Cultural and Gender Differences in Assessing Upgrading Strategies (UPS) for Enhancing Food Security in Tanzania

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Introduction

Developing best suitable strategies to upgrade food security in rural poor areas needs the active involvement of expertise from all fields of the food value chain. Factors such as cultural background and gender may influence their assessment on potential and feasibility for the implementation of such strategies.

The aim of this study is to assess 42 upgrading strategies (UPS), proposed by researchers, along all components of smallholder food value chain (FVC) in order to gain evidence on their potential and feasibility for enhancing food security. Two regions were focussed on: semi-arid Dodoma and sub-humid Morogoro. The FVC consists of five main components: Natural Resources, Food Production, Food Processing, Markets, Consumption, and an additional cross-cutting one: Waste Management/Recycling (Fig.1), but it is perceived as an interconnected complete chain (Gomez et al. 2011). The focus was on the relevant local food value chains related to agricultural production, such as of Maize, Millet, Sesame and Sunflower and on the improvement of local livelihoods. The assessment results of the UPS are analysed in regards of cultural background and gender of the respondents. This study is embedded in a trans-disciplinary research project called Trans-SEC: Innovating Strategies to safeguard Food Security using Technology and Knowledge Transfer: A people-centred Approach (Graef et al. 2014).

Material and Methods

A questionnaire was developed and distributed to 90 scientists throughout the Trans-SEC consortium. Scientists were asked to assess 42 predefined UPS (Table 1) regarding their potential and feasibility for upgrading in order to enhance food security at the case study sites. 32 of the

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scientists responded and 29 of the datasets were valid for evaluation. 20 male and 9 female scientists participated, 18 of them were Tanzanian and 11 were German. The FVC components were also assessed by the experts regarding their overall importance and feasibility for upgrading local livelihoods.

The dataset was descriptively analysed using SPSS deriving frequency tables and cross-tabulations to find correlations between variables (DeVaus, 1996). We checked for differences between the scientists’ assessments considering their cultural background (Tanzanian and German) and gender.

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### Natural Resources

<table>
<thead>
<tr>
<th>Natural Resources</th>
<th>Food Production</th>
<th>Food Processing</th>
<th>Markets</th>
<th>Consumption</th>
<th>Waste Management/Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainwater harvesting</td>
<td>Mineral fertilizer input</td>
<td>Preservation techniques</td>
<td>Savings- and Credit Cooperatives (SACCOs)</td>
<td>Diet diversification</td>
<td>Crop residues as mulch</td>
</tr>
<tr>
<td>Conservation agriculture</td>
<td>Manure input</td>
<td>Oil extraction processes</td>
<td>Warehouse receipt systems</td>
<td>Nutrition awareness training</td>
<td>Animal feed from crop residues</td>
</tr>
<tr>
<td>Agroforestry</td>
<td>Intercropping</td>
<td>Fortification of staple foods</td>
<td>Guarantee systems</td>
<td>New food habits</td>
<td>Food waste and animal faeces for biogas</td>
</tr>
<tr>
<td>Ridges for erosion control</td>
<td>Cover crops</td>
<td>Food storage devices</td>
<td>Vertical coordination in trading systems</td>
<td>School feeding</td>
<td>Food waste and animal faeces for production of compost</td>
</tr>
<tr>
<td>Ridges as water catchments</td>
<td>Improved animal feed</td>
<td>Horizontal coordination in trading systems</td>
<td>Outgrower schemes (contract farming)</td>
<td></td>
<td>Food waste and animal faeces for heating</td>
</tr>
<tr>
<td>Nutrient input from waste</td>
<td>Improved crop varieties</td>
<td></td>
<td>Communication techniques</td>
<td></td>
<td>Waste water irrigation</td>
</tr>
<tr>
<td>Biochar utilization for soil improvement</td>
<td>New crop varieties</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drip irrigation</td>
<td>New crop types</td>
<td>Pest and disease control</td>
<td>Rural energy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Upgrading strategies along the food value chain components

### Results and Discussion

Differences in assessing UPS are found both between Tanzanian and German scientists and female and male scientists. The differences occur both in the assessments of UPS between the two regions and within a region. However they are not statistically significant, possibly due to the low number of respondents.

Some examples of assessed UPS with highest upgrading potential are presented in Table 2. Rainwater harvesting in Dodoma and food storage devices in Morogoro are assessed by both nationalities to have a very high potential for improving food security. Other UPS such as improved crop varieties, Savings- and Credit Cooperatives (SACCOs) and nutrition awareness training are assessed to have a very high upgrading potential for both regions by most of the Tanzanian scientists. The German scientists prefer communication techniques and diet diversification for both regions. Some UPS are assessed only by scientists from one nationality to have a high potential. For instance manure input in Dodoma, which is assessed as having a very high potential by 100% of German scientists, but only by 57% of Tanzanian experts. The UPS assessments of the FVC component recycling vary largely between nationalities.
When focusing on the FVC components’ potential and feasibility for upgrading local livelihoods, they are assessed differently between Tanzanian and German scientists. Tanzanian experts consider natural resources for Dodoma and food production for Morogoro most important, whereas German scientists see a higher importance for food production in Dodoma and natural resources as well as food processing (both favoured by 38%) in Morogoro. Tanzanian scientists assume the food production UPS most feasible to implement at both case study sites. German scientists regard UPS for natural resource management as well as food production most feasible for Dodoma, and UPS for natural resource management to be most feasible for upgrading smallholder livelihoods in Morogoro.

We also found gender differences in the assessments, however they were not statistically significant. Figure 2 displays the main differences between assessments of UPS between male and female. Some UPS are favoured by female scientists for one region, for example conservation agriculture for Dodoma, while more male scientists are in favour of the same UPS for Morogoro region. The UPS crop residues as mulch is considered to have very high upgrading potential in Dodoma region by 67% of the female compared to 40% of the male scientists. For Morogoro region only male experts (62%) consider this UPS as having a high upgrading potential. None of the female scientists found crop residues as mulch to have a high potential here. Food storage devices (Dodoma) and rainwater harvesting (Morogoro) are examples for UPS assessed equally by male and female scientists for one region. Largest differences between male and female scientists for UPS assessments are found among food production, markets, consumption and waste management.
Conclusions and Outlook

We searched for differences between the Tanzanian and German scientists’ assessments of the importance of food value chain components and potentials of 42 UPS for enhancing food security in Dodoma and Morogoro region of Tanzania. We find assessment differences for UPS with site specific requirements, such as UPS for natural resource management, food production, food processing or recycling. Reasons may be the different professional backgrounds and perceptions of scientists, and also their field experience at the case study sites.

Male and female scientists differ in assessments of the UPS. The main differences are linked to site specific UPS requirements. Also, there is some evidence that more technical UPS, for example oil extraction processes are preferred by male scientists.

References

