ENVIRONMENT FOR DEVELOPMENT
-KENYA

UNIVERSITY OF NAIROBI
SCHOOL OF ECONOMICS

EFD-KENYA POLICY RESEARCH REVIEW WORKSHOP
LA MADA HOTEL, NAIROBI 14th – 15th JULY 2016

INTRODUCTION

The Environment for Development Kenya (EfD-Kenya) in collaboration with the Kenya Institute for Public Policy Research and Analysis (KIPPRA) held a Policy Research workshop at the La Mada Hotel on July 14th – 15th 2016. The objective of the workshop was to share and discuss proposals for 2017 funding and also finalize drafting of the Research Policy Review/Strategy for 2016-2020.

WELCOME REMARKS: Prof Peter Kimuyu, Executive Committee Chairman, EfD-Kenya

The meeting started with a prayer from a participant. Prof Peter Kimuyu, chairman of the EfD-Kenya Executive Committee, thereafter made introductory remarks. He welcomed the participants and emphasized the role of EfD-Kenya in carrying out research that informs policy in collaboration with public and private sectors, with the aim of ensuring environmental sustainability, development and poverty reduction.

Prof. Kimuyu (centre) welcoming participants at the EfD-Kenya Research and Policy Workshop

A BRIEF ON EfD INITIATIVE AND ACTIVITIES: Prof. Jane Mariara, Coordinator EfD-Kenya

EfD-Kenya, Coordinator, Prof Jane Mariara, on her part gave a brief presentation on the initiative and activities that EfD is undertaking in the region. She said the objectives of the workshop were to:

i. To discuss EfD-Kenya proposals for 2017 funding
ii. To discuss the ongoing research on water demand in Kenya
iii. To review data available for the water project
iv. To finalize drafting of EfD-Kenya Research Policy Review/Strategy 2016-2020

Prof. Mariara (standing) explains a point to the participants at the EfD-Kenya Research and Policy Workshop

She briefed participants on the role and mandate of EfD, the EfD centres around the world and EfD-Kenya's ongoing projects. Prof Mariara observed that EfD Initiative is a capacity building programme in environmental economics focusing on research, policy interaction and academic programmes, whose main objective is to support poverty reduction and sustainable development by building environmental economics capacity in policy making processes.

Prof Mariara explained to participants that EfD-Kenya is one of the six centres in the EfD initiative across the world. She said EfD-Kenya's role is to work in close collaboration with

individuals and institutions in the public sector, policy research and academia at the local and international level. She urged stakeholders to come up with cutting edge research proposals, noting that in 2016, EfD-Kenya had only one proposal. She noted that EfD-Kenya has grown and needs to expand into other sectors such as industry, energy, forestry, green-growth and agriculture. Prof Mariara said EfD's role is simply to conduct research. However, the decision to implement such research findings is purely a prerogative of the institutions receiving the policies, thus the need to continually engage with policy stakeholders.

Prof Mariara noted that KIPPRA, the policy wing of EfD-Kenya is charged with ensuring that economic research translates into policy in Kenya. She urged participants to ensure they that collaborate with other institutions doing same studies to add synergies instead of duplicating what has been done or is done elsewhere. She urged researchers to ensure that when they write research papers or proposals, they state from the beginning, how policy makers would gain from the proposed study. She added that this is a very key ingredient in every research proposal.

In her concluding remarks Prof Mariara urged the participants in the room to watch the EfD Initiative video detailing activities that EfD is currently engaged in across the world.

PROPOSAL/PAPER PRESENTATIONS

During the two-day workshop, researchers presented the proposals they have been working on and participants' commented on them. Each research proposal presented was discussed and critiqued by peers. The presenters were advised to incorporate the comments made before submitting to the EfD Initiative via Editorial express before July 18, 2016.

Effects of Climate change on Water Quality in Kenya – Dr. Michael Jairo

Dr. Jairo presented the proposal co-authored with Dr. David Mwai and Prof. Jane Mariara. He made a brief overview of the proposal focusing on the climate change effects on the quality of water and quantification of the current and future costs of purifying water attributable to climate change.

Dr. Jairo said that while there is link between climatic change and water quality, the studies are from developed countries, with very limited evidence from the sub-Saharan African, Kenya in particular. The dearth of literature is so despite the likely impacts of climate change that countries in sub-Saharan, Kenya in particular, may suffer due to their geographical locations, low incomes, low technological endowment and lack of institutional capacity to adapt to rapid changes in the environment.

Dr. Jairo noted that the quality of water of surface runoff dependents on both natural and anthropothegic factors. He said the study will use primary data collected from 92 Water Service Providers (WSPs) and 214 water treatment sites located across Kenya. He said the study will estimate an abatement cost function derived from a productions function.

Dr. Jairo stated that the 'estimated abetment cost' will be a function of volume and quality of effluent, influent streams and factor prices. "By estimating the function the study will seek to evaluate the effects of climate change on water quality in Kenya and assess how climate change affect artificial water purification processes," he said.

The study proposes to use climate factors in the 'abatement cost function'. However, besides it, Dr. Jairo said other factors that determine abatement cost have also been included. He said the study follows Rossi, Young and Epp (1979) pollution abatement cost function. Dr. Jairo defended the 'abatement cost' function saying it uses the production function – which usually take into account (labour, capital or land and taxation). According to Rossi, Young and Epp (1979) abatement cost is a function of volume and quality of effluent and influent streams and factor prices. Rossi, Young and Epp (1979) modeled the production function shown in equation 1 to derive abatement cost function.

John Mutua, Judith Mutuku and Michael Jairo excited as they watch the EfD Video

Plenary Discussion

Prof Kimuyu made some useful comments, which needed to be incorporated in the proposal. He asked the presenter whether all the factors which contribute to the quality of water had been considered in the proposal. He said the end result of safe drinking water is a function of many variables.

Prof Kimuyu said once water has been treated and pumped into places for consumption, the final product sometimes could still have impurities, which are risky for human health. He questioned why the authors choose the period for data analysis as 1997 to 2015, yet climate change is always known to take a long period, say 30 years. He asked Dr. Jairo to indicate the likely results expected in the study. He asked whether there is any contribution caused by the ecosystem and whether there was control of other factors using the model. He also advised the team to indicate relevant stakeholders in the proposal as well as an expected outcome of the current and future cost of purifying water attributable to climate change.

Dr. Richard Mulwa suggested that additional cost of purifying water attributed to climate change need also to be included. He said cost of purifying water attributable to climate change should be estimated as the product of the coefficient of climate change estimated in the model, total cost of purifying water and the quantity of purified water.

Dr. Mulwa noted that for simulating the additional cost of purifying water attributable to climate change by the year 2030, the paper should use the future climate scenarios, but holding total cost of purifying water and quantity of purified water constant. He said the proposal could use the future climate scenarios but holding total cost of purifying water and quantity of purified water constant. He said the authors needed to include the additional estimated cost of purifying water attributable to climate change and simulate additional cost of purifying water attributable to climate change by the year 2030.

Dr. John Mutua pointed out that water contamination is attributable to many factors such as technology used in the water treatment, storage tanks, the type of pipe used to pump water and leakages.

Production Risk, Risk Preferences and Poverty in a Changing Climate: Lessons from Semi-arid Lower Midlands of Kenya – Dr. Richard Mulwa

Dr. Mulwa presented his proposal co-authored with Prof. Jane Mariara. He started by highlighting the policy implication of production risk, risk preferences and poverty in a changing climate, especially in the semi-arid regions, which need to be linked to the use. He said the findings of the study would be used to mitigate the production risk which apparently is a concern to farmers in semi-arid areas.

Dr. Mulwa noted that semi-arid midlands have different combinations of human, natural, physical, financial and social capitals that help them hedge against risk and produce crops under harsh environments and changing climate. He said nevertheless that the levels of endowment of these assets vary between farmers and determine the wealth/poverty levels of a particular household.

He reported that the study proposes to determine the level of production risk level amongst crop producers in semi-arid Kenya and their risk increasing and risk decreasing outputs. He noted that the study would contribute to policy on production risks in a changing climate.

Just-Pope framework, does not consider producers' behaviour toward risk, which is very important in input allocation decisions and hence in output supply. Therefore, prescribing similar policy interventions for all farmers assumes homogeneity in asset ownership, production risk, and also risk preferences among all farms. Dr. Mulwa noted that most of the households depend on agriculture as key source of livelihood, but due to climate change are impacted adversely.

Dr. Mulwa said farm households base their investment and production decisions, partly, on the perceived risk of failure. Because of that, many households are less likely to adopt new crop technologies even when expected net returns are high. He thus said that risk is an important factor that influences farm production decisions.

Plenary Discussion

The proposal was well received. Victor suggested that the research should consider linking farmers with the market, which can reduce price uncertainty. This, he said can boost uptake of alternative production technologies advocated for. John Nyagena suggested that there was need for the paper to show how the results of the study compare with the Climate Change Action Plan.

Estimating Residential Water Demand across Utilities in Kenya: Case of Water Service Providers in Kenya – Ms. Judy Mutuku

Ms. Judy Mutuku, presented a draft research paper authored by herself, Prof. Peter Kimuyu, Prof. Mariara, Dr. Mulwa and David Fuente. She started by giving the grim statistics of people with no access to safe drinking water, those who face water scarcity at least one month per year and individuals who face inadequate sanitation.

However, Ms. Mutuku noted that as the population continues to rise, the demand for water consumption is also expected to increase by at least 25 per cent. She said many regions in Sub-

Saharan Africa face huge freshwater management challenges such as limited allocation of water resources and environmental quality and policies for sustainable water.

Ms. Mutuku said that in many developing countries, water scarcity has become a major problem mainly due to lack of appropriate investments in infrastructure and institutions. Ms. Mutuku stated that Kenya is water scare, yet is endowed with fresh water. Kenya's fresh water per capita, she said has been declining over time and is projected to be 235 cubic meters by 2025 unless measures are put in place to address the challenge.

Judy Mutuku, EfD-Kenya presenting the paper while Kennedy Ng'ang'a reflects on the data.

Ms. Mutuku noted that as water demand for domestic and industrial use continues to increase due to rapid population growth and urbanization, the demand is expected to also rise. She further noted that in Kenya, many households face a diverse set of water sources which makes water demand and accessibility to vary significantly across households; hence the quality, reliability and conditions vary across sources making water a heterogeneous good in Kenya.

Ms Mutuku observed that studies on water in Kenya have addressed issues such as financing of water investments, access of water, water tariffs and subsidy and cost of coping with poor water supply. However, she said there is no study which has examined the residential water demand across water utilities in Kenya. She thus concluded that the study will bridge the gap in knowledge by estimating the residential demand for water utilities for metered and unmetered households in Kenya.

Plenary Discussion

Prof Mariara emphasized the need for the research paper to include GIS and Socio-economic data for water utilities in Kenya. She said the study was good, but needed to have the data to support the study. Victor Mose noted that the study is useful and will be used in filling the existing knowledge gap in the water sector in Kenya. He however noted that there is need to take into account the actual water lost in urban areas due to infrastructure dilapidation. Urban centres know how much water they require and that is why some water companies' ration water so that those who need it most can get water. John Nyangena – KPPRA concurred that the study would be useful especially to the private sector.

Data Needs for EfD-Kenya Water Research - Kennedy Ng'ang'a

Kennedy made a presentation on data that he has been organizing through GIS methods. The aim of the GIS analysis was two-fold. The first objective was to discreetly map out the boundaries of each water service board and water service provider. These maps were to be based on the jurisdiction of each company or board based on sub-locations served. The boundaries would then be used for a second objective – to map climatic variables for each water service provider and water service board from global long term climate datasets. The results were compared with the existing maps of some of the companies and found to match closely. All the boundary files produced during the mapping and the preliminary results of the climatic variables extraction were also presented at the workshop. Kennedy further discussed various sources of climate data that he had explored including the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS) and National Oceanic and Atmospheric Administration (GHCN CAMS) rainfall and temperature datasets. The participants deliberated on the presentation and noted that more work was needed before a complete data set for water demand and efficiency analysis would be available. Kennedy was encouraged to work on completing the data extraction and mapping exercise to facilitate the analysis.

Household Fuel Choice, Transition and Poverty in Kenya – Dr. John Mutua, Energy Regulatory Commission

Dr. Mutua presented the paper on behalf of his co-authors: Dr. Dianah Ngui-Muchai, Dr. John Mutua, Prof. Peter Kimuyu and Dr. Daniel Mwai. Dr. Mutua began the presentation by noting that the key research objectives of the study were related to most, if not all, EfD-Kenya research themes. He noted that poverty levels, which have a direct correlation with type and quantity of energy used, play a vital role in the access of energy sources among the different households. He said that the overall objective of the study was to investigate what influences energy transition and how these fuel choices contribute in poverty reduction.

Dr. John Mutua makes a presentation during the workshop

The study sought to answer the question 'what influences the introduction and adoption of modern fuels and how difference in household fuel choice could contribute to poverty reduction?' He also sought to investigate the role of policy in addressing the energy transition, household fuel choice and poverty reduction.

Plenary Discussion

All the researchers present gave very useful comments on refining the proposal. Dr. Jairo felt that the research question on 'What policy interventions are most appropriate in improving consumption of cleaner forms of energy and at the same time reducing poverty, hence pressure on forests?' should be made more specific in terms of how reducing poverty can lead to reduction of pressure on forests.

Dr. Mulwa noted that the overall objective was not linking up with the research questions. He suggested that the study should first investigate what would bar one from transitioning to other sources of energy. He further noted that the research questions are mostly policy questions, and hence his question on how the households would be informed on what type of fuel to use once the study is completed and what policies can work better, for example, whether subsidies would be effective in supporting energy transitions.

Prof. Mariara also noted that the proposed objectives were more of questions of policy relevance rather than objectives. She further suggested that what was important was for the research questions to be answered once the research is done. Mr. Nyangena added that there was a need to focus mainly on household decisions on energy transitions.

Mr Mose also raised issue of policy concern on the zero rated LPG. He sought to know what value can be added through research to impact energy prices. He also suggested that research needs to be picked up to find out the information held by households in regards to the costs to be incurred once they are connected to the grid. The outcomes of the research can assist the Government in making the policy a reality and how best a household can be enabled to pay for electricity costs considering that being connected to the grid means an additional cost to the already poor households.

Optimizing Power Generation to Reduce Green House Gases and Energy Costs in Kenya: Dr. John Mutua, Energy Regulatory Commission

Dr. Mutua moved on quickly to make a second presentation of a proposal co-authored by Prof. Peter Kimuyu, Prof. Jane Mariara and Dr. Richard Mulwa. He started by giving an overview of how electricity demand in Kenya has risen since 2000 due to increase in population, urbanization and industrial growth. He noted that while the generation of electricity has also expanded from 800MW in 2000 to 2,338MW in 2016, the demand for electricity is exerting pressure on available resources. The result he said has led to increase in greenhouse gas emissions, which impact on the global climate change.

Dr. Mutua said the study would use optimal control model and ordinary least squares methods to investigate the impact of electric power generation on reduction of greenhouse gases and power costs in Kenya. The research also intends to address the dearth of academic literature on the link between electricity power generation mix and its impact on greenhouse gas emissions and electricity costs in the developing countries. The findings will be useful to academicians, policy makers and development partners in understanding the implications of these developments on the reduction of greenhouse gases using a balanced generation mix as well as their impact on power costs in the country.

Plenary Discussion

Commenting on the two presentations, Dr. Mulwa and Prof Kimuyu noted that the two proposals were very good and suggested that he should refine one proposal so that he can send one strong paper that can be the basis of other papers. On the same note, Prof. Mariara advised on the need to send only one strong proposal that has potential to be accepted rather than jeopardizing the two, but submitting half-baked work given the looming deadline.

EFD-KENYA POLICY RESEARCH REVIEW/STRATEGIC PLAN

The EfD-Kenya Strategic Plan is developed in recognition that the MDGs failure to pay adequate attention to environment has led to a lot of attention to the environment in the Sustainable Development Goals (SDGs) focusing on environment and natural resources.

In the 2016-2020 plan period, EfD-Kenya's research will focus on several thematic areas related to the SDGs namely: energy; climate change (sub-themes – agriculture, health & energy); forestry; water; extractive industry; urbanization; and green growth. These themes are priority areas for both national and county governments and have important implications for environmental protection, poverty reduction and green growth.

Part of day 1 and day 2 were dedicated to discussions on the way forward in drafting the five-year policy research review/strategic plan. The process was guided by EfD guidelines which provided useful and strategic input into the plan and activities with the following steps:

Step 1: Policy Context of Research Themes

This step involved stating the purpose of working on each research theme and identifying particular societal problems that can be linked to EfD-Kenya's research. This step had already been realized in an earlier EfD-Kenya Executive meeting, therefore the researchers decided to go to the next step.

Step 2: Mapping of Policy Processes

The step involved identification of the most important policy processes, sector strategies, major investment programmes or legislation underway (or existing) that relate to the research themes. Under this, the themes were also to be matched with both the Sustainable Development Goals (SDGs) and the Intended Nationally Determined Contributions (INDCs).

EfD-Kenya members had earlier in the year already identified themes and matched them with the SDGs. For the INDCs, the team used Kenya INDCs for the research themes and selected the

most appropriate mitigation and adaptation strategies and included them in the draft Strategic Plan. The team also identified the policy processes, strategies, legislation and others that are important to the problems being looked into the researchers. These included Acts of Parliament, Bill, Government Policies and Strategies and many others.

Victor Mose explains a point on INDCs as John Nyangena looks on.

Step 3: Stakeholder Mapping

This step required identifying stakeholders who have an interest in the research themes and/or who could stand to gain or lose from a tentative policy change that could be related to the research findings. The awareness of stakeholders, their positions, interests and power can enhance the chances of research informing decision-making. This is also an important input when considering how to improve the chances of informing policy processes with research findings.

The activity involved brainstorming and grouping the stakeholders into four categories; private sector stakeholders, public sector stakeholders, civil society stakeholders, and academic

stakeholders. The team members were divided into working groups so as to come up with stakeholder listing for particular themes and then report back to plenary.

Step 4: Analyzing Power and Interest of Stakeholders

Once identification of all possible stakeholders was done, the team narrowed down the number of actors to those considered most important. Then, the stakeholders were organized into four categories where there are those with a 'high' power interest who have a professional interest in the research themes or are likely to be substantially affected by any policy change, and those with 'high' power who have substantial influence to promote or block a tentative policy change and therefore have an interest in using or not using new research on the issue.

Step 5: Prioritizing Stakeholders

The last step involved stating the reasons for involving each stakeholder in the research themes, by informing, consulting, involving or collaborating. The step also involved identifying the link/match between the EfD-Kenya or its staff's personal networks and the prioritized stakeholders, determining how strong the relation is and listing any actions that the EfD-Kenya considers most important for strengthening or expanding the network.

Vote of Thanks: Prof. Peter Kimuyu

Prof. Kimuyu gave a vote of thanks to all the participants for their attendance, contribution and patience throughout the workshop. He noted that a lot had been done for the two days highlighting that four (4) proposals and one (1) draft paper were successfully presented. He reminded the researchers that they had tight deadlines as some of the papers presented were to be refined and send to the EfD Initiative by 18th July, 2016. He also urged the researchers to continue building their social capital on environmental issues as this would increase EfD-Kenya's network.

EfD Kenya fellows and staff pose for a photo during the workshop

EfD Kenya Secretariate pose for a photo at the end of the workshop.

Appendix I – List of Participating Organisations and their Websites

- University of Nairobi (www.uonbi.ac.ke)
- School of Economics (www.economics.uonbi.ac.ke)
- Environment for Development Kenya (www.efdinitiative.org/Kenya)
- Kenya Institution of Public Policy and Research and Analysis (www.kippra.org)
- Energy Regulatory Commission (www.erc.go.ke)
- CIAT (https://ciat.cgiar.org/donors/kenya)
- People Daily (http://epaper.peopledaily.co.ke/#folio=1)