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Boomtown Transforming the Economic and Social Modus Vivendi of a Rural Community in Northern Greece

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Abstract: The main objective of this case study is to examine the role a boomtown has played in the transformation of a rural community in Northern Greece. More specifically, the study focuses on researching at the local community level of Foufas Kozani, the economic and social impact of the public electric power corporation's (in Greek DEI) plants in nearby Ptolemaida. Examining the role power plants have played in rural non-agricultural development of the research area, the study aims to clarify the extent to which the emergence of a boomtown has altered the profile and the modus vivendi of a nearby rural community.

Key words: Boomtown, electric power plants, economic and social impact, rural community, Greece

INTRODUCTION

Although historically, agriculture has played an important role in expanding the economic base of rural regions in the developing world in recent years, globalization, urbanization, industrialization and improved infrastructure have opened up new opportunities in many rural areas, thereby reducing their dependence on agriculture as the primary engine of rural growth (Haggblade *et al*., 2009). Over time, the rural nonfarm economy has grown rapidly, contributing significantly to both employment and income growth, as rural residents across the developing world earn a large share of their income 35-50% from nonfarm activities (Haggblade *et al*., 2009). The rural nonfarm economy encompasses all non-agricultural activities such as: Mining and quarrying, household and non-household manufacturing, processing, repair, construction, trade and commerce, transport and other services in villages and rural towns undertaken by enterprises varying in size from household own-account enterprises to factories and public corporations (Brajesh, 2008).

The process of economic, social and physical restructuring manifested in recent years in the rural space of the developed economies is a complex process, driven by a number of long-term trends of change (Sofer and Applebaum, 2009). Some of these trends are the declining significance of agriculture for both national and regional economies, the penetration of industrial, commercial and service sector enterprises into rural communities and the emergence of boomtowns in rural areas (Krannich, 2012). Boomtowns are communities that experience rapid economic and population growth, typically in association with mining or other types of resource extraction and occasionally in connection with other growth contexts involving rapid social and economic change (Schafft *et al*., 2013; Krannich, 2012).

Boomtowns and the social and economic analysis of small rural communities undergoing rapid growth and industrialization gained significant prominence during the 1970s and 1980s. During this time, many Western countries underwent a period of heavy energy development as spikes in energy prices led to the implementation of hundreds of new energy projects across the West, including coal, uranium, oil, oil shale and natural gas extraction, as well as the construction of new coal-fired power plants, pipelines and processing facilities (Jacquet, 2009). These projects had significant economic and social impacts on rural communities and in some cases caused major transformations to local societies (England and Albrecht, 1984). Also, it was during that period of late seventies, the significance of rural non-farm activities was well realized in view of addressing the increasing problems of unemployment and poverty situation in most developing countries (Brajesh, 2008).

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In Greece, an illustrative example of boomtown emergence is Ptolemaida in Northern Greece, a town which has influenced significantly the economic and social development of its nearby rural communities, including Foufas Kozani, the community studied in the present research. The economic and social modus vivendi of Foufas, as well as of the entire Ptolemaida region is characterized by the presence of 4 large electric power plants, owned and operated by the public electric power corporation SA (in Greek: DEI), the biggest electric power company in Greece which is controlled to an extent by the government. These power plants produce 70% of Greece's electric power, using as fuel the large local deposits of lignite. Over the years, the power plants have played a major role in the region, having significant environmental, social and economic influences and transforming the profile of the nearby rural communities (Koutsoukos and Iakovidou, 2013).

Literature review: The earliest scientific literature concerning boomtowns examined community-level social disorganization or disruption associated with boomtown growth. Much of this research focused on Western rural communities that in the 1970s and 1980s experienced rapid growth when sudden spikes in energy prices led to the exploration and development of new energy sources (Schafft *et al*., 2013). This research examined, the ways in which the emergence of a boomtown may be associated with rapid economic and social transformation and a variety of social disruptions, including changes in rural community identity (England and Albrecht, 1984; Wilkinson *et al*., 1982).

In particular, Gold (1974), conducting a 5 month study in Gillette, Wyoming and Colstrip, Montana, USA, noted that rapid growth and energy development lead to a number of negative outcomes, as residents lost a sense of community during periods of energy boom created by the local coal industry. Using key informants and interviewing over 100 people, Gold (1974) pointed out negative indicators of social well-being at the 2 rural communities. Later Cortese and Jones (1977), examined 3 rural communities in North Dakota and Wyoming, USA where economic activity was largely focused on energy development and extraction. The results showed on average that boom growth was associated with negative cultural and social changes, as rural communities were becoming less relaxed, friendly, traditional, isolated, harmonious and run down and more expensive, difficult, progressive and competitive (Cortese and Jones, 1977). This early scientific work raised numerous questions regarding the shorter and longer-term social and economic impact of boomtowns while at the same time suggesting the need for greater methodological and conceptual refinement (Schafft *et al*., 2013).

Over the last years, as recent advances in gas and oil drilling technology have led to boomtown development in many countries worldwide, a new academic interest has emerged on how the presence of boomtowns affects the economic and social modus vivendi of rural households. In particular, Brown *et al*. (2005) and Jacquet (2009) researched the social and economic impact of boomtowns and indicated that social disruptions often accompany economic growth and that this can lead to polarization within communities.

In addition, Wynveen (2011) and Theodori (2009) found that local residents living in rural communities with widespread gas development perceived positive short-term economic gains and permanent infrastructure improvements due to gas development. Yet, these perceptions were tempered by negative community-level impacts like the creation of class tension and inequality, conflicts of opinion over hydraulic fracturing and quality of life and environmental issues like increased traffic and air pollution, effects which are in accordance with those predicted by boomtown sociology (Keane, 2013).

On the other hand, according to Brasier economic growth resulting from boomtowns in rural areas creates and bolsters social and economic cohesion, rather than weakening these ties. In some cases, indicators of well-being, such as community satisfaction, trust in other community residents and social ties, rebound to pre-boom levels after intense development subsides (Smith *et al*., 2001).

Malloy (2010) researched on the modern boomtown of Uintah County, Utah, USA which is dependent on natural resources, particularly oil and natural gas, as a large part of the economy and social make-up of the community. Using a variety of well-being indicators including community satisfaction, Malloy (2010) indicated the significant increases in economic opportunity for employees and residents in the County, although along with great increases in economic opportunity and population, emerged negative attributes a community may endure such as crime.

Exploring the impacts of Marcellus Shale gas development in Bradford County in Northeastern Pennsylvania, USA, Perry (2012) illustrated the ways rapid social and economic change processes impacted daily lives and community dynamics in 1 traditionally agricultural and rural place. Marcellus Shale Region was studied, also by Schafft *et al*. (2013) who examined the rapid boomtown-associated community change and by Keane (2013) who focused on the economic, social and environmental risks of the natural gas development.

Lawrie *et al.* (2011) examined the relationship between boomtowns and socio-economic well-being in 3 rural communities in Australia's resource-dependent regions. The research looked into the anatomy of these communities in terms of local demographic and economic change and examined a range of socio-economic indicators, such as income, cost of living, housing affordability, welfare receipts and unemployment. Also in Australia, Petrova and Marinova (2013), carried out an exploratory research in an agricultural community, focusing on the social impacts of a large-scale mining operation in Boddington, Western Australia. According to the research, the mining operation triggered significant changes which resulted in a structural and functional transformation of the local social environment.

In Greece, the social and economic impacts of boomtowns have not been thoroughly examined by the academic literature. In particular and concerning Ptolemaida as a boomtown, the scientific research has focused on the environmental aspect of the issue, examining the effects of the lignite extraction on the local environment and studying the atmospheric and soil pollution caused by the function of the electric power plants (Terzi *et al.*, 2008; Kavouridis, 2008; Petaloti *et al.*, 2006).

MATERIALS AND METHODS

For the purposes of the present research, a combination of qualitative and quantitative methods was used. Firstly, qualitative research was carried out focusing on a thorough study of the main parameters of the issue, aiming to clarify variables used at the quantitative stage of the research (Ritchie and Lewis, 2003). An effort was made to record the historical evolution of agriculture in the region, noting the structural, social and economic framework in which the rural community developed. Also, an effort was made to document the evolution of the electric power plants focusing on the social and economic aspects of their emergence.

More specifically with the aid of native to the region key informants, data and information that might well be concealed within the statistics and official registrations were gathered for framing the contemporary research field with useful information (Koutsou *et al.*, 2011). Thus, a considerable amount of material was gathered, consisting of local press articles, publications issued by cultural clubs, organisations, local cooperatives and the public electric power corporation S.A. (in Greek: DEI), in order to clarify the historical framework of the community's evolution, a process which according to researchers, designates the changes in societies over the years (Abrams, 1982; Skocpol, 1984).

At a next step, qualitative and semi-structured interviews took place, aiming at the clarification of the attitudes of a relatively small group of farmers from the community of Foufas. The interview was chosen, as a research tool since it investigates issues in an in depth manner and provides detailed information as regards personal feelings, perceptions and attitudes, leading in this way to a kind of understanding not easily achieved using quantitative methods (Robson, 2010). In addition, the questions posed during the interviews were aimed at broadening the framework of issues studied and determining the conceptual axes of the questionnaire which would be used later at the stage of quantitative research.

Primary data were collected during the period between May and September, 2011. About 8 in-depth interviews were held with farmers, selected specially for this purpose. The interviews had an average duration of 30-35 min were tape recorded and the useful conclusions deduced were utilized, as auxiliary material for the final definition of the questionnaire which was used at a later step.

Thus at the stage of quantitative research, the questionnaire method was used, as it is one of the most widespread and popular research methods for gathering data (Robson, 2010). It should be mentioned that the unit of analysis for the present study were the farmers, owners of agricultural holdings in Foufas, enlisted in the official lists of IACS (Integrated Administration and Control System, OSDE in Greek) for year 2011.

The questionnaire was developed specifically for this purpose based on literature review (Robson, 2010), the results of qualitative research and the objectives of this study. It consisted of 48 mostly quantitative (closed), answer questions and the respondents level of agreement or disagreement with statements was assessed using a 5-point Likert-type scale ranging from strongly agree to strongly disagree. At this point, it should also be mentioned that the present study had the characteristics of a population census, thus there was no need for applying sampling methods. The questionnaire was pilot-tested in face-to-face sessions with farmers and redefined over several stages based on comments and suggestions received. The final survey was conducted between September and October, 2012. A total of 73 farmers answered the questionnaire and the response rate (93.6%, 73/78) was high according to the relevant literature (Groves, 2006; Babbie, 1998). Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS v.20).

RESULTS

The rural community of Foufas is situated on Northern Greece in the Regional Unit of Kozani in an altitude of 650 m and 15 km from the boomtown of Ptolemaida which is the nearest to the community urban centre. As far as, agriculture in Foufas is concerned, conventional farming is the prevailing farming system and there are no organic cultivations in the community. Potatoes, corn and wheat are the main crops in the 750 ha of cultivated land (Table 1). Also, there are many household gardens with vegetables mainly for domestic use. The average farm size was 6.8 ha, relatively low compared to the average EU-27 farm size which was 22 ha in 2012 (Koutsoukos and Iakovidou, 2013).

In Foufas until 1960s, agriculture was the dominant source of employment and also the driving force of the rural economy, having environmental, social and cultural influences in the local community. Traditionally, the agricultural sector comprised of small and medium sized, mixed farming units consisting of both crop production and livestock which grew different types of crops. Labour intensive crops, such as tobacco and vegetables were the main cultivations and in most farm households all members used to research in the various farming activities. Livestock production was also popular among farm households and the livestock sector included cattle, sheep, dairy, swine and poultry.

During the 1960s, the discovery of large deposits of lignite in the region led to the construction of the 1st electric power facilities, transforming gradually the economic and social modus vivendi of the community. Since 1960s, the character of the region has changed from a mainly agricultural into a more industrial country. This change implied a rapid development of urban and industrial employment opportunities and also a growth of the rural non-farm economic sector comprised of wide ranging activities directly or indirectly related to the electric power plants, resulting in serious consequences for the nearby rural communities.

Ptolemaida with its rapid economic growth turned into a modern industrial town, acquired the main characteristics of a sprawling urban centre and became a boomtown. New economic activities emerged in the region and mining, manufacturing, processing, construction, trade and commerce, construction companies, small factories and other services altered the economic and social profile of the region. According to boomtown sociology, during periods in which there is an increase in energy developments, rural communities might benefit at some level from short-term wealth and job creation and increased business activity and tax revenue (Keane, 2013).

Table 1: The profile of the rural community of Foufas

Parametrs	Units
Regional unit	Kozani
Altitude	650 m
Population (2011)	530
Cultivated land (2012)	650 ha
Irrigated land (2012)	480 ha
Main cultivations	Potato, wheat, rye, corn
Farming system	Conventional agriculture
Active agricultural holdings (2012)	78
Average farm size (2012)	6.8 ha

Jobs and business activity related both directly and indirectly to the extractive industry were created in the region.

The majority of farmers in Foufas integrated themselves into the urban labor market of Ptolemaida balancing the decline of agricultural employment. Meanwhile many farmers, especially young ones were interested in pursuing careers in the local electric power plants or receiving technical training for these careers, as the electric power industry provided some of the best wages and long-term career advancement ever seen in the area. Approximately, 3 quarters of the labor force directly connected to the electric power plants came from out of Ptolemaida and the nearby rural communities, such as Foufas. These developments offered new prospects for stimulating rural economic growth but at the same time replaced agriculture as the main driver of the rural economy.

In subsequent years, this process rapidly raised material standards of living and created a new social class, affecting at the same time the social structure and the style of life in the region. Many farming families from the nearby rural communities, including Foufas, bought houses and settled in Ptolemaida. Some of them sold their farms and abandoned completely agriculture but the majority maintained their farms active in agriculture, having a combination of farm and non-farm income which at the household level provides resilience against adverse situations in either of the sectors, though agriculture is known for more frequent adversity (Brajesh, 2008).

That period, the economic and social dynamic favoured the growth of the secondary and the tertiary sector of the local economy and gave agriculture the role of the complementary sector in the process of development, starting a process of de-agrarianisation. According to Bryceson (1997), de-agrarianisation is a long-term process involving 4 main elements: Occupational adjustment, income earning re-orientation, social identity transformation and spatial relocation of rural dwellers away from strictly peasant modes of livelihood. These changes which do not necessarily take place, simultaneously or follow similar trajectories (Tacoli, 1998) were noticed also in Foufas. The outcome

of these changes was the appearance of a multifunctional rural space, characterized by a growing number of pluriactive households and by an increasing spatial heterogeneity.

In this setting, farming was in many cases left to old people and part timers and agriculture was, therefore marginalized due to the industrialization process, as new employment opportunities emerged, linked with the presence of the electric power plants in the region. As a result, there has been a dramatic decline in the number of active agricultural holdings. According to official agricultural statistics, the total number of agricultural holdings in Foufas in 2011 was 78, down from 201 in 1951 (Table 2), a remarkable decline of 61.2% over this period.

The industrialization process had also a major impact to the farming profile of the community, as it affected the cropping patterns and changed the farming system in response to labour constraints. In particular, there was a general shift away from labour-demanding crops, like tobacco and vegetables to those that are the least labour-intensive and drought-resistant, like wheat, rye and barley which are relatively easy to plant and maintain and require less working time and irrigation than other crops. In addition, most agricultural holdings started to focus on 1 or 2 cash crops with relatively straight forward production schedules, specializing in 1 or 2 areas of production. As far as, livestock production is concerned, the decrease of labour availability caused the decline of livestock sector minimizing its size and affecting its structure. As a result, it appeared to be a trend towards the keeping of smaller livestock, mostly pigs and poultry which are less labour-demanding.

Next, as far as the profile of farmers in Foufas is concerned (Table 3), the results showed that they are more likely to be men (81.2%), married (83.3%) and secondary education graduates (74.7%). The examination of the farmers profile, also indicated a relatively low percentage of participation in vocational training-lifelong learning activities and a considerable percentage of off-farm employment. Overall, on 65.8% of agricultural holdings either the holder or spouse has another source of off-farm occupation, directly or indirectly related to the electric power plants.

Also, the findings showed that the majority of agricultural holdings which have off-farm employment cultivate less labour-demanding crops, like wheat and rye. More specifically, 43.8% of the respondents who have an off-farm occupation cultivate wheat, 20.8% rye, 16.7% corn, 12.5% clover and 6.2% potato (Table 4).

Next, investigating the farmers beliefs towards the impacts of the electric power plants to their community produced key insights. More specifically, farmers in Foufas were asked to evaluate the impact of electric power plants to 5 already determined factors which mark out life quality in their area (Table 5). Bearing in mind the relevant literature (Schafft *et al*., 2013; Jacquet, 2009; Freudenberg and Krannich, 2003) together with the conclusions of the qualitative research, the questionnaire focused on 5 main factors affecting the economic and social modus vivendi in Foufas. Respondents were each asked individually to evaluate the impact of the electric power plants to these factors through a 5 point Likert-type scale ranging from very negative to very positive (Vagias, 2006).

Economic benefits are often the main reason energy development is embraced by community members, particularly in rural communities with histories of economic decline and high unemployment. To start with the present research examined, the power plants impact to rural household income and the results showed that for

Table 2: Total number of agricultural holdings in Foufas from 1951-2011

Years	Agricultural holdings
1951	201
1961	193
1971	176
1981	161
1991	152
2001	101
2011	78

Data available from Hellenic statistical authority, annual agriculture statistics

Table 3: The profile of farmers in Foufas

Variables	Results
Gender (men-women)	81.2-18.8%
Age (years) (average and standard deviation)	48.6±9.4
Marital status (married)	83.3%
Primary education	18.3%
Secondary education	74.7%
Post secondary education	7.0%
Vocational training-lifelong learning	13.3%
Off-farm employment	65.8%

Table 4: Crop types of farmers who have off-farm employment in Foufas

Crops	Farmers	Percentage
Wheat	21	43.8
Rye	10	20.8
Corn	8	16.7
Clover	6	12.5
Potato	3	6.2
Total	48	100.0

Table 5: Impact of electric power plants to various factors affecting economic and social modus vivendi in Foufas

Factors	Very negative	Negative	Neutral	Positive	Very positive	Total
Household income	0 (0%)	0 (0%)	4 (5.5%)	18 (24.6%)	51(69.9%)	73 (100.0%)
Unemployment reduction	0 (0%)	0 (0%)	0 (0%)	15 (20.5%)	58 (79.5%)	73 (100.0%)
Agriculture	10 (13.7%)	32 (43.8%)	28 (38.3%)	3 (4.2%)	0 (0%)	73 (100.0%)
Natural environment	31 (42.5%)	39 (53.3%)	3 (4.2%)	0 (0%)	0 (0%)	73 (100.0%)
Local society's well-being	2 (2.7%)	9 (12.4%)	18 (24.6%)	30 (41.1%)	14 (19.2%)	73 (100.0%)

the majority of farmers, the power plants had a positive impact. In particular, a notable 69.9% of the respondents characterised the impact of the electric power plants to household income as very positive (Table 4) and 24.6% as positive. Only 4 out of 73 respondents (5.5%) characterised the impact as neutral.

Next, the results indicated a common belief among farmers of Foufas, concerning the impact of electric power plants to unemployment reduction, as job creation was largely perceived as the primary positive impact of the power plants emergence. More particularly, the vast majority of the respondents (79.5%) considered this impact, as very positive while 20.5% of them as positive.

As far as agriculture is concerned, it seems most of the farmers in Foufas believe the impact of the electric power plants is rather negative. In particular, 43.8% of the respondents characterised the impact as negative and 13.7% as very negative. A considerable 38.3% characterised, it as neutral while a small percentage of 4.2% considers the impact positive. While some farmers believe that the raise of household income will enable some families to invest in their farms and continue farming, others express pessimism over the agrarian future of their community noting that the abandonment of farming, as a livelihood strategy for many households will have a negative impact to local agriculture.

Also, it should be mentioned that reports have indicated crops grown near the power plants are at risk for stunted growth and therefore, decreased productivity as a result of increased air pollution (Terzi *et al*., 2008; Petaloti *et al*., 2006). The negative impacts to soil fertility are due to acid deposition and intense heat from the process which ultimately causes depleted fertility of the soils that surround lignite extraction locations (Kavouridis, 2008).

Focusing on the environmental impact of the electric power plants, farmers beliefs are in line with scientific studies (Terzi *et al*., 2008; Petaloti *et al*., 2006) which have demonstrated the plants negative effect to the natural environment in Ptolemaida region. So, the majority of the respondents claimed that the plants have a negative (53.3%) or a very negative (42.5%) impact to the environment. In particular, interviews conducted with key informants indicated that perceptions of potential environmental threats were consistent across the community, especially the impacts on surface and groundwater quality and air pollution.

Finally, farmers were asked to evaluate the plants impact to the social well being of their community. The issue of social well-being in resource-dependent communities has been one of ongoing interest for geographers, rural sociologists and economists (Lawrie *et al*., 2011). In Foufas, 41.1% of the respondents consider the plants impact to social well being positive and 19.2% consider it very positive. On the contrary, 12.4% of the farmers consider it negative and 2.7% very negative while for 24.6% it is neutral.

DISCUSSION

To sum up, various conclusions emerged regarding the role a boomtown has played in the transformation of a rural community in Northern Greece. The present study focused on researching at the local community level of Foufas Kozani, the economic and social impact of the public electric power corporation's (in Greek DEI) plants in nearby Ptolemaida. Research findings in this case study reconfirmed insights demonstrated by other scientific studies (Keane, 2013; Schafft *et al*., 2013; Jacquet, 2009) that boomtown emergence in rural areas has significant effects in the modus vivendi of rural households.

Results highlight the plants main impacts to a number of factors, such as household income, unemployment reduction, agriculture, natural environment and local society's well-being. According to Foufa's farmers, the plants have had a positive impact to household income, unemployment reduction and social well-being. On the contrary, the plants impact to natural environment and agriculture, according to respondents is considered to be negative.

In particular, farmers belief about the plant's positive impact to household income and unemployment reduction offers a number of key insights into how cooperation and coexistence of agriculture and non-agricultural sector could provide a sound basis for long-term development in the region. While Greek economy is ravaged by factory closures, a lack of jobs and rising unemployment, many farming households are unable to make a living from agriculture alone.

Especially in this period of crisis and as agricultural sector alone is hardly in a position to provide gainful employment opportunities and to sustain the livelihood of rural households, many rural people diversify their employment and income sources and adopt an alternative strategy of survival for their households. As indicated earlier in search for supplementary income the turn to non-agricultural activities, directly or indirectly related to boomtown emergence can provide a possible solution for rural households.

Moreover, the results have, also shown the gradual replacement of agriculture as the main driver of the rural economy, the dramatic decline in the number of active agricultural holdings and the transformation of Foufas

from a purely agricultural community to a community linked to the boomtown of Ptolemaida. The economic and social dynamic of the nearby boomtown gave agriculture the role of the complementary sector in Foufas, as many former farmers started working either full time or part time at the electric power plants. So in Foufas, the proximity of the urban environment attracted a wide range of economic activities in favour of industrialization and agriculture was not given the first priority in the process of rural development.

CONCLUSION

The research presented in this study, builds on the understanding of how a boomtown can affect the economic and social modus vivendi of a nearby rural community, achieving at the same time a coherent understanding of how boomtowns and rural communities interact. Further research should develop a framework for evaluating the social and economic impacts of boomtowns to nearby rural communities.

It should be noted that a contract for the construction of a 1.4 billion-euro lignite power plant at Ptolemaida in Kozani was signed on May, 2013. The proposed plant, named Ptolemaida 5, represents one of the largest investment projects in the country and the biggest energy development in recent years. The new facility will replace the existing inefficient and polluting lignite plants which have long been the target of environmental campaigners. According to the corporation, 3,000 people will be employed on the construction of the plant and when completed, >350 people in its operation. Within this frame of reference and in order to respond to this new challenge, it is important for governmental organisations, policy planners and rural societies to be fully aware of the economic and social impacts of boomtowns to nearby rural communities.

REFERENCES

Abrams, P., 1982. Historical Sociology. Open Books Ltd., Somerset.

Babbie, E., 1998. Survey Research Methods. 2nd Edn., Wadsworth Publishing, Belmont, CA.

Brajesh, J., 2008. Some evidences on rural diversification from selected States and districts of India. J. Rural Dev., 27: 269-293.

Brown, R.B., S.F. Dorins and R.S. Krannich, 2005. The boom-bust-recovery cycle: Dynamics of change in community satisfaction and social integration in Delta, Utah. Rural Sociol., 70: 28-49.

Bryceson, D.F., 1997. De-Agrarianisation in Sub-Saharan Africa: Acknowledging the Inevitable. In: Farewell to Farms: De-Agrarianisation and Employment in Africa, Bryceson, D.F. and V. Jamal (Eds.). Ashgate Publishing Ltd., Aldershot, UK., pp: 3-20.

Cortese, C.F. and B. Jones, 1977. The sociological analysis of boom towns. Western Sociol. Rev., 8: 76-90.

England, J.L. and S.L. Albrecht, 1984. Boomtowns and social disruption. Rural Sociol., 49: 230-246.

Freudenberg, W. and R. Krannich, 2003. Boomtowns. In: Encyclopedia of Community: From the Village to the Virtual World, Christensen, K. and D. Levinson (Eds.). Sage Publications, Thousand Oaks, CA., pp: 99-100.

Gold, R.L., 1974. Social Impacts of Strip Mining and other Industrializations of Coal Resources. In: Social Impact Assessment, Wolf, C.P. (Ed.). Environmental Design Research Associates Inc., Washington, DC., USA., pp: 123-146.

Groves, R.M., 2006. Nonresponse rates and nonresponse bias in household surveys. Public Opin. Q., 70: 646-675.

Haggblade, S., P. Hazell and T. Reardon, 2009. Transforming the rural nonfarm economy: Opportunities and threats in the developing world. International Food Policy Research Institute (IFPRI), Issue Brief No. 58, February 2009.

Jacquet, J., 2009. Energy boomtowns and natural gas: Implications for Marcellus shale local governments and rural communities. Paper No. 43, Northeast Regional Center for Rural Development, Pennsylvania State University, State College, PA., USA., January 2009, pp: 1-63.

Kavouridis, K., 2008. Lignite industry in Greece within a world context: Mining, energy supply and environment. Energy Policy, 36: 1257-1272.

Keane, R., 2013. Hydraulic fracturing and agriculture: Rewards and risks for farmers in Pennsylvania's Marcellus Shale region. Master Thesis, Studies at Brown University, Providence, Rhode Island.

Koutsou, S., M. Partalidou and M. Petrou, 2011. Present or absent farm heads? A contemporary reading of family farming in Greece. Sociol. Ruralis, 51: 404-419.

Koutsoukos, M. and O. Iakovidou, 2013. Factors motivating farmers to adopt different agrifood systems: A case study of two rural communities in Greece. Rural Soc., 23: 32-45.

Krannich, R.S., 2012. Social change in natural resource-based rural communities: The evolution of sociological research and knowledge as influenced by William R. Freudenburg. J. Environ. Stud. Sci., 2: 18-27.

Lawrie, M., M. Tonts and P. Plummer, 2011. Boomtowns, resource dependence and socio-economic well-being. Aust. Geogr., 42: 139-164.

Malloy, D., 2010. Who wins and who loses? A community approach to understanding the well-being of boomtown residents. Ph.D. Thesis, Utah State University, Logan, Utah.

Perry, S.L., 2012. Development, land use and collective trauma: The Marcellus Shale gas boom in rural Pennsylvania. Cult. Agric. Food Environ., 34: 81-92.

Petaloti, C., A. Triantafyllou, T. Kouimtzis and C. Samara, 2006. Trace elements in atmospheric particulate matter over a coal burning power production area of Western Macedonia, Greece. Chemosphere, 65: 2233-2243.

Petrova, S. and D. Marinova, 2013. Social impacts of mining: Changes within the local social landscape. Rural Soc., 22: 153-165.

Ritchie, J. and Lewis, 2003. Qualitative Research Practice: A Guide for Social Science Students and Researchers. Sage Publications, London.

Robson, C., 2010. Real World Research. Blackwell Publishing Ltd., London, UK.

Schafft, K.A., Y. Borlu and L. Glenna, 2013. The relationship between Marcellus Shale gas development in Pennsylvania and local perceptions of risk and opportunity. Rural Sociol., 78: 143-166.

Skocpol, T., 1984. Vision and Method in Historical Sociology. Cambridge University Press, Cambridge, ISBN-13: 9780521297240, Pages: 410.

Smith, M.D., R.S. Krannich and L.M. Hunter, 2001. Growth, decline, stability and disruption: A longitudinal analysis of social well-being in four Western rural communities. Rural Sociol., 66: 425-450.

Sofer, M. and L. Applebaum, 2009. The emergence of farmers-entrepreneurs as local development agents in the rural space of Israel. Rural Stud., 20: 107-125.

Tacoli, C., 1998. Rural-urban interactions: A guide to the literature. Environ. Urbanization, 10: 147-166.

Terzi, E., C. Anatolaki, C. Samara and R. Tsitouridou, 2008. Mass closure of total suspended particles over the coal burning power production area of Western Macedonia, Greece. J. Atmos. Chem., 59: 171-186.

Theodori, G.L., 2009. Paradoxical perceptions of problems associated with unconventional natural gas development. Southern Rural Sociol., 24: 97-117.

Vagias, W.M., 2006. Likert-type scale response anchors. Clemson International Institute for Tourism and Research Development, Department of Parks, Recreation and Tourism Management, Clemson University, USA.

Wilkinson, K.P., J.G. Thompson, R.R. Reynolds Jr. and L.M. Ostresh, 1982. Local social disruption and Western energy development: A critical review. Pac. Sociol. Rev., 25: 275-296.

Wynveen, B.J., 2011. A thematic analysis of local respondents' perceptions of Barnett Shale energy development. J. Rural Soc. Sci., 26: 8-31.