GERES GLOBAL SURVEY ON COOKSTOVE PROGRAMS' NEEDS AND EXPERTISE

JULY-AUGUST 2011

Released: December 2011

Disclaimer

This summary is issued for those project implementers and decision makers who have participated in the survey or have an interest in the sector. It represents an overview of the GERES Global Survey results on improved cookstove programs' needs and expertise conducted in July-August 2011. The survey was conducted by a working group at GERES Cambodia, with no external participation and peer reviews of the process. The results represent solely the opinion of the GERES Cambodia working group and do not necessarily represent those of GERES in general. All requests and comments are to be addressed to the GERES Cambodia working group at the following addresses: i.baskoro@geres.eu; n.akhmedkhodjaeva@geres.eu.

ABOUT GERES

GERES- Groupe Energies Renouvelables, Environnement et Solidarités- is a French NGO created in 1976 after the first Oil Shock. The main areas of focus for GERES are: environmental conservation, climate change mitigation and adaptation, and improving the livelihoods of the poor. We are particularly involved in the implementation of engineering solutions for development and providing specific technical expertise. Energy efficiency programs, renewable energies and local economic development are GERES core activities. For more information, visit http://www.geres.eu.

CONTEXT

The stakes and methods in the household energy development sector have changed considerably in the past decade. In particular, the issue of sustainable dissemination of improved, fuel-efficient cookstoves in the context of energy poverty has been at the top of the agenda for many years and has now become one of the most important cross-cutting issues of the developing world, impacting upon issues of local socioeconomic development, maternal and child health, forest depletion and indoor air pollution. With nearly 3 billion people relying on biomass every day for cooking and heating, and with nearly 2 million dying every year due to the negative effects of smoke from traditional devices, the improved cookstove (ICS) sector requires a multi-actor and multi-method approach.

With over than 30 years of experience in implementing ICS programs all over the world, governments, development agencies, NGOs, universities and private companies have created a substantial body of knowledge on the subject. The recent decade has witnessed a change in the scale and the quantity of ICS programs. A number of coordinating and policy-making partnerships and foundations, exchange networks, and interregional coordination platforms advocating ICS have been created (ESMAP, PCIA, GACC, HEDON, GIZ HERA, EnDev, etc.).

According to the World Bank[1] "*the building blocks are finally falling into place*" creating unique momentum for national and international taskforces to make significant progress in this area.

GERES has been implementing ICS projects in Cambodia since the mid 1990's. One of its improved cookstoves - the low-cost clay, portable New Lao Stove (NLS) was introduced in Cambodia in 1996 under the Cambodian Fuelwood Saving Project (CFSP). Since 2003, 1.5 million NLS have been distributed in Cambodia without price subsidies. In 2007 GERES was the first ICS program implementer in the world to receive carbon credits verified by the Voluntary Carbon Standard (VCS) for the carbon reduction activities of its NLS project starting from 2003.

GERES is one of the most recognized European stakeholders in the ICS sector. In 2011, it received the Global Leadership prize from the Partnership for Clean Indoor Air (PCIA), for its efforts to reduce indoor air pollution as a result of the New Lao Stove project. GERES is also associated with GACC and PCIA in order to share its experiences and contribute to the goal of "100 by 20" announced by GACC and the UN.

Being one of the biggest ICS program implementers in Asia for over 15 years, GERES seeks to capitalize on its years of experience in professionalization and commercialization methods in the biomass equipment sector. GERES experts remark that despite the knowledge sharing networks, working group trainings, seminars and workshops, programs still struggle to achieve durable results in improved cookstove dissemination in the field due to the numerous local pitfalls. As an intervention opportunity, GERES now proposes to develop a program with the objective to **provide targeted and turn-key professionalization services** for the ICS sector in the LDCs of Asia and Africa. The program will operate **on a self-sustained institution model** and seek to provide services to the local private sector (either directly or via indirect support structures) to widely disseminate not only energy efficient biomass equipment, but also sustainable biomass fuels in LDCs.

[1] *References: "Household Cookstoves, Environment Health, and Climate Change: a new look at an old problem"*, 2011, the World Bank.

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This program is currently undergoing feasibility studies, and is expected to launch in mid-2012.

OBJECTIVE OF THE SURVEY

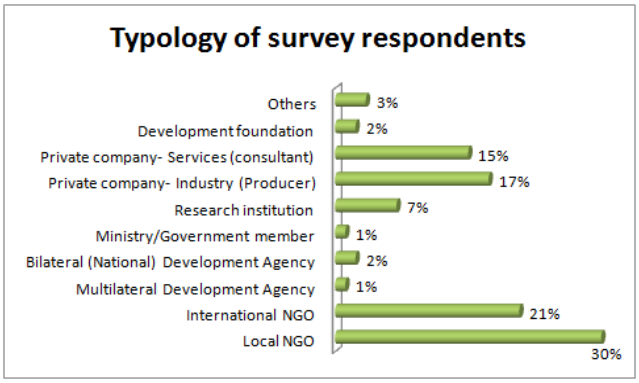
The preliminary global survey was conducted by the GERES Cambodia working group as a means to estimate the needs of the participants in terms of services and support, and to identify potential expertise. The study prioritized the identification of the "needs for services" over the definition of "proposed services", ensuring that the approach is closer to the actual needs of respondents.

SURVEY METHODOLOGY AND THE RESPONDENT ORGANISATIONS

The survey was addressed to a variety of actors (NGOs, donors, humanitarian, private, and research institutions), who are or wish to be involved in the improved cookstove (ICS) programs around the world (focusing on South Asian, Southeast Asian and African stakeholders). The working group looked up the potential respondents' contacts on available Internet databases and networks, but also gathered them from GERES employees' personal contacts.

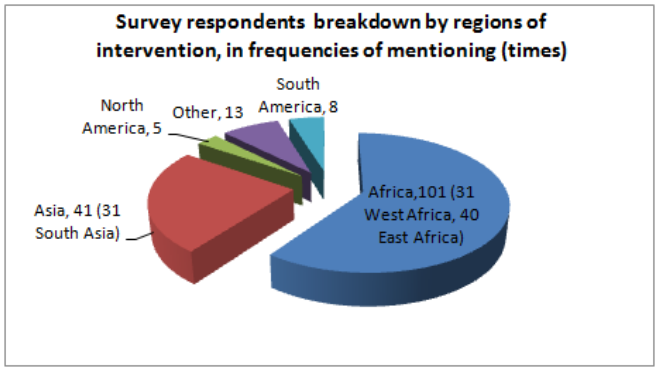
The survey's final distribution list was comprised of 225 institutions with the following breakdown: NGOs (*52%*), private industries (*14%*), research institutions (*10%*), private consultancies (*7%*), development organizations and governments (*4%* each) and others.

The actual survey respondents were represented by local and international NGOs (*30%* and *21%* respectively, *51%* together), private industries (*17%*), private consultancy service companies (*15%*), research institutions (*10%*) and others (see figure below):



The upstream identification of the target audience type partly pre-identified the respondents share, but a trend can be noticed – **THE ICS INTERVENTION PROGRAMS ARE MOSTLY REPRESENTED AND ADVOCATED FOR BY LOCAL AND INTERNATIONAL NGOS.**

The survey was conducted online in English and French and collected 72 full responses over 1 month (8 July-8 August 2011), representing a 32% response rate. Respondent organizations work in over 60 countries in various fields such as environment and renewable energies, community and livelihoods development, women empowerment, agriculture and forestry.



SUMMARY OF THE RESULTS

TYPE OF INVOLVEMENT IN ICS PROGRAMS

Nearly half of the respondents (*47%*) have the capacity for ICS program management and advisory services (meaning technical, social and economic research, evaluation, testing, etc.). This means that these organizations have certain research protocols, for example, for testing or socioeconomic research, and could also have the capacity to provide external support services.

31% declared that they only act as program implementers, i.e. an entity managing the funds to implement the program/activity (for example, a private producer producing the stoves or a foundation), but requiring external consultancies for advanced technical or methodological research.

Advisory companies, such as private consultants and research labs, represented *11%* of the survey respondents.

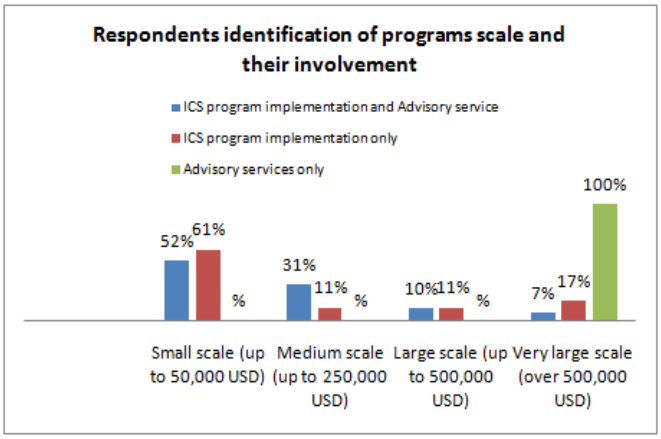
A SUCCESSFUL ICS PROGRAM IS THE RESULT OF SOLID EXPERTISE AND LONG-TERM FIELD RESEARCH.

38% of the respondent organizations have been implementing an ICS program for more than 10 years, with another *29%* implemented between 5 and 10 years.

33% of the respondents have only been involved in ICS for 3-5 years, and may require specific assistance and sustainable funding to develop.

SIGNIFICANT NUMBER OF THE REPORTED ICS PROGRAMS HAVE LIMITED BUDGETS AND IDENTIFY THEMSELVES AS SMALL-SCALE: THE UP-SCALING OF THE RESULTS CAN BE DIFFICULT.

For the ICS programs reported in this survey, more than half of them identify themselves as small-scale programs (up to 50 000 USD annual budget). Around *10%* represent large-scale projects (up to 500 000 USD/year) in both "ICS program implementers only" and "ICS program implementers & advisors" categories. Very large-scale ICS programs were also represented by some "ICS program implementers" (*17%*) and a few "ICS program implementers/advisors" (*7%*).

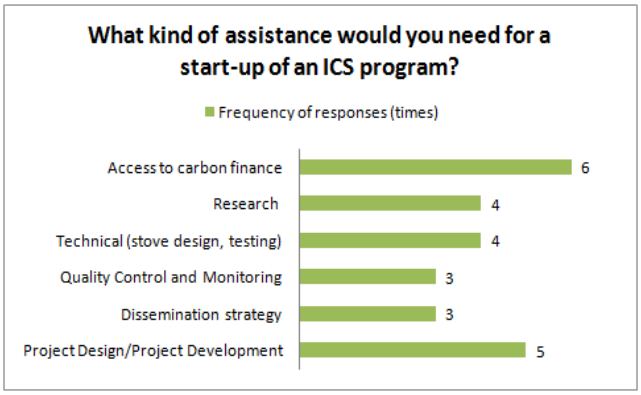


STRONG INVOLVEMENT IN BIOMASS RELATED PROGRAMS ALONG WITH ICS PROGRAMS

Apart from being engaged in the ICS field, *55.6%* (n=52) of the respondents also have biomass related programs (most of them being engaged in research (*41%*), but many are also in production and promotion of biomass – *34%* and *26%* respectively. Usually, these biomass programs are linked to ICS programs, promoting the use of recycled fuels such as agricultural waste.

GROWING INTEREST IN DEVELOPING AN ICS PROGRAM...

11% (n=72) of the respondent organizations expressed interest in developing an ICS program in their respective areas of intervention in the future. When asked about the types of support needed, the evident start-up activities such as project design, technical or research input were considered a priority, but respondents also were inclined towards exploring the carbon potential of the future project (see also the further section).



... AND IN ACCESSING INTERNATIONAL CARBON MARKETS, BUT HIGH TRANSACTION COSTS AND REQUIREMENTS STIFLE THE DEMAND

ICS projects are steadily entering carbon credit markets. With the potential of the modern carbon market (estimated worth of 142 billion USD in 2010), access to carbon finance could be a decisive factor to launch/develop an ICS program. The international carbon markets are a new, important avenue for funding ICS projects, along with private sector financing *(World Bank, 2011)*.

The survey respondents showed great interest in acquiring skills to validate their ICS programs for obtaining carbon credit financing. Among actual ICS program implementers, *42%* (n=53) have already positioned their ICS program for carbon financing, but only 2-4 of them have actually reached the final stages of the verification process.

The procedures to access carbon finance remain complicated, and the costs of access are high. Procedures require precise data collection to measure the reduction of emissions, and implementation of regular protocols and audits. Before getting the first revenues from carbon financing, $150 000 - $200 000 has to be invested in the project (*Nexus Carbon for Development, 2011*). A successful accreditation of an ICS program for carbon emission reductions requires rigorous data collection, verified testing results and field monitoring. Up-front financing, the need for training in applying emission reduction calculation methods, and expertise in writing qualification documents were reported as some of the most prominent needs.

ICS CHARACTERISTICS

THE RESPONDENTS WORK WITH A LARGE VARIETY OF ICS, MOSTLY COMBUSTION TYPE WITH THE USE OF BIOMASS FUEL. MORE THAN HALF OF THEM ARE PRODUCED BY LOCAL ARTISANS AND DISTRIBUTED THROUGH DECENTRALIZED SUPPLY CHAIN. THE PRODUCTION UNITS SHARE COMMON CONSTRAINTS, WHICH NEED TO BE ADDRESSED LOCALLY.

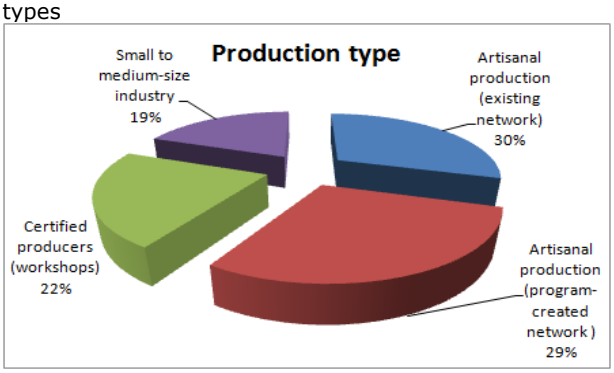
The respondents could report on up to 5 improved cookstoves that their organization disseminates/helps to disseminate in the concerned countries of intervention. In total, respondent organizations reported 154 types of improved stoves (including institutional and production-type models).

60% of the reported improved cookstove models are fixed, and *40%* are portable ones. The majority are characterized as one pothole (*66%*), with a chimney (*60%*) to evacuate smoke from the stove.

For the ICS reported in this survey , in *76%* of the cases the energy is derived from combustion, as a result of burning firewood (*60%*), charcoal (*15%*) and processed or loose biomass (*11% and 9%* respectively). Some reported improved cookstoves use gasification *(7%)* and T-LUD *(9%)* technology, using LPG and other fuels for burning. The latter represent the more advanced generation of improved cookstoves, which are usually produced and distributed by small or medium-sized industries.

PRODUCTION AND DISTRIBUTION CHAIN PATTERNS

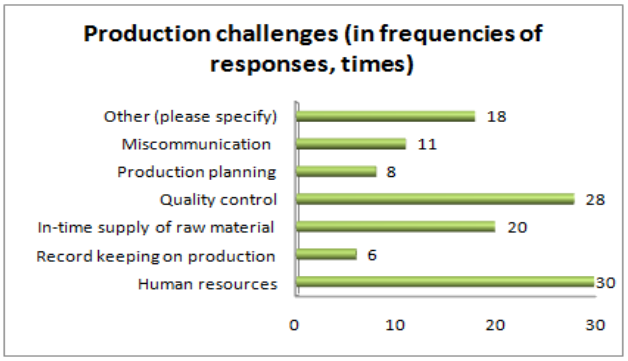
From the ICS models reported in this survey *50%* are hand-made, *38%* are produced semi-mechanically and *12%* by a fully mechanical production process. By the type of production, the reported ICS (n=51) can be grouped by the following production unit types



Almost *60%* of the improved cookstoves are produced locally at the artisanal scale (either by an already existing producers' network or one created by the ICS program) using simple processes. Only *19%* of the reported ICS are produced by a small to medium-sized industry (these are more advanced types of stoves, or institututional stoves).

The distribution is also an important element of the ICS value chain. A *decentralized supply chain* comprised of wholesalers, distributors and retailers is often the best-available choice for ICS distribution in the LDC context. More than half (*54%*) of the respondent programs use a *decentralized supply chain* to disseminate ICS throughout the target country.

Centralized supply chains (*22%*) (authorized dealers, sales at production site) can also be an option especially to assure better traceability and counterfeit control. Non-market based distribution (*24%*) can be the case of donations, charity distributions or bulk purchases in the case of natural catastrophies.



ICS production shares some common problems: lack of a qualified workforce, inconsistent production quality control, and insecure raw material supplies. Infrastructure problems such as electricity cuts were also mentioned. The solution needs on-site analysis of the situation and working out strategies for resolving each kind of problem (procedures, feedback, SWOT analysis,…), which is a very context-based approach.

High local taxes, poor infrastructure, unfavorable institutional arrangements, financial constraints, and stove technology difficulties were also mentioned as production challenges.

PRICE AND DISTRIBUTION CHALLENGES

The recent World Bank report on cookstoves mentions that worldwide, cookstove costs range widely, from as low as US$ 15 to as high as US$ 100-200.

The more expensive the cookstove is, the more energy efficient and the better its combustion quality. Advanced improved cookstoves are the most expensive; they refer to the more recently manufactured cookstoves, based on higher levels of technical research. Improved biomass and charcoal stoves are usually less expensive than the advanced ones, but close to them in performance if the production is standardized (*World Bank, 2011*).

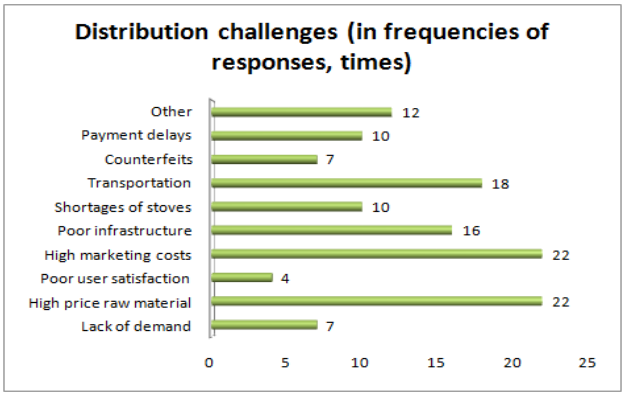
Our survey compliments this data: stoves range in price from US$ 4 (NLS, portable cookstove in Cambodia), to US$ 10-30 for more expensive biomass stoves, to US$ 150-300 for institutional stoves in India, up to US$ 1500 for the largest, advanced stoves using gasification technology.

Distribution strategies depend highly on the price and target population. As the ICS are more expensive than the traditional means of cooking, some programs apply subsidies to encourage the purchase of the stove. This allows them to penetrate the market at its early stage and attract new customers.

Among respondents, issues such as high marketing costs, increasing prices for raw materials, transportation and infrastructure issues were reported as main constraints for ICS marketing.

Shortage of improved cookstoves and payment delays are also important challenges, which can be due to the incorrect demand forecast, insufficient production capacity and financial constraints.

In the "other distribution challenges" group, the expectations of the subsidies by the customers, low awareness among the target population, organizational issues, and impossibility of a target population to afford an improved cookstove were mentioned.



STOVE TESTING: PERFORMANCE, FUELS AND EMISSIONS

GENERALLY, THE STOVE TESTING AND INTERNATIONAL EVALUATION PROTOCOLS HAVE BECOME MORE ACCESSIBLE FOR ICS PRACTITIONERS OVER THE LAST DECADES. THE KNOW-HOW IS NO LONGER "EXCLUSIVE"; HOWEVER THE ACTUAL FIELD APPLICATION MIGHT NEED INTRINSIC QUALITY CONTROL TOOLS.

Most programs (across regions) are familiar with internationally recognized stove performance tests, collaborating with the leading international organizations (Aprovecho, Berkeley Air,…) and national institutions (universities and labs) to perform the major stove efficiency tests. Tests such as the Water Boiling Test (WBT), Kitchen Performance Test (KPT), Cooking Fuel Test (CFT), and Household Fuel Consumption Test (HFCT) were frequently mentioned. Other tests such as Indoor air Pollution (IAP), thermal insulation or other stove material characterization tests were given a lower priority and less frequently mentioned in the survey data.

EXPRESSED NEEDS AND EXPERTISE

A majority of the respondent organizations *(91%, n=54)* are interested in increasing the importance of their ICS program, as the potential for ICS programs is still underexploited in their respective countries of intervention.

To achieve these objectives, the program implementers expressed the need for support to gain more funding,

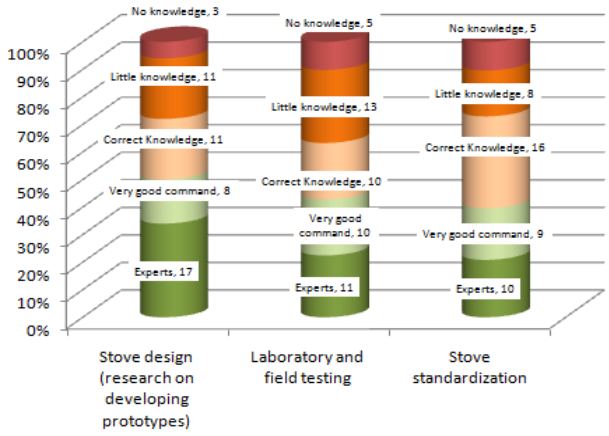
partnerships, networks, educational material, gender mainstreaming (accentuating the role of women in household decision-making), and better cost management (making the improved cookstove affordable for the largest possible population group).

Improvement of marketing, distribution and monitoring schemes were also mentioned as drive factors for ICS dissemination.

LEVELS OF EXPERTISE IN ICS PROGRAM IMPLEMENTATION ACTIVITIES VARY GREATLY AMONG PROGRAMS AND REGIONS. HOWEVER, THE SURVEY DATA SUGGESTS THAT THERE IS NO SIGNIFICANT "GAP" OF EXPERTISE BETWEEN REGIONS; EACH REGION COULD PROVIDE AT LEAST ONE "EXPERT" AND HAS AT LEAST ONE "CLIENT" IN NEED OF COACHING IN THE SAME AREA.

ICS program practitioners build on their experience and develop competencies in various areas which allow them to complement the local stove supply chains. GERES asked the target respondents to rank their level of competencies for their respective ICS programs on a scale from "expert" to "no knowledge".

Expertise levels in stove design, standardization and testing areas.



More organizations identified that they had "*expert and very good command*" of the stove design, testing and standardization skills than organizations which had "*little knowledge or no knowledge*" in these skill areas.

Geographically speaking, the biggest share of expertise in these areas of expertise was in the ICS programs registered in South Asia, with some also in East and West Africa. The South, Southeast and North Africa regions accounted for very few expert ICS organizations in these skill areas.

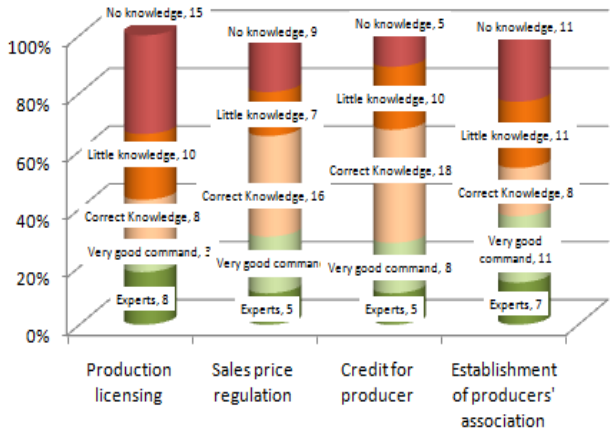
At the same time, a significant number of organizations declared "little knowledge" or "no knowledge" in these areas from the same South Asia, East and West Africa. This means that each region has a certain number of "expert/good knowledge" ICS programs as well as ICS programs with less expertise.

This assumption also holds true for the following sections, although the expertise rankings per service are slightly different.

The quality control, technical capacity training, monitoring & tracking database and sales monitoring areas also account for a significant number of organizations with "expert and very good command". However, there is a noticeable downward trend toward "correct knowledge" and "little knowledge/no experience" areas in these kinds of services.

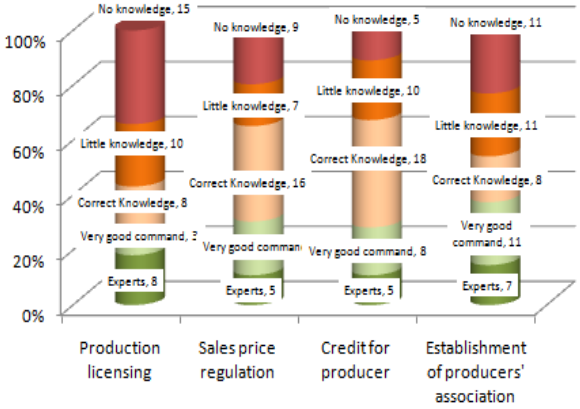
It is noteworthy that several services are interlinked and action in one entails improvement in others (ex. the standardization efforts in the field are achieved by technical capacity trainings delivered to the producers).

Expertise levels in the after-sales and regulatory services

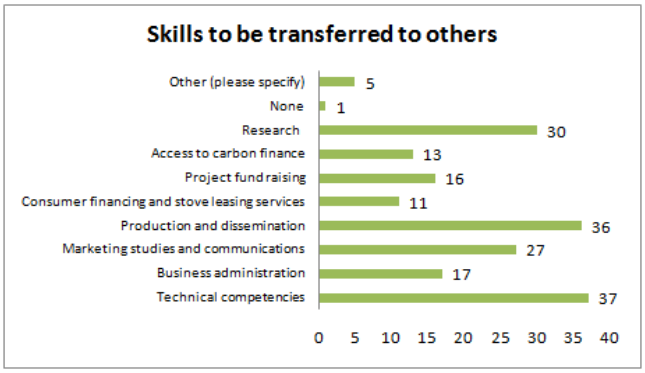


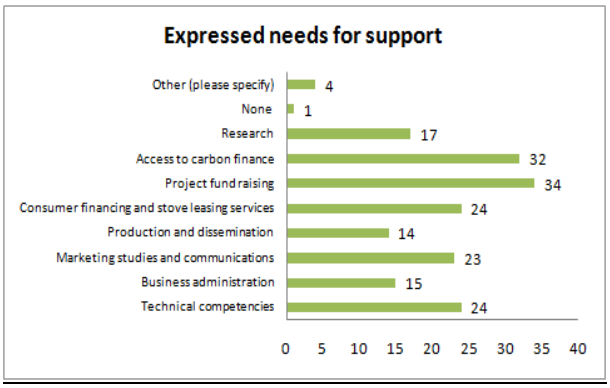
Considering after-sales services (production licensing, sales price regulation, credit management for producers) and regulatory services (such as setting up producers' associations), we can assume that these services are not usually prioritized in ICS programs, especially at the early stages.

Expertise levels in the after-sales and regulatory services



This section of the questionnaire was followed by more general concluding questions, where respondents were asked to declare the areas where they could present themselves as "coaches" and those where they need support ("needs for support").





In terms of "skills ready to be transferred" and "needs for services", some skill sets such as technical competencies, business administration and marketing reported a comparable number of both potential "trainers" and "trainees". The access to carbon financing and project fundraising skills are in significant demand, with a lot of respondents needing support in these areas. The production and dissemination skills, on the contrary, received the least requests for input.

CONCLUSION

GERES Cambodia working group sincerely thanks all organizations who have contributed to this research by participating in this survey.

The survey aimed at having general feedback from the ICS program practitioners and concerned actors about the programs' characteristics, common interests and challenges. Moreover, it also gave an opportunity for the respondents to evaluate their expertise and needs and to think forward to up-scaling and expanding their areas of expertise. To achieve the objective of the large scale dissemination of effective biomass equipment, the improved cookstoves (and biomass fuel) supply chain actors need a strong network, professionalization of services and follow-up.

Survey methodology and resources did not allow conducting more technical and detailed research in the given timeframe; however, the conclusions of this survey give a good basis for further in-depth studies.

With the help of the information from this survey, GERES experts and its senior expert partners are working currently on a program that will be designed to respond most efficiently to the needs of the ICS program practitioners (grouping expertise from similar contexts, facilitating exchanges, etc.) and will also indirectly contribute to structuring the favorable institutional and financial environment for independent ICS supply chain actors.

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