

## **Youth Farmers' Social Adaptation towards Climate Change Impact**

*Mas Ernawati Hamdan<sup>2</sup>, Norsida Man<sup>2</sup>, Sulaiman Md Yassin<sup>1</sup>, Jeffrey Lawrence D'Silva<sup>1</sup>  
and Hayrol Azril Mohamed Shaffril<sup>1</sup>*

<sup>1</sup> Institute for Social Science Studies, Universiti Putra Malaysia

<sup>2</sup> Faculty of Agriculture, Universiti Putra Malaysia  
Serdang, Selangor, 43400, Malaysia.

[masernah@gmail.com](mailto:masernah@gmail.com)

### **Introduction**

Climate change is a major threat for attaining agricultural sustainability in Malaysia as it continuously changes and affects the agriculture in diversified ways (Siwar et al, 2009; Alam, 2012). Additionally, climate change is taking place in the context of other developmental stresses, notably poverty, fluctuating oil prices and food insecurity (FAO, 2006), as well as in combination with environmental change, drought and land degradation (Thomas et al, 2008). It is thus essential to develop and implement effective adaptation measures so that climate related risks and opportunities might support development objectives within local and policy decision making processes (Adger et al, 2006; IPCC, 2007).

Currently, the Malaysian government is encouraging the new generation to be involved in entrepreneurship. The development of entrepreneurship has become a national agenda with the establishment of a ministry in 1995, known as the Ministry of Entrepreneurship and Co-operative Development. The establishment of this ministry is timely due to the increased number of graduates unemployment reaching up to 60 000 in 2005. Entrepreneurship has been accepted as a potential catalyst and incubator for the technological progress, product, and market innovation (Muller and Thomas, 2000). It is believed that entrepreneurship will benefit the Malaysian youth and also to the nation. On the other hand, there is increasing number of agricultural entrepreneurs in Malaysia. A total of 1,600 Bumiputera agropreneurs were born across the country in 2012, which shows an increase of 44 percent compared to 1,111 people in 2011 (Maznah, 2012).

### **Methodology**

This is a quantitative study which used a developed questionnaire as the main tool for data collection. The questionnaire was developed based on literature reviews in order to answer the research objectives. For each of the question asked, the respondents were given a 5 point likert scale which gave them a choice of answers, including: strongly disagree, disagree, moderately

agree, agree and strongly agree. Using a multi-stage simple random sampling technique, a total 400 youth farmers from selected agriculture area was chosen as respondents in this study. During the first stages of the sampling technique, the respondents selected are among those who involved in grain crops, aquaculture, commodities and crops. Respondents selected are from these four fields as these types of agriculture activities have a high potential to be affected by the climate change impact. Then in the second stage of sampling, a single agriculture district was then randomly selected from each type of crops and this resulted in seven selected agriculture districts namely Muar, Segamat, Pekan, Temerloh, Pendang, Cameron Highland and Setiu. The collected data then was analysed using SPSS to achieve the determined objectives.

## **Results**

### ***Respondents' demographic data***

To obtain demographic data on the respondents, a total of nine questions were asked. Based on the results obtained, it was determined that 5.5 percent of the respondents were aged 20 and under, 37.3 percent were aged 21 to 30, while of the remaining 57.3 percent were aged 31 and above. Only 1 percent of the respondents had never been to school, 18 percent possessed a primary school level of education, 25 percent possessed a secondary school level of education, while majority with 42 percent of the respondents possessed certificates/STPM. The remaining 9.3 percent of the respondents possessed a diploma and 4.8 percent a degree holder. Majority of the respondent do not attend any agriculture courses with 60.5 percentage. In this study, the farmers were divided into four different categories based on their type of crops; Grain crops (Paddy), aquaculture, commodities (Palm oil/Rubber) and crops (Fruits/Floriculture/Vegetables). The mean score recorded for monthly income was RM2,083.79. Most of the respondents (28.3 percent) earn between RM501 to RM1000 per month. Since this study focusing on youth, the mean score recorded for experience as a farmers only almost 10 years.. A total of 36.8 percent of the respondents had less than 5 years' experience as a farmers.

**Table 1: Demographic Profile of Respondents**

| <b>Characteristic</b>                   | <b>Frequency<br/>(n=400)</b> | <b>Percentage<br/>(%)</b> | <b>Mean</b> | <b>S.D</b> |
|---|------------------------------|---------------------------|-------------|------------|
| <b>Age (years)</b>                      |                              |                           | 31.66       | 6.80       |
| <20                                     | 22                           | 5.5                       |             |            |
| 21 – 30                                 | 149                          | 37.3                      |             |            |
| >31                                     | 229                          | 57.3                      |             |            |
| <b>Education Level</b>                  |                              |                           |             |            |
| No schooling                            | 4                            | 1.0                       |             |            |
| Primary                                 | 72                           | 18.0                      |             |            |
| Secondary                               | 100                          | 25.0                      |             |            |
| Certificates/STPM                       | 168                          | 42.0                      |             |            |
| Diploma                                 | 37                           | 9.3                       |             |            |
| Degree/Bachelor                         | 19                           | 4.8                       |             |            |
| <b>Agricultural Education<br/>Level</b> |                              |                           |             |            |
| Vocational                              | 11                           | 2.8                       |             |            |
| Agriculture Institute                   | 21                           | 5.3                       |             |            |
| University/College                      | 21                           | 5.3                       |             |            |
| Agriculture Courses                     | 105                          | 26.3                      |             |            |
| No education in<br>agriculture          | 242                          | 60.5                      |             |            |
| <b>Type of crops</b>                    |                              |                           |             |            |
| Palm Oil                                | 45                           | 11.3                      |             |            |
| Rubber                                  | 55                           | 13.8                      |             |            |
| Fruits/Floriculture                     | 62                           | 15.5                      |             |            |
| Vegetables                              | 38                           | 9.5                       |             |            |
| Paddy                                   | 100                          | 25.0                      |             |            |
| Aquaculture                             | 100                          | 25.0                      |             |            |
| <b>Income Level</b>                     |                              |                           | 2083.       | 1864.8     |
|   |                              |                           | 79          | 7          |
| <RM500                                  | 52                           | 13.0                      |             |            |
| RM501 – RM1000                          | 113                          | 28.3                      |             |            |

|   |     |      |      |      |
|---|-----|------|------|------|
| RM1001 – RM2000                               | 102 | 25.5 |      |      |
| RM2001 – RM3000                               | 60  | 15.0 |      |      |
| RM3001 – RM4000                               | 12  | 3.0  |      |      |
| >RM4001                                       | 61  | 15.3 |      |      |
| <b>Involvement in<br/>agriculture (years)</b> |     |      | 9.94 | 6.85 |
| < 5   | 147 | 36.8 |      |      |
| 6 – 10  | 111 | 27.8 |      |      |
| 11 – 15                                       | 45  | 11.3 |      |      |
| 16 – 20                                       | 85  | 21.3 |      |      |
| >20   | 12  | 3.0  |      |      |

---

### ***Social Adaptation towards Climate Change Impact***

In this study, social adaptations towards climate change were measured based on the individual adaptive capacity for climate change developed by Marshall et al. (2009). The overall mean score was categorized into three levels, namely low (M = 1.00-2.33), moderate (2.34-3.66) and high (3.68-5.00). The category was identified according to the equal distribution of the mean score. As depicted in Table 2, ten aspects were used to record a high overall mean score: (1) the perception of risk (M = 3.806); (2) the ability to cope with change (M = 3.693); (3) The level of interest in adapting to change (M = 3.741); (4) the ability to plan, learn and reorganize (M = 3.714); (5) attachment to occupation (M = 4.535); (6) attachment to place (M = 4.615); (7) business size and approaches (M = 3.777); (8) local environmental knowledge (M = 3.947); (9) Environmental awareness, values and attitudes (M = 4.295); (10) formal and informal networks (M = 4.193).

The remaining six aspects were used to record a moderate overall mean score ranging from 3.009 to 3.497. The highest mean score was recorded using the aspect “attachment to place” (M = 4.615), while the lowest mean score was recorded using “access to climate technology, information and skills” (M = 3.009) (Table 2).

**Table 2 : Level of Social Adaptation toward Climate Change Impact (n=400)**

| Social Adaptation Aspects   | Mean         | S.D          |
|---|--------------|--------------|
| The perception of risk  | 3.806        | 0.668        |
| The ability to cope with change (financial and emotional flexibility) | 3.693        | 0.635        |
| The level of interest in adapting to change                           | 3.741        | 0.741        |
| The ability to plan, learn and reorganize                             | 3.714        | 0.736        |
| Attachment to occupation  | 4.535        | 0.656        |
| Employability (age, education and attitude to working elsewhere)      | 3.104        | 1.086        |
| Family characteristics  | 3.497        | 0.705        |
| Attachment to place   | 4.615        | 0.654        |
| Business size and approaches  | 3.777        | 0.736        |
| Financial status  | 3.380        | 0.789        |
| Livelihood diversity  | 3.461        | 0.701        |
| Local environmental knowledge   | 3.947        | 0.669        |
| Environmental awareness, values and attitudes                         | 4.295        | 0.528        |
| Access to climate technology, information and expertise               | 3.009        | 0.904        |
| Formal and informal networks  | 4.193        | 0.682        |
| Perceptions of equity in accessing resources                          | 3.270        | 1.012        |
| <b>Total</b>  | <b>3.752</b> | <b>0.323</b> |

*Note: \*Indicator*

*n = 400*

*Note: Figures in parentheses indicate percentage (%)*

## **Discussion**

The level of adaptation among youth farmers in Peninsular Malaysia can be categorized according to the three levels outlined above – namely low, moderate and high. A number of recommendations arise from this.

### ***Moderate level of adaptation***

Based on the results depicted, six aspects of social adaptation can be categorized as moderate, namely:

- (1) Employability (age, education and attitude to working elsewhere);
- (2) family characteristics;
- (3) financial status;
- (4) livelihood diversity;
- (5) access to climate technology, information and skills;
- (6) perceptions of equity in accessing resources.

Even all of these aspects recorded moderate scores, they should be further strengthened. The farmers indicated that they are aware of climate change, and this issue is discussed as the main topics among their family members and colleagues. It can be concluded that their awareness and level of knowledge on climate change is only general thus, it is recommended that access to climate technology, information and skills should be further strengthened. The farmers should be exposed to such information, as its availability, accessibility and transparency will inform them on the preparations needed to face such threats.

### ***High level of adaptation***

Ten aspects reported high levels of adaptation, namely:

- (1) the perception of risk;
- (2) the ability to cope with change;
- (3) The level of interest in adapting to change;
- (4) the ability to plan, learn and reorganize;
- (5) attachment to occupation;
- (6) attachment to place;
- (7) business size and approaches;
- (8) local environmental knowledge;
- (9) Environmental awareness, values and attitudes;

(10) formal and informal networks.

The youth fit into the climate change and development equation, both as victims and also as solution providers. The youth are victims to climate change because current effects of climate change are a result of current and past human activities. It can be seen as a positive sign that youth farmers in Peninsular Malaysia have positive environmental awareness, attitudes and beliefs regarding the current agriculture industry situation. To further enhance their adaptation towards climate change impact, consistent exposure to and possession of climate change information will aid them to prepare socially and economically for the threats created by such changes.

### **Conclusion**

Youth involvement in the agriculture sector has been the most deliberated topics today. With rapid development, the current challenge for the governments of both developed and developing countries are the lack of participation among youth in agricultural activities. This has a direct effect on the countries growth and development, which is evidently fuelled by various components in a nations economy. For, a sustainable growth and development of the nation depends very much on the strengths and capabilities of its human resources, which are needed to generate and sustain the livelihood of the nation and its people. Hence, readiness to face climate change among farmers is crucial.

### **References**

- Adger, W.N., Paavola, J., Mace, M.J., Huq, S. (Eds.), 2006. *Fairness in Adaptation to Climate Change*. MIT Press, 312 p.
- Alam M.M., Siwar C., Basri T., Mazlin M. & Toriman M. E. (2012). Review: Climate change adaptation policy in Malaysia: Issues for agricultural sector. *African Journal of Agricultural Research*, 7 (9), 1368-1373.
- Food and Agriculture Organization (FAO) (2009). *Climate Change and Bioenergy Challenges for Food and Agriculture. Paper presented at High Level Expert Forum: How to Feed the World in 2050*, 12-13 October 2009, Rome, Italy.
- International Panel on Climate Change (IPCC) (2007), "Climate change: impact, adaptation and vulnerability", Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.
- Maznah (2012, December 28). Jumlah Usahawan Tani Meningkatkan. Utusan Malaysia Online.

Siwar, C., Alam, M. M., Murad, M. W., & Al-amin, A. Q. (2009). A review of the linkages between climate change, agricultural sustainability and poverty in Malaysia. *International Review of Business Research*, 5, 309-321.

Thomas, A.D., Hoon, S.R., Linton, P.E., 2008. Carbon dioxide fluxes from cyanobacteria crusted soils in the Kalahari. *Applied Soil Ecology* 39, 254–263.

Thomas, A.S. and Muller, S.L. (2000). A case for comparative entrepreneurship: assessing the relevance culture. *Journal of International Business Studies*. 31(2): 287-305.