Main Conclusions from the GFSE Thematic Workshops

The Global Forum on Sustainable Energy (GFSE) organized two expert workshops to discuss challenges for the diffusion of appropriate renewable energy and energy efficiency solutions in developing and emerging countries (SDG 7) as well as the importance of energy efficiency measures and renewable energy solutions to reduce urban poverty (focus on SDGs 1, 7, and 11). The main conclusions from these workshops were as follows:

Trust & Mutual Understanding

- Building up trust and confidence between involved stakeholders is a key factor in various contexts. A relationship of mutual trust is a precondition for entrepreneurial activities related to energy efficiency and renewable energy services, for making use of a product or service and for developing innovative solutions further.
- Lack of trust between low-income customers and companies providing energy services occurs due to a number of factors, such as lack of legal titles by customers and problems to enforce contracts and the perception of the customers that energy suppliers may tend to discriminate them or disconnect them from the services without considering their particular circumstances. There is a need to increase trust and mutual understanding between energy supply companies and low-income customers and develop innovative business models that adequately address the customer interface in the areas of sales, payments, service and disposal/replacement of energy efficiency and renewable energy products in a cost-effective manner.
- The key to successful clean energy innovations lies in understanding problems in their local context, through knowledge about existing resources and obstacles and the means people already have access to. Local people understand their own needs better than anyone else and can contribute to the technological innovations necessary to meet those needs.
- Awareness of the gender implications of innovative solutions, an understanding of the cultural context in a specific market, community structures, customer´s preferences and the related mindset of its market actors have to be taken into consideration when designing a certain renewable energy or energy efficiency product or service – and in the best of cases, customers should be involved in product development as early as possible. This understanding is needed to stimulate the creation, diffusion and penetration of RES/EE innovations in developing and emerging countries.

Affordability & Economic Viability

- Affordability for low and fluctuating incomes and economic viability has to be at the core of each successful business model in markets with financial constraints, as cash flow restrictions often do not allow consumers to even plan a month ahead. Additional barriers that discourage low-income people from using RES/EE solutions are lack of technologies that meet their specific needs, low-quality products lacking robustness and durability and lack of awareness about suitable products and services.
- Innovative business models, which address low and fluctuating incomes and are designed to increase the diffusion of appropriate RE/EE technologies that are tailored to the poor´s income patterns and specific needs, are already emerging in developing and in emerging countries.
- Policies to enhance the use of energy saving measures should be increased as poorer segments of the society already spend disproportionately more for energy services. Synergies between energy efficiency and renewable energies should be explored, since energy efficiency measures can help to make the renewable energy supply easier and more cost-effective.
- To maximize effectiveness of policies, energy suppliers and/or state actors should introduce pro-poor measures (measures to reduce poverty) in urban poverty areas – this is often done in water and sanitation sectors. A pro-poor approach and the willingness of customers to pay must be taken into consideration when developing policies to guarantee sustainability.

- Energy efficiency and renewable energy technologies can already provide cost-effective energy services in a number of markets. Through innovation, the costs of the technologies have been reduced substantially in the past years. However, some technologies have initially high capital costs and low-income households may not be able to afford them. Therefore, innovative, affordable financing schemes are required to enable low-income people to purchase energy efficient equipment and/or renewable energy services.

Funding Gap & Bankability of Projects

- Bridging the existing funding gap by making projects bankable and ensuring access to finance with a focus on small and medium-sized enterprises (SMEs), that are often not considered in large-scale programmes and projects of development actors, are crucial enabling factors.
- Strategies targeting renewable energy or energy efficiency solutions to reduce urban poverty need to establish an inherent link between the strategy and actual bankable projects, so that these can be linked to appropriate financing mechanisms or schemes.
- Climate financing instruments can support the mobilisation of the required upfront investments and help making access to affordable capital for renewable energy and energy technologies easier.

Partnerships

- In the context of the currently emerging innovative supply systems in many countries that replace traditional supply models, a rethinking of public and private ownership structures is often required. The private sector has a key role and the combination of innovative business models and technology advances is already enabling a market-based clean energy transition in developing countries. Appropriate policy frameworks and support instruments are needed to enhance private sector engagement in low-income markets.
- Multiple actors have a role to play in bringing about a clean energy system and collaboration between industry, science, policy and society is required. There is a need to combine different kinds of knowledge to successfully deliver energy services that suit local demands. This knowledge comes from technology manufacturers, local communities, market actors, the academic sector etc.
- Foreign entrepreneurs and particularly small- and medium-sized enterprises (SMEs) should strive to build strong partnerships with local public and private actors and use synergies as much as possible. Understanding the local context is key and market research specific for each business case is needed. However, business-case specific market research is costly and in many instances data availability and reliability remains poor, so creative solutions have to be applied to do research for consumers at the bottom of the pyramid. A reliable regulatory framework can contribute to make the local context more predictable for foreign entrepreneurs, but any foreign actor in developing and emerging countries will be best advised to collaborate with local stakeholders, draw on existing research and locally available data to collect the most suitable market information for their specific products. In this way, they can tailor the RES/EE products to the local needs and build a solid basis to assess business risks and opportunities.
- Increased knowledge enhancement on the local and national levels in developing countries is needed. Training should meet local needs, but be aligned, whenever possible, to international standards. This process requires substantial communication and backup from the actors involved. An assessment of the skills needed in the local markets should be conducted jointly by international and local actors prior to their development to make sure that the training responds to demands of the companies.

Capacity Building

- If possible, capacity building should not only take into account the needs of individual organisations, but also the institutional context (e.g. roles and coordination arrangements between different public institutions, which may support or weaken the capacity building exercise). Attention should also be

paid to an effective utilisation of available financial and human resources. Furthermore, capacity development should be measured systematically to assess its effectiveness and to undertake course corrections, if necessary.

- Capacity development should not be solely understood as a North-South exchange. The promotion of South-South learning solutions and triangular cooperation should also be pursued, such that the experience and capacity that already exists in developing countries can be utilised.
- Training and education programmes yield the most beneficial results if they are designed as long-term initiatives that are integrated into national education systems. Although the build-up of local capacities should not happen on a case-by-case basis, the specific skills and capacities needed for an innovative sustainable energy solution have to be identified in each case. A committed cooperation between universities, companies and NGOs can enable the transition from research on innovative RES and EE technologies to effective practical implementation. The link to local universities in developing and emerging countries is important to adapt products and services to the local context, yet requires a lot of communication and feedback loops between all involved actors. This approach holds great potential for replication in different local contexts.
- Technology maintenance poses challenges for the long-term sustainability of many technological projects or programmes, so a better training of the local workforce combined with adequate payment has the potential to substantially improve the long-term project results.
- Greater emphasis has to be placed on engaging consumers in developing and emerging markets in order to improve product design, educating consumers on the benefits of innovative and sustainable products and thereby raising consumer acceptance, while educating customers and other market actors on the importance for an after-life-use of products to enable the creation of a circular economy.
- Addressing the disproportionate impact of poverty on women is of paramount importance. Access to clean energy services plays a crucial role in women's economic empowerment. Investments in women's access to energy services for enterprise development are necessary. In addition, women entrepreneurs' capacities to engage in clean energy local value chains must be strengthened. Training and education to harness women's power should be a priority.

<u>Regulatory Instruments</u>

- Access to sustainable energy is an indispensable precondition to enable the creation of a local manufacturing industry. The mere existence of supportive policies or framework conditions is an important step in enabling entrepreneurship and the development of local value chains, but further considerations have to address their stability and reliability in the long-run, and the effectiveness of implementation.
- Lack of quality and robustness of energy-efficient products or renewable energy technologies can have serious repercussions, since lower income segments of the populations cannot afford expensive repairs or the purchase of replacement products. Regulation and quality control can help prevent that low-priced and low-quality solutions are used, which have very short product lives and thereby endanger brand recognition and consumer trust in a technology. Designing appropriate regulations, which ensure products for low-income individuals are of good quality, and developing complementary policies is necessary.
- Introducing and enforcing minimum energy performance standards (MEPS) and labelling as well as environmental standards for energy consuming products contributes to increase awareness of low-income consumers about energy efficient and environmentally-friendly products. If introduced in a harmonised manner at the regional level, MEPS contribute to the creation of regional markets for energy efficient equipment with economies of scale, and can prevent market distortions due to substandard foreign products entering the local markets, as well as foster the development of local value chains for energy efficiency, where local actors are able to produce, assemble, maintain and repair equipment.

- Regulatory instruments, which encourage energy supply companies to focus on guaranteeing reliable energy supply for low-income individuals and promote the introduction of renewable energies and energy efficiency measures, should be introduced. For example, when designing energy efficiency obligations for energy suppliers, a link can be made to energy efficiency measures conducted in low-income households. The savings achieved at energy poor households can be multiplied by a factor larger than one, such that these savings count relatively more towards the achievement of the energy efficiency targets for energy suppliers.

Renewable Energy and Energy Efficiency for Cities

- Cities are very vulnerable to climate change and already today are being affected by its impacts. Extreme weather events (e.g. storms, floods, droughts, heat waves, sea level rise), for example, can easily disrupt urban infrastructures and services. High population density can complicate the impacts of such climate-triggered disruptions, given that the rapid urbanisation trends already pose a considerable strain on water and energy supply, land use, waste management, sanitation and transport. There is a sizeable urban poor population in developing and emerging countries living in low-cost housing areas or informal settlements with little or no infrastructure and services. This population is especially vulnerable to climate change because their homes are frequently located in hazardous areas.
- On the other hand, cities are well positioned to undertake climate protection actions. Long-lived urban infrastructures have a substantial influence on our ability to mitigate greenhouse gas (GHG) emissions and adapt to climate change. Therefore, it is important that decisions made today pave the way for low-carbon, climate-resilient urban infrastructures. Renewable energy and energy efficiency are a key element in making cities climate-resilient and can also have multiple benefits in different areas such as air quality, poverty reduction and sanitation.

Cross-Sectoral Solutions

- To enable a sustainable and circular economy in the long run, policies and framework conditions that prevent waste spillage from industrialised to developing markets at the end of a product's lifecycle have to be created together with a management system for the after-life-use of products.
- Integrated, cross-sectoral or cross-cutting financing solutions, such as resource efficiency loans, are needed to guarantee long-term sustainable solutions. Programmes addressing resource efficiency are becoming more important to foster the development of joint solutions, such as energy recovery from wastewater using highly-efficient large-scale heat pumps or through biogas production.
- Sectors that require a water-energy-land nexus approach constitute a substantial challenge in developing countries, due to the need for a coordinated line of action across local, state and national levels. However, in many cases, the existing framework conditions do not facilitate such investments. Policies are often designed to target investments into one sector, while neglecting another. It is therefore, necessary to make additional efforts to make the nexus approach between water, energy, food security and health operational on the ground.
- Particularly in the urban space, there is a strong interdependence between different technologies and the development of various infrastructures. Actors need to work together to address these interdependences so that infrastructure projects fit together, instead of competing against one another. The dialogue between the persons responsible for water supply, wastewater infrastructure, energy supply, as well as information and communication technology (ICT) in cities should support the use of synergies to develop joint programmes and projects.

The **Global Forum on Sustainable Energy (GFSE)** is a neutral multi-stakeholder platform which is facilitating international dialogue on energy for sustainable development by taking into accounts the special interests and challenges of developing countries. GFSE aims at the establishment of a sustainable world energy system from a social, economic and environmental perspective. GFSE contributes to both international discourse and information dissemination on sustainable energy.

Imprint Published and produced by: Global Forum on Sustainable Energy, c.o. Österreichische Energieagentur – Austrian Energy Agency, Mariahilfer Straße 136, A-1150 Vienna E-Mail: gfse@energyagency.at; Internet: http://www.gfse.at