and potential adaptation measures: Based on the understanding of the key points of vulnerabilities and their causes, we will identify experts in the state and even outside the state for conducting rapid assessments of existing and potential adaptation measures. It is expected that most of these will be sectoral assessments (primarily crop-wise) and will focus on providing a menu of options (for short, medium and long time scales) to address the various drivers of vulnerability individually. Since most of the sectoral experts may not have the expertise on economic costs and benefits of the various options, this part will not be considered at this stage.

iii. Stakeholder Workshop for Assessment of Adaptation Options: It is our previous experience that most of the sectoral studies, howsoever well designed, end up being uni-dimensional. Extensive experience in environmental and social issues related policy making has also taught convinced us that policy decisions often involve trade-offs between the various policy options and the decision makers therefore need to be provided with a much more integrated picture of each policy option than just a menu. While quantitative techniques such as the Multi-criteria analysis have been in some cases deployed to derive this integrated picture in a more transparent and objective manner, results derived from such techniques for climate change adaptation assessments have not been very effective and politically acceptable.
In view of this, we propose to use participatory approaches for this purpose. The benefit of adopting a participatory approach is that while they do away with extensive data requirements for complex quantitative analysis like the MCA, they still retain the property of addressing a complex multi-attribute issue in a multi-dimensional fashion by incorporating the diverse perspectives and viewpoint of different stakeholders. To achieve this purpose, we will organize a state level stakeholder’s workshop (2-3 days, intense brainstorming type) with the objectives of it being:

- Sharing of the findings of the vulnerability assessments
- Sharing of the findings of the commissioned rapid studies to put forth the various adaptation options available
- Facilitating defining of a policy goal for adaptation in the state
- Identifying the most important and potentially most effective adaptation options and the stakeholders responsible for taking them forward
- Identifying the vehicles (existing schemes, development programmes, guidelines, institutional mechanisms etc.) which need to be modified to incorporate these options.

The workshop will be structured in a way so as to categorize the menu of adaptation options (available from the vulnerability assessments stage and from the commissioned studies) into short, medium and long terms. By once again using the PSIR framework and tools like Outcome Mapping, each option will be assessed on the following criteria

- Potential effectiveness in addressing the issue
- Technical Feasibility of the measures: Analysed through expert judgements;
- Applicability for implementation (e.g. practical, cultural, social)
- Distributional effects of the adaptation measures:
- The capacity to implement and sustain the measures

Based on these criteria, a few adaptation options will be prioritized by the stakeholders. These options will then be taken for further analysis such as cost effectiveness assessment, identification of the key policies where they need to be integrated, different actors responsible for undertaking them and their potential linkages with other existing programmes of the government and non-government actors. In case it is not possible to completely achieve the expected outputs from the workshop, consensus on a way forward to do so will be sought. These follow-ups will thereby be done accordingly.

The M.P. project will be a development prototype for the larger weADAPT team in exploring a range of tools for evaluating climate change adaptation strategies and measures. Following the precepts of Outcome Mapping, reflection and documentation of the process will be important at all levels.
iv. Economic Assessments of the Identified Adaptation Options: In order for the state government to allocate resources towards promoting the identified adaptation measures, it will need an estimate of the costs in doing so. We will therefore undertake an economic analysis of 2 main adaptation options identified earlier. In these assessments, standard economic techniques will be used. Our experience of using the costs-benefit analysis and Multi criteria Analysis for the Bundelkhand region in M.P. have shown the various difficulties involved in doing these assessments for future time period (as far as 30-40 years) and the huge uncertainties associated with the results. In place of these, we will instead conduct a Cost-effectiveness analysis for analysing the climate change adaptation. The detailed methodology for this analysis will be worked out immediately after the tender submission and may be shared and refined at a later stage, if required.

v. Synthesis of information to arrive at the recommended menu of adaptation options: The information from assessments conducted in the workshop and the economic assessment will be synthesized into a matrix to be presented to the decision makers of the state through a meeting and policy briefs.

Overall outputs of the Adaptation Planning and Options Assessment Stage

- Formulation of a draft policy goal for adaptation related to agriculture in the state of Madhya Pradesh
- Assessment of a menu of adaptation options completed through stakeholder processes and analytical processes
- Few Adaptation Options prioritized, along with their time scales, the policies that need to incorporate these, the various actors best suited to take them forward, their linkages with existing programmes and the costs to state exchequer for doing so.

D. Scale-up Planning and Capacity Development Assessment

At the previous stage of Adaptation Options Assessment, a large part of the analysis will indeed focus on the scaling up of good adaptation practices through policy measures and development programmes. At this stage, we will engage much more extensively the specific actors working on the identified sectoral policies and detail out the steps required for actually scaling up the identified options and incorporating them within the policies.

Having done so, the actors at various scales will have been identified. These actors, however, may not necessarily have the capacities or the orientation to undertake or manage the identified measures. We will assess their capacities and identify their capacity development needs through:

- Consultations with actors directly dealing with them through meetings and sometimes structured questionnaires.
- Small orientation and consultation workshops with these actors themselves, where they will be oriented on the measures being identified, getting their feedback on these measures, and understanding their barriers and constraints in potentially implementing these measures.
A Proposal – State-level Vulnerability and Adaptation Assessment

Based on this process, we will identify the present capacities of the identified as well as be able to outline the specific capacity development measures that need to be undertaken.

**Final stakeholder Workshop:** The findings of the overall research will be disseminated through a final stakeholder workshop where the synthesis of the different components of the study will be presented to all the concerned stakeholders, including the high level decision makers in the state. In addition, policy briefings for officials at state and district levels will also be prepared and circulated widely. The research team will also publish newspaper articles in both local and English languages to disseminate the findings.

### 6.0 STAKEHOLDER ENGAGEMENT AND COLLABORATIVE CONSIDERATIONS

All the team partners, viz. DA, EPCO and SEI have been involved in such assignments previously and have managed to complete with very effective results. This is, in large part, primarily due to the ability to achieve optimum stakeholder engagement at all levels. We will do our best to repeat in this proposal our previous successes. While we have already outlined above the specific points where different stakeholders will be engaged, we wish to do so much more explicitly through the following Table

#### Table: Stakeholder Engagement Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Role/Stage</th>
<th>Stakeholders engaged</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Core Project team,</strong> responsible for the research design and management</td>
<td>DA (a NGO working extensively on the ground and policy levels in M.P.)&lt;br&gt;EPCO (semi-autonomous government body and a premier thinktank for environmental policy making in M.P.)&lt;br&gt;SEI (research organization renowned globally for climate change adaptation)&lt;br&gt;2 Senior Representatives of concerned government departments at the state level</td>
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<tr>
<td>2.</td>
<td><strong>Refinement of Research Design and Parameters</strong></td>
<td>State level officials from Government departments related to Agriculture, Water, Rural Development, Environment etc.&lt;br&gt;Premier NGOs working in the state&lt;br&gt;Sectoral experts from Academia, Consultancy Organisations etc.</td>
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<tr>
<td>3.</td>
<td><strong>Vulnerability Assessments</strong></td>
<td>Vulnerable Communities&lt;br&gt;Panchayati Raj Institutions&lt;br&gt;District level officials in the case study locations&lt;br&gt;Local NGOs</td>
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<tr>
<td>4.</td>
<td><strong>Adaptation Options Assessments</strong></td>
<td>Vulnerable communities&lt;br&gt;District level officials&lt;br&gt;Local and state level NGOs</td>
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</table>
A Proposal – State-level Vulnerability and Adaptation Assessment

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<th>5.</th>
<th>Scaling-up and capacity assessments</th>
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<tr>
<td></td>
<td>▪ Policy makers of the relevant government departments</td>
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<td></td>
<td>▪ Actors who will be expected to implement adaptation measures</td>
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</table>

Collaborations: Besides the two Indian partners DA and EPCO, collaboration has been made with the Stockholm Environment Institute, Oxford, U.K. The Stockholm Environment Institute is an independent international research organisation bridging science and policy in core areas of environmental change. The SEI Oxford Centre leads international partnerships through the SEI’s Risk, Livelihoods and Vulnerability Programme and the weADAPT.org platform on climate adaptation. The Oxford Centre includes specialists in multi-stressor vulnerability to environmental change, climate adaptation, participatory management and social learning, spatial analysis and visualisation, transport, agent-based social simulation and water management.

The expertise available with the SEI Oxford Centre will be utilized for this project at specific places, especially in providing technical support and training for the India team in vulnerability assessment and adaptation planning in India. Three specific activities are therefore planned:

- **Study tour by one or two of the India team leaders to SEI Oxford.** The team leaders would receive hands-on training in vulnerability mapping, using available data sets for India and the AWhere spatial analysis package that forms a central part of the weADAPT.org platform. In addition, the team would set up a prototype based on Madhya Pradesh, documenting the issues, vulnerabilities and expected outcomes in the wikiADAPT module of the weADAPT platform.

  This practical work in establishing the entry level data and methods for the project would be supplemented by tutorials, group discussions and readings on vulnerability and adaptation. We see this as an intensive learning process, not just for the DA team but for the SEI group and other partners involved in state-of-the-art vulnerability assessment and adaptation planning.

  One outcome of the study tour would be a course outline, methods and supporting documentation for a one-week workshop in vulnerability assessment for climate change adaptation. This would be made available to the V&A community through the weADAPT platform, taking advantage of the wealth of existing training modules on the platform.

- **Team workshop in Madhya Pradesh:** The study tour would be followed up with a team workshop, ideally after some additional data has been collected yet at the stage of planning outcomes and communication strategies with key stakeholders. The content will be agreed with the entire team, following a participatory model (we draw upon outcome mapping, action research and social learning in our workshop preparation and implementation).

- **Further technical assistance and regional backstopping.** Members of the DA and state team will be encouraged to participate in further training exercises, notably drawing upon the SEI Risk, Livelihoods and Vulnerability group in our Bangkok
office, and on-line through regular skype call and weADAPT open demonstrations/tutorials with the Oxford group (and our international experts).

- **Participation and support in planning a synthesis workshop.** Preparing material for risk communication, for evaluating adaptation options and for documenting social learning and organisational change (following action research and outcome mapping approaches) will be supported through study tours and on-site assistance.

  The entire project will benefit from ongoing activities in the SEI, including technical assistance and development through the weADAPT group, including preparation of climate change data, decision explorer tools, techniques in vulnerability mapping, and a vulnerability assessment handbook.

### 7.0 PROJECT MANAGEMENT

- **Project Timeline**

  The project will be of the duration of full 24 months from the date of it’s start (as per the signing of the contract). We provide below the Gnatt Chart for the various activities in the project.
# A Proposal – State-level Vulnerability and Adaptation Assessment

<table>
<thead>
<tr>
<th>Activities</th>
<th>Quarters (every 3 months)</th>
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<tbody>
<tr>
<td><strong>Set up and mechanisms for effective delivery</strong></td>
<td>Q1</td>
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<td>Team Mobilisation - preliminary</td>
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<tr>
<td>Situation Analysis</td>
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<td>Partnership Development</td>
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<td>Launch Workshop &amp; incorporation of government representatives in core project team</td>
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<tr>
<td><strong>Impact and Vulnerability Assessments</strong></td>
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<td>Training Visit of Researchers to U.K.</td>
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<td>Literature Review</td>
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<td>Agro-climatic Zone based Impact Assessments</td>
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<tr>
<td>Extrapolation to state level impacts</td>
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<td>Conversion to digital maps</td>
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<tr>
<td>Stakeholder Orientation Workshop on Vulnerability Assessments</td>
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<td>Team Workshop in M.P. for finalisation of vulnerability assessments methodology</td>
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<tr>
<td>Preparation of survey instruments etc</td>
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<tr>
<td>Half Yearly Progress Report preparation &amp; submission</td>
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<tr>
<td>Field surveys in case study locations</td>
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<tr>
<td>Data Analysis for Vulnerability Assessments</td>
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<tr>
<td>Region specific workshops</td>
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<tr>
<td>Policy Analysis and collation of learnings at state level</td>
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<tr>
<td><strong>Adaptation Planning and Options Assessment</strong></td>
<td></td>
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<tr>
<td>Identification of Traditional Coping measures</td>
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<tr>
<td>Commissioning of Rapid Studies</td>
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<tr>
<td>Stakeholder Workshop for Assessment of Adaptation Options</td>
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<tr>
<td>Economic Assessments of the Identified Adaptation Options</td>
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<tr>
<td>Synthesis of information to arrive at the recommended menu of adaptation options</td>
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<tr>
<td><strong>Scale-up Planning and Capacity Development Assessment</strong></td>
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<tr>
<td>Small orientation workshops with identified actors</td>
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<tr>
<td>Analysis of capacity status and capacity development needs</td>
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<tr>
<td>Final consultation Workshop for dissemination of research outputs to all concerned stakeholders</td>
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<tr>
<td>Final Report preparation and submission</td>
<td></td>
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</tbody>
</table>
# Project Deliverables

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Contents</th>
<th>Delivery Date</th>
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</table>
| 6 monthly Progress Report 1| Finalised structure of the Core Project Team  
Outcomes of the Launch Workshop  
Report on researchers’ training visit to U.K.  
Finalised Vulnerability Assessments methodology | End of Month 6       |
| 6 monthly Progress Report 2| Impact Assessments on yields in different agro-climatic zones  
Vulnerability Profiles of the case study locations  
Outcomes of the region specific workshops  
Collated learnings for vulnerability at state level | End of Month 6       |
| 6 monthly Progress Report 3| Reports of the commissioned studies  
Details of Adaptation Options assessments  
Menu of prioritized adaptation options along with their cost effectiveness | End of Month 22      |
| Technical Reports –       | Technical detail of methodologies adopted  
Analytical Frameworks Used  
Results  
Conclusions | End of Month 22       |
| Non-technical Reports     | Non-technical outline of methodologies adopted  
Key Results  
Conclusions | End of Month 23       |
| Overall Synthesis Report   | Integration of results of various assessments  
Policy Recommendations | Month 24             |
Profiles of Consortium Partners

Development Alternatives

Development Alternatives, India, is a non-profit research, development and consultancy organisation established in 1983 under the Societies Registration Act. It fosters the new relationship in the people, technology and environment interactions needed to attain the goal of sustainable development. For details visit our website www.devalt.org.

Experience in Climate Change

The Climate Change Centre has been established in the organisation since 1990. The Centre has made active contributions to research, advocacy and outreach programmes related to Climate Change Mitigation and Adaptation. It has been actively involved in climate change science, negotiations and mitigation and adaptation measures for almost a decade and a half. The organization has primarily been active in the following areas:

1. Assessments of vulnerability to climate change (for rural areas of Rajasthan, Bundelkhand and the city of Delhi; DA is currently also implementing 3 climate change adaptation projects in Bundelkhand. They involve conducting vulnerability assessments, devising adaptation policies, piloting adaptation measures and conducting cost-benefit analysis for the adaptation measures in Bundelkhand.)

2. Devising and implementing community led adaptation strategies by empowering communities and local institutions (for rural India)

3. Promoting community level climate friendly initiatives, such as renewable energy fuelled energy services in rural areas, clean energy devices like efficient stoves and rechargeable lights for domestic applications and designing and promoting energy efficient technologies and processes for producing building materials.

4. Contributions to GHG inventourisation for National Communications (for the brick and cement sectors in India)

5. Facilitation for earning carbon credits (including establishment of baselines for industrial, renewable energy and forestry sectors), especially for projects with significant social benefits. A example of this is that DA has ensured that very small brick enterprises (investment upto Rs. 10 lakh) using green technology earn upto Rs. 1 lakh per annum of carbon revenues

6. Capacity building (including awareness and training) of stakeholders such as policy makers, civil society organizations and business sector (Several workshops and trainings on Adaptation strategies and development of CDM projects)

Experience at Grassroots level

The Social Action Group (SAG) of DA, works towards facilitating a multi-dimensional interface between individuals and institutions towards creating empowered and informed communities. SAG has a Key role in establishing critical links with different stakeholders (formal institutions,
Line departments, research organizations, financial and academic institutions, N.R.I.’s, self help groups) for social action and rural development. It helps create a common platform that encourages people to people interactions which is essential to developmental processes that are sustainable.

At present, it is working in the Bundelkhand region of Central India.

Activities of the SAG can be classified under the following heads:-

1. Creation of institutions at the community level, and their inter and intra linkages with other institutions at the village, block, district, state levels, through rigorous training and exposures to successful models.

2. Livelihoods generation through micro-credit and technical support to both off-farm and on-farm enterprises.

3. Natural Resource Management through activities such as promotion of check-dams, green manuring, soil and moisture conservation measures and structures.

Convergence/Networking through leveraging resources- financial, intellectual and physical-through a union and network of various stakeholders

**Experience in Participatory Processes**

Development Alternatives has been managing several multi-stakeholder processes to evolve consensus on issues, strategies and negotiating positions for the last 20 years. Bringing together relevant stakeholders to facilitate informed decision making at all levels is an expertise that the organization has developed during the implementation of more than 400 projects that have been completed. The multi-stakeholder processes at various scales managed by DA are:

1. **Rural** : Participatory village development plans (20 villages); common interest groups (over 30000 groups)

2. **National** :
   a. **Government of India position papers** *(for Stockholm Conference, Rio-Earth Summit)*
   b. **State of Environment Reporting (6 states in India)** : DA is designated by the Ministry of Environment & Forests, Govt. Of India as the National Host Institute for facilitating State of Environment Reporting in 6 states in India.
   c. **Small Grant Programmes (UNDP-Small Grants)**: Development Alternatives was the National Host Institution from 1995-1999 for implementing the Small Grants Programme under UNDP’s Global Environment Facility (GEF). Technical and programme support was provided by Development Alternatives for identifying grassroots NGOs for addressing the local environmental problems through innovative projects.
   d. **Poorest Areas Civil Society Programme – 108 poorest districts of India** : The Poorest Areas Civil Society Programme is the single largest anti-poverty programme in India being supported by UK Government’s Department for International Development (DFID) and managed and implemented by Development Alternatives and PriceWaterhouseCoopers (P) Ltd. The PACS programme covers 108 poorest districts of India. The states covered by the programme are Bihar,
Chattisgarh, Jharkhand, Madhya Pradesh, Maharashtra and Uttar Pradesh, where over 80% of India’s poorest districts are located.

3. South Asian level

a. **State of Environment Reporting - South Asia:** The UNEP commissioned Development Alternatives for preparing the State of Environment Report - South Asia in consultation with different stakeholders in the region. The report aimed at providing guidance for regional and international environmental action, planning, policy setting and resource allocation. The key issues identified from the array of environmental concerns in the region provided input to the UNEP mandate in the Global State of Environment Report 2002 and the Earth Summit 2002.

b. **South Asian Strategy Paper for WSSD**

c. **Sub-Regional Sustainable Development Strategy for South Asia:** The UNEP has now commissioned Development Alternatives for facilitating the preparation of Sub-Regional Development Strategy for South Asia. Development Alternatives is preparing this in consultation with several of the key government, research and non-government organisations across South Asia.

d. **Alternate Vision for Sustainable Development - South Asia**

e. **Co-ordinator - Climate Action Network, South Asia:** Development Alternatives is the co-ordinator of CAN, South Asia with BCAS, Bangladesh as its Secretariat. CAN is a worldwide network of over 340 Non-Governmental Organizations (NGOs) working to promote government and individual action to limit human-induced climate change to ecologically sustainable levels. For details please visit the link www.can-sa.net.

f. **Secretariat-Building Advisory Services Information Network (basin), South Asia:** DA is the co-ordinator for the South Asian node of the basin network. The prime functions of the network are:

   i. Promote collaboration between Habitat and Livelihood agencies in South Asia especially for (but not limited to) knowledge exchange.

   ii. Facilitate dialogue between grassroots actors and decision-makers for creating sustainable habitat and livelihood interventions.

   iii. Provide links to expertise and knowledge on technology, finance, institutional development and capacity building for sustainable habitat and livelihoods

**Experience in Outreach Activities:**

Development Alternatives has developed communication packages in germane areas of the environment and development problematic using various formal and informal media and methods. The Communications Unit of DA has evolved a systematic process of preparing various kinds of communication packages to suit the requirements of different levels of audiences. The institution has a capability to identify needs at different levels, and design communication modules and corresponding communication materials, thus ensuring that the desired messages are well conveyed to the target audience. Some of the communication activities have been:

1. Preparation of audio-visuals (*films, documentaries, radio programmes*) on environmental issues
2. Language versioning of audio-visuals (English to Hindi and other local languages)
3. Print-media based communications (Press releases, newspaper articles)
4. Awareness materials (leaflets, posters, booklets)
5. Development of websites (11 websites developed and maintained on environment and development issues)
6. Newsletters (the DA Newsletter, ENVIRO News - Newsletter of the Ministry of Environment and Forests (GOI))
7. Workshops, Conferences, Trainings etc.
Environmental Planning and Co-ordination Organisation

The Environmental Planning & Coordination Organisation (EPCO) was established by the Housing and Environment Department of the Government of Madhya Pradesh in 1981. EPCO was set up with a mission to assist and advise the State Government on environmental policy and planning through

- The preparation of a comprehensive data-based report on the status of the State’s environment, with regular updating
- The appraisal of particular development projects and industrial projects
- The study of particular environment problems and the formulation of feasible solutions
- The facilitation of expert external inputs, including consultation services, in addition to its own capacities
- Undertaking environmental research and promote it through academic institutions
- Undertaking environment sensitive planning by providing comprehensive design services in architecture, urban and landscape design and environmental graphics.
- Coordinating environment related activities and policies of the different agencies of government and its different levies; to also co-ordinate activities of NGOs and other groups among themselves and public agencies.

Over the years, EPCO has steadily grown to become the State’s premier organization in the field of environment related matters. It has worked closely with the State Government on various projects; yet it has established its own identity as an autonomous organization. It is a think-tank for environmental matters, but is also project oriented. Over the last 25 year EPCO has touched upon virtually every kind of work that is related to the field of environment. It has carried out pioneering work in creation of environmental awareness and focusing attention on environmental problems of the State

Stockholm Environment Institute, Oxford Centre

The Stockholm Environment Institute is an independent international research organisation bridging science and policy in core areas of environmental change. The SEI Oxford Centre leads international partnerships through the SEI’s Risk, Livelihoods and Vulnerability Programme and the weADAPT.org platform on climate adaptation. The Oxford Centre includes specialists in multi-stressor vulnerability to environmental change, climate adaptation, participatory management and social learning, spatial analysis and visualisation, transport, agent-based social simulation and water management.

The Centre involves some 20 people, including an office in the University of Cape Town. The annual turnover is on the order of $1.5 million.

Two initiatives illustrate our mission, range of activities and leadership.

weADAPT.org

Our major initiative is a collaborative platform on climate adaptation, www.weADAPT.org. Launched at COP13, the main component of the platform the wikiADAPT, an open source, open access portal for sharing good practice on climate vulnerability and adaptation. The platform also includes technical services on climate futures and spatial visualisation, with additional modules on exploring adaptation decisions, exposure and vulnerability mapping underway.
Modules on training following participatory methods are available. The platform encourages other users and organisations to get involved and support building capacity in climate adaptation.

Related to the weADAPT group, the Oxford Centre leads the UNEP Collaborating Centre on Climate Adaptation. This will be officially established in 2008, with an exciting programme of capacity building planned.

**Transformations in risk, vulnerability and resilience**

Our work on dynamic vulnerability, adaptive management and resilience comes together in understanding how transformations in risk may be approaching tipping points of either collapse (into some form of humanitarian crisis) or to achieve sustainable development and widespread alleviation of poverty. The initiative is a close partnership with the Refugee Studies Centre in Oxford University and the United Nations University Institute for Environment and Human Security. Core members are also drawn from the Stockholm Resilience Centre.

**Other Initiatives**

Our research on climate change focuses explicitly on the development and evaluation of adaptation strategies and options. The EU project Freshwater Integrated Resource Management with Agents is developing agent-based methods for evaluating adaptation strategies for risk management in public water supply in southern England. A flagship project on behalf of the Assessment of Impacts and Adaptation to Climate Change (AIACC) project will develop and implement a training course on climate change vulnerability, impacts and adaptation. Similarly, we are participating in the UN Development Programme GEF project on national communications and capacity building in Central America, using the Adaptation Policy Framework (APF).
Annexure II

Curriculum Vitae

Dr. K. Vijaya Lakshmi

Proposed Role: Project Manager
Name of the Firm: Development Alternatives
Date of Birth: 25 July 1957
Nationality: Indian
Years with the Firm / Entity: 16 years
Languages known: English, Hindi, Telugu, German

Educational Qualifications

- Ph.D, Physical Organic Chemistry, Sri Venkateswara University, Tirupati, AP, 1987
- M.Sc, Organic Chemistry, University of Kanpur, Kanpur (U.P.), 1978
- B.Sc., Chemistry. Andhra University (A.P.) Chemistry, 1976

Details of professional experience including period:

- Senior Programme Director (1998–Present): (Environment Systems Branch) Development Alternatives (DA)
  Responsible for business development and overall supervision of the financial and substantive health of the branch working in the areas of water and sanitation, industry and urban environmental management, community based environmental action, environmental monitoring, training and global climate change issues. Primarily responsible for the programs on provision of clean drinking water, promoting sustainable urban environmental management practices, cleaner and responsible industrial production, corporate sustainability management, community based environmental action and R&D on cost–effective devices for environmental monitoring (air, water, soil, pesticides, arsenic) and treatment devices. She is leading a team that deals with Customised Solutions for micro enterprises, private businesses and development agencies engaged in creation of livelihoods, especially in the water sector.

  Responsible for facilitating DA’s environmental Planning and Management services through providing consultancy, training, R&D & monitoring services. In a very short span of time, has been able to nurture, groom and establish trans-disciplinary teams with core competence to provide services such as performance benchmarking, facilitation of ISO 14001 implementation, EIAs, EMPs, technology validation, demonstration of clean technologies, training, outreach and awareness for both industrial and urban environmental managers.
A Proposal – State-level Vulnerability and Adaptation Assessment

- **Environment Scientist, (1990-1994) (Environment monitoring laboratory)**
  Development Alternatives

  Established an environmental laboratory for testing of samples of air, water, waste water, soil and for conducting waste treatment studies. Initiated cleaner production program area with a special focus on small and medium enterprises (SMEs). Demonstrated profitability of pollution prevention in SMEs. Responsible for developing field based water and air quality monitoring kits and for developing biological waste treatment methods.

- **Research Scientist (1986-1990) Delhi University and S.V. University:**

  Carried out a study sponsored by WHO to estimate the amount of pesticide residues in cereals and pulses.

  Also studied the impact of pesticides on leguminous plants. Studies were carried out both under simulated laboratory conditions as well as through field experiments. Evaluated water quality of various sources in Tirupati, a world famous pilgrim town in South India. Department of Environment (DoE) has sponsored these studies.

**Other Relevant Programs / Projects Coordinated**

- Research study on policies for sustainable management of water resources, sponsored by **European Commission.** Designed as a multi-partner based research, the study focuses on integrating socio-economic, environmental and technological dimensions of the urban, rural and industrial water use. The study aims at coming out with a white paper on the sustainable water policies. Other partners include, CII, IIRM, NETPEM, IIIEE (Lund) Delft Technical University (Netherlands) and VTT – Finland.

- **South Asia Strategy Paper** for the forthcoming world summit on sustainable development (WSSD) at Johannesburg. Sponsored by UNEP, NORAD and SACEP

- **State of the Environment of South Asia 2000 (SOE-SA 2000) report** under the sponsorship of **UNEP- EAP (AP) and SACEP and NORAD** as part of the **Global Environment Outlook** report to be presented at the Earth Summit 2002.

- **Youth version of the State of the Environment of South Asia** report along the lines of the ‘Pachamama’ a youth perspective of the State of The Environment of the World. Sponsored by **UNEP-EAP (AP), SACEP and NORAD.**

- Computer based **Energy and Environmental Performance Benchmarking Model** for the hospitality sector based on the data of six leading hotels in the country. The model is adopted by the Federation of the Hotels and Restaurants Association of India (FHRAI) for large scale dissemination across the country through their members. Sponsored by the **USAID Program on Clean Technology Initiatives.**

**Past and present association with professional and expert bodies:**

- Member of the IUCN supported South Asia Association for the Regional Environmental Assessment (SAAREA)
- Member of Gender and Water Alliance (GWA)
- Member of IUCN Commission on Education and Communication
- Member of Verification Working Group of Global Reporting Initiative (GRI)
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- Member of Greening of Industry Network
- Member of NGO-Business Environment Partnership -Asia Working Group
- Member of the Asia Pacific Roundtable on Cleaner Production (APRCP)
- Member of Local Area Environmental Monitoring Committee (LAEC) setup by Delhi Government
THOMAS E. DOWNING

Dr Thomas E. Downing (PhD, Geography, Clark University) is the Executive Director of the Oxford Centre of the Stockholm Environment Institute. He was formerly Reader in Climate Policy in the Environmental Change Institute of the University of Oxford, and has been the science adviser to the UK Climate Impacts Programme, and research fellow in the University of Birmingham and National Center for Atmospheric Research. Currently he is visiting professor in Oxford University in the School of Geography and Environment and Queen Elisabeth House, as well as senior research fellow in the SEI centre at York University and chair in social vulnerability with the United Nations University Institute for Environment and Human Security. He has been involved in all four assessments of the Intergovernmental Panel on Climate Change. He was recently elected a fellow of the Royal Society for Arts, Manufacture and Commerce (RSA).

His major interests are vulnerability and adaptation to climate change and climatic hazards, with an emphasis on developing participatory, actor-oriented methods (such as agent-based social simulation). The SEI is leading development of a platform for supporting climate change adaptation decisions. He has published over 100 papers, books, reports and book reviews, including the *Atlas of Climate Change* (with Kirstin Dow). Recent projects include the UK national assessment of climate change and demand for water (CCDEW), agent-based simulation modelling in support of integrated water management in Europe (FIRMA), seasonal climate forecasting in southern African and potential implications for sustainable livelihoods (CLOUD), frameworks and methods for vulnerability and adaptation to climatic hazards and climate change (ADAM, CLEAR and NAPA), development of a collaborating centre on climate adaptation with the United Nations Environment Programme and assisting the Food and Agriculture Organisation to develop their climate adaptation strategy.

EDUCATION


POSITIONS HELD

*Director, SEI Oxford Centre* (of the Stockholm Environment Institute), 2002 to present. The SEI centre in Oxford works on vulnerability and adaptation to global change, including research, applications and training. The SEI Oxford office leads development of international vulnerability networks on vulnerability ([www.VulnerabilityNet.org](http://www.VulnerabilityNet.org)) and and climate adaptation ([www.weADAPT.org](http://www.weADAPT.org)) and coordinates the SEI Risk, Livelihoods and Vulnerability Programme. Training courses and workshops on vulnerability and climate adaptation have been held in Cambodia, Cuba, Bhutan, Burkina Faso, Ethiopia, India, Italy, Kenya, Mexico, South Africa, and United Kingdom. The Oxford centre supports the SEI project office at the University of Cape Town and works closely with Enda in Dakar. The Oxford centre annual turnover is about US$1.5 million.
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MunichRe Foundation chair in social vulnerability, United Nations University Institute for Environment and Human Security, Bonn, 2005 to 2009. Developing research and training in social vulnerability with an emphasis on climate adaptation and multiple stresses. A particular focus is on micro-finance and the role of integrated vulnerability assessment. The four chairs support an annual summer academy on social vulnerability.

Programme Leader and Senior Research Fellow, Environmental Change Institute, University of Oxford, 1991 to 2002. Developed and managed research with over £5 million of contracts and grants. Major research focussed on: adaptive natural resource management, applying techniques in agent based social simulation in water demand; convenor of the International Geographical Union’s Task Force on Vulnerability; regional climate change impact assessment; social and institutional management of climatic hazards; economic valuation of impacts of climate change; and integrated assessment modelling: incorporation of social vulnerability and institutional decision making.

Senior Research Fellow for Environmental Studies, Linacre College, University of Oxford, 1997 to 2002. Promoted research and teaching on environment in the College and University.

Director and Science Adviser, UK Climate Change Impact Programme, 1997 to 2005. Advised on an extended programme of research on climate change impacts for stakeholders in the U.K.


Post-doctoral Fellow, National Center for Atmospheric Research, 1988 to 1990. Developed methods of climate impact assessment in developing countries, including research on climatic variations and food policy in Kenya.


Teaching and Research Assistant, Clark University, 1979 to 1982, and University of Colorado, 1976 to 1979. Taught courses in water resources and physical geography, including a computer-based water resources planning simulation. Assisted in SCOPE project on improving the methods of climate impact assessment. Assisted in establishing the Natural Hazards Research and Applications Information Center at the Institute of Behavioral Science.

LIST OF RECENT PROJECTS

FAO climate adaptation strategy, FAO, 2007 (Principal Investigator).
Change and Impact Research: the Mediterranean Environment (CIRCE), EC, 2007-10 (Lead, climate adaptation).

Advancing Capacity to Support Climate Change Adaptation, EC, Defra, 2006-9 (Lead, Technical assistance).

Developing a technical platform on climate adaptation (wikiADAPT), Sida, 2006-8 (Principal Investigator).

Scoping phase of a collaborative programme with UNEP, Centres for Climate Adaptation, Sida, 2006-8 (Principal Investigator).

Strategic advice on adaptation to climate change; Synthesis paper on food security and climate change, FAO, 2007.

Adaptation and Mitigation (ADAM): policy analysis for adaptation and mitigation planning, including case studies in South Africa and Spain, EC, 2005-8.

Poverty and Vulnerability II: field projects in South Africa and Southeast Asia; meta-analysis of vulnerability, development of Vulnerability Network (co-Principal Investigator), Sida, 2004-6.


NeWater: adaptive management of water resources (co-Principal Investigator), EC, 2005-9.

Complexity, Evidence, Volatility, and Agents (co-Principal Investigator), EC, 2005-7.

Intergovernmental Panel on Climate Change, Working Group II chapter on mitigation and adaptation linkages (Lead Author), Defra, 2004-7.

Social Cost of Carbon (Principal Investigator), Defra, 2004-5.

Vulnerability assessment toolkit and training workshops (Principal Investigator), ENDA, UNITAR, 2004-5.

Adaptation Research Workshop (co-Principal Investigator), UNEP, World Bank, Sida, Tyndall Centre, AIACC project, 2003-4.

Support to the NAPA regional workshops on climate change adaptation (Principal Investigator), UNEP and UNITAR, 2003.

HIV/AIDS and food security (Principal Investigator), FAO, 2003-4.

Adaptation to climate change in Orissa, India (co-Principal Investigator), UNEP, 2003-4.

GECAFS: Methodological review and development for vulnerable food systems (co-Principal Investigator), ESRC, 2003-4.

Climate outlooks and adaptation in southern Africa (co-Principal Investigator), Tyndall Centre, 2002-4.

Climate adaptation and land use planning at the catchment scale, Tyndall Centre, 2002-4.

Atlantis: impact of a worst case scenario of sea level rise (co-Principal Investigator), EC, 2002-4.

Poverty and vulnerability, Sida, 2001-4.


Preparation of climate change projects for the GEF (Principal Investigator), 2002.
Training course in climate change vulnerability and adaptation. START and Third World Academy of Science (Principal Investigator), 2002-2003.


Expert advisor, Select Committee on International Development, House of Commons enquiry into climate change and international development, 2001-2002.


Climate change and demand for water (CC:DEW), Department for the Environment, Transport and the Regions (Principal Investigator), extended by the Department for the Environment, Food and Rural Affairs, 2000-2002.


Vulnerability indicators for climate change, UN Environment Programme (Principal Investigator), 1999-2000.


Scoping study on climate change and biodiversity, Scottish Natural Heritage, 1998.

Societal and institutional responses to climate change and climatic hazards (SIRCH), European Commission (Principal Investigator), 1998-2000.

Programme Office for the UK Climate Impacts Programme, Department of the Environment, Transport and the Regions (Initially Director and Science Advisor), 1997 to 2002.

Impact of climate change on agriculture, Ministry of Agriculture, Fisheries and Food (Lead editor), 1997-8.

U.N. Environment Programme country studies of climate change impacts (Consultant to CICERO), 1997.

Climate change, climatic variability and agriculture in Europe: an integrated assessment (CLIVARA), European Commission (Principal Investigator), 1996-98.


Landscape dynamics and climate change (TIGER), Phase I and II, Natural Environment Research Council (Principal Investigator), 1995-97.

Guidelines for adapting to climate change, World Bank (Consultant), 1996.

Impact of climate change on agriculture in southern Africa, WWF International (Project leader for agriculture), 1995-96.
SKILLS AND FIELD EXPERIENCE

Moderate proficiency in Spanish, some knowledge of French and Swahili.

Substantial competence in computers (programming, data bases, word processing, spreadsheets, statistical analyses, geographic information systems).

Experience and training in project management, stakeholder facilitation and research administration, leadership.

Extended residency and research projects in Europe and the U.S. Field experience in Mexico (agrarian reform) and Kenya (assisting the government in environmental assessments and household surveys, 4 years). Short-term assignments in Antigua & Barbuda, Argentina, Bangladesh, Bhutan, Burkina Faso, Cambodia, Chile, China, Cuba, Egypt, Ethiopia, Hungary, Italy, Kenya, Mali, Rwanda, Senegal, South Africa, Spain, Sudan, Tanzania, Thailand, Zambia, and Zimbabwe.

HONOURS AND PROFESSIONAL ORGANISATIONS

Phi Beta Kappa, 1975

Association of American Geographers (Africa, Climatology and Cultural Ecology Speciality Groups), member

Association of British Climatologists, past member

Royal Geographical Society with the Institute of British Geographers (Developing Areas and Environmental Research Groups), member

Drought Mitigation Working Group, U.K. International Decade for Natural Disaster Reduction, to 1998, Co-chair
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- Climate Policy, Associate editor for adaptation, Editorial Board
- Environmental Science and Policy, Geographical Journal, Ecology and Society, Editorial Board
- Fellow, Royal Society for the encouragement of Arts, Manufactures & Commerce (RSA), 2006

REVIEWED PUBLICATIONS (in date/author order)

Forthcoming:

2007:

2006:

2004:

2003:


2002:


2001:


A Proposal – State-level Vulnerability and Adaptation Assessment


2000:


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A Proposal – State-level Vulnerability and Adaptation Assessment

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A Proposal – State-level Vulnerability and Adaptation Assessment

ANAND KUMAR
Natural Resource Management and GIS Specialist

Education

- M.Sc. In Geology with specialisation in Remote Sensing & GIS.

Areas of Expertise / Experience

State level participatory processes, State of the Environment studies and regional assessments; evaluation and assessment of regional and national sustainable development actions and capacity building integrated environment assessments; Participatory Planning, Natural Resource Management; Watershed management, Risk Management, Development of environment management plans, Database management and interpretation for preparation of National, State and District level planning and resource atlases, Remote sensing and Geographic Information System (GIS) applications in Natural Resource Management (NRM), Disaster Management (DM), Environmental Impact Assessment, Web based GIS applications, Preparation of local area resource profiles using GIS for formulation of action plans for state governments, NGOs and individuals

Relevant Projects

Water for All and Always – An Adaptation Project:

This project looks at water resource management in the Bundelkhand Region primarily revolving around the issues of sustainability in terms of both source creation and its management (quality and quantity), and building of institutional systems at various levels (village, block, district levels) for community based management of water and sanitation challenges. Anand has primarily been responsible for incorporating climate change consideration in this project and ensuring that the climate change impacts are taken account of while designing and implementing the interventions. The project is initially piloted 10 villages, to start with, and will spread across two blocks of Tikamgarh and Jhansi Districts of this region. Each village has about 120 Households and therefore the total population would be around 6,000-7,000.

Project Title: National Host Institute for State of Environment (SoE) Reporting

Development Alternatives is the National Host Institute for preparation of State of Environment Reports for 8 states of India. Anand as the focal point from DA is coordinating and building the capacities of local state governments to bring out their respective reports. Besides, DA is responsible for system design, data management, outreach and policy advise.
UDIT MATHUR
Environmental Economist

**Expertise / Experience:**

- Application of economics in various Environmental Studies.
- Analysis of the cost and benefit of various activities for environmental implications.
- Development of climate change mitigation projects
- Policy studies on energy and energy efficiency
- Incorporating aspects related to adaptation to climate change in projects on rural development

**Education:**

- Masters in Economics (2001-03), Delhi School of Economics.
- B.A in Economics, Hindu College Delhi.

**Professional Experience**

Development Alternatives: Environmental Economist (June 2003 – till date)

**Helping Communities Adapt to Climate Change**

Udit is a key expert in the Vulnerability and Adaptation Programme in Development Alternatives. He is the Project leader in the climate change projects in Bundelkhand. The Bundelkhand region has been experiencing and is very likely to further witness severe climatic changes, thus affecting both lives and livelihoods of millions of poor people. With regards to this, DA is executing projects to fully understand the implications of climate change in the Bundelkhand context and help communities take actions to minimise these impacts. With financial support from United Nations Institute of Training and Research (UNITAR), the following activities are being conducted:

- Development of climate change scenarios for Bundelkhand region (in partnership with Indian Institute of Tropical Metereology, Pune)
- Assessment of socio-economic vulnerability as well as impact of climate change on agriculture
- Development of Strategies for Adaptation
- Development and testing of a strategy for communicating the climate risks and potential adaptation measures to policy makers and rural communities

In conjunction with the above, an economic costing of climate change impacts on Bundelkhand is also being conducted with the support of Asia Pacific Network on Global Change (APN). Together, the above information will be communicated to the district and state level policy makers for incorporating climate change in their policies.

**Climate Change and The Poor: Linking Local Adaptation Needs to policy and Institutional Structures (DFID)** - This research project aims to facilitate greater interactions between local level climate change adaptation and global climate change science and policy through a collaborative research network, and the carrying out of a series of case studies. In this project, Udit identified the policy interventions favoured by local communities in response to (i) water stress in drought prone areas (ii) management of resources in coastal areas to respond to
extreme weather events such as cyclones, flooding and inundation (iii) enhance food security and agricultural development.

“Water and Environmental Sustainability” : An input to World Bank Country Assistance Strategy, 2005: This paper looked into the following aspects (i) Making an assessment of environmental challenges India faces in the environmental sustainability of water sector, (ii) Identify various investment / policy /regulatory /management options effective in India (iii) propose new economic instruments that might be effective, (iv) review policies and investments of the World Bank and indicate ways in which environmental quality of the World Bank’s work on water could be improved.

Regoverning Markets – Ensuring Small Producers’ Participation in Agri-Food Supply System: This paper looked into the market distortions caused by the high level of concentration in the input and distribution sides of the agri-food system. It aimed at understanding the mechanisms required for securing small producer participation in Restructured National and Regional Agri-food Systems. The two activities of the research included (i) Analyzing concentration in processing and retail sectors of national and regional agri-food systems and its impacts and implications on rural livelihoods and communities, (ii) Understanding the role of primary producers and their economic organisations in negotiating market access and improving terms of trade in specific agricultural supply chains. Two supply chains, viz. Dairy and Soya were extensively looked into in this research.

Facilititation of Clean Development Mechanism Projects: Udit is an important member of the team within Development Alternatives involved in facilitating development of Clean Development Mechanism projects. He has significantly contributed to facilitating CDM projects on Energy Efficiency in Hotels and brick kilns, and renewable energy projects. Currently he is developing projects on energy efficient building materials and plantations based carbon sequestration projects.

Framework for Promoting Biomass-based Decentralised Energy Systems in South Asia, USAID funded - The objective of the project was to identify the most appropriate bio-energy technologies available in South Asia and the kinds of financial and institutional mechanisms required to promote these technologies. Udit was involved in identifying the financial and institutional mechanisms wherein he studied in detail the current practices around the world, analysed the social dynamics of Indian villages and through consultation with several experts in this field recommended the various types of institutional and financial mechanisms for the different kinds of rural settings of South Asia.

Publications
- Impact of Kyoto Protocol on Trade Competitiveness, Environmental Finance, July 2004
- Bundling of CDM Projects, Development Alternatives Newsletter, October 2003
- Trade Competitiveness & Kyoto Protocol, Development Alternatives Newsletter, October 2004
- Economic Analysis of Auctioning Air Waves, Indian Economic Review, December 2002
Dr. SHAILENDRA NATH PANDEY
Development Alternatives, NEW DELHI

Education

- Postgraduate Diploma in Human Resource Management, IGNOU. 1996
- Ph.D, Specialization in Extension Education, First Division (87.2%), CCS Haryana Agricultural University, Hisar-125 004, 1998
- M. Sc. (Ag), Specialization in Agriculture Extension Education, First Division (80.6%), CCS Haryana Agricultural University, Hisar-125 004, 1995
- B.Sc (Ag), Specialization in Agriculture First Division (63.4%) – J.N.K.V.V. Jabalpur (M.P.), 1992

Experience

Dr. Pandey has been managing the field level activities of Development Alternatives for the last 6 years. He has been responsible for project formulation, management, implementation, monitoring and interaction with various stakeholders for developing livelihoods in Bundelkhand region. His expertise is as follows:

- Diverse experience in operations, project formulation and management, planning, coordination & resource mobilization, monitoring and evaluation of projects in developmental sector.
- Expertise in managing operations in a non-urban setting, involving formulation, planning, managing, monitoring and evaluating National/ Regional developmental programs,
- Proven ability in developing strategic alliances with Government as well as grassroots level organisation & acting as a catalyst for capacity enhancement of their ability to respond to developmental challenges & poverty alleviation.
- Key areas of work include NRM, Building & Strengthening Community Institutions, and Livelihood generation program for Rural Development.
- Job responsibilities include Design, Management and Implementation of rural livelihoods Programme of Development Alternatives in Bundelkhand Region. NGO networking, Publications and research.

Awards/Honours

- Qualified NET (National Eligibility Test) for Agricultural Extension held Under the Agricultural Scientists Recruitment Board, ICAR, New Delhi, 1996, 1997 & 1998.
- Qualified NET (National Eligibility Test) conducted by the University Grants Commission (UGC) in the subject of adult, continuing and non-formal education in the year 1996.
- A very wide range of human resource development programme organized and conducted (target group-Administrators to grass root level workers, rural communities, CSO etc)
FINANCIAL PROPOSAL