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**Health Measures for Agricultural
Suppliers - The Case of Bayer
CropScience**

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Health Measures for Agricultural Suppliers – The Case of Bayer CropScience

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Abstract

According to the World Economic Forum successful multinational companies (MNC) engaged in developing countries have to gain credibility in the host countries while they are confronted with unclear expectations and liabilities. Furthermore, MNC have to create value for different kinds of stakeholders to achieve a long-run business success. Bayer CropScience is carrying out the 'Model Village Project' (MVP) in rural India as part of its social supply chain management (SSCM). While doing business with smallholder farmers as suppliers of cotton seeds, the company is implementing a set of measures which shall create shared value by contributing to human development in the villages and at the same time secure the resource supply and the long-run value of the company. To gain the trust of the villagers plays a major role in Bayer CropScience's strategy. Hence, it is important to know the villagers' expectations and perceptions. This paper presents the case of the MVP and thereby focuses on the implementation process of selected health measures as part of the supplier development. It provides a contribution to strengthen the analysis of the social dimension that is, compared with environmental topics, usually underrepresented in the sustainable supply chain management literature. The empirical findings of this paper are based upon quantitative and qualitative data. They show a wide gap between the objective health situation of the villagers and their subjective view. Misperceptions of the smallholder farmers about their own health status lead partly to implementation and acceptance problems of

measures. We conclude with recommendations for a corporate implementation of health related SSCM measures.

Key Words: Social supply chain management, shared value, malnutrition, health, smallholder farmers

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Health in the Social Supply Chain Management

The World Economic Forum (2012: 4) points out that the role of business has changed during the last two decades. According to the participants there, multinational companies (MNC) engaged in developing countries have to gain credibility in host countries while they are confronted with unclear expectations and liabilities. Moreover, MNC have to create value for different kinds of stakeholders to achieve a long-run business success. Many other authors argue in the same line, e.g. Carter and Easton (2011: 59) who call for considering sustainability as a license to do business in the 21st century and sustainable supply chain management (SSCM) to be a key element of this license.

International institutions recommend health and safety to be important components of the SSCM. Companies and their suppliers should provide safe and healthy working environments for their employees (ILO, 2013, UN Global Compact, 2013). The ILO's (2010) code of practice on safety and health in agriculture also addresses health and safety with a focus on working conditions. Hence several elements of Bayer CropScience's 'Model Village Project' (MVP) will go beyond these recommendations because they plan to include all villagers and to focus also on nutrition issues.

The aim of this paper is to present the case of Bayer CropScience in rural India. It examines whether health investments of an MNC in the social supply chain can be beneficial for both, the human development of local people and the company. Currently, the measures undertaken in the MVP are still in the initial phase. The paper explains the experiences made with selected measures and evaluates the challenges which occurred due to misperceptions of the farmers while taking into account both, the villagers' and the corporate perspectives.

Misperceptions of the own health status are frequent in poor rural parts of the developing world (Vellakkal et al., 2013) due to adaptation to social circumstances but also due to lack of education, available health facilities and public information on illness and remedy. As Sen (2009: 285-286) puts it: "The internal view of the patient may be seriously limited by his or her knowledge and social experience. A person reared in a community with great many diseases and little medical facilities may be inclined to take certain symptoms as "normal" when they are clinically preventable." As such, it is theoretically well-established, and an empirically frequent problem to find gaps between the objective health status of people and their subjective health perception (Sen 2009: 284-290).

The paper is organized as follows: Chapter 2 provides the theoretical background. Chapter 3 briefly describes the MVP and the motivation of Bayer CropScience for health related investments. It also explains the data base and the methodology. Building on a comprehensive initial baseline study chapter 4 describes the objective and the subjective health situation of the villagers. These empirical findings are the foundation of the first insights about opportunities and threats in the implementation process that we discuss in

chapter 5. The paper ends in chapter 6 with recommendations for the structure of a successful implementation process for health related measures in the SSCM.

Theoretical Background

SSCM is based on the triple bottom line approach of Elkington (1997) which combines the improvement of long-term economic performance with environmental and social goals (Reefke, Trocci, 2013: 805). To aim simultaneously on these three targets is the common element of main definitions of SSCM in the literature (Taticchi, Tonelli, Pasqualino, 2013: 786). In the corporate social responsibility (CSR) and SSCM discussion environmental topics are dominating whereas the social dimension is comparably underrepresented (Brunn et al, 2013: 37; Taticchi, Tonelli, Pasqualino, 2013: 794).

Creating shared value (CSV) in the social supply chain is one of the aims of sustainable development (European Commission, 2011: 6). Porter and Kramer (2011: 66) define CSV "... as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates. Shared value creation focuses on identifying and expanding the connections between societal and economic progress."

The proactive resource based approach, one root of the sustainable supply chain management theory, shows that the inclusion of social welfare aspects in the supply chain strategy may not only enhance the living conditions of the suppliers but also safeguard the long term access to the required resources for the buyers (Wolf, 2014: 319).

It is common for MNCs working with suppliers in developing countries to transfer technology and knowledge for increasing suppliers' productivity (e.g. Blalock, Gertler, 2008). Lenssen and van Wassenhove, (2012: 410) recommended that companies should further use technology and knowledge transfer as strategic investments in their suppliers' human capital and thereby create shared value. They further propose to "... invest in local health and education programmes as sources for an enabling business environment."

Productivity, nutrition and health are interdependent (Agulanna, et al. 2013: 8). Health investments for improving the individual nutrition and health status of suppliers that influence their potential to work can be evaluated as investments in human capital. Health affects the income farmers can achieve and income influences the spending options for nutrition and health. Various studies in developing countries have shown the negative impact of a poor health and nutrition status on agricultural labor productivity (Asenso-Okyere, et al., 2011: 10) and on the proportion of time men work on physically very exhausting tasks (Duncan, Frankenberg, 2002: 109).

Nonetheless Walters and James (2009: 7) found in their comprehensive literature review that proactive and voluntary improvements of suppliers'

employees' health by buyers are relatively uncommon. The cases they detected for positive influences through buyers were mostly motivated by external pressure through companies' stakeholders that created reputational risks. Risk management aspects are in general an important driver for CSR activities.

Bayer CropScience Model Villages in Rural India

Background

In 2003, roughly one year after the acquisition of the French Corporation Aventis CropScience including Proagro, a subsidiary operating in the Indian cotton seed production, NGOs accused Bayer CropScience of child labor in the fields of their supplying smallholder farmers in India.

This resulted in major challenges for Bayer CropScience, one of the early signatories of the United Nations Global Compact, being committed to a zero child labor strategy. After an intensive learning process the company succeeded in remarkably mitigating child labor. The India Committee of the Netherlands and several NGOs acknowledged the contributions of the company to diminish child labor (Subramanian, 2011: 7).

Due to this success and close contacts to Indian farmers Bayer CropScience has started to develop a community development strategy. While doing business with farmers when buying cotton seeds, the company plans to implement a set of measures that potentially contribute to both, sustainable human development (SHD) in the villages, and to the supply chain performance and thus the success of Bayer CropScience.¹ Four villages, two model and two control villages, in rural Karnataka (South India) were selected, where the company was not sourcing during that time. In two model villages Bayer CropScience has initiated activities that can affect Bayer suppliers value-added and SHD of the villages. Their effects are externally and independently evaluated by the authors of this paper.

Aims and motivation

Bayer CropScience's motivation for health investments in their smallholder farmer suppliers is to create shared value by enhancing productivity as well as simultaneously increasing income and the well-being of the villagers.

Trust building and effective communication are thereby prerequisites for the establishment of successful long-term relations in the supply chain, and personal relations improve the business ties when dealing with farmers (Fischer, 2013: 213). Trust may develop over time with increased information and good experiences among business partner (Laequddin, 2012: 553).

¹In an internal communication of Bayer CropScience the goal of the MVP has been specified: The project is aiming at "... development of the villages in a clear win-win context by developing economically sustainable business in a triple bottom line perspective, by also providing and preserving social and environmental bottom lines."

Therefore, the measures Bayer CropScience undertakes should also contribute to trust building.

The main aim of the MVP is to try out measures that show economic and social effectiveness and efficiency. At the same time they have to be implementable and accepted by the people. Measures which are identified to fulfill these criteria in the coming evaluations shall be rolled out to other suppliers in rural India. Moreover, it is a long-run goal of the MVP to shift ownership and responsibility of successful measures gradually to the villagers.

Database and Methodology

The scientific evaluation of the MVP is based upon a combination of quantitative and qualitative data. In 2011 a baseline quantitative survey was conducted in collaboration with the Indian NGO BELAKU in four villages of rural Karnataka. In total, a representative sample of about 2,300 interviews in almost 1,000 households was realized, thereby covering 75% of the villages' households of all castes. To be able to evaluate the macro-nutritional status of the population weight and height of the villagers were measured after every interview as basis to calculate their body mass index (BMI). The questionnaire includes amongst others health related questions and questions to health perceptions of the respondents.

Additionally, in a health camp six medical doctors from different specialties and a team of laboratory technicians examined the health status of the inhabitants in one of the model villages. Moreover, the authors conducted focus group discussions (FGD) with villagers in 2012 and 2013 to enrich the findings with subjective experiences, insights and suggestions of the villagers.

For clarifying the expectations of the villagers the people centered sustainable human development perspective based on Sen's (1999) capability approach is used. As acceptance of the villagers is a crucial necessary condition for the success of activities in the MVP, the evaluation of the measures also examines the acceptance rate of the villagers.

Health Situation of the Villagers

Objective Health Status

Following the Multidimensional Poverty Index¹ (MPI, see e.g. Alkire, Santos 2011) a person is considered to be malnourished if his/her body mass index (BMI) – defined as weight in kg divided by squared height in meters – is lower than 18.5. Our empirical results show that malnutrition is a severe problem in the villages (see figure 1): 44.7% of the population aged 15 years or older are malnourished. The degree of malnutrition exceeds the average of rural India (NFHS-3, 2007). This is a crucial issue as malnourishment causes lower resistance to infections, hence a higher prevalence of diseases (Agulanna, et al. 2013: 2).

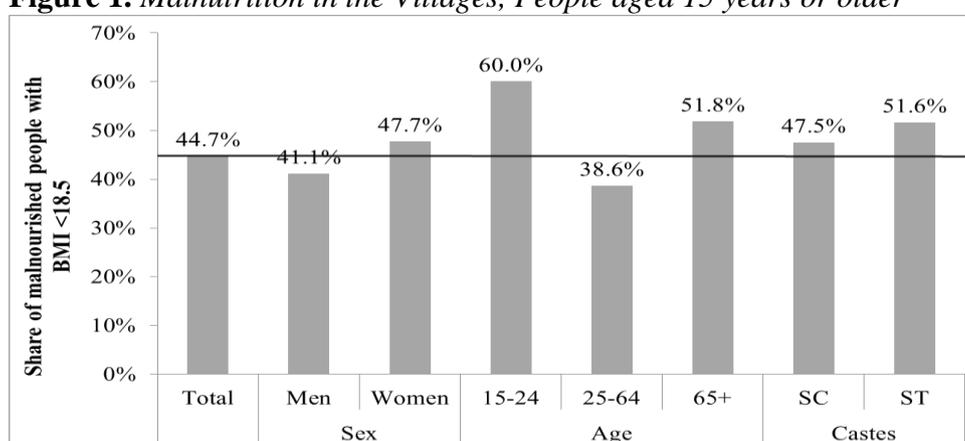
Women are more often affected than men, and the relationship between age and malnutrition seems to be U-shaped: malnutrition is above average for

¹ The MPI applies the BMI classification of the WHO (Alkire, Santos 2014: 254).

young people between 15 and 24 years (60.0%) and for older people aged 65 years or more (51.8%), while the share of malnourished people between 25 and 64 years is lower at 38.6%. Villagers from lowest castes (scheduled castes, SC; scheduled tribes, ST) are on the average more often affected by malnutrition than people from other castes.

Sustainable access to safe drinking water and basic sanitation is central for health as lack of safe water and basic sanitation are causes of major diseases and health impediments. In the MVP villages, almost no one uses improved sanitation (see table 1); people rely on open defecation instead. This imposes extraordinarily high risks for the people's health. Only 7.5% of the villagers, in contrast, report that they do not have access to an improved water source. Nevertheless, water quality seems to be a substantial problem. In one village, the water used by the villagers' contains high fluoride which can end up in diseases like dental or skeletal fluorosis (Nriagu, 2011: 776-780).

Figure 1. Malnutrition in the Villages, People aged 15 years or older



N=2,462

Source: Model Village Project Baseline Survey, 2011.

Table 1. Indicators of Access to Health Related Infrastructure in the Villages in Percent

	Total	Sex		Age			Castes	
		Men	Women	15-24	25-64	65+	SC	ST
Share of population...								
...without access to improved sanitation	99.3	99.4	99.2	99.4	99.2	99.4	99.2	99.4
...without access to an improved drinking water source	7.5	7.3	7.7	8.3	7.8	6.6	7.7	7.9

N=5,811

Source: Model Village Project Baseline Survey, 2011.

During the health camps the doctors observed anemia to be common among children and adults. Malnutrition was the major cause for the poor health of many villagers. Many were found using medicines haphazardly without proper consultation with doctors which lead to a number of diseases. More than seven of ten people have the habit of consuming tobacco which causes oral and dental diseases. Hence, the dental status of the villagers is very poor. Around 80% suffer from chronic generalized periodontics, 60% from calculus and 40% from stains.

Subjective Health Evaluation of the Villagers

Against the background of the poor objective health status of the villagers it is remarkable that the vast majority of villagers consider themselves able to achieve the desired degree of health and nutrition.

In our quantitative baseline survey, almost all people for whom the capabilities to live a long and healthy life, to have enough good food and to have access to sufficient drinking water are extremely important believe they have the freedom to do so. The shares of villagers who express that they are deprived are less than 6% for all three dimensions and point to a severe lack of health awareness in the villages.

Doctors in the health camps were emphasizing that negligence about health is one major cause behind various health problems. Also hygiene was very poor because of lack of seriousness. This perception of a severe lack of health awareness of many villagers was confirmed in our FGD, e.g. a whole focus group of male members of other backward classes agreed to be in good health.

Table 2. *Subjective Health Evaluation of the Villagers (in percent)*

	<i>Share of population in per cent who say that they do <u>not</u> have the freedom to achieve their goals which they consider extremely important*</i>							
	Total	Sex		Age			Castes	
		Men	Wo-men	15-24	25-64	65+	SC	ST
No freedom to have a long and healthy life	3.6	4.9	1.8	6.2	2.9	3.8	1.6	4.4
No freedom to have enough food to eat	3.4	3.9	2.8	6.7	2.5	3.9	4.7	0.0
No freedom to have sufficient drinking water	5.6	6.1	5.1	8.8	5.2	2.1	6.9	6.4

**measured on a four digit Likert scale: extremely important ... not at all important; N=537*

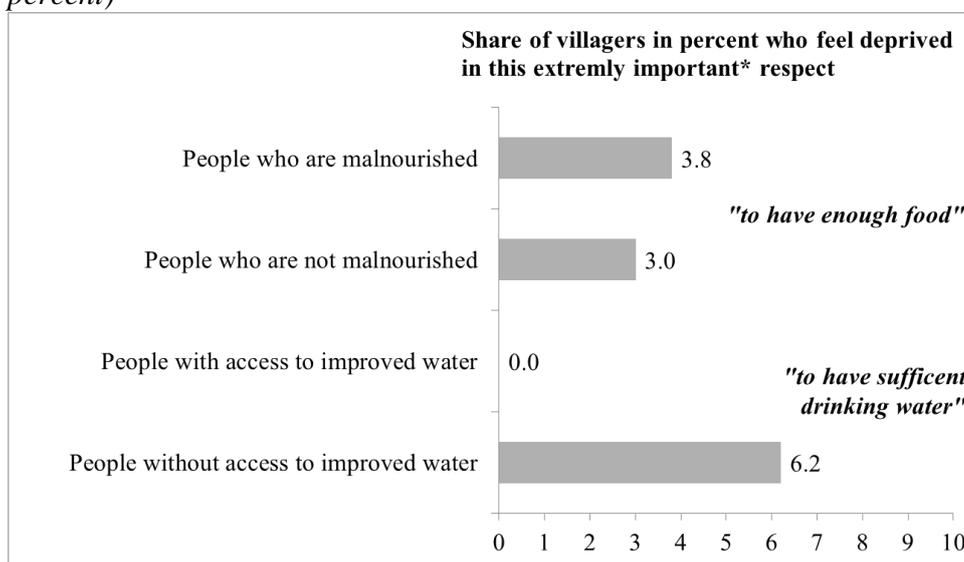
Source: Model Village Project Baseline Survey, 2011.

Gap between Objective and Subjective Health Status

This remarkable gap between objective health status of the villagers and their subjective perception is also confirmed if we compare the subjective perceptions of people who are objectively deprived with those who are not.

Figure 2 illustrates that there is no significant difference in subjective health assessment between people who are malnourished and those who are not. While only 3% of villagers who consider having good food to be important for a good life and who are not malnourished feel deprived, the corresponding share for malnourished villagers is 3.8% and thus only slightly higher. For access to drinking water there is even no villager among those objectively deprived who feels restricted in this respect.

Figure 2. *Subjective Feeling of Deprivation and Objective Deprivation (in percent)*



**measured on a four digit Likert scale: extremely important ... not at all important; N=537
The differences between deprived and non-deprived persons are statistically not significant on the 0.05 level.
Source: Model Village Project Baseline Survey, 2011.*

The wide gap between objective realities and subjective perceptions of people points at severe misperceptions. For a MNC like Bayer CropScience, misperceptions of the individual health can substantially weaken suppliers' human capital and productivity. It is therefore necessary to systematically monitor health and adaptation issues together with hidden productivity increase potentials related to health improvements.

Selected Measures and Implementations

Water Purification

To tackle the problem of bad water quality due to high fluoride content, one of the first measures Bayer CropScience undertook in 2011 together with

an Indian co-operation partner was the installation of a water purification plant in one model village. After only a few months around 30% of the villagers bought the purified water which seemed to be an acceptable initial quote. But until the summer of 2013 the sales were stagnating, despite the fact that the price for the water is reasonable (1 Rupee per 5 liters) and that villagers using this water reported that their well-being has increased. A substantial share of demand for purified water comes from neighbor villages in the meantime, not from the model village itself.

With 30% the acceptance rate is too low to classify the measure as successfully implemented and accepted. In a FGD villagers were giving a variety of reasons why they are not willing to buy purified water.

Even if the price is low, in FGD some villagers stated that they cannot afford it. Another argument given was that they are not able to carry the water to the fields and have to drink ground water there. Some villagers pointed to the fact that due to technical problems of the water plant purified water was not available for some weeks, so they had to go back to the regular water, which made some of them sick and led to high additional costs for a doctor visit. Another presumably very important reason lies in the misperception of the villagers: in the FGD several villagers stated that they consider both kinds of water as perfect substitutes. This goes in line with the finding of the medical doctors about the lack of awareness of the villagers concerning health issues. To increase the number of villagers using purified water it is necessary to persuade the villagers that the purified water is important to improve their health. Therefore Bayer CropScience plans to offer additional awareness raising workshops in the near future.

Development Manager and Self-Help Groups (SHG) as Core Elements

Due to the multi-dimensionality of sustainable human development and the resulting complexity of related development strategies, it is hardly possible to coordinate a rural strategy from a remote urban corporate desktop. Therefore, in 2013 Bayer CropScience installed a development manager from the NGO BELAKU to advice and to support the villagers. The central task of this manager was the initiation and guidance of across castes' women's SHG which can be a successful mean for the empowerment of rural women in India (e.g. Deininger, Liu, 2013). Within the SHG women collect their savings and use them for micro loans to group members.

The SHG also serve as a platform for awareness raising workshops and measures. The women engaged in these groups shall function as multipliers, and invite and encourage other villagers, both men and women, to participate in awareness raising activities.

Backyard Gardens

To improve the micro-nutrition of the villagers through a higher intake of vegetables a backyard garden project was initiated by Bayer CropScience and implemented by the on-side development manager. In general the diet of the villagers consists predominantly of staple food. Bayer CropScience financed

seedlings which were given for free to all villagers who would like to participate in this project. However, due to a lack of suitable space backyard gardens are so far only feasible for a minority of the villagers. Moreover, the alternative of growing of vegetables in the fields competes with growing other crops which could be sold. The FGD discussion showed that most women would prefer to grow vegetables for own consumption. The final decision about the usage of the fields is, however, often taken by men who mostly prefer to grow salable crops. The fact that growing vegetables would save money they have to spend for food is subordinate. These facts show that awareness raising measures concerning nutrition are an important precondition for the success of the activity. Moreover both men and women have to be addressed likewise.

This measure also shows that intra-household decision making processes might play a decisive role for the acceptance of measures. Measures like backyard gardens are more likely to be accepted in households where women's empowerment and their influence on decisions are higher. This goes in line with empirical results to the intra-household collective model (e.g. Bird, 2003: 321-322).

Animal Health Camp

Animals – especially cattle – are very important for the villagers. They need them for cultivating the fields. Furthermore milk and paneer (Indian cheese) enhance the food quality. To assure the health of the animals (cattle, sheep, goats) Bayer CropScience organized an animal health camp in 2013 which included training and advice in animal rearing. As the animal health camp was welcomed by the villagers, it was fruitful for trust building and seems to fulfil the criteria of creating shared value, because Bayer CropScience also offers Bayer products.

Recommendations

The empirical baseline analysis shows the theoretically and empirically well-established gap between the objective health situation of the villagers and their subjective view. First experiences from the MVP illustrate that these misperceptions lead to implementation and acceptance problems for the health activities undertaken which have to be overcome. Bayer CropScience started with the water purification measure because this was essential from an objective assessment, but this measure has so far only been partly successful and additional efforts have to be undertaken to raise the acceptance of the initiative. The animal health camp was highly appreciated by the villagers due to the fact that the villagers are convinced to profit from this measure. That is also at least partly true for the backyard gardens. It will be interesting to see how the villagers make use of this activity, because it has the chance to improve their nutrition and to generate income. As health awareness is very low, however, one must take into account that increased income may at least

partly be used for conspicuous consumption which is quite common in rural India (Linssen, Kempen, Kraaykamp, 2011: 61).

Gaps between subjective perceptions and objective health risks can also emerge in Bayer CropScience's core business of selling pesticides and similar products. As illiterate, less informed customers may not be able to adequately apply these products, also in this core business field, systematic training and information on safe use and health issues of the products are essential for a win-win situation.

The case of Bayer CropScience even at this rather early stage illustrates that for a MNC aiming at a win-win-situation it is not sufficient to develop and implement worthwhile measures to improve the productivity of smallholder farmers and the supply chain performance. First evidence from the MVP underlines that gaps between objective needs and subjective assessments have to be taken into account for a successful implementation of health-related activities. MNCs should hence develop a step by step process for implementing effective health measures.

First, the health situation has to be analyzed and potential or actual health risks have to be identified. In the next step it is very decisive to also consider and analyse the subjective assessments of the suppliers. Therefore, the people centered approach is a valuable instrument. Measures should be prioritized under consideration of the subjective needs of the suppliers. The implementation process should start with those measures which are objectively important but likewise meet the specific needs of the local people. During the implementation of the first measures MNCs can develop trust with their suppliers. This trust is the basis for awareness raising measures about health risks which should take place before other health measures are installed where visible gaps between objective and subjective assessments are found.

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