



# SUSTAINABLE ENERGY ACCESS FOR THE POOR: A MEANS FOR PROMOTING CLIMATE CHANGE ADAPTATION OF COMMUNITIES

MITALEE GUPTA<sup>1,2\*</sup>, THIYAGARAJAN VELUMAIL<sup>2</sup>

<sup>1</sup> Yale School of Forestry & Environmental Studies, Yale University, <sup>2</sup> United Nations Development Programme, Asia-Pacific Regional Centre, \*mitalee.gupta@yale.edu



Empowered lives.  
Resilient nations.

## INTRODUCTION

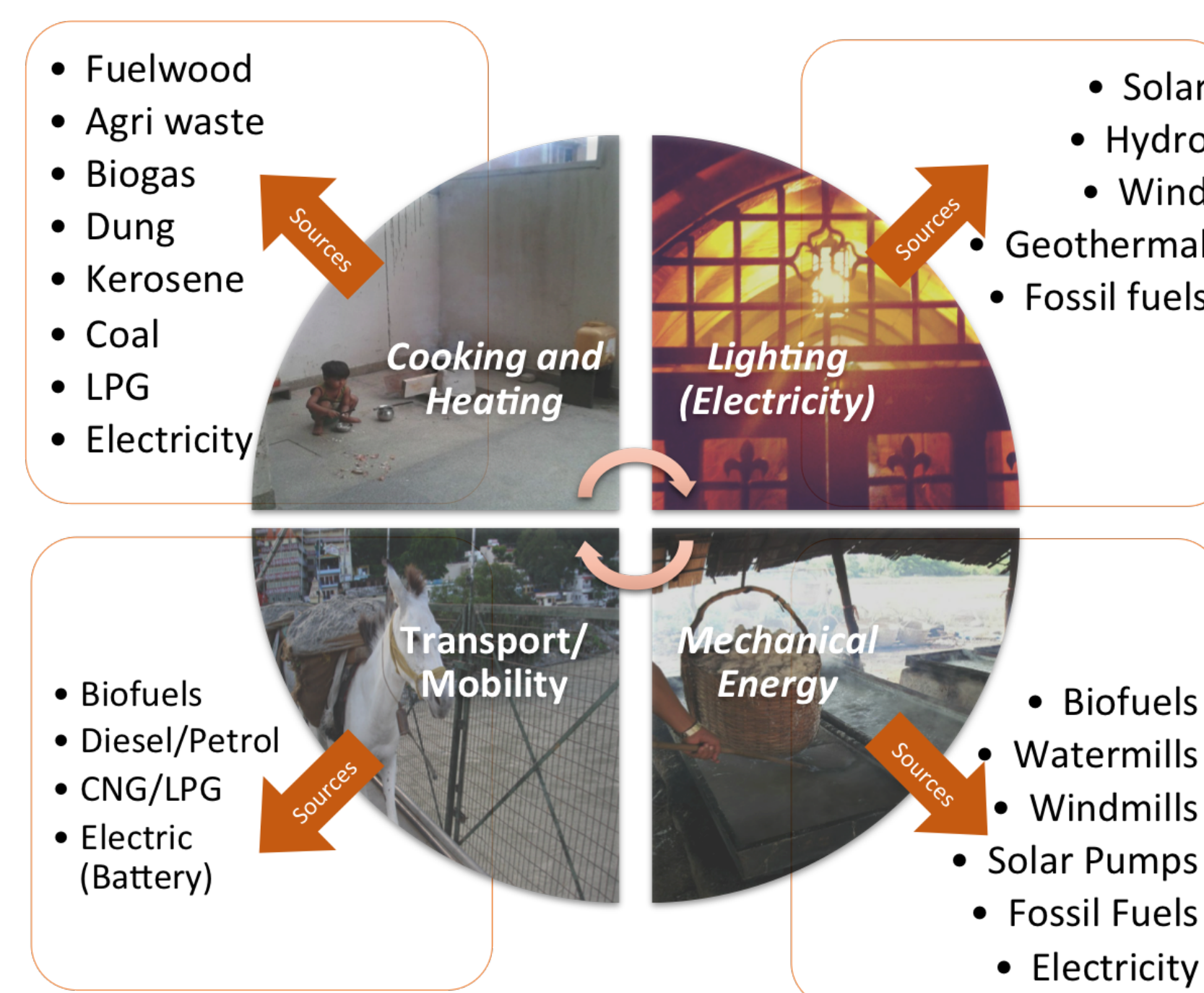
Climate change poses significant challenges for the poor communities residing in rural areas, due to their dependence on climate sensitive resources for their sustenance and livelihood. Hence adaptation, particularly for most vulnerable communities, has been determined to be the ideal solution.

We discuss ways in which access to sustainable energy provides a rural community with:

- Enhanced resilience against adverse and uncertain impacts of climate change.
- Reduced dependence on climate vulnerable resources.
- Adaptation to climate change.

## ENERGY FOR THE POOR

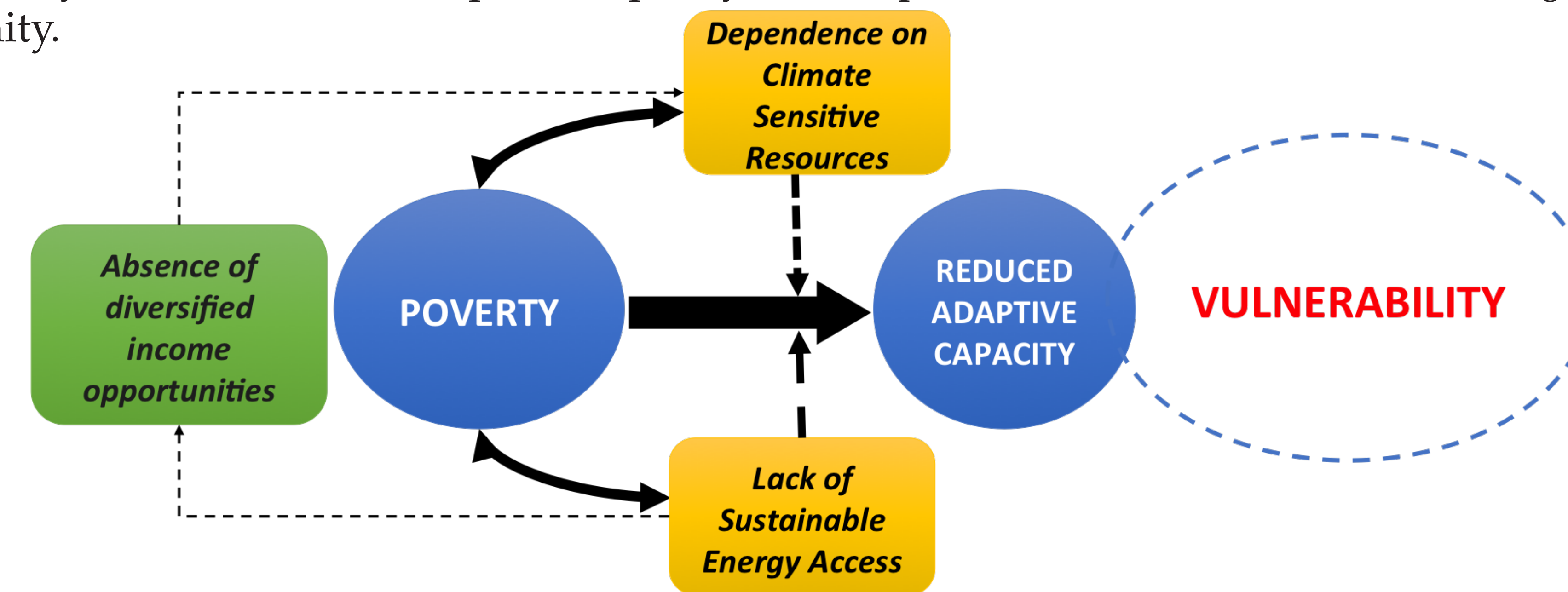
As of 2009, almost 2.7 billion people worldwide rely completely on traditional biomass for meeting their cooking and heating energy needs, and about 1.3 billion have no access to electricity, with additional 1 billion people having unreliable electricity access. Furthermore, the rural poor have been found to spend almost 20-30% of their annual income on energy fuels.



**Figure 1:** Energy Sources for meeting different energy needs of the poor

## VULNERABILITY AND ADAPTIVE CAPACITY

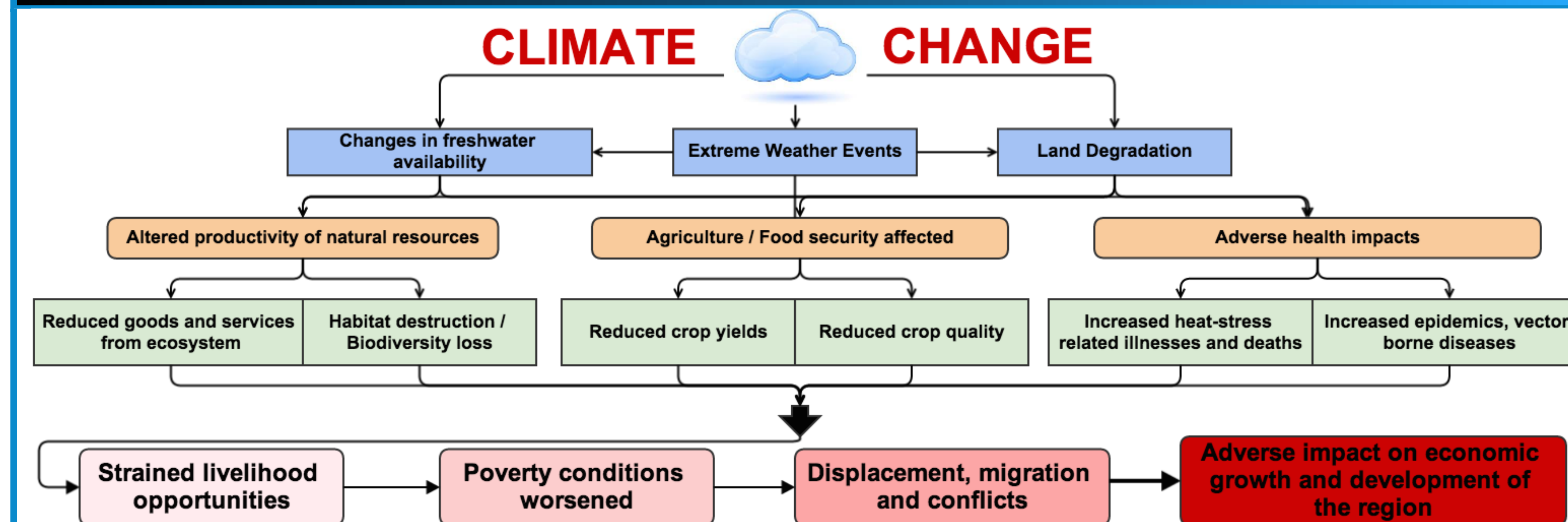
Vulnerability is a function of Adaptive Capacity and helps assess the level of climate change threat to a community.



**Figure 2:** Poverty driven Vulnerability

Climate change is expected to have adverse impacts on productivity of natural resources, agriculture and health of the community. As vulnerability is generated from factors like changes in resource access, political marginalization, lack of economic opportunities and weakening of social institutions, the rural poor are therefore more disproportionately impacted from changes in climate.

## RESULTS



**Figure 3:** Consequential impacts of Climate Change on poor communities in rural areas

We evaluated the specific impacts of energy projects in Malawi, Nepal and Peru and saw that sustainable energy access empowered these communities by providing for productive end uses.

- Dependence on natural resources and rate of deforestation was reduced by introduc-

tion of solar technology and improved cookstoves in Malawi.

- Agricultural yields were enhanced by provision of irrigation facilities in Nepal.
- General health of the community was improved by developing micro-hydro in Peru.

## CONCLUSIONS

We used case studies to emphasize the links between sustainable energy access, poverty reduction and enhanced adaptive capacity of the poor. Access to sustainable energy leads to development of communities by:

- diversifying income opportunities
- reducing dependence on climate sensitive resources
- proliferation of micro enterprises
- social welfare
- poverty reduction
- overall growth and development

The sources of livelihood for the poor communities in rural areas are much more limited, hence in periods of climatic stress they may be forced to sell off their assets and migrate to informal settings in urban areas. Hence access to sustainable energy helps build the resilience of poor communities against adverse impacts of changing climate and enables them to adapt.

## FUTURE RESEARCH

Most renewable sources of energy are likely to be affected due to climatic variability but the level of these impacts are still uncertain and hence a lot needs to be done in terms of researching and developing energy solutions that are sustainable and not impacted by the changes in climate.

## REFERENCES

- African Development Bank et. al., *Poverty and Climate Change: Reducing the Vulnerability of Poor through Adaptation*, Technical Report, United Nations Poverty-Environment Initiative, 2003.
- Intergovernmental Panel on Climate Change, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Technical Report, IPCC, 2007.
- United Nations Development Programme - Asia Pacific Regional Centre, *Achieving Sustainable Energy for All in the Asia-Pacific*, Technical Report, UNDP, 2013.