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Mainstreaming Gender in Bioenergy Projects: Lessons from PISCES

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PISCES

Policy Innovation Systems for Clean Energy Security (PISCES) has been a five-year Research Programme Consortium funded by the UK's Department for International Development (DFID) and has developed new knowledge for the sustainable use of bioenergy to improve energy access and livelihoods in poor communities. PISCES was led by the African Centre for Technology Studies (ACTS), Kenya with lead partners Practical Action, M.S. Swaminathan Research Foundation (MSSRF), the University of Dar es Salaam and the University of Edinburgh, together with a network of national and international partners and collaborators.

Policy Working Group (PWG)

The Policy Working Group (PWG) of PISCES has been an expert working group whose objective has been to develop a consultative and participatory policy methodology to discuss the policy issues and guide policy statements on bioenergy. The group, with focus on Kenya and Sri Lanka, achieved this by bringing together policy makers, stakeholders and experts to develop a combined methodology on participatory policy dialogue and applying the same in developing bioenergy policy.

Main approaches to gender and bioenergy in developing countries

This section sets the pace by reviewing the evolution of debates around gender and bioenergy and how they relate to developing countries.

Overview of gender perspectives on energy

Bioenergy is defined as all energy from plant-derived organic matter available on a renewable basis or purpose grown energy crops, also referred to as biofuels, natural forests (bioresources) and residue and waste (bioresidue) (FAO, 2009). Gender on the other hand is used to describe those characteristics of men and women which are socially determined. This includes the different roles and responsibilities of women and men in a given culture or location which are influenced by social, economic and cultural factors (FAO, 1997, 2004).

Since the mid-1980s, there has been a growing consensus that sustainable development requires an understanding of both women's and men's roles and responsibilities within the community and their relations to each other. This has come to be known as the Gender and Development (GAD) approach. The main objective of GAD is mainstreaming women's needs and perspectives into all activities including those that pertain to bioenergy. Mainstreaming acknowledges that all activities and operations have a

gender impact and do not automatically benefit men and women equally. Gender Equity therefore aims to reflect similar or equal inputs, just and fair valuation of men and women's efforts. This implies that, regardless of the differences in the gender divisions of labour, resources, opportunities, treatment and potential, and other factors, the rewards accruing to men and women for similar work, skills and knowledge, have to be of the same quality and reflect the inputs they have contributed.

The gender debates in bio-energy subsector have been spurred by different considerations since 1995 when the UN's Fourth World Conference on Women was held in Beijing. It has been reported that throughout the world women continue to have fewer options and opportunities than men. Unequal treatment of men and women, and their differentiated social and economic roles, has also led to higher levels of poverty for women than for men in many developing countries. This being the case, achieving gender equity is an important reason for attention to women's and men's energy needs. In addition, improving the effectiveness of poverty alleviation programs in line with the Millennium Development Goals

(MDGs) adopted by the UN General Assembly is another inspiration. Access to affordable energy services is an essential prerequisite to achieving economic growth and poverty reduction. In order to achieve the global poverty reduction target, the distinct energy concerns of women and men need to be addressed through gender sensitive policies and programmes.

Energy and gender debates contextualize energy poverty as having a woman/gender dimension. Out of the 1.3 billion people currently living in poverty, 70% are women (Clancy, 2004). In developing countries, women are depicted as energy managers and are responsible for provision of household energy needs in addition to food. The commonest source of this household energy is biomass which plays an enormously important role in the lives of the rural poor in developing countries, in the form of wood for cooking and heating. However, it is associated with increase in drudgery and overburdening women hence leaving them insufficient time for participating in economic empowering activities among other negative effects. Arguably, gender/women and energy has emerged as one of the critical pathways for linking energy interven-

tions to the MDGs. However, despite this entry point to gender, energy poverty and gender equity concerns exist at every level of energy sector. This paper uses the PISCES programme to reflect some of the embedded challenges.

Evolution of gender approaches

Gender debates embracing bio-energy have come a long way. Around 1980s, the focus was largely on environmental concerns as opposed to bioenergy. For instance, the Brundtland Report, *Our Common Future* in 1987 went a long way into promoting environment issues in the development process. This captured the attention of eco-feminists and development agencies who attempted to find a link between women and environment. This resulted to what is referred to as Women, Environment and Environmental (WED) era. This however elicited some concerns related to how women's time and labour was interpreted in terms of burden as opposed to how this could be linked to development. This saw the emergence of Gender, Environment and Development (GED) approach. This approach aimed at incorporating gender perspective on environment rather than a woman-only perspective. Subse-

quently, gender debates started taking sectorial dimension and a platform emerged with energy orientation.

The early debates around gender in developing countries tended to focus on rural household as the unit of analysis. Women were depicted as the energy users and suppliers in the households based on division of labour with women playing the victim (Clancy et al. 2004; Cecelski, 2004). Consequently, the Women In Development (WID) approach was advanced to demonstrate the important role of women in the energy sector. This view still continues to hold root. The justification for this being that 70% of the 1.3million people living in poverty are women, a third of households in rural areas are female headed and women are disadvantaged compared to men in terms of access to and control of resources, technical skills hence restricting women's response to energy interventions (Clancy et al. 2004; Cecelski, 2004). The aforementioned gender and development approaches tended to overlook the fact that women and men have different energy needs and women were also generalised as one homogeneous social group (Cecelski, 2000, 2004).

Arguably, the question of gender has been included in

energy debates and with the acknowledgement of energy poverty in developing countries, improved technologies have been introduced. The rising interests in bioenergy development is thus characterised by efforts to develop a modern and efficient bioenergy production systems. For instance, development agencies have sponsored energy saving stove programmes, biogas and solar voltaic cells in a number of developing countries (Clancy 1999; Cecelski, 2000; Leach 1988). To maximise the benefits that can be derived from access to energy services, the energy service perspective is being popularised. This approach puts emphasis on, not only on the fuel or the technology, but on the purpose to which the energy will be put to use (Dutta, 2003). This approach focuses beyond the woman, taking interest in men's needs, not just because their energy needs are different but mainly because the activities of one may impact the opportunities of the other (Clancy 2004). In addition, involving men in gendered thinking helps eradicate cultural barriers that may be hindering women from participating fully into development.

The concept of gender equality and poverty alleviation in view of development has begun to receive considerable

attention. Research work informed by sustainable livelihood framework (IDS, 2003) has provided lessons that we can draw upon in the analysis of the complex energy, poverty and gender equity nexus.¹ The work of Clancy et al. (2003) attempts to explain this nexus within a sustainable livelihoods framework but focuses on women more generally. One of their key finding is that most traditional gender analysis tools are not applied in energy work. Thus, the proposed framework articulates gender from energy poverty perspective by arguing that access to clean and affordable energy is a core dimension of poverty. This framework introduces key components for analysis namely livelihoods, energy services and impact of new energy services. It also pays particular attention to women in the analysis.

Although gender equality has been considered as a pathway to meeting poverty alleviation goals, there is lack of systematic approach on how this can be advanced especially in the energy sector. Moreover, gender inequality in the bioenergy sector exists and the need to bridge this gap is hampered by underdeveloped conceptual and theoretical frameworks that would connect gender, energy and development (Cecelski, 2004:2). Such frameworks

should help us understand the divergent implications of the wider application of bioenergy for both women and men. We find that research in these areas rarely provide gender disaggregated data. In addition, actual impacts of new technologies on lives of disadvantaged gender e.g. the case of women in developing countries, are mainly assumed. Gender disparities in relation to energy poverty are paramount in informing relevant policy dimensions in developing countries.

The absence of an appropriate framework for gender and energy research has prompted researchers to develop criteria for gender sensitive energy research. This has taken the gender and poverty approach more generally. According to Cecelski (2004), a number of important aspects in relation to gender have been elaborated. These include:

- Gender is treated as a separate category of analysis not as a subset of poverty.
- Gender analysis methods are systematically applied in gender sensitive energy research embracing both qualitative and quantitative methods.

- Gender analysis address women strategic needs and transformation of gender relations.
- The impacts of new energy technologies, services and policies on women and men.

These developments have enriched the gender-energy research methodologies as advanced by ENERGIA International (www.energia.org)

Towards an engendered approach to bioenergy activities

This guideline is informed by gender tools and indicators developed by ENERGIA (Clancy et al., 2007). The guidelines take into consideration the identification of gender sensitive indicators intended to measure progress for a particular programme or project in line with development objectives (UNDP, 2004). These indicators can be both quantitative and qualitative. Some of the important elements behind an engendered approach include:

- Creation of a gender-sensitive set of energy-related goals.
- Collection and use of data sets disaggregated by sex and other social

and economic variables to determine who is using what forms of energy to do what. There is inadequate or no information on the impacts of renewable energy interventions on women's work which is attributed to lack of disaggregated data.

- Identification of gender goals and development of gender sensitive indicators in line with these goals.

This paper takes into cognisance the importance of these elements in the analysis of the PISCES programme. We also take note that, an engendered policy can be attained through gender mainstreaming which is an approach that takes into cognisance the needs of both men and women in the planning and policy making process. This is spurred by their different energy needs due to their differing household roles, responses to crises, and coping mechanisms offering energy technologies and services that match those needs (ENERGIA, 2011). PISCES being a policy oriented programme, the policy brief aims at providing some guidelines on how any approach can create gender sensitive energy policies.

Lessons from PISCES

Methodology: Entry point for gender mainstreaming under PISCES

The basic thesis of PISCES is that the intersection of energy, water and food security plays a fundamental role in improving the livelihoods of rural poor in Africa and South Asia. If properly managed, modern bioenergy systems represent an opportunity to promote a sustained and balanced rural development. With this in mind, the action of PISCES is strongly oriented towards the promotion of initiatives with a strong socio-economic impact. Gender relations are central to this project and they represent a cross-cutting social parameter which PISCES has to take into account in its actions. In this respect, gender is used as an analytical framework

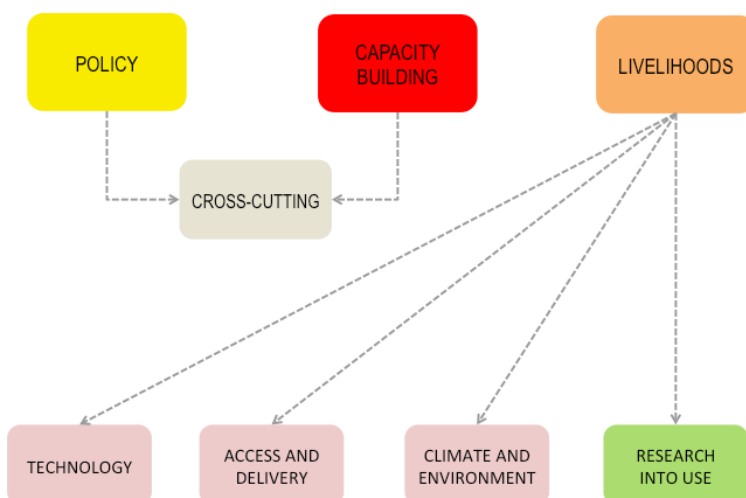
as well as an instrument to mainstream the socio-economic impacts of each initiative.

PISCES activities are framed around three main themes: policy, capacity building and livelihoods. These themes have informed the research PISCES has conducted in the past six years, which encompasses three main fields: Technology, Access and Delivery, Climate and Environment. To investigate the synergies between these three main research areas, PISCES has also identified four cross-cutting themes. 'Research into use' aims to ensure that research translates into reliable and appropriate policies; 'South-South-North' has the objective to improve knowledge exchange between southern and northern partners; 'capacity building' aims to understand the obstacles that inhibit PISCES stakeholders from realizing their goals and enhancing their abilities to achieve measurable

and sustainable results; 'Gender & Equity' has the objective of ensuring that gender and other factors are taken into account in policy recommendations.

In the next paragraphs, our purpose is to discuss some of the activities implemented by PISCES partners under the three main research areas in light of their relevance and impact on the cross-cutting theme of 'Gender & Equity' (G&E). We will make reference to three different concepts which need a brief definition: 'gender equality', 'gender equity' and 'gender mainstreaming'. *Gender equality* is the result of the absence of discrimination on the basis of a person's gender in opportunities, and in the allocation of resources or benefits and in access to services. This concept therefore sets the general goal which is to be achieved through specific interventions. On the other hand, *gender equity* entails the provision of fairness and justice in the distribution of benefits and responsibilities between women and men. It recognises that women and men have different needs and power and that these differences should be identified in a manner that redresses existing imbalances. The third concept, *gender mainstreaming*, has to be understood in the context of development implementation. It refers to the set of processes which bring an assessment of the implications for women and men

Entry Points for Gender Mainstreaming



into the planning and execution of any action (including legislation, policies or programmes, in any area and at any level). This means going beyond a focus on increasing the numbers of women involved in a specific initiative, so as to bring gender to the fore in all aspects of development work. The ultimate goal of this process is to achieve gender equality (UN 1997).

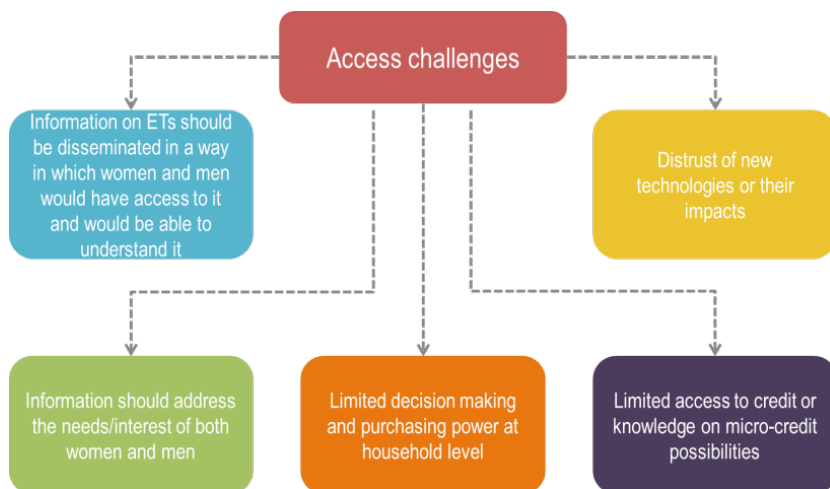
While the kind of intervention promoted by PISCES through the cross-cutting theme of ‘Gender & Equity’ fits into the field of ‘gender mainstreaming’, its main objective is to consider the impact of each partner’s activities from a ‘gender equity’ perspective, and in the long run its ultimate goal is promoting ‘gender equality’. The three main research fields of PISCES have relevant implications for gender equity and represent an opportunity for gender mainstreaming.

The first, ‘Technology’, investigates the appropriateness of modern and traditional technologies to make bioenergy a driver of socio-economic development without harming food and water security. This has implications for gender relations. For instance, the activities implemented have to ensure that women and men have equal opportunities to acquire new technologies, and that their needs are equally taken into account in the setting of research priorities and in the design, transfer and application of new tech-

nologies. The second theme focuses on access and delivery. Its objective is improving poor people’s access to bioenergy with a specific focus on how this impacts on food and water access. Given that gender relations have to do with power differentials, and asymmetries are usually result of inequalities embedded in economic, social and cultural practices, the issue of access and delivery is particularly sensitive to gender equity and has to be taken into account when designing gender mainstreaming initiatives. In this regard, activities have to ensure that men and women have equitable access to the bioenergy services that they need to improve their standard of living and quality of life. Thus, specific projects and programmes must be accompanied by policy initiatives assuring that sustainable and affordable energy services are not ‘gender blind’. The third theme investigates how climate change impacts on bioenergy provision and access. Given that vulnerability and adaptation are largely social issues –

as opposed to purely biophysical or technological – there are gender differences in climate change impacts and in adaptive capacities. These differences should be acknowledged in the adaptation process, to avoid further increases in gender inequality and to ensure the implementation of successful policies and measures.

In order to give critical attention to the implication of the three main research areas of PISCES for gender equity, and hence to add value to the output of the activities implemented, PISCES established a Gender Working Group (GWG). GWG is in charge of the evaluation of PISCES activities from a G&E perspective and of providing each partner with relevant recommendations on how to improve its activities from a gender equity perspective. In doing so, the GWG has developed a document entitled ‘Guideline for gender analysis under PISCES programme’ which is meant to be the main evaluation tool for gender mainstreaming. The guidelines have



two main objectives: reviewing the activities implemented by each country partner from G&E perspective; and planning G&E activities for the future.

The data collection guidelines

The document aims to establish a framework which each partner is required to adopt according to its own activities/projects, in order to mainstream gender effectively into PISCES activities. The guideline provides for six main steps of analysis and implementation and it is divided into two main sections. The first three steps are intended to provide basic information about the existing dynamics of gender relations at various levels. This section encompasses a review of the PISCES policy and project documents (step 1), mapping the broader relation between gender and energy at country level – so as to have a broader picture of the specific context where interventions fit into – (step 2), and identifying the potential target groups and stakeholders to design an appropriate gender mainstreaming strategy (step 3). The second three steps have the objective of designing specific actions for improving the gender mainstreaming performance of each partner in relation to the activities under implementation. Step 4 provides for the identi-

fication of the general gender goals to be achieved by the relevant stakeholders and target groups. Once the broader goals are identified, gender mainstreaming impact, progress and achievement are measured and evaluated through appropriate gender sensitive indicators (step 5). The last step of the guideline (step 6) aims to place the findings of the gender mainstreaming initiatives into the broader socio-economic context. Emphasis is placed on the impact of each activity on communities' livelihoods and the distribution of the benefits for both men and women. This is by far the most challenging and sensitive objective of PISCES gender mainstreaming strategy, which is intended to capture the practical and strategic benefits of the energy service and of the participation process for women and men. Central to that is the issue of access to information and control of resources. For instance, this include an evaluation of whether women and men have equal access to information about energy services, and whether they have equal access to credit, training, raw materials, land and other resources relevant to household and community's livelihood generation. This also includes an assessment of the impacts of introducing bioenergy systems for economic and productive domestic

uses, and more broadly raises the issue of the ownership of each development initiative (who controls the operation of the energy service?). Finally, it aims to enable the formulation of appropriate policies in the energy sector, promoting a balanced redistribution of the benefits between men and women.

The implementation of the guideline: the case of Sri Lanka and Kenya

In this section we will discuss the implementation of PISCES guidelines in two partner countries: Sri Lanka and Kenya. The information provided were generated by each partner and then discussed by the GWG in its working sessions. While at an early stage each partner provided a list of all of the activities under implementation, for practical purposes the GWG then decided to target only few of these activities so to capture in deep their impact on gender equity. Finally, we must keep in mind that the impact assessments presented below are only partial and they are result of an on-going work which is still in progress. The main purpose here is to show, from a methodological perspective, how the information was re-elaborated by the GWG and how the guideline document was actually put into practice. This could represent

a good starting point for similar projects aiming at evaluating the impact of gender equity into bioenergy projects. Finally, the document also provides some recommendation to improve the performance of the activities implemented on gender equity in the two case analysed.

The case of Sri Lanka

Over 80% of people in Sri Lanka make use of traditional biomass as a main source of energy for cooking, thereby contributing to both energy and food security. At the same time the use of biomass impacts on the ecological balance and sustainability of natural resource use. With this in mind, gender is a social indicator reflecting the needs, roles and responsibilities of men and women, and showing how livelihoods are generated at national, regional and household level.

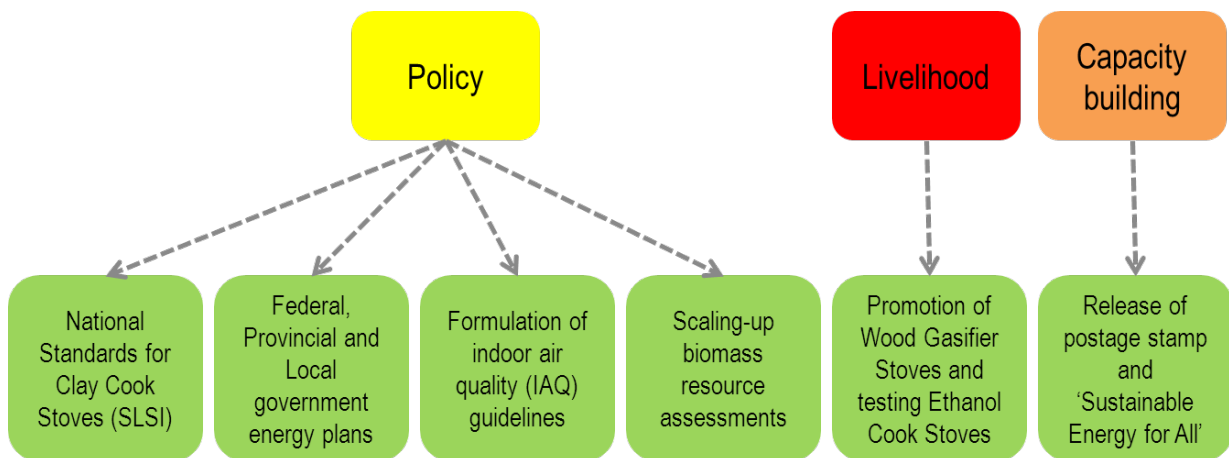
Practical Action Sri Lanka (PAC) is currently engaged on a wide range of activities under PI-SCES, including the formulation of appropriate policies and regulatory processes for bioenergy; field experiments; research; pilot studies; and scaling-up of new technologies. All these activities impact on gender equity. A fuller list includes the following:

1. Formulation of National Standards for Clay Cook Stoves;
2. Provision of Wood Gasifier Stoves;
3. Testing Ethanol Cook Stoves;
4. Assessment of biomass use in industry and institutions;
5. Formulation of indoor air quality (IAQ) guidelines;
6. Scaling-up biomass resource assessments in

selected 3 provinces of Sri Lanka;

7. Biomass flow rate studies and systems dynamics modelling;
8. Improving statistical models for projecting energy parameters from grass-roots data;
9. Formulation of Federal, Local and Provincial Government energy plans;
10. Release of postage stamp and first day cover on 'Sustainable Energy for All'.

The GWG, based on a gender audit carried out by Prof. Anoja Wickramasinghe for PAC, has identified several entry points for effectively mainstreaming gender into these activities.



Activities under the theme of Policy, Sri Lanka National	G&E goal	Target Stakeholders	Indicators	Expected/realised impact
Standards for Clay Cook Stoves (SLSI)	Standardizing the clay cook stoves (traditionally labelled as Anagi) to benefit consumers (men&women). User/women friendly reliable and acceptable device-stoves for cooking	Family members of households	Time saved for welfare and productive work;	Access to better quality stoves by women and men, affordability and acceptability.
Federal, Provincial and Local Government energy plans	Making the divisional, provincial and national policies gender sensitive.	Sri Lankan public	Reviews of existing policies and practices; proposing best entry points for mainstreaming gender into proposed policies and statutes.	Mapping and presenting spatially significant plans with specific gender concerns, opportunities, enterprises, and technology solutions.
Formulation of indoor air quality (IAQ) guidelines	Ensuring a clean indoor environment, especially for women who expose to indoor air pollutants	Housewives, children, Sri Lankan public	Gender disaggregated data on the potential impact of IAQ guidelines	Integration of gender specific aspects/variables related to IAQ strategies
Scaling-up biomass resource assessments in three selected provinces of Sri Lanka	Collecting gender specific knowledge, based experience and data contributing to bioenergy resources in Sri Lanka.	The three Provinces' public	Collection and management of gender specific data for scaling up.	Identifying gender specific barriers to developing bioenergy resources

Thus, for practical reasons the GWG decided to focus its attention on six out of ten activities, which were then grouped under the three main research fields of PISCES: Policy, Livelihoods

and Capacity Building. A summary of this is provided below: The diagram above shows that there is a potential high impact in the field of policy and a poten-

tial impact on capacity building and livelihoods. We will therefore proceed by discussing the relevance of each initiative to G&E in light of the broader field of research they insert into.

Policy

Developing appropriate regulatory processes and policies is extremely important to maximise the benefits of bioenergy for local communities, and particularly for the rural poor. Thus, it is even more important to include appropriate mechanisms assuring equal benefits for both women and men at the stage of formulation, adoption and implementation. This is of particular relevance to the four activities PAC Sri Lanka has targeted under the research theme of policy: Formulation of National Standards for Clay Cook Stoves; Formulation of Federal, Local and Provincial Government energy plans; formulation of Indoor Air Quality

(IAQ) guidelines; scaling-up biomass resource assessments in three selected provinces of Sri Lanka. As provided by the guideline presented above, the GWG has identified the general goal in relation to G&E, the relevant stakeholders to be involved, the specific indicators, and the expected impacts and results of each of these initiatives. These findings are summarised in the table below.

Based on this review, we observe that collecting gender disaggregated data on the socio-economic setting of the policy, as well as on its expected outcomes, is a first step to guarantee equal benefits for women and men. Tools to achieve this are: undertaking participatory appraisal activities and work-

shops that actively involve women and men; and establishing relationships between the energy sector and grassroots organisations. From this perspective, PISCES stresses the importance of involving a wide range of actors, including policymakers, civil society organisations, research institutions and the private sector. The rationale is that public opinion must be aware of the benefits of formulating legislation and regulatory processes informed by gender equity principles. At this stage is also necessary to identify any anticipated negative impacts of the regulatory framework on women and men.

Second, to ensure that the gender dimension is taken into account in all the relevant steps of

Activities under the theme of Policy, Sri Lanka	G&E goal	Target Stakeholders	Indicators	Expected/realised impact
National Standards for Clay Cook Stoves (SLSI)	Standardizing the clay cook stoves (traditionally labelled as Anagi) to benefit consumers (men&women). User/women friendly reliable and acceptable device-stoves for cooking	Family members of households	Time saved for welfare and productive work;	Access to better quality stoves by women and men, affordability and acceptability.
Federal, Provincial and Local Government energy plans	Making the divisional, provincial and national policies gender sensitive.	Sri Lankan public	Reviews of existing policies and practices; proposing best entry points for mainstreaming gender into proposed policies and statutes.	Mapping and presenting spatially significant plans with specific gender concerns, opportunities, enterprises, and technology solutions.
Formulation of indoor air quality (IAQ) guidelines	Ensuring a clean indoor environment, especially for women who expose to indoor air pollutants	Housewives, children, Sri Lankan public	Gender disaggregated data on the potential impact of IAQ guidelines	Integration of gender specific aspects/ variables related to IAQ strategies
Scaling-up biomass resource assessments in three selected provinces of Sri Lanka	Collecting gender specific knowledge, based experience and data contributing to bioenergy resources in Sri Lanka.	The three Provinces' public	Collection and management of gender specific data for scaling up.	Identifying gender specific barriers to developing bioenergy resources

policy formulation is desirable to guarantee an equal representation of women and men at the stage of policy drafting and adoption. For instance, it is important to identify any constraints on women's participation and make concrete recommendations for increasing their involvement. Other potential tools include involving gender experts in the formulation of legislation and guidelines, and providing information on policy gaps at the stage of policy formulation. Finally, regulatory frameworks guaranteeing equal benefits for women and men have to include gender indicators of success for monitoring and evaluation (see below), and include adequate financial and budgetary mechanisms to ensure an effective translation of the policies into practice.

Livelihood and Capacity Building

Bioenergy is central to livelihood generation at community and household levels. PAC Sri Lanka is currently engaged in several initiatives which have a direct impact on the provision and quality of energy (including the biomass source) and technology development (testing ethanol cook stoves and provision of wood gasifier stoves). These activities have a strong gender dimension as they are likely to impact directly on the household workplace environment and

on existing cooking practices. Thus, they impact on gender relations at household level and have the potential to improve the daily quality of life.

At a broader level, PAC Sri Lanka is involved in awareness and capacity building activities – such as the release of postage stamps and the initiative 'Sustainable Energy for All' – which aims to bring bioenergy to the attention of the public. From a gender equity perspective, both technology development and awareness campaigns should stress the differing energy needs of men and women. As provided by the guideline presented above, the GWG has identified the general goal in relation to G&E, the relevant stakeholders, the specific indicators, and the expected impacts and results of each of these initiatives. These findings are summarised in the table below.

Based on this review, we observe that to capture the implications of introducing a new technology such as wood gasifier stoves and ethanol cook stoves, it is necessary to understand the different impacts for women and men in socio-economic and cultural terms. A qualitative impact assessment should be carried out before the introduction of the technology (to understand how it is likely to affect current gen-

der relations) and after (to see whether the actual impact is different from the one expected). In this regard, development effectiveness can be enhanced by introducing participatory gender research and assessment methods. For instance, in the case of gasifier stoves, ensuring equal participation of women and men in the piloting process and covering information on cost benefit analysis of the technology are extremely significant for gender mainstreaming. In this regard, the question of access to technology is important in defining who is likely to benefit from it, and this should be reflected in form of specific quantitative and qualitative indicators (see below). Indicators should highlight the contribution of the technology to improving the livelihood of women and men equally, and in relation to their productive, and strategic needs. Developing appropriate indicators helps to design interventions to reduce any gap between genders, for instance in terms of income, welfare, and/or 'productive' work.

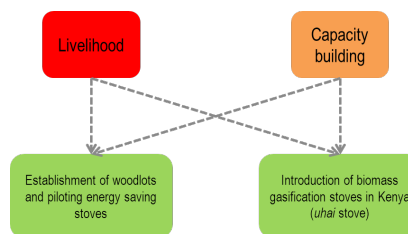
The case of Kenya

The work of the African Centre for Technology Studies in Kenya (ACTS) is strongly oriented towards the development of suitable technologies to improve poor communities' and households' access to bioenergy. These interventions fit into

Livelihood and CB,	G&E goal	Target	Indicators	Expected/realised impact
Sri Lanka		Stakeholders		
Promotion of Wood Gasifier Stoves and testing Ethanol Cook Stoves	Identifying gender specific needs for clean cooking energy solution; Providing efficient wood gasifier stove to enhance indoor air quality; converting illicit micro distilleries to socially accepted enterprises.	Housewives in urban and semi-urban areas; Village- based illicit micro distilleries	Participatory assessment methods, with instructions to women on the piloting process covering information on cost benefit analysis of the technology	Improved community health and welfare through enhanced standards. Identification of differential benefits of efficiency, energy use, cleanliness, convenience, conservation, health and time savings.
Release of postage stamp and first day cover ons 'Sustainable Energy for All'	Awareness of sustainable energy sources equally by both men and women	School children	Number of school/children involved	Understanding of the message: specific roles, energy options and opportunities in energy conservation and efficiency

the PISCES research areas of livelihood and capacity building. As discussed in the case of Sri Lanka, the development of new technologies as well as their adaptation to the specific local context has socio-economic implications for gender relations. A gender dimension to the relation between energy access, technology development and livelihood generation exists because of the social divisions in poor communities that allocate the primary responsibility for household energy provision and use to women, and limit their decision-making within the household and community. In this regard, the work of ACTS focuses on at least three initiatives with a potential high impact on gen-

der mainstreaming: establishment of woodlots and piloting energy saving stoves (*uhai* stove) in Oyola and Wakesi villages in Kisumu County; introduction of biomass gasification stoves. The relation between these initiatives and the broader research areas of PISCES is summarised in the table below.



The diagram above shows that there is a potentially high impact in the field of capacity building and livelihoods. In this regard, the GWG has identified the

general goal in relation to G&E, the relevant stakeholders to be involved, the specific indicators, and the expected impacts and results of each of these initiatives. These findings are summarised in the table below.

The relation between technology development, rural livelihoods generation and energy security has implications for gender equity from different perspectives. Given the prevailing socio-economic, political and cultural biases against women in the access to resources in rural areas of Kenya, the introduction of a new technology does not necessarily bring equal benefit to women and men. Inequalities are usually embedded in the social and economic structure. As these in-

Activities, livelihood, CB	G&E goal	Target Stakeholders	Indicators	Expected/realised impact
Establishment of woodlots and piloting energy saving stoves (uhai stove) in Oyola and Wakesi villages in Kisumu County	<ul style="list-style-type: none"> - Reduce drudgery -Reduce the time that women spend in collecting firewood in floods - Reduced environmental degradation which affects both men and women - Improved economic status - By having more spare time, women can now participate in economic activities - Income generation through woodlots and sale of seedlings used as a source of collateral for accessing loans -Better income to provide assistance for orphans and poor families 	ACTS, Uhai Lake Forum (a CBO), IDRC/DFID	<ul style="list-style-type: none"> -Number of women/children/men suffering sickness -Time spent fetching water/fuel -N. of technology uptakes by men/women/youth -N. of active businesses -N. attending evening classes - N. of loans accessed through the use of woodlots as collateral - N. of women/men trained on IT from the energy centre - N. of women in committees/ No. of issues raised by women in bioenergy fora -Women feel more connected to others -Clauses in policy documents, and budget allocations to gender mainstreaming in energy policies and other related policies eg. the National Climate Change Response Strategy (NCCRS) and the National Biofuel Strategy 	<ul style="list-style-type: none"> -Improved community welfare (e.g. health) -Access to more clean technologies for convenient fuels (drudgery) -Access to water (health) - Access to financial credit through the use of woodlots as collateral - Improved knowledge of bioenergy technologies - Increased awareness on indoor air pollution -Business started (income generation) -Access to information -Women/girls given opportunity to pursue further /higher education, short courses
	<ul style="list-style-type: none"> -Reducing the amount of firewood used for cooking and heating -Solar operated lamps to provide cheap alternative to light in households 		ACTS, TERI, DFID, Kartech engineers, Renewable Energy Technology Assistance Programme (RETAP)	<ul style="list-style-type: none"> - N. of policy meetings trained partners participate in etc - N. of women holding key policy positions after PISCES training

equalities are reproduced, they strongly affect the pattern of access to resources. Therefore technologies emphasising economic sustainability are usually less accessible to women. In addition, when women have to rely on inefficient technologies for cooking and other purposes

with traditional biomass, this is frequently the cause of health hazards such as indoor air pollution. Relying on traditional biomass is also time-consuming and, given that women are usually in charge of firewood collection, this prevents them from participating in other productive

economic activities. The general goals of the G&E initiatives proposed by ACTS are to limit as much as possible such adverse effects on women. For instance, the establishment of woodlots and the piloting of energy saving stoves aim to reduce drudgery and the time women spend

in collecting firewood when it floods; they help to mitigate the effects of environmental degradation on the poorest households, and create the conditions for women to participate in other economic activities. Nonetheless, women do not usually own land; and where they have access to land, they may not have control over what is planted. An appropriate regulatory framework is therefore needed to make sure that women can really access and enjoy the benefits of these projects. Thus, gender disaggregated data should be collected at different stages of the implementation. This enables determining the impact of the initiatives on both men and women, and whether benefits are equally shared. In the same vein, if the introduction of biomass gasification stoves has the objective of reducing the amount of firewood used for cooking and heating, and providing cheap alternative to lighting in households, it is important to develop financial mechanisms to allow women access these energy services. Economic decisions in most rural areas are taken by men, and women have a limited control of the total household expenditure. If energy or new stoves have to be purchased, men are likely to take the decision. Therefore energy decisions impact men and women differently. The problem then is how to enhance the ability of women

to afford different sources of energy, including the adoption of improved cook stoves. A main recommendation is to design and develop financial mechanisms to allow women access sustainable energy services. A possible tool could be engaging and building the capacity of local stove manufacturers to develop and locally-produce a biomass gasification stove.

Conclusion

The aim of the policy brief was to apply the guidelines towards putting into perspective the place of gender in the PISCES Programme. A few lessons can be drawn for policy recommendations. Firstly, although challenging, collecting gender disaggregated data is a first step to guarantee equal benefits for women and men as a starting point. Secondly, each of the gender mainstreaming endeavours must be informed by a careful analysis of the stakeholders, their gender goals and consequently development of gender sensitive indicators aligned to these goals. We acknowledge that the policy brief falls short of meeting this criteria but it opens up a different thinking around how gender sensitive bioenergy activities can be implemented.

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Notes

1. For example the Energy, Poverty and Energy initiative (EnPoGen) under the Asia Alternative Energy Program (ASTAE) of the World Bank; see also Cecelski, 2004).



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