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Beyond Rio + 20: Green economy in agriculture and food system

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Editorial

Beyond Rio + 20: Green economy in agriculture and food system

Prof. Dr. Angelika Ploeger is the Editor-in-chief of Future of Food: Journal on Food, Agriculture and Society (FOFJ)

Congratulations – to our team and authors for publishing the first issue of Future of Food: Journal on Food, Agriculture and Society, which is the outcome of intensive discussions and exchange of ideas about research results of sustainable food systems between young scientists during and after the August 2011 summer school initiated by the Federation of German Scientistsi On the Future of Food in cooperation with the Master course International Food Business and Consumer Studies organized at Kassel University, Germany.

International students and PhD candidates from various Universities met at Kassel University to discuss future challenges in the food system with well known scientists from Germany and the United States of America: "How can we make a change for a peaceful, sustainable and food secure world?" was the underlying question. With an Open Space event at Göttingen University this intensive brain storming week finished. Kick-off lectures about increasing world population and its needs, water scarcity, climate change, global food systems and nutrition transition enhanced the discussions in the afternoons where questions such as food safety problems worldwide, social effects of agricultural development projects as well as water privatization, community supported agriculture or how we can turn aid into partnership were discussed.

Because the funded project about the future of food finished at the end of 2011, the idea was born to start an online- journal "The Future of Food" and two participants of the summer course (Managing Editors Sisira Saddhamangala Withanachchi and Sören Köpke) took over the organization under the umbrella of the Department of Organic Food Quality and Food Culture at Kassel University (Stefanie Becker joined the team in 2013).

The problem of scale of production in general but especially in the food system is a key issue already since World War II and was addressed clearly in the book written by E.F. Schumacher "Small is Beautiful" in 1973, ranked among the 100 most influential books by the "Times", thus enhancing concerns of environmental movements in Europe trigger by the 1972 Club of Rome report "Limits to Growth". He argued that the modern economy is unsustainable and he was worried about pollution caused by the unsustainable use of non-renewable resources. He was already not convinced that efficiency is the solution, but sufficiency ("enoughness") that means a balance between the human needs, limitations

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of non-renewable resources and an appropriate use of technology. He was one of the first economists questioning that gross national product (GNP) is the right parameter to measure human well-being. His idea was "… to obtain the maximum amount of well-being with the minimum amount of consumption" and he already included the Developing Countries in his economic model ("smallness within bigness") because he favored a specific form of decentralization.

As a consequence of these findings extensive research programs were initiated in the fields of environmental and social sciences as well as economics. The results were contradictory, because in many circumstances they supported the Club of Rome´s and Schumacher´s results, however others pointed in the opposite direction, sometimes lead by vested interests. This lead to very reluctant reactions by many politicians and left civil society in uncertainty about what to believe and what to do. The main reason for this situation was the fact that most of the research was conducted in the commonly used sectoral approach.

Therefore, if one wants to achieve a change in human behavior towards a sustainable lifestyle, a different approach in science is necessary, using a trans-disciplinary approach, involving civil society in the decisions for agenda setting and the choice of scientific tools. Very much like initiatives such as the Ecological Society of America`s Earth Stewardship or the Millennium Alliance for Humanity & Biosphere which formulate clear priorities to foster societal change to enhance the process from knowledge to action (Fischer et al, Front Ecol Environ 2012;10(3) 153-160). "Human actions and behaviors, both by individuals and societies, are resulting in the ongoing degradation of the biosphere. The social sciences have generated useful knowledge on how to foster behavioral change. Achieving large scale behavioral change requires a powerful movement within civil society. For sustainable science to be effective, it needs to engage with civil society and support appropriate initiatives…(p.153)… It is our firm belief that the ultimate solution to the sustainability crisis hinges on a far greater emphasis on further developing our understanding of the evolution of value and belief systems, at levels ranging from individuals to societies. Gaining such an understanding will require a new suite of trans-disciplinary research that does not shy away from a spectrum of questions and approaches that natural scientists in particular have rarely engaged with in the past (p.158)"

The aim of this e-Journal is to create an online platform for young scientists to publish peer-reviewed articles and disseminate scientific knowledge in the field of sustainable food systems (from farm to fork). This e-Journal encourages scientists to link the basic science approach with social/cultural sciences. The major emphasis is laid on trans-disciplinary nature of the work. Clarity, novelty and significance are criteria for the peer-review process done by eminent international experts in their respective fields whom I would like to thank very much for their voluntary work.

I am proud that the Future of Food Journal (represented by the Managing Editors) already initiated events (e.g. at Rio+20 in Brazil) or supported and conducted school programs such as "water for life" in Sri Lanka within the United Nations International Year of Water Cooperation 2013, valued as a success story (conducted by Managing Editor Sisira Saddhamangala Withanachchi).

May the e-Journal Future of Food: Journal on Food, Agriculture and Society enhance networking and open discussions between young scientists and encourage them to work in a trans-disciplinary way thus participating in the behavioral change which is needed within civil society.

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Improvement of Food Security in Bangladesh through Socio-Economic Empowerment of Women

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Bangladesh, empowerment, income generating activities, food security

Abstract

Empowerment is one possible approach to increase political, social and economic participation of a target group and thus decrease food insecurity among vulnerable people. The objective of this research was to evaluate a socio-economic empowerment project implemented for 8 years in rural northern Bangladesh by using secondary data from 2000 and primary data from 2009. Three hundred women were primarily selected out of all existing and active 121 women groups formed during 8 years project implementation. Standardized interviews were conducted to collect quantitative data. In addition an overall qualitative analysis included focus group discussions, the review of project summaries and discussions with implementing staff. Data was collected on socio-economic status, rice storages and food consumption. In addition knowledge was gained on current activities of the women groups. The empowerment concept implemented in this setting was successful to increase the participants' political, social and economic engagement and visibility. Apart from that the utilization of skills for income generation led to an improvement of the socio-economic status and food insecurity became less common. Recommendations for future projects include the increase of female members among the NGO staff as well as the further follow-up and strengthening of political acceptance and visibility of the empowered participants to sustain the outcome of the project.

Introduction

Causes of food insecurity and malnutrition are multi-dimensional (FAO, 1998) and are to be addressed from different angles. Empowerment is one possible approach to increase political, social and economic participation of a target group. Empowerment is defined as a process of increasing self-responsibility as well as self-determination (GTZ 2004; Deutsche Welthungerhilfe e.V. et al., 2009). In 2002, Narayan defined four basic pillars: information, inclusion and participation, accountability, and local organization capability. The concept of empowerment is frequently used in various development projects and addresses vulnerable and underprivileged groups, for example women. The aim of strengthening the group's or individual's capacity (Alsop 2006) is to enhance their political, economic and social participation in their community.

In Bangladesh, one of the poorest and populous countries in the world (CIA, 2012), the majority of the population lives in rural areas with their livelihood depending on agriculture and daily labour. With a risen human development index (146 out of 187) the country still remains below the regional average in terms of health, education and income (UNDP, 2013). Especially in rural areas gender inequality is a prevailing challenge. Bangladeshi women face many barriers withholding them to

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participate in political and economic decisions, as well as isolating them socially (Bates et al., 2004). Many women lack human capital like education (Roy et al., 2008). Childhood marriage is still practiced by more than one third and the rate of domestic violence against women remains high (Bates et al., 2004; NIPORT, 2004). Mainly the men are decision makers in Bangladeshi households and decide alone even on issues concerning women's health care or social contacts. Women's involvement in earning income for the household is low (CARE, 2005). About 40% of women between 15 and 24 are undernourished (BMI < 18.5 kg/m2) (UNICEF, 2007).

The development project "Socio-Economic Empowerment of Women and Hard Core Poor" (SEEWHCP) was implemented in northwest Bangladesh from 2001 to 2011 under the local non-governmental organization (NGO) SKS Foundation which was funded by the German NGO Andheri-Hilfe Bonn e.V. The project, located in a rural disaster-prone and one of the poorest areas of the country, aimed to develop empowerment of more than 2500 women in local community structures. The women living in rural areas were vulnerable with regard to access to food, human rights, education and resources such as health care or land. Poor nutritional status and malnutrition were, among others, issues to be addressed by governmental as well as non-governmental organizations. By initiating the formation of women groups, SKS Foundation's objective was the achievement of sustainable development through empowerment. By learning income generating activities (IGA), which can be differentiated into a) household-based activities and b) building networks and groups as group-based activities, the socio-economic situation as well as the visibility of women was to be improved.

A baseline survey was conducted in 2000 by SKS Foundation to assess the socio-economic status of potential participants. To evaluate the SEEWHCP implementation methods in 2009, a follow-up survey was conducted. With the objective to evaluate the project achievements considering natural and cultural challenges as well as empowerment goals, quantitative data on socio-economic status (SES), health, and food consumption of the participants was collected. In addition focus group discussions, previous project summaries and observations of group meetings supported an overall qualitative interpretation. The results presented in this article only focus on the IGA as one empowerment tool implemented by the project and its impact on the food security situation and dietary diversity in the household.

Methods

The data collection took place in the pre-harvest season in November 2009, which was characterized by a lack of food sources especially in the northwestern parts of Bangladesh (Zug, 2006). Three hundred project participants out of 121 women groups formed by the project were randomly selected to be interviewed in 2009 by a random number method covering every village included in the project. Baseline and follow-up questionnaires were comparable in methods used to collect socio-economic data. However, for the follow-up survey an additional module on health and food consumption (7 days recall) (Elmadfa, 2004) was included. Quantitative data was collected conducting interviews with a pre-tested, standardized questionnaire. In addition, qualitative data was gathered in 6 focus group discussions with 6 randomly selected women groups. Data was collected by trained SKS Foundation staff who were familiar with the project region and the project participants.

Three income categories were created similar to the baseline survey, divided in regular income, irregular income and no income at all per household. In addition, the amount of the actual daily income was included in the follow-up questionnaire. The number of times rice was usually consumed per day was a mean to estimate food availability on the household level. Rice as a staple was interpreted as meals per day. Dietary diversity was represented in the frequency of the consumption of a variety of different foods in addition to rice during the foregone week.

Statistical data analyses were performed using IBM SPSS Statistics 18.0 (SPSS Inc., Chicago, USA) and Microsoft Office Excel 2007. Variable distributions were described and data was analyzed using the non-parametric Wilcoxon-Test. In addition odds ratio analyses were done to calculate the likelihood of certain indicators in dependency of others.

Results

Three hundred women were eligible for data analysis. Baseline data was available from 141 women out of the 300 interviewed to be compared with data from 2009. The respondents were between 16 and 60 years old and participated in the project for a different number of years ranging from 1 to 8.

General household characteristics Households sizes in the sample ranged from 1 to 10 people (mean: 4.56) with on average 2 children per household. The majority of women were illiterate (68.6%) and worked mainly as housewives (30.6%). Additional income sources were agricultural activities, mainly livestock (42.6%) or an own business (12.6%). Four percent of the participants were working as a traditional birth attendant which was a skill

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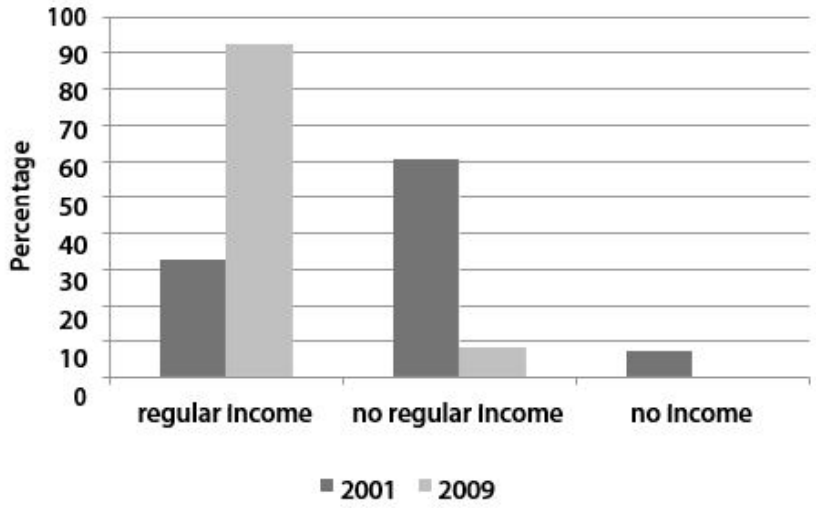

Figure 1: Income status of the interviewed women's households in % (N=141)

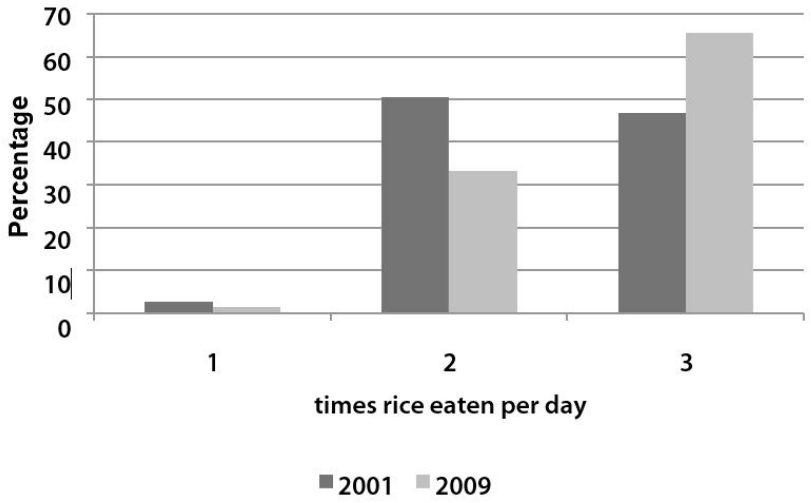

Figure 2: Average times rice was consumed per day over past 7 days in % (N=141)

taught by the project. Only 3.6% grew their own vegetables and fruits. Eighty percent of the households owned land beside their homestead which was mainly cultivated for crops and vegetables.

Income Situation

The income situation of the participant's households had improved by comparing data from 2001 with 2009 with an increase of the number of households earning regular income (33% in 2000 to 92% in 2009) ($p<0.01$, Diagram 1). The actual daily income for households with regular income was between 100 and 500 Taka (1.28 to 6.38 USD). The ones with irregular income earned on average less (between 0.64 to 1.28 USD). By 2009, no household in the sample reported to have no income source.

Food security situation

With the income generated, participants bought arable land which was used to generate additional income and household crops for domestic consumption. Diagram 2 shows the increase of the number of meals eaten per day by the participants in 2001 compared to

2009. Forty-seven percent were able to eat three meals per day in 2001 whereas in 2009 66% stated to consume three meals per day. This is significantly associated with the regularity of income ($p<0.01$, Table 1).

The development of a stable income source among the participants had an impact on the availability of food in the household and thus on the number of meals consumed per day. The number of women who consumed

Table 1: Number of meals per day by regularity of income in % (N=141)

Year	2001	2009	2001	2009	2001	2009
Times of Rice Eaten a Day	1		2		3	
Regular income	-	0.8	5.6	29.1	94.4	70.1
Irregular income	-	9.1	76.1	72.7	23.9	18.2
No income	37.5	-	37.5	-	25.0	-

only one meal per day at the beginning of the project was higher than in 2009 (38% and 10%, respectively).

Rice storage in the household was on average 11.17 days in 2009 (range: 0 to 180 days). Rice cultivating households were five times more likely to have rice storage worth for more than 4 days than non-rice-cultivating households in the sample.

Dietary Diversity

Moreover, it could be observed that the agricultural IGAs positively contributed to a diversified diet. Diets were high in fish but low in meat and animal source products as egg and milk. Meat consumption did not correlate with the ownership of animals. Taro, radish and eggplant were the vegetables most consumed amongst the interviewed women. Intake of vitamin A rich fruits was low. Women who reared cows were more likely to consume milk. Similarly, women who grew vegetables and fruits consumed these products more often than those who did not grow them.

Empowerment

Women reported that earning their own income supported their independence and offered access to local markets. As a result the SES of their households improved with regard to income which increased through contribution of the additional income women brought home. In 2001 most of the nowadays participating women were dependent on their husbands with regard to income and decision making, however, after learning and applying their own skills their self-consciousness and self-responsibility

increased. Following the focus group discussions, they became active members of their own households and of their community.

Discussion

The conducted research intended to evaluate the outcomes of the empowerment approach applied in the SEEWHCP development project in rural Bangladesh designed to improve food security and build income-generating capacity.

The results of empirical studies of the last years show in how far respect towards and the recognition of women is influenced by various factors. Among these are the ability to independently earn an income, the skills to carry out an occupation apart from household work, the right to property, and to be a literate and educated participant of decisions within and outside the family (Sen, 1999). By collecting data on socio-economic and nutrition characteristics of the project participants, the research tried to scientifically contribute to the evaluation of the change of the living situation with regard to the women's role before and during the last phase of the intervention.

The impact of the implemented program on the living conditions underlines the success of such projects in terms of women's economic participation in Bangladesh.

Following the results, the surveyed deveopment project applied a successful approach and contributed to the improvement of the SES and food security amongst the majority of participants. Especially with regard to the local challenges and the high number of landless people in the project area (IRIN, 2010) the project's outcomes shown in the results chapter proof success. As Kabeer et al., (2011) already found out, women who find paid employment seem to have more power on decision making for their own health or to invest money in possessions and goods. Also Anderson et al., (2009) reported the importance of income and its impact on empowerment

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and especially meant employment outside one's own household. The surveyed project created those income sources with success. The participants became aware of the advantages and the necessity of putting their own abilities into best possible use.

A study from Rafqul from 2011 under-lines the importance of the inclusion of husbands in project activities as they might feel the need to reject all the new ideas the women bring home. As they usually dominate the women's decisions, they could prevent them from successfully applying IGAs. SKS Foundation applied this method mainly sensitively and reliable. The empowerment of the women significantly contributed to an improvement of the whole households' SES.

To strengthen the developed structures in a sustainable way the cooperation between local government and the women groups need to be strengthened, especially as the government is still dominated by males. According to Harrold (2007), sustainability still remains a challenge to empowerment approaches in terms of linkage to government bodies. Support from the government side is a crucial criterion to sustain empowerment goals and thus gender equality (Khan, 2006). SKS Foundation's women groups reached visibility by forming groups and actively becoming aware of their rights and possibility of interaction.

For further analysis of dietary patterns and nutritional status, anthropometric measurements need to be conducted and more detailed food frequency protocols need to be applied. As this research project lacks a control group, another follow-up study would have to include such a group.

Conclusion

The results obtained by the research gave evidence for the successful implementation of the empowerment approach applied in the surveyed project. SKS foundation was able to improve food security among the participants' households, to stabilize and thus increase daily income and to diversify the diets of the participants.

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Conflict of Interests

The author hereby declares that there are no conflicts of interests.

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Evaluation of water retention capacity and flood control function of the forest catchment

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Forest, Green dam, Flood control, Grid-cell distributed runoff model

Abstract

This research quantitatively evaluates the water retention capacity and flood control function of the forest catchments by using hydrological data of the large flood events which happened after the serious droughts. The objective sites are the Oodo Dam and the Sameura Dam catchments in Japan. The kinematic wave model, which considers saturated and unsaturated subsurface soil zones, is used for the rainfall-runoff analysis. The result shows that possible storage volume of the Oodo Dam catchment is 162.26 MCM in 2005, while that of Samerua is 102.83 MCM in 2005 and 102.64 MCM in 2007. Flood control function of the Oodo Dam catchment is 173 mm in water depth in 2005, while the Sameura Dam catchment 114 mm in 2005 and 126 mm in 2007. This indicates that the Oodo Dam catchment has more than twice as big water capacity as its capacity (78.4 mm), while the Sameura Dam catchment has about one-fifth of its storage capacity (693 mm).

Introduction

The Japanese Archipelago is covered by mountainous forest in great part (67%) of its land surface compared to its area. Forests are generally believed to have water retention function known as 'green dam', which can store water in the soil layers and mitigate floods. Most of the headwater zones of the Japanese rivers are in the mountainous areas covered by forests. In recent years, new dam construction is often criticized severely because of the raising awareness of environmental risks. The criticisms are based on the 'green dam' function. Although widely known qualitatively, this function is not evaluated quantitatively except the arguments done by Kosugi (2004) and Takara (2004ab). Quantitative evaluation of the flood mitigation capacity of 'green dam' is crucial to the discussion of disaster mitigation and environment protection, especially nowadays for disaster mitigation and conservation of environment are equally stressed as fundamental factors to achieve sustainable development in the Rio+20 Conference (U.N. Genaral Assembly, 2012).

Kosugi used a tank model, which is one of the lumped models, while Takara used a distributed runoff model with the hypothetical precipitation. Considering these previous quantitative studies, this research is to evaluate water retention capacity and flood control function of forests in the Oodo Dam and the Sameura Dam catchments in Japan; these catchments are covered by forest more than 85% of their surfaces.

Case study sites and events

As can be seen in Figure 1, this paper selected two dam catchments in Shikoku Island of Japan as case study sites. The Oodo Dam is located in the upper stream of the Niyodo River, whose catchment area is

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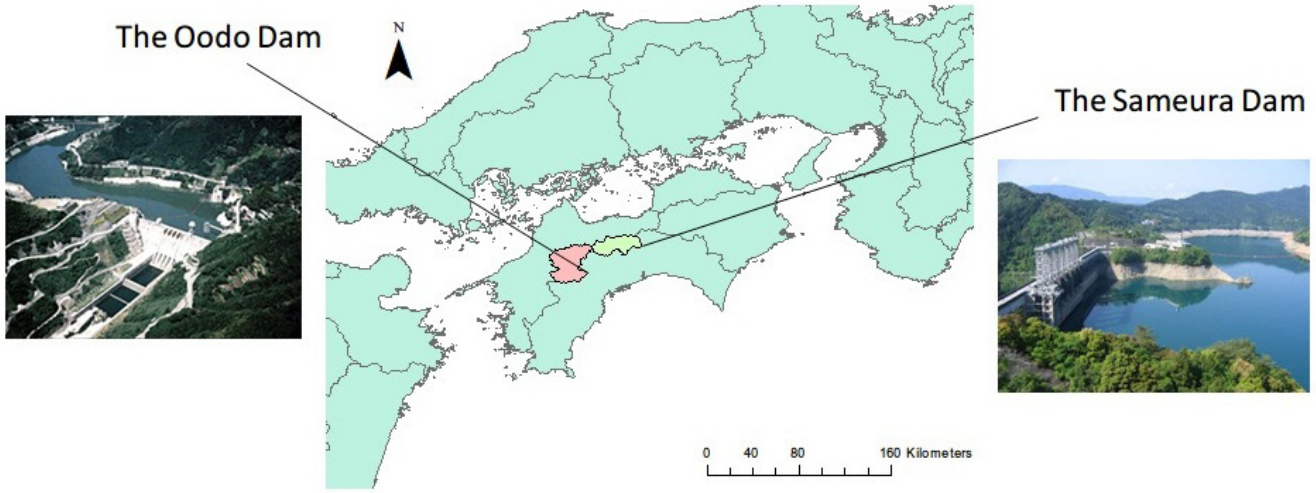

Figure 1: The location and pictures of the Oodo Dam (Oodo Dam official Website, 2012) and the Sameura Dam (Japan Water Agency Ikeda Dam Control Head Office, 2007)

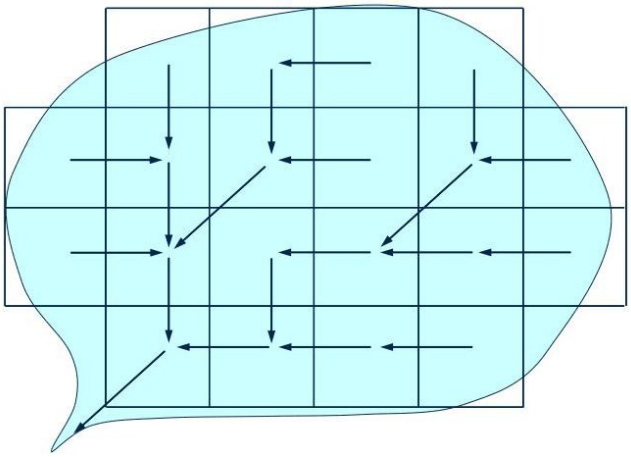

Figure 2: The concept of the cell distributed model (Takara et al., 2004b)

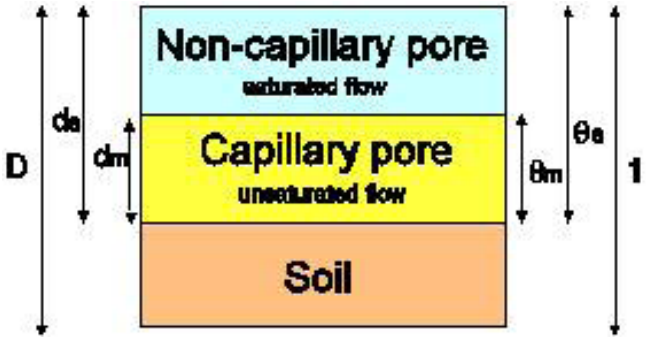

Figure 3: The subsurface soil structure of the saturated and the unsaturated zones (Tachikawa et al., 2004)

688.9 km2 and its total storage capacity is 66 MCM (million m3); the effective storage capacity of the dam is 52 MCM. The Sameura Dam is a multi-purpose reservoir located in the upper area of the Yoshino River. The Sameura Dam's catchment is 417 km2 and the total storage capacity is 316 MCM (effective storage capacity is 289 MCM). These catchments are ideal to assess the effect of forests because most parts of the both catchments are covered by forest (89% in the Oodo Dam, 86% in the Sameura Dam).

This research deals with the following cases:

a) The Oodo Dam restricted 30% of water intake from August 11th in 2005, and as a result, storage capacity had decreased to 22.7%. After that, storage capacity had recovered up to 327% of the capacity on September 4th by the precipitation brought by Typhoon No. 14 in 2005;

(b) The Sameura Dam had started water intake restriction from June in 2005. Storage capacity for water utilization had dropped to 0% in September 4th; however, it had recovered to 100% by September 7th because of the precipitation induced by Typhoon No. 14 in 2005 (651.4 mm); and

(c) The Sameura Dam also restricted water intake in May 2007. The water storage had decreased to 23.5% on July 3rd; however, the storage recovered by a series of successive precipitation (718.8 mm) and became 100% on July 15th.

Analysis of water retention capacity and flood control function

This chapter describes the rainfall-runoff model used for analysis of water retention capacity and flood control function.

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Summary of the distributed runoff model[1]

The concept of the distributed runoff model used in this research is shown in Figure 2. In this model, the catchment is covered by square grid-cells and each precipitation is considered to flow in the steepest direction, which is deviated from the elevation. Precipitations at each grid-cell are obtained from the nearest rain gauges. Runoff analysis is based on the kinematic wave model.

When the subsurface system is not considered, the kinematic wave model can be formulated as follows.

Continuous equation:

$$\frac{\partial h}{\partial t} + \frac{\partial q}{\partial x} = r \tag{1}$$

where *h* is water depth, *q* is water flow and *r* is precipitation at time t and location *x* on the slope (or grid-cell).

If the subsurface mechanism is not considered,

$$\begin{aligned} q &= f(h) \\ &= \alpha h^m \end{aligned} \tag{2}$$

$$\alpha = \sqrt{i}/n, m = 5/3$$

where *n* is roughness coefficient and *i* is gradient.

In this research, as to consider mountain slope covered by the forest, soil structure of each cell is considered to be composed of saturated and unsaturated zones as shown in Figure 3 (Tachikawa et al., 2004). *Q-h* relation equation based on this model can be described as follows:

$$q(h) = \begin{cases} v_m d_m (\frac{h}{d_m})^\beta & 0 \le h < d_m \\ v_m d_m + v_a (h - d_m) & d_m \le h < d_a \\ v_m d_m + v_a (h - d_m) + \alpha (h - d_a)^m & d_a \le h \end{cases} \tag{3}$$

where *vm* is water velocity, d_m is the height of unsaturated zone, $_{da}$ is the height of saturated zone.

Application of the model

The grid size used in this research is 250 m and roughness coefficients reflect the different land use type at each grid-cell.

Runoff model parameters are decided by the trial and error method. Simulation performance is checked by the Nash- Sutcliff efficiency coefficient. Using this runoff model, we analyzed water retention capacity and flood control function. Evapotranspiration and percolation of water into the rock layers are not considered in this research.

Equations for water retention capacity and flood control function

In order to evaluate flood control function and water retention function, each cell is divided into *N* sub-areas. The average water depth at each sub-area, which is derived from the runoff simulation (h), is multiplied by the area of the sub-area to calculate water retention capacity at each sub-area. The sum of water retention capacity in the sub-areas is total water retention capacity in the catchment as shown in the following equations:

$$S = \sum_{i=1}^{M} \sum_{j=1}^{N} \overline{h_{i,j}} \frac{d^2}{N} \tag{4}$$

w acity at the catchment, *M* is the total number of grid- cells, $\overline{h_{i,j}}$ is the average water depth in sub-area no. *j* in grid-cell no. *i* and *d* is the grid size (250 m). Flood control function is calculated by subtracting initial water volume, which can be considered in steady state before the event, from water storage volume at each cell.

Results and findings

Oodo Dam in 2005

A runoff simulation conducted in the Oodo Dam catchment is shown in Figure 4 and parameters obtained from this simulation are shown in Table 1.

The maximum dam inflow during the calculation period was 4,550 m^3/s and the maximum dam outflow was 3,225 m^3/s, while the maximum planned dam outflow was 3,800 m^3/s. The maximum storage volume during this period was 42.51 MCM.

Figure 5 shows water storage of the saturated zone, the unsaturated zone and the whole catchment at the Oodo Dam catchment in 2005. Water retention volume maximized up to 162.26 MCM at 18:00 on September 6th, and then the value has stabilized. This result indicates that

Table 1: Parameters in the Oodo Dam catchment in 2005

Manning coefficient ($m^{-1}/3/s$)	Land use type	Value
Np	Paddy field	0.05
Nfi	Field	0.1
No	Orchard	0.1
Nfo	Forest	0.4
Nw	Wasteland	0.3
Nu	Urban area	0.1
Nwa	Water area	0.8
NRv	River	0.01
Soil parameter		
TOUSUIMS	*Ka* (m/s)	0.02
ASOU	*D* (mm)	1000
GAMMAS	θa	0.275
GAMMAC	θm	0.125
BETAC	β	8

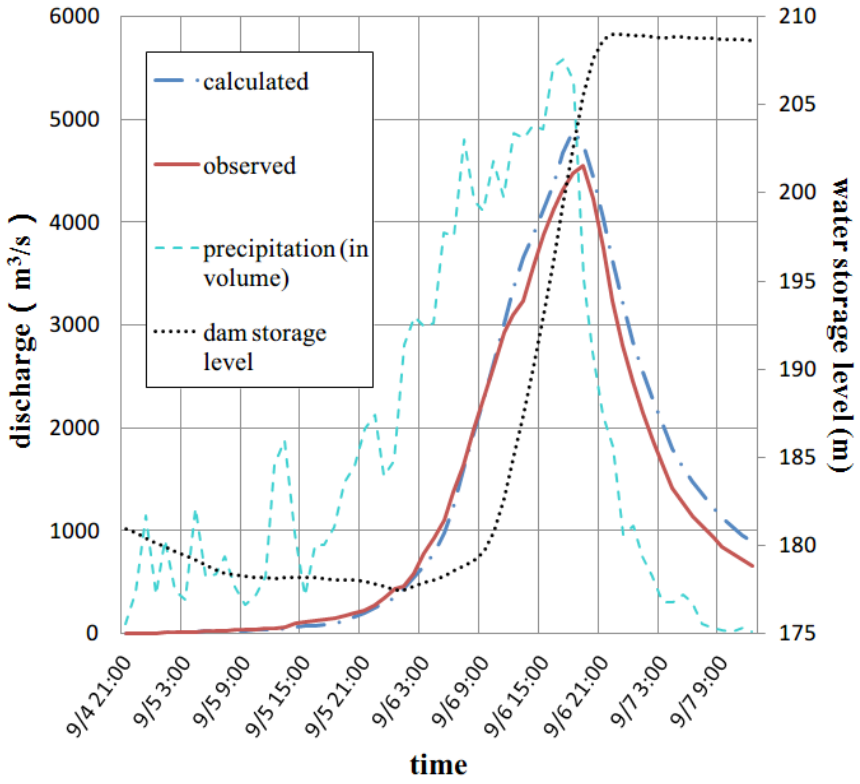

Figure 4: Runoff simulation result in the Oodo Dam catchment in 2005 (based on the model parameters calibrated as in Table 1)

the surface soil became saturated at this point and precipitation after this point flowed as surface flows. The maximum flood control function is 173 mm in water depth at this point. The storage capacity of the Oodo Dam is 78.4 mm; hence the flood control function of the catchment is as twice as the Oodo Dam has.

Sameura Dam in 2005

Figure 6 shows runoff simulation in the Sameura Dam catchment in 2005, and parameters determined by this

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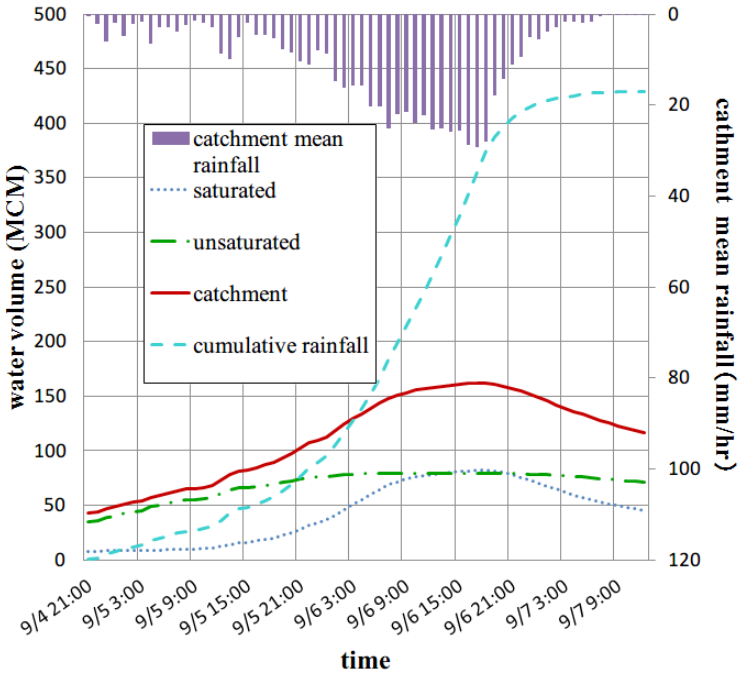

Figure 5: Water storage of the saturated zone, the unsaturated zone and the whole catchment at the Oodo Dam catchment in 2005 (based on the same simulation in Figure 4)

Table 2: Parameters in the Sameura Dam catchment in 2005

Manning coefficient ($m^{-1}/3/s$)	Land use type	Value
Np	Paddy field	0.05
Nfi	Field	0.1
No	Orchard	0.1
Nfo	Forest	0.2
Nw	Wasteland	0.2
Nu	Urban area	0.1
Nwa	Water area	0.8
NRv	River	0.002
Soil parameter		
TOUSUIMS	*Ka* (m/s)	0.004
ASOU	*D* (mm)	1000
GAMMAS	θa	0.255
GAMMAC	θm	0.105
BETAC	β	8

simulation are shown in Table 2. The maximum dam inflow during this period was 5,405 m^3/s and the dam outflow was almost none. The maximum dam storage volume was 257.81 MCM at 9:00 on September 7th.

Figure 7 shows water storage of the saturated zone, the unsaturated zone and the whole catchment at the Sameura Dam catchment. The maximum water storage volume at the catchment was 102.83 MCM and flood control function was 114 mm in water depth at 19:00 on September 6th.

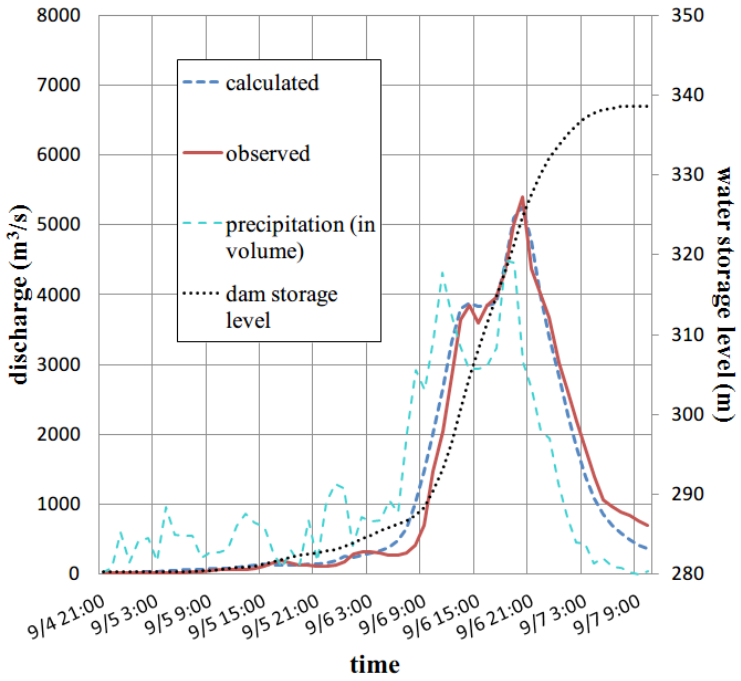

Figure 6: Runoff simulation result in the Sameura Dam catchment in 2005 (based on the model parameters calibrated as in Table 2).

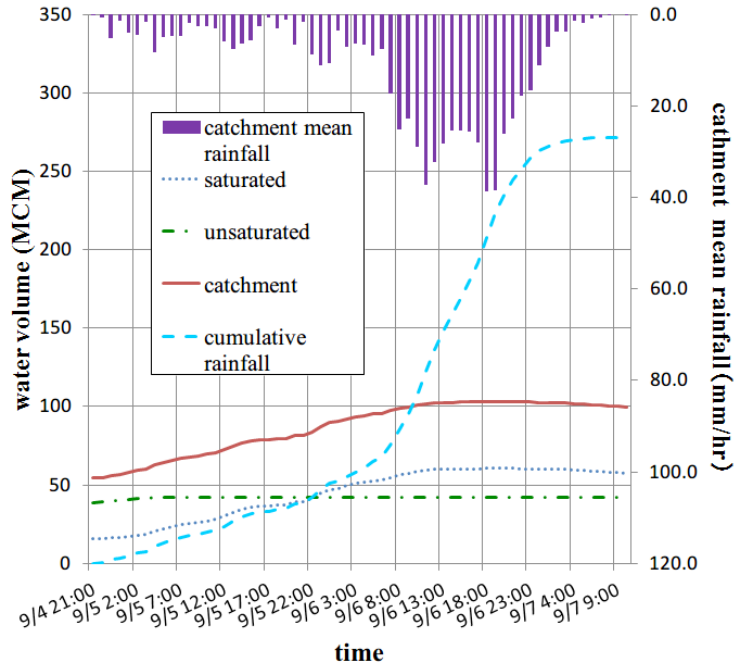

Figure 7: Water storage of the saturated zone, the unsaturated zone and the whole catchment at the Sameura Dam catchment in 2005 (based on the same simulation in Figure 6).

Sameura Dam in 2007

Figure 8 shows runoff simulation results in the Sameura Dam catchment in 2007, and parameters decided by this simulation are the same as parameters used for the Sameura Dam catchment in 2005.

The maximum dam inflow was 3,265 m³/s, while dam outflow was almost none except on the 15th. The maximum dam storage volume was 234.33 MCM.

Figure 9 shows water storage of the saturated zone, the unsaturated zone and the whole catchment in the Sameura Dam catchment. The maximum water retention volume during the period was 102.64 MCM and the flood control function was 126 mm in water depth

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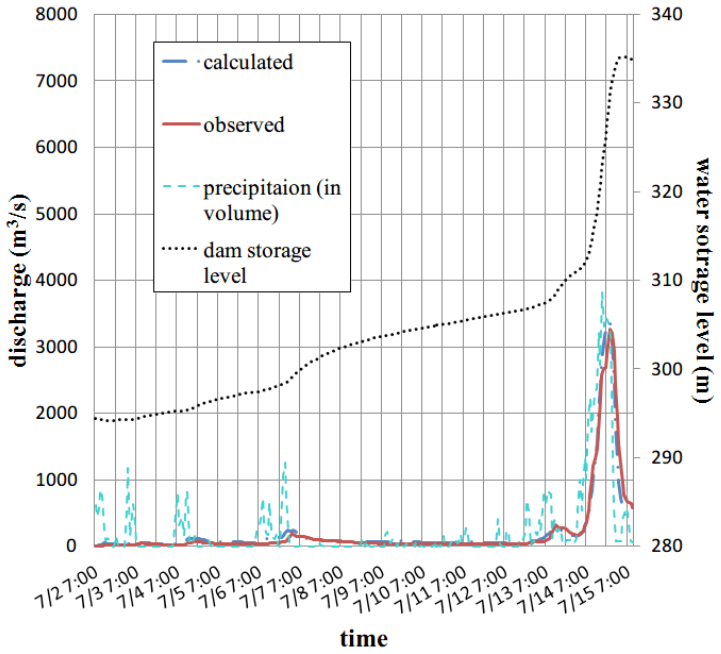

Figure 8: Runoff simulation result in the Sameura Dam catchment in 2007 (based on the model parameters calibrated as in Table 2).

Table 3: Values at Oodo dam and Sameura dam catchment during the study events.

Dam catchment	Oodo	Sameura	Sameura
Year	2005	2005	2007
Total rainfall (mm)	622.7	651.4	718.8
Max of catchment mean rainfall (m^3/s)	5587.74	4482.75	3822.5
Max dam inflow (m^3/s)	4,550	5,405	3,265
Max dam outflow (m^3/s)	3225.1	775.6	3822.5
of storage capacity at the catchment (MCM =			
106 m^3)	162.26	102.83	102.64
lood control function of catchment (mm)	173	114	126
Cumulative rainfall (mm)	544.2	536.5	678.8
Dam storage volume (mm)	45.9	363.0	500.0
Cumulative outflow (mm)	204.3	2.0	19.7
ax of dam storage volume (MCM = 106 m^3)	42.51	257.81	234.33
Effective dam storage volume (mm)	78.4	693.0	693.0

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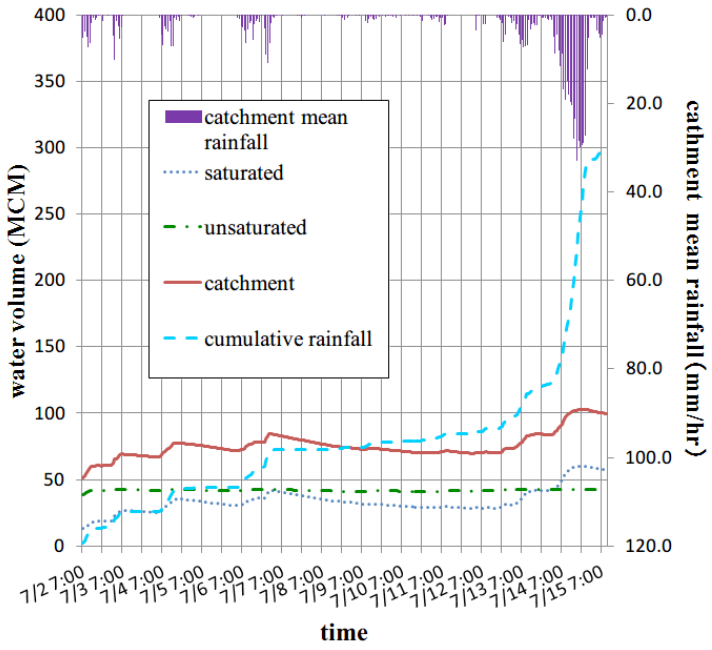

Figure 9: Water storage of the saturated zone, the unsaturated zone and the whole catchment at the Sameura Dam catchment in 2007 (based on the same simulation in Figure 8).

at 21:00 on September 14th. The storage capacity of the Sameura Dam is 693 mm; hence, the flood control function of the catchment is one-fifth of the Sameura Dam's effective storage capacity.

Conclusions

This research has shown that the cell distributed runoff model can be used to analyze the water retention capacity and the flood control function in forest catchments by considering the subsurface soil structure of saturated and unsaturated zones, and runoff at the different land use type. By studying the case where the soil was very dry because of serious droughts, the maximum storage volume and the flood control function in the catchments can be evaluated.

Values in the Oodo and Sameura Dam catchments during the study events are shown in Table 3. The water storage volume at the Oodo Dam catchment is 162.26 MCM and the flood control function is 173 mm, while the Samura Dam is 102.83 MCM in 2005 and 102.64 MCM in 2007, and the flood control function is 114mm in 2005 and 126mm in 2007 in water depth.
This research indicates that it is of imporance to assess the forest function quantitatively for disaster prevention and environmental protection. The results will provide important findings to achieve sustainable water management compatible with flood management. Our future research is to improve the accuracy of the runoff simulation results by considering the evapotranspiration mechanism and soil characteristics and spatial distribution in the forests.

Acknowledgements

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Conflict of Interests

The authors hereby declare that there is no conflict of interests.

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1. The model has been developed by Kojima et al. (1998) at the Disaster Prevention Research Institute in Kyoto University. It has been applied to many simulation studies such as a runoff simulation in Japan (Kojima et al., 1998) and sediment runoff simulations in Japan (Nagatani et al., 2008) and in Indonesia (Sayama & Takara, 2003).

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Biofuel as the solution of alternative energy production?

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Keywords

Biofuel, Food security, Livelihood, Environment, Land Acquisition

Abstract

There have being increasing debate on the prospects of biofuel becoming the next best alternative to solving the problem of CO2 emission and the escalating fuel prices, but the question is whether this assertion is true and also if it comes without any cost to pay. This paper seeks to find out whether this much praised alternative to solving these problems is a better option or another way for the developed countries to find more areas where they could get cheap land, labour and raw materials for the production of biofuel. This will focus mainly on some effects the growing biofuel production has on food security, livelihood of people, the environment and some land conflicts developing as a result of land grabbing for biofuel production in the developing countries.

Introduction

As the world's population grows bigger and bigger, the magnitude of aggregate demand for goods and services also enlarges, this in effect, causes a growth in the consumption of energy. This phenomenon is more pronounced in the developed countries partly due to the dramatic movement of workers to the status of middle-income level which drives both the personal and commercial demand for transport fuel upwards (Mitchell, 2010:1). Stated by Birur et al (2008), energy is an important factor of production in the global economy. 90% of the commercially produced energy is from fossil fuels such as crude oil, coal, and gas, which are non-renewable in nature (Birur et al., 2008:1). Based on the increasing dependence of the economies to function with the help of oil, the crisis of the 1970's provided the initial drive for the search of new energy sources. The price volatility of oil was a huge problem for countries to contend with. Aside from the price volatility, debates also shifted to focus on the pending environmental hazards the rise in oil production causes. There have been serious concerns raised in regards to CO_2 emissions and what this source of energy releases into the environment, which is one of the major factors leading to climate change. This has led to a scramble for a cleaner and more secure energy source (Rice 2010: 6).

In light of changing demand and supply of oil, most countries for want of enhancing energy security, have promoted the production of biofuel which is a renewable energy source. This has also led government all over the world to set biofuel production targets. They place a legal obligation on fuel companies to blend a certain volume or percentage of biofuels with the petrol and diesel they sell. According to an Oxfam briefing paper (2008), the European Commission proposed that by 2020, all member states must meet at least 10% of their transport energy needs through 'renewable sources' (Renewable Energy Sources Directive). In this same direction, the USA, has also established a Renewable Fuel Standard in the Energy Policy Act of 2005. This energy security act mandates the annual use of 36 billion gallons of renewable fuels, mainly ethanol, by 2022. This direction taken, according to the EC and the US, is the best way to handle the problem of climate change and improve fuel security

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(Oxfam, 2008: 6).

Energy consumption varies drastically between the rich and poor countries. An example stated in the Oxfam briefing paper, revealed that "the per capita oil consumption in the USA is more than 100 times that of Tanzania". The promotion of this biofuel by rich countries prompts many to wonder whether biofuels, which can be produced more efficiently in the South, actually offers the solution to all parties (ibid: 25).

Eide (2008) mentions that, the European and American demand for liquid biofuel has motivated substantial production in countries like Indonesia and Malaysia who engage in biodiesel production from palm oil. The most recent addition is the production of biodiesel from Jatropha, a plant producing non-edible oily seeds (Eide, 2008:10).

Biofuel use constitutes a very limited part of the total energy consumed and derived from biomass. However the extent of agricultural lands used to produce this small portion of total energy produced from biomass is largely effecting food production (Eide, 2008:10). The anticipation that biofuel can be the alternative to solving the energy crises has led to the increasing demand and supply of it, which in effect has also led to so many people who are mainly the poor and vulnerable in society to suffer through land conflicts.

In the mist of all these changes with regards to the supply and consumption of oil, this paper would want to find out whether these policies being embarked upon by the developed countries would be beneficial to the developing countries. The paper would first try to give some little background information on biofuel and how it is seen as the next best alternative energy source to solving the problem posed by fossil fuel. Though some argue that this is actually an effective way of solving the energy crises and CO2 emission problems leading to climate change, this paper would try to view the other side of the coin by outlining some effects biofuel production has on food security, livelihood of people, environment and lands in the developing countries.

Meaning of Biofuel

Biofuel is most commonly defined as a renewable source of energy, which is produced from biological material or biomass, such as sugar cane, corn, or vegetable oils etc. in other words "Biofuels are liquid fuels that are directly derived from renewable biological resources, especially from purpose-grown energy crops" (Molony and Smith, 2010). "Woodfuel, which has been used for thousands of years for cooking and heating, is also a biofuel. Bioenergy in all its forms is energy produced from biomass, non-fossil material of biological origin including forest and agricultural plants, wild or cultivated as crops. It can be processed and used in solid, liquid or gas forms. Biofuel in forms of gas includes methane" (Eide 2008:9).

This fuel is obtained from plants and animal materials which can be grouped into liquid, solid and gas form. Solid biofuel includes fuelwood and charcoal whiles liquid biofuel mainly includes bioethanol and biodiesel and in gas form is methane. To tease out the difference between biofuel fuel and fossil fuel, the former is gotten from plants while the latter from biological materials that has been dead for hundreds and thousands of years. According to Molony and Smith (2010), virtually all of the commercially available biofuels are 'first generation' energy crops, by that they mean energy that are produced from crops like sugar cane, maize (bioethanol) whiles oilseeds such as rapeseed, soy, palm or jatropha (biodiesel) are also used. They stated that many of the crops used are edible and this has prompted research into finding alternatives crops that are non-edible so as to reduce the threat posed by biofuel production on food. There is also the 'second generation' or 'advanced' biofuel created from processes that convert cellulosic agricultural and forestry wastes into energy by using them for bioethanol or biodiesel. This second generation biofuel would be a way of preventing future problems of using food for fuel, but until it is well developed, the first generation biofuel still poses serious threat to food security and development as it's the target of heavy investment companies and countries (Molony and Smith, 2010).

Implications of Biofuel Production

At a first glance of why there is a great focus or shift to biofuel as the alternative to solve the problem posed by fossil fuel thus to reduce CO_2 emissions and also find ways of alternative energy supply for price reasons, one could also state that this transition is not devoid of implications. These implications, as earlier mentioned in the introduction, varies from country to country based on the existing conditions. Developed countries very much support biofuel and think it's a way to solve their hunger for energy and ignore implications to the developing countries. The bargain is between the strong and weak players.

As Wade (2003) talks about issues of bargaining steered by morality, he categorises morality into two parts, where the first is 'a-bit-better-than-the- jungle morality of tit-for-tat' where he means the powerful always survive and have their way. The second is the 'all-men-are

brothers morality' where the strong have the duty to restrain themselves to help the weak (Wade 2003:623). But the stronger countries move by their own interest and disregard the consequences of what would happen in the long-run when every land is used for the production of biofuel.

An extrapolation into the future does not give the right signals to the current rush for biofuels. This is because the acceleration has created a whole raft of environmental and social problems, ranging from deforestation to farm worker displacement, higher food prices, and increased carbon emission. Now, the scientific community is calling for a more cautionary approach to ameliorate further suffering and destruction (Chryso-stomou 2008). Against this backdrop, the discussion would now focus on some specific impacts the current wave of biofuel development is having on the developing countries. These include:

Impact on Food Security

Eide (2008) states that, "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (Eide 2008:7). So why would biofuel production affect food security?

A key driver of food prices increases is the global demand for biofuels (Oxfam, 2012: 12). The dramatic rise in oil prices seen in the last decade has enabled liquid biofuels to become cost-competitive with petroleum-based transportation fuels, and as we already know, bioethanol and biodiesel are derived from commodities that are used for food, so logically the more such materials are channeled into the production of energy it affects the price also since its in competition with a rising opposition (fossil fuel) (Gomez et al 2008:473). In December 2007, the United Nations Food and Agriculture Organisation (FAO) calculated that world food prices rose 40% in 12 months prior, and the price hikes affected all major biofuel feedstocks, including sugarcane, corn, rapeseed oil, palm oil, and soybeans (Tenenbaum 2008).

As biofuel production increasingly expands, prices of food also hike up, leading to low income families to be vulnerable to hunger and malnutrition. Though price hikes can't only be attributed to biofuel, it stands as a major factor (BirdLife International, 2008). This puts a country's food security at risk when people are not even having two square meals a day. Georgis and Glantz (2009) assert that the impact of biofuel is much felt in Africa. They contest that it is unacceptable ethically to use food crops to produce biofuel whiles Africa is a food-deficit continent. Democratic societies must strongly reject this prioritising of land use. African policy makers make biofuel a priority instead of food security, this they state does not go without opportunity cost because there is always a price to pay for this trade off (Wolde-Georgis and Glantz 2008).

Looking at the effects of biofuel on developing countries, it cannot currently be seen as solving the problem since it's now leading to high prices of food and contributing to foods crisis. This rising food prices had led to placing poor people, who often spend over half of their income on food, in an untenable situation. According to Oxfam it's estimated that the crisis has endangered the livelihoods of at least 290 million of the world's rural and urban poor (Oxfam, 2008: 5).

Impact on Livelihoods

The fast growing interest of huge investors to invest in biofuel in developing countries can militate against the livelihood of the rural poor. When there is land grabbing, it further marginalises those who rely on land for their livelihoods (Molony and Smith, 2010). Large-scale biofuel companies are forcefully ejecting small-scale farmers from their farmlands since they have the resources to negotiate and have their way. As mentioned earlier on, the stronger use their strength to have their way by suppressing the weak. Also these large companies destroy plants such as shea nuts and medicinal plants which villagers rely on. This affects their livelihood and threatens rural development and other economic resources. When such actions take place many farmers are displaced of their livelihood and deepens their poverty. The impact of land deals for biofuels on food production goes beyond what investors choose to grow on the land they acquire. They also deny millions of families' access to the land they depend upon to survive (Oxfam, 2012: 16).

Impact on Environment

One of the fundamental justifications for a shift to biofuels as an alternative energy source has to do with the climatic benefits that are anticipated to occur from the substitution for fossil fuels, whose combustion results in much greater CO_2 emissions, to fuels whose combustion releases gases sequestered through cultivation and which are therefore considered greenhouse gas (GHG) neutral (Schoneveld and Pacheco, 2011). This is seen as neutral because, it's believed that when these crops are growing, they keep carbon from the atmosphere. Nevertheless, when they are burned as biofuel, this carbon is simply released back. This means that over the lifecycle of the fuel, the net impact on atmospheric carbon is neutral. Despite this explanation there are still some emissions associated with all stages of their lifecycle, particularly if the crops are grown intensively, using nitrogen-based fertilisers and machinery, or if the refining

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process requires large inputs of fossil energy (Oxfam, 2008:7).

Aside this form of emission, there are further GHG emmissions associated with the process of bringing new land into production. As trees and grasses are burnt (forest) this contributes to some level of emission. Ploughing up soil also allows carbon previously held under ground to oxidise. Together, soils and vegetation store nearly three times as much carbon as the atmosphere. Clearly it's shown that clearing new lands to grow biofuels results in potentially significant emissions. As a result of this fact, the more the demand for biofuels increases, new land will be cleared to grow the crops (ibid:8), which also puts our forest at risk. Forest plays an important environmental role in the production of timber, wood, fuel, and other products, in the conservation of biodiversity and wildlife habitats, as well as in the mitigation of global climate change and the protection of watersheds against soil degradation and flood risk (Gunther Fischer et al 2009:30).

Rice (2010) argues that biofuel is not the solution to the emission of GHGs compared to fossil fuels because land, fertiliser and energy needed to grow the plants, and manufacture and transport the fuels can have a large and negative climate impact (Rice 2010:28).

Impact on Land

Biofuel production can have enormous effects on land both scientifically and socially, this section would advance argument in different dimensions of how the use affects the land directly as well as some land conflicts that emerges as a result of changing use of land. Rice (2010) states that the increasing use of industrial biofuel actually results in a changing use of land. He categorises the use of land into two forms thus direct and indirect use. There is a direct land use change when forests, peatlands, grasslands or other non-agricultural lands are converted for industrial biofuel production. This change also leads to the extermination of carbon-rich habitats in the soil which has increasing effect on the carbon stored in the soil and vegetation. The more biofuel production increases new lands are also converted leading to an increase in the direct land change usage. The indirect land use is, however, lands which were formally used for growing food or animal feed which is converted to be used for growing industrial biofuels. According to Rice (2010), this displaces the original agricultural land use onto land in new areas. He explains that though the biofuel crop itself may not cause new land clearance directly, it can still be held responsible because of its displacement impact (Rice 2010:26).

In the quest to developing and expanding biofuel production, there have also being a massive increase in land conflicts around the world. According to Bird Life International (2012), until July 2001, there have been 261 conflicts which involved 566 villages for about 569,000 hectares of land recorded in Indonesia (quoted from FoE, 2005b). Tens of thousands of people's livelihoods are threatened due to this poor land leases systems (BirdLife International 2012).

Unfortunately, one of the side effects of biofuel production is the rush of rich and powerful investors to buy lands which does not have strong land tenure systems. This action potentially displaces vulnerable communities whose rights are poorly protected (Oxfam, 2008: 21). "Nearly half Tanzania's land area has been identified as suitable for biofuel production. Already this is causing tensions as investors' land requirements come into conflict with those of communities. For example, 1000 farmers in the Wami Basin-a rice growing area currently face clearance to make way for a Swedish investor looking to develop 400,000 hectares of sugarcane plantations" (ibid: 22).

It's clear that the poorer the recognition of rural land rights is in a country, the more likely it is to host land deals many of which are to grow crops for biofuels. Many investors fail to deliver on promised compensation and job creation, and skewed power relations in negotiations over access to land often lead to a bad deal for the local communities (ibid).

Conclusion

Throughout this article, the main focus has been to spell out delicate issues concerning the impact of the current biofuel production trend. Most clearly biofuel has generated discourse on the problems it causes or it might cause. Nevertheless the worries over climate change and increasing fuel prices led to the rise of this new wave of a search for an alternative energy source. Proponents of biofuel, believe that it's the best way to drastically reduce carbon dioxide emission and save the world, but however it should also be stated that opposition to biofuel are not against the whole idea of biofuel but rather give a careful prompt to how priority is given to the alternative energy.

In the discussions of the article, it was realised that biofuel is a threat to food security because crops consumed by humans are now diverted for the processing of biofuel which contributes to the deduction of food supply for human consumption. Furthermore, the demand for biofuel has increased competition for land that would

have being used for cultivating food crops for human consumption. This has led many farmers to lose their livelihood. Lastly, more production of biofuels will force food prices up and make it more difficult for poor people to purchase food leading to malnutrition and hunger.

Considering the impacts biofuel production has on developing countries as outlined in the discussion, it could be said that this approach to solving fuel and climate change crises might not be the best alternative now. This pending issue could possibly be solved through an effective coordination between the developed and developing countries in global governance to finding a sure and true alternative solution to energy and climate change crises. Much ground would be covered if the principle of "all-men-are-brothers" morality by Wade (2008) is applied. Where a holistic consideration would be attached to all decisions made in the quest to solving these crises. In this sense, all parties should be actively involved to avoid decisions skewing toward the interest of only one party. In handling the issue this way, much focus would not be on only a solution to the fuel crises but would also focus on reducing poverty, advancing social equity and ensure environmental protection in the global world.

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Conflict of Interests

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Research Paper

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Climate Change and Hunger as the Challenges in the Global Food System

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Abstract

In the last decades, there has been a growing tendency towards international trade and globalisation, particularly leading to a significant increase in flows of agricultural commodities worldwide. From a macroeconomic perspective, the commodity projections are more optimistic than the previous years and the long run tendency shows an increasing demand for feedstock. However, the strong shifts of shocks and fluctuations (in terms of prices and volumes) are a concern to global food security, with the number of hungry people rising to nearly one billion. Agriculture is a main user of natural resources, and it has a strong link with rural societies and the environment. Forecasted impacts from climate change, limited productive endorsements and emerging rivals on crop production, such bio-energy, aggravate the panorama on food scarcity. In this context, it is a great challenge on farming and food systems to reduce global hunger and produce in sustainable ways adequate supplies for food, feed, and non-food uses. The main objective of this work is to question the sustainability of food and agriculture systems. It is particularly interesting to know its role and if it will be able to respond to a growing population with increasing food demand in a world where pressure on land, water and other natural resources are already evident, and, moreover, climate change will also condition and impact the outcome. Furthermore, a deeper focus will be set on developing countries, which are expected to emerge and take a leading role in the international arena. This short paper is structured as follows: Section I, "Introduction", describes the social situation regarding hunger, Section II, "Global Context", attempts to summarise the current scenario in the international trading scheme and present the emerging rivals for primary resources, and in Section III, "Climate Change", presents an overview of possible changes in the sector and future perspectives in the field. Finally, in Section IV, "Conclusion", the main conclusions are presented.

Introduction

The world is faced with a great challenge to feed the entire population despite adverse conditions such as scarce resources and climatological changes. One of the most severe issues is the enormous and rising number of undernourished people, exasperated by the recent price spikes and the global economic recession. The Organisation for Economic Cooperation and Development and The Food and Agriculture Organisation of the United Nations [OECD – FAO] (2010) reports it will affect nearly one billion persons in 2010 (p. 44). In addition, the OECD-FAO (2010) points out that a growing world population[1],which is estimated to reach 9 billion people by 2050, is mainly coming from developing countries (p. 44). To counteract the stresses on food security, agricultural production will need to double by 2050. (The Organisation for Economic Cooperation and Develop-

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ment [OECD], 2010; OECD-FAO, 2010). Furthermore, there will be changing needs from developing countries which includes dietary patterns and requirements that will increase the demand on animal protein (OECD, 2010; OECD-FAO, 2010). Agriculture and the global food system play an important role, especially in eradicating hunger and responding to growing food demands by delivering safe and high quality food at fair prices.

Food accessibility rather than global food availability seems to be a greater quest as argued on OECD-FAO (2010). The world now produces enough to feed all the population, however in spite of that hundreds of millions of people still remain food insecure (OECD-FAO, 2010; Heinemann, 2009). A comprehensive approach to food security requires more than just alleviating hunger as the major problem is poverty; in fact, the OECD-FAO (2010) reported that a vast majority of the world's food insecure people are farmers (p. 43-44). Moreover, as much as one-third of food is estimated as waste and this occurs at the farm level, in the storage and distribution system, in food service, and at home (OECD-FAO, 2010, p. 46). Furthermore, the OECD-FAO (2010) acknowledges that a better use of what is produced can be achieved by improved technical performance, provided sufficient investment and sustainable resource management, in addition to efficiency gains being obtained by reducing production losses (e.g. disease, pests, storage) and food waste (p. 44). All of this indicates that there will be considerable additional agricultural products and it will be available to meet food and feed purposes demands over the coming decade (OECD-FAO, 2010: 25) but the enigma remains, will it be able to reach all the population.

Global Context

Agriculture and trade policies have a paramount role in agricultural commodities and food products prices. OECD-FAO (2010) claims that the degree to which domestic markets are integrated within the world market will determine the extent on the price transmission, in addition to the magnitude of the fluctuations being passed through (p. 26-27). Furthermore, term-of-trade effects on higher food commodity prices, as well as border measures, domestic price supports and infrastructure weaknesses have huge implications for resource-poor countries (p. 26-27) Hence, a well-functioning rules-based multilateral trading system is crucial to ensure food access and distribution, moving from where it can be abundantly produced to where it cannot (p. 43).

High volatility and fluctuations of international commodity prices and agricultural products, in comparison to industrial goods and manufactures, are frequently observed as stated in the OECD-FAO (2010) report. High food prices clearly place a burden for consumers, particularly on poor net food importers who typically spend a large share of their income on less processed foods that make up for a major part of their diets, and have no saving possibility (OECD-FAO, 2010: 40). More concerns on food security arise as strategies to avoid large variations in food costs, such as diversification of diets, are difficult to achieve (OECD-FAO, 2010; Vermeulen et al., 2010). Hence, the OECD-FAO (2010) explains that often consumption is reduced or less money is available for non-food items, such as basic needs: housing, transportation, health and educational services (p. 40). In addition, the impact of price surges and shocks on domestic economies have significant implications in terms of resource allocation and revenues; the OECD-FAO (2010) has argued that in developing countries with a less diversified production base and a high reliance on international trading of agriculture commodities, small shifts in prices can induce to considerable disequilibria on their trade balance (p. 59-60). In fact, disparities among countries tend to increase with price volatility, producers in developed countries often have access to various support schemes and credit markets, while producers of commodities in developing countries, whom tend to lack of assets and adequate insurance coverage, may face larger income fluctuations (OECD-FAO, 2010: 49). Furthermore, high volatility and unexpected strong changes in prices levels impose great costs throughout the food chain due to higher uncertainty which hinders investments and sectoral development (OECD-FAO, 2010: 49).

The OECD (2010) emphasised an important aspect regarding agriculture which is the prevalence of the risks that could simultaneously affect several farmers or productive areas (p. 13). For farmers risk management is traditionally part of its business strategy since production faces many uncertainties, such as weather-related hazards that threaten returns, or even the viability of farms (OECD, 2010: 13). Managing these risks typically includes production diversification, irrigation, futures markets, insurance and contracts, as well as diversified sources of income by off-farm activities, environmental and recreational services and assets (OECD, 2010: 13). However, the application and viability of the instruments depends largely on the market structure, production side and local conditions.

Another important feature in global food chains is that the food industry has become more globalised, vertically integrated and more concentrated (OECD-FAO, 2010: 46). On one side, this has provided a response to a wide range of changing consumer preferences at relatively affordable prices, and on the other side, there are

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raising concerns regarding the growing market power and the correct distribution of profits along the food chain (OECD-FAO, 2010: 46). At the same time, there is an increasing tendency through stringent food quality and food safety standards which are often viewed as a response to consumer claims; yet this generally implies higher compliance costs which are hard for farmers in developing countries to meet as reported by the OECD-FAO (2010).

Developing countries are expected to be the driving force behind the expected growth in agricultural production, consumption and trade (OECD-FAO, 2010: 3). The population and income dynamics in developing and emerging economies will represent the major market growth for virtually all commodities and continue to increasing demand for food over the next and coming decades as stated by the OECD- FAO (2010). The OECD (2010) and the OECD-FAO (2010)[2] reported that the developed countries' agriculture will continue to supply a large share of world food and feed supplies but with lower growth prospects, higher costs and more constrained resources in contrast to the new players, this suggests that the contribution to global food balances will decline but will increase towards the higher value-added food. However, the OECD-FAO (2010) projections for the Least Developed Countries imply higher reliance on international markets, as well as a growing exposure to commodity prices shifts and fluctuations prone to import bills (p. 3). Furthermore, the OECD-FAO (2010) explained that the sectoral growth will be led mainly by Latin American and Eastern Europe, and to a minor extent by Asia; and as to international trade growth, a particularly dynamic and higher share of developing countries, mainly in Asia and Latin America, will expand South-South and North-South trade (p.11-12).

In the meantime, the agri-food sector is strongly influenced by energy, rural development and environmental measures (OECD-FAO, 2010: 16). This is particularly clear when considering the heightened linkages among crop and energy prices; as increased variability in energy markets, specifically on crude oil prices, impact directly on crop prices and trade flows through both demand (reinforce feedstock demand for biofuels) and supply (influencing input: price of fertiliser, pesticides and chemicals, transportation and processing costs) (OECD-FAO, 2010: 26-27). According to the OECD-FAO (2010), the growing biofuels market is becoming a rival to food markets through related land use changes, which raises fears of "food versus fuel" in times of shortages of conventional fuel sources (p. 42-43). In spite of substantial additional land available for agriculture use, bringing further marginal land into production could involve considerable investment and lower yields, while possibly incurring social and environmental costs (OECD, 2010: 28). Furthermore, it is expected that if energy future prices rise further on, the tie with food prices will be even stronger (OECD-FAO, 2010: 54).

Climate change

Agriculture is particularly vulnerable to climate change (Vermeulen et al., 2010: 4). Scientific consensus and projections by 2050 suggest both an increase in global mean temperatures and further weather variability; this will have implications for the type and distribution of agricultural production worldwide (OECD, 2010; OECD-FAO, 2010). The OECD-FAO (2010) argued that less-resilient agricultural production areas will suffer the most, as already dry regions face even drier conditions, especially the semitropical and tropical latitudes (p. 9, 44). Production variability and uncertainty of supplies with climate change may enhance food safety risks which might result from increases in the frequency of extreme events such as droughts and water borne diseases, with temperatures rising and flooding, or even extreme shifts in the production zones (OECD-FAO, 2010: 44). According to the OECD (2010) climate change will also worsen the living conditions for many who are already vulnerable, particularly in developing countries that lack assets and adequate insurance coverage to compensate (p. 9).

As agricultural production increases so will resource constraint, water will particularly become tighter. The OECD (2010) claims that agriculture globally consumes about 70 per cent of the world's freshwater withdrawals (p.10). Climate change is expected to alter the seasonal timing of rainfall and snow pack melt, and result in a higher incidence and severity of floods and droughts (OECD, 2010: 10). Another derived effect is linked to aquaculture, as they interact in several ways. Competition between the fishery and agriculture sectors may arise for water and land, especially for irrigated agriculture, as well as competition between feed for terrestrial animals or farmed fish (OECD-FAO, 2010: 41). Another factor to consider is agriculture support policies which are linked to production. These policies should be carefully evaluated because if wrongly applied they could encourage less efficient use of water, leading to off-farm pollution and exacerbate flooding (OECD, 2010: 6). As the OECD (2010) explains, given the anticipated growth in the demand for food and water, in addition, to the increasing pressures from climate change, rain-fed and irrigated agriculture will need to be managed more sustainably to reduce resulting production risks (p.10).

On the whole, the OECD (2010) states that climate

change effects are expected to be negative for agricultural production, nonetheless some regions may benefit from improved weather conditions (p. 10). Quantifying greenhouse gas [GHG] emissions from agricultural activities is challenging as it is subject to a complex interplay between climate, soil type, slope and production practices (OECD, 2010: 9). Despite scientific uncertainty on valuation methods, increased concentrations of GHG in the atmosphere are already locked-in and by 2004 agriculture, forestry and land use altogether had contributed directly to about a third of GHG emissions (OECD, 2010: 9-10; Vermeulen et al., 2010: 4). Mitigation in agriculture can be achieved through improved cropland and grazing land management (by sequester of carbon and offset emissions from other sources), restoration of degraded lands (improving soil quality), and land use changes (such as agroforestry) (OECD, 2010; Vermeulen et al., 2010). According to the OECD (2010) currently available technologies range from altering farm management practices to the adoption of new varieties, crops, and animal breeds more suitable to future climate conditions (p. 10). Furthermore, emissions can be reduced by improved nutrition and better management of manure from livestock production (OECD, 2010: 10). It is acknowledged that agriculture has the potential to contribute to mitigation and sequestration of carbon, particularly the GHG emission reduction, by adapting to climate change conditions and adopting more efficient and sustainable production methods (OECD, 2010; OECD-FAO, 2010). Worldwide the panorama seems to be quite different, and agriculture will undergo major changes. Setting the ground will require a new approach to combat world hunger and adverse conditions, while improving productivity and production in a sustainable way. According to the OECD-FAO (2010) progress will depend on the application of available technologies and to a great extent on innovation and technology in the field (p. 46).

Biotechnology in agriculture has been a controversial subject. Among consumer groups and the public at large, genetically modified [GM] crops are considered to be an inferior product in quality compared to those produced in a traditional method (Sobolevsky et al., 2005; Disdier et al., 2010) and there are growing concerns on its impact on human health and the environment (Heinemann, 2009: 39). However, the OECD-FAO (2010) reveals that nowadays there is a considerable use and dependence on technology and innovation in global food and agriculture systems (p. 46). Disdier et al. (2010) show that GM technology is applied in a wide range of crops and countries; by the year 2008 the main adopters of GM technology were (cultivated land in million hectares [MH]): United States (62,5 MH), Argentina (21MH) and Brazil (15,75MH), followed to a lesser extent Canada (7,625MH), India (7,625MH), China (3,75MH), Paraguay (2,75MH) and other 18 countries (less than 2 MH). Furthermore, the OECD-FAO (2010) claims that Asian countries are expected to adopt and engage in the commercial production of GM crops by 2015, and that product differentiation, segregation and labelling, will acquire increased prominence in the commercialisation of GM and non-GM crops (p. 29). Sobolevsky et al. (2005) argues that this should take place throughout the entire production chain, marketing, processing, and distribution chain of the food system. For this reason, many countries have already started to implement mandatory labelling regulations or even switching towards a GM free zone (Disdier et al., 2010). According to the OECD-FAO (2010) the development and approval of GM crops is still unsettled in the international arena and it is already generating trade diversions among countries and regions (p. 46). Particularly developing countries are struggling between a trade–off on the expected production and agronomic benefits of producing GM crops, and the potential loss in terms of access to rich markets (Vigani et al., 2009)

Conclusion

Agriculture and food systems will be challenged by several factors but in particular by the increasing demand of food availability and accessibility to feed the world (with those suffering from hunger now estimated at one billion). Furthermore, climate change and the growing concerns over the competition for natural resources with the development of various innovative bio energies suggest that major impacts on the future of agriculture production and the sustainability of the sector and environment. The development of emerging economies with their dietary food habit changes are set to increase pressures on commodities, especially on coarse grains, vegetable oils, meats and feedstock. Clearly in order to fulfil agricultural and food demand around the globe, improvementregarding distribution and efficiency is required, by way of increases in yields and reductions of crop losses.

A holistic approach seems to be the one that will contribute to viability of rural areas, progress of agriculture and environmental harmony. On an environmental level, climate change presents great challenges as well as beneficial opportunities to adapt towards a more sustainable approach that reduces GHG emissions, increases carbon sequestration, and mitigates the impacts of climate change. Moreover, countries should invest more on research and development (e.g. crop varieties and breeds which are better adapted to adverse conditions) as well as consider risk management instruments (crop and dis-

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aster insurance) and agricultural policies more in line with a market-based approach (e.g. incentives for more efficient use of water and land). In addition, a healthy and diversified local economy that provides off-farm work opportunities and services is core to the survival, stability and welfare of a rural development. All in all, an integrated approach, which takes into account domestic production, international trade, stocks and safety nets for the poor, is essential to provide a solution to global food insecurity and hunger in the longer term.

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1. According to OECD-FAO (2010) "World population growth is expected to average 1.1% per annum to 2019, compared with 1.2% in the previous decade. Only slow population growth of 0.4% per annum is expected in the OECD area. Higher growth is expected in the developing countries, with the population of Arica as a whole growing at over 2% per annum. Continuing urbanisation trends and rising per capita incomes, emerging large middle classes and underlying population demographics collectively reinforce higher food demand in these countries " (p. 16).

2. As OECD-FAO (2010) explains"…OECD countries will continue to dominate exports in 2019 (shares in brakes) of wheat (52%), coarse grains (59%), pig meat (80%), butter (80%), cheese (63%), whole milk powder (66%) and skim milk powder (74%). Developing countries will hold dominate shares in 2019 for: rice (88% share), oilseed (56%), protein meals (80%), vegetable oils

Research Paper

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India's Carbon Governance: The Clean Development Mechanism

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Abstract

Carbon Governance systems – institutional arrangements in place for mitigating greenhouse gas emissions – are different in emerging countries. Indeed, carbon is the same everywhere but Carbon Governance isn't: in Brazil, the financial community is actively interested in carbon trading, but Chinese banks have hardly any interest in it; and while the Chinese government takes an active interest in providing capacity to project developers, the Brazilian authorities see their role uniquely as guarantors of environmental integrity of emissions reductions projects. In the case of India, carbon governance offers specific features of patterns and interactions mostly because India strongly developed the Clean Development Mechanism and its market. This article proposes a study to the research and understanding of how exactly carbon governance works in the Indian case, knowing that India is the second largest host of CDM projects.

Introduction

The catastrophic consequences of climate change[1] pose ecological and humanitarian challenges on an unprecedented scale. In the international, regional and national levels, different structures of governance are emerging. The market-based Clean Development Mechanism (CDM) is an excellent example of an international regime, which is implemented at national level (mostly by the private sector). The CDM allows emission reduction projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one ton of CO_2. These CERs can be traded and sold, and used by industrialised countries to meet a part of their reduction targets under the Kyoto Protocol. The mechanism stimulates sustainable development and emission reductions, while giving industrialised countries some flexibility in how they meet their emission reduction limitation targets. As some academics argue, the Kyoto Protocol[2] and the United Nations Framework Convention on Climate Change (UNFCCC) were doomed to face difficulties ab initio.[3] First, there is an institutional and systematic problem. In recent years, many have questioned whether the UNFCCC is, in fact, the best and most effective forum for mobilising a global response to climate change. International efforts to negotiate a treaty on climate change have been "producing diminishing returns for some time".[4] The near disaster of the Conference of the Parties-15,[5] in Copenhagen, demonstrates that the current approach to negotiating a comprehensive, universal, and legally binding global agreement on climate change is unlikely to succeed. Secondly, the substantive problem, international climate policy, as it has been understood and practiced by many governments under

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the Kyoto Protocol approach has failed to produce any discernible real world reductions in emissions of greenhouse gases since the mid 1990's.[6]

In order for a future global climate change agreement to be successful, emerging economies such as China[7] and India must rapidly indicate that they areready to play their part.[8] In this context, with the international framework for ongoing climate change action being under discussion, it is the appropriate time to consider this model of governance and to identify its application in countries with a special role in the climate change action. One of those is India, the second largest host of CDM projects.[9]

On the international level, India ratified the UNFCCC, in June 1992, followed by the Kyoto Protocol in August. Also, after signing the Copenhagen Accord, India has assumed a voluntary commitment to cut its carbon intensity which has been established by the Indian Chamber of Commerce[10] that believed there is a huge scope for the large-scale registration of projects within both the energy efficiency and the renewable energy sectors. India set a voluntary target to cut its carbon intensity, or the amount of carbon dioxide released per unit of GDP, by as much as 25 percent by 2020 from 2005 levels.[11] As some scholars mentioned, India seeks to exploit the synergies between development, energy and climate goals.[12] But it has been noted that India's stance on climate protection at both national and international levels is "dominated by underlying business interests" with carbon governance following this trend.[13] In a similar manner to China, sustainable development is a national key priority.[14] Unlike China, however, India appears less aggressive in leveraging both the policy devices and the institutional support offered by the international climate change regime in order to serve its domestic sustainable development objectives.[15] The lack of direct action to promote foreign investment and technology transference through the CDM provides one example of this.

India is on the frontline of global warming.[16] In a recent estimate, the World Bank suggests that the developing world will suffer 80 per cent of the damage from climate change despite accounting for only one third of greenhouse gases in the atmosphere.[17] India is a case in point. The country is now the fourth largest emitter of GHGs in the world and accounts for 5 per cent of global GHG flows. But with 1.1 billion people – or a population of just under one sixth the global totals – its per capita emissions are a mere 1.7 tons of carbon dioxide equivalent (CO_2), compared to 23.5 tons CO_2 per capita for the USA. It has a significant aggregate footprint with an insignificant per capita footprint. Neither fact diminishes its climate vulnerability.

Defining "Carbon Governance"

Global carbon governance is characterised by an increasing segmentation of different layers and clusters of rule-making and rule-implementing, fragmented both vertically between supranational, international, national and sub-national layers of authority (multilevel governance) and horizontally between different parallel rule-making systems maintained by different groups of actors (multi-polar governance).[18] National governments are involved in policy making at national level and linking it with international climate regime, sub-national government implement policies in many cases.

According to Biermann[19], the core of climate governance is international architecture under the United Nations Framework Convention on Climate Change and the related Kyoto Protocol. Thus, climate governance covers both adaptation to climate impacts and climate change mitigation. In this context, the institutional arrangements in place for mitigating greenhouse gas emissions are referred to as "carbon governance". Biermann defines "carbon governance" as the set of rules, policies, mechanisms and institutions developed to manage and mitigate climate change and the process of the development of rules and rule making systems to coordinate national responses to climate change.[20]

Overview of Indian Carbon Governance. Legal and policy framework

Environmental protection in India emerged as a policy issue in the 1960s and was clearly second-hand to development and growth imperatives. However, over the past few years the Indian Government has put efforts into enhancing the status of environmental and climate issues on the political agenda. Yet, this political field is still characterised by governance failure, as far as policy implementation is concerned. Like other jurisdictions, existing environmental and development policy overlapped carbon governance. For instance, the Environment Protection Act (1986) requires certain types of development projects to be approved on environmental grounds and, where applicable, this approval process may add to the complexity of a CDM project although, conversely, this process may assist in certifying its sustainability credentials.[21] It is clear that the domestic environmental protection regime affects the context in which the CDM market operates but the dominance of business interests creates a dividing line between the environmental and economic dimensions of the Indian regime. Given that poverty reduction is a national priority in India, the strength of climate change as a policy driver is likely to rank lower than other social imperatives.[22] The CDM was

designed to accommodate this situation, with the flexibility allowed within the domestic implementation provisions, seeking to accommodate national circumstances.

India's Federal Structure

In the context of carbon governance and environment federalism it is important to distinguish the different kinds of responsibilities in these matters. For instance, sectors such water, industries, agriculture and transports come under the jurisdiction of individual states, while electricity, factories, forests, wildlife and socio-economic planning fall under the purview of both Central and States.[23] India is a federal union with a legal system based on English common law, thirty-five states and territories and has several inconsistencies between national and state-level regimes, which affect the carbon governance. For instance, so far there is no overarching renewable energy law governing all states. Instead, there are separate initiatives by the central and state governments. [24]

Sub-national governments play a key role in sectors like energy, industry, transports, urban development and waste management – directly related to the "carbon governance". Further, mitigation actions implementation will also be, in most cases, at local level further highlighting the role of sub-national governments.

Nevertheless, before 2009 most environmental responsibilities were left in the hands of state and local governments, if they were addressed at all. Actually, sub-national governments did not have policies and programmes specifically on climate change though many had indirect effects on climate change mitigation and adaptation. Also, while the emerging state level actions and plans, prepared by the sub-national government are federally directed, the core of the State Action Plans on Climate Change (SAPCCs)[25] is being shaped by the priorities identified by each state government. Some initiatives target cities and local governance bodies to enhance climate actions: the "Asian Cities Climate Change Resilience Network (ACCRN)"[26], "Urban Climate Project"[27], the "Local Renewables Model Community Network"[28], the "Urban Environmental Accord".[29]

It is important to pursue the harmonisation between national and state level actions through a participatory and inclusive policy making process.[30] Inconsistency between federal and regional policies can pose barriers to investment due to a lack of clarity.[31]

National Action Plan on Climate Change (NAPCC)

The NAPCC is the prime policy document that outlines India's approach and plan to deal with climate change. It involves the establishment of eight missions or programmes on solar technology, energy efficiency, sustainable habitat, water, the Himalayan ecosystem, green India, agriculture and strategic knowledge. Four of these missions are focused on the mitigation of climate change: Jawaharlal Nehru National Solar Mission (JNNSM)[32], National Mission on Enhanced Energy Efficiency (NMEEE)[33], National Mission on Sustainable Habitat (NMSH)[34] and Green India Mission (GIM). It is important to outline, that each of the missions has a designated implementing agency at the national level, which further identifies a state nodal agency with roles to implement the missions. The National Solar Mission, for example, is being implemented by the Ministry of New and Renewable Energy.[35]

This plan establishes that India's policy response to climate change will primarily address the urgent and critical concerns of the country with co-benefits for addressing climate change through a directional shift in the development pathway, thereby assigning priority to the maintenance of high economic growth.[36] Much of the NAPCC focus is on development and adaptation but there are actions which have direct bearing to emissions mitigation, for instance the National Mission on Energy Efficiency, the National Solar Mission and the Green India. The development priorities are also stated in the interim report of the committee set up by the Government of India to help develop a low carbon strategy for inclusive growth, as an input to India's 12th five Year Plan (2013-2017).[37] It states that development objectives (decreasing poverty, improvement in quality of life, distributional justice, job creation, competitiveness, industrial growth) are affected by climate change mitigation policies and recommends that policy choices should be based on the extent of additional burden imposed on, and the benefits that accrue to different consumers and sectors of the economy.[38] Indeed, it seems that development and economic growth still remain the priorities for India.[39]

Carbon Market in India: a new segment of the service industry

The CDM – an economic mechanism that relies on market forces for its successful implementation – cannot be understood independently of the broader "carbon market" to which it belongs.[40] The carbon market is defined here as the sum of all transactions in which one or several parties pay another party or a set of parties in exchange for a given quantity of GHG emission credits. The legal definition of these credits varies, but what is important is that they are transferred from the seller to the buyer. Payments can take various forms, such as cash, equity, debt, or technology transfer.[41]

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Benecke identifies four characteristics of the Indian Carbon Market.[42] The first, already mentioned, regards concerns and discourses about the quality of Indian CDM projects and the effectiveness of the Designated National Authority DNA.[43] The second memo is that less than half of Indian CDM projects have a credit buyer. This means that only one half of Indian CDM projects are bilateral – those that have signed the letter of approval with industrialised countries. Most CDM projects in India are developed unilaterally by local stakeholders, without direct involvement of Annex I countries. This is a controversial use of the CDM which excludes the possibility for technology transfers and foreign investment.[44] In this context, Indian's carbon market is dominated by private sector participants[45] who seek to maximise profit, increase their market share, and gain a competitive advantage. In order to do so, these Indian private actors "interpret sustainability criteria and additionality tests in their favour and adapt them to respective circumstances".[46] Also, in general, it is argued that the CDM often appears to generate wrong incentives for private companies mandated to validate and ultimately certify individual projects.[47] Thirdly, most CDM projects registered in India are small-scale renewable energy and energy efficiency projects. Internationally, India holds a share of 28.1% of the total 2,747 CDM projects in the renewable energy sector. As Benecke states, "most of CDM activities take place in the biomass energy sector (…) this is followed by project activities in the wind sector (…) by activities related to energy efficiency measures in industries (…) and by projects in the hydro sector".[48] Last, but not the least, the distribution of CDM projects across India's states is not equal, with a strong bias towards more economically prosperous states, which, undoubtedly, creates uncertainties about the CDM's contribution towards sustainable development and equal distribution of national welfare aspects.

Clean Development Mechanism (CDM)

The CDM is a mechanism under the Kyoto Protocol that allows developed countries to invest in emission reductions in developing countries, which provides a cost effective alternative, to meet their goal under the Kyoto Protocol. The CDM also helps developing countries in achieving sustainable development by technology transfer and fund flows given by developed countries. Nonetheless, there is a lot of criticism in using the CDM as an expanded mechanism for the inclusion of the developing world into a post-2012 climate regime. Schneider[49] states that the CDM is an offsetting mechanism, which does not contribute to overall emission reductions. Wara and Victor argue that the CDM "rather than draw them (developing countries) into substantial limits on emissions it has, by contrast, rewarded them for avoiding exactly those commitments".[50]

The CDM is a new mode of governance to achieve climate-policy objectives. Actually, a range of actors across sectors and state levels are, together, acting both as market participants and also governing this mechanism through various levels of interaction.

As on January 2012, India ranks only second to China with over 20% (769) of the CDM projects registered globally. Major sectors include renewable energy (wind, hydro, biomass), waste management, industries-cogeneration and waste heat recovery.[51] However, literature states that "as the Indian Government regards CDM as income generation device, its policy stimulating potential is debatable".[52]

The process

UNFCCC defined very well the process of the CDM, therefore, a project must follow a life-cycle of eight stages, which involves: design, host country approval, validation, registration, implementation and financing, monitoring, verification and certification, and CERs issuance. In order to be eligible for registration as a CDM project, applications must fulfill the sustainable development indicators, which are established by the national government. The language of sustainable development is visible in this process as prospective projects need to be designed towards improving quality of life from an environmental standpoint, which is assessed by taking into consideration social, economic, environmental and technological wellbeing. However, there is a need to monitoring this process as the sustainable development of the CDM may be overshadowed by the business interests. According to Benecke, "the central values underlying the Indian state's interests and activities are to guarantee national welfare objectives and at the same time to retain the international reputation as investor friendly, integer and open country".[53]

In India, the Ministry of Environment and Forests is the Designated National Authority (DNA), which is the first screening point of the CDM projects' potential.[54] In addition, several states in India have created bodies to oversee CDM projects and there are also existing government agencies or independent bodies established by the private sector. Then, these projects are validated by a Designated Operational Entity (DOE), an independent third party auditor. After validation, CDM projects are also webhosted at the UNFCCC websites for global stakeholder comments.

The CDM Executive Board[55] then considers the project for registration, review or rejection. A verification pro-

cess is also carried out by the DOE before every issuance of carbon credits.

Conclusion: the India Carbon Market dynamics. Key challenges

The Indian carbon market is characterised "as private sector oriented yet invisibly state controlled market facilitation" under regulation of carbon governance structures.[56] As Fuhr and Lederer state, "governance should not be read as being a synonym to deregulation or a normative call for a retreat of the state".[57] However, in India, it lacks direct control at the national level and it is argued that state intervention occurs only as state interests and values are threatened, for instance, by international pressure. India's federal system provides one possible explanation for the absence of centralised control, since Indian states have jurisdiction in areas such as environment and energy, directly related to the carbon market. Besides, there is limited application of hard-steering mechanisms. This lack of control in the Indian market can be explained by philosophical reasons (market freedom and allocation) or policy goals (the intention to support entrepreneurship rather than environmental objectives).[58] The expansion of the Indian carbon market will demand political intervention mostly to create an enabling infrastructure for expansion, including provision of emissions trading infrastructures for the market's growth.[59]

However, Benecke states that as the CDM operates under multilevel governance, changes to procedure and substantial reforms can only and must take place at an international level as the international process must be able to accommodate national input effectively.[60] On the other hand, it is clear that the international climate change regime cannot hide and forget business needs within the CDM market. We understand that the CDM has shown to be a rather flexible mechanism which can evolve, adapt and improve. For instance, when the mechanism was built linking the CDM to the EU ETS, a cap-and-trade system, was not foreseen.

On the other hand, Indian businessmen (industry representatives, business operator and other investors) appear frustrated with the administrative hurdles, constraints and challenges posed by the UNFCCC Secretariat and the Executive Board. Mostly additional assessments at the international level might be a source of opposition to the expansion of the CDM in India.[61]

Cultural issues might operate to deter investors otherwise willing to participate in CDM projects as the Indian business community is reluctant to accept foreign partnerships. And pre-existing business networks may emerge as barriers to foreign participation.[62]

Technology transfer and CDM should be linked to ensure wider adoption of environmentally beneficial technologies beyond the CDM project.[63] India would like to see that a CDM project leads to real technology transfer, giving the country the ability not only to operate the technology, but also to replicate and innovate. However, in India there is a lack of direct action to promote foreign investment and technology transfer through the CDM.[64]

In conclusion, it is crucial to study interactions in the Indian CDM market as it allows empirical groundwork for practical reforms and new proposals. Also, the specific features of patterns and interactions allow the conclusion that carbon governance is not equal around the world. It could be argued that local action needs to occur in the context of collective international effort. However, the Indian tendency towards unilateral action in the Indian CDM participation obstructs the possibility of assigning common responsibilities and that affects the extent of technology transfer allowed under the CDM. Nevertheless, India is the second largest CDM host and, consequently, a substantial contribution to international mitigation efforts, under the international regime, although it could better harness external investment and frameworks to scale-up CDMs transactions.

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Conflict of Interests

The author hereby declares that there is no conflict of interests.

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1. According to article 1 of the United Nations Framework Convention on Climate Change, "climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
2. The Kyoto Protocol was born in 1997 with the goal of establishing a legally binding framework for mitigating the overall emissions of GHGs (greenhouse gases). Because of the complex and different pattern of responsibilities with regard to the creation of the problem, some countries have to do with quantified emission reduction obligations and some others do not.
3. In this matter, Dilma's Roussef opening speech at the Conference Rio+20, on the 20th of June, was clear.
4. FALKNER, Robert, HANNES, Stephan and VOGLER, John, "International Climate policy after Copenhagen: Towards a 'Building Blocks' Approach", in Global Policy, I, (2010): p. 253.
5. Briefly, the Copenhagen Accord has been criticized by environmental groups such as Friends of the Earth and carbon traders including Barclays Capital, because no binding targets were set. It calls for more talks in preparation for a treaty to respond to a global warming by capping emissions and expanding the $ 126 billion a year carbon market.
6. LEAL-ARCAS, Rafael, "Alternative Architecture for climate change: major economies", in *European Journal of Legal Studies*, Vol. 4, 1, (2011): p. 25-56. The Author proposes using the experience of trade agreements as a model for reaching a global climate treaty.
7. In 2010, CO2 emissions from China have surpassed the ones from the USA. Although, annual average increasing rates of CO2 emissions from China will decrease from 7.4% during 2000-2010 to 3.3% during 2010-2020. ONISHI, Akira and SOSA-GARCIA, Rodolfo, "Global Proposals for Energy Security and Environmental Sustainability, Galilei Consulting, Civil Society Hemispheric Forum, OAS, Miami, 1-2, 2008.
8. The Kyoto Protocol is an agreement on climate change which has proved to be very rigid in its approach to reducing GHG - article 1.5 of the UNFCCC defines greenhouse gas as "those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation". For the purposes of GHG emission reduction, the UNFCC divides the world into Annex I countries (or developed countries) and developing countries, legally binding only Annex I countries to reducing their GHG emissions by a certain deadline. Why? Because rich-countries have been the major polluters. However, it has been argued that a better and fairer way to envisage the climate change issue, nowadays, is by bringing together the major GHG emitters, irrespective of their GDP. FARBER, Daniel, "The case for climate compensation: justice to climate change victims in a complex world", in Utah Law Review, 2, (2008): p. 377.
9. Regarding November 2010, 79,615,975 Certified Emissions Reductions (CERs) have been issued for 550 CDM projects. UNFCCC, "CDM Statistics", available at, accessed 23 June, 2012.
10. Comments made by representatives from the Indian Chamber of Commerce during an official side-event at the Carbon Expo: Global Carbon Market Fair and Conference, held at the Fira de Barcelona, May 27-29, 2009.
11. SINGH, Gurav, "India Will Meet Its Copenhagen Climate Commitment, Ramesh Says", January, 2010, available at *http://cdm.unfccc.int/Statistics/index.html* accessed 23 June, 2012.
12. RAJAMANI, Lavanya, "The Indian Way: Exploring the Synergies between Development, Energy and Climate Goals', Chapter 18 in Donald N. Zilman, Catherine Redgwell, Yinka O. Omorogbe and Lila K. Barrera-Hernandez, Beyond the Carbon Economy: Energy law in Transition, (OUP 2009): p. 420 and 483.
13. BENECKE, Gadrun, "Varieties of Carbon Governance: Tacking Stock of the Local Carbon Market in India", in *The Journal of Environment and Development,* Vol. 18, issue 4, (2009): p. 350.
14. Ministry of Environment and Forests, India's Initial National Communication to the United Nations Framework Convention on Climate Change, Executive Summary, (2004): p. iii, para. 5.
15. As it is well known, there is a number of potential conflicts between economic growth and acting on climate change. It is a fairly straightforward proposition that as the economy grows, so will the GHG emissions. As such, for example, the International Energy Agency's (IEA) World Energy Model, used to derive its authoritative projections of energy demand and is based on projected economic growth as a key exogenous assumptions. However, COPELAND and TAYLOR developed a seminal mode that can be used to break down the environmental effects of economic growth into three effects: scale; composition; technique. So, according to them, the final impact of any economic growth is, ex ante, indeterminate. COPELAND B. and TAYLOR S., "North-South trade and the environment", in *Quarterly Journal of Economics*, Vol. 108, No. 3, (1994): p. 755-787; United Nations Conference on Trade and Development, Developing Country Interests in Climate Change Action and the Implications for a Post-2012 Climate Change Regime, United Nations, (2009): p. 9.
16. India should be concerned about climate change because it might have substantial adverse impacts on them. Of course, the climate change nature and extent and their impacts are uncertain however, that should not justify inaction. Also, there are three main "categories" of certain impacts: agriculture, sea level rise and increased frequency of extreme events. Nonetheless, the immediate concern for India should be the fast pace at which negotiations are taking place on the climate front. India's main energy resource is coal. With the threat of climate change, India is called upon to change its energy strategy based on coal, its most abundant resource, and to use other energy sources instead.
17. World Bank, "World Development Report 2010: Development and Climate Change", Washington DC, World Bank, 2009.
18. TERI, (The Energy and Resources Institute), "Carbon Governance at Sub-national Level in India, New Delhi: The Energy and Resources Institute, 2011, p. 5.
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20. BIERMAN, Frank, "Beyond the intergovernmental regime: recent trends in global carbon governance", in *Current Opinions in Environmental Sustainability*, Vol. 2, (2010): p. 284-288.
21. Other national laws, which apply indirectly to the clean energy sector, include the Forest Conservation Act (1978), the Water (Prevention and Control of Pollution) Act (1972) and the Air (Prevention and Control Pollution) Act (1980). Baker & McKenzie/World Institute of Sustainable Energy, Identifying optimal legal framework for renewable energy in India, (November 2008): p. 4.
22. CHAPMAN, Shopie, "Assessing Good Carbon Governance in India", University of Cambridge, Good Carbon Governance Working Paper No. 4, April 20, 2011.
23. Seventh Schedule, Article 246 of the Constitution. TERI, supra note 18, p. 9.
24. Indian Renewable Energy Status Report
25. Background Report for DIREC 2010, p. 24.
26. The Prime Minister of India, Dr. Manmohan Singh alerted the States to operate State level Action Plans on Climate Change, consistent with the strategy outlined in National Action Plan on Climate Change, at the Conference of State Environment Ministers, in 2009. So, there has been an increase of policies and programs at the sub-national level. For instance, the Department of Science, Technology and Environment prepared the SAPCC for the state of Goa. The main mission/objectives include protection of coastal resources and livelihood of traditional

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inhabitants along the coast; polarization and installation of renewable energy; use and promotion energy conserving devices; stress on biodiversity maintenance, preservation and increase of the forest cover to keep the state green; promoting sustainable agricultural practices to optimal usage of the available land and to bring it under green cover. To sum up, in its action plan the state prioritizes mitigation as its objective and the missions are mostly in line with the NAPCC. Participant cities are: Surat, Indore, Gorakhpur. The objective is to catalyze attention, funding and action on building climate change resilience through active engagement and analysis for various cities.

27. Currently, taking place in Coimbatore and Rajkot. It is tapping opportunities of low-carbon development in Indian municipalities.
28. In Coimbator, Nagpur and Bhubaneshwar, is promoting renewable energy use at city level.
29. Participant cities are: Kota, Ahemdabad, Hyderabad, Delhi, Gwalior, Bhilai, Bhopal, Darbhanga, Jammu, Mysore, Calicut, Aligarh, Jamnagar, Lucknow.
30. It is interesting to note that in the European Union exists a principle (not a rule) which predetermines the activity of the Community and, as such, has legal force: the subsidiary principle. For the environment, much depends on the interpretation given to the requirement that the objective of environmental protection cannot be sufficiently achieved by Member States and can thus be better achieved at a Community level. KRAMER, Ludwig, EC Environmental Law, Thomson, (2007): p. 17.
31. Indeed, as recent financial events indicate, every economic activity is embedded in a broader social order and can only be carried out within a clearly regulatory framework. BENECKE, Gadrun, supra note 13, p. 329.
32. The focus sector is energy supply and the objective is to promote the sharing of renewable in the electricity generation mix, leading to considerable emission reductions. The mission has a 3-phase approach, envisaging deployment of 20,000 MW of solar generated power by 2022. The national implementing agency is the Ministry of New and Renewable Energy.
33. The target is expected to avoid capacity addition of 19,000 MW, leading to a reduction of around 98.55 million tons of CO2 annually. ATTERIDGE A., SRIVASTAVA M.K., PAHUJA N., "Climate Policy in India: What shapes International, National and State Policy?, in AMBIO, Vol. 41, issue 1, (2012): p. 68-77.
34. The focus sectors are building, waste and transport. It aims at ensuing sustainability in Indian cities in lieu of climate change through changes in city development plans. This mission is to be implemented through appropriate changes in the legal and regulatory framework (e.g. Building Byelaws, Development Control and Regulation, etc.).
35. National Mission on Enhanced Energy Efficiency is being implemented by the Bureau of Energy Efficiency (BEE) of the Ministry of Power and National Mission on Sustainable Habitat is being implemented by the Ministry of Urban Development.
36. Some scholars argue that whether and how we regulate climate change is not the only problem to decipher. The other issue on the table is whether our decision to regulate climate change will affect how we regulate energy. The problem is that for a long time environmental and energy regulation have been largely separated and distinct. As LINCOLN L. DAVIED explains, "can, or will, the crisis of climate change propel us to a new form of energy regulation that is integrated with the regulation of environmental protection and resources use?"."Energy Policy Today and Tomorrow – Toward Sustainability?", in *Journal of Land, Resources & Environmental Law*, Vol. 29, 1, (2009): p. 73.
37. Government of India, "Interim report of the Expert Group on Low Carbon Strategies for Inclusive Growth", Planning Commission, 2012.
38. TERI, supra note 18, p. 11.
39. Some scholars state that India should reject the conventional paradigm for energy planning according to which we are asked to think in terms of energy consumption as a necessary condition for economic growth. Thus, "the paradigm says that if we want development, then we have to have economic growth, and if we want to increase Gross Domestic Product (GDP), we must increase energy consumption". The so called Energy-GDP relationship. REDDY, Amulya Kumar N., "Development, energy and environment: alternative paradigms", Department of Management Studies, Indian Institute of Sciences, Bangalore, available at *http://www.amulya-reddy.org.in/*Publication/89to93_ET200191.pdf, accessed 23 June, 2012.
40. While command and control regulations are unable to internalize the external costs of the environment, economic instruments may help by distributing and prizing a formerly common good. Markets thus create scarcity and place limits on the use of resources to avoid further degradation of that resource. STRECK, Charlotte, "New Partnerships in Global Environmental Policy: The Clean Development Mechanism", in *Journal of Environment & Development*, Vol. 13, No. 3, (2004): p. 295-322.
41. Scholars explain that carbon transactions can be grouped into two main categories: 1. "allowance-based transactions, in which the buyer purchases emissions allowances created and allocated (or auctioned) by regulators under cap-and-trade regimes, such as Assigned Amount Units (AAUs) under the Kyoto Protocol, or EU Allowances (EUAs) under the EU-ETS" and 2. "project-based transactions, in which the buyer purchases emission credits from a project that reduces GHG emissions compared to what would have happened otherwise. Project-based transactions include CDM and JI transactions, but also non-Kyoto transactions such as voluntary transactions in Europe or in the United States (…)". LECOCQ, Franck and AMBROSI, Philippe, "The Clean Development Mechanism: History, Status, and Prospects", in *Review of Environmental Economics and Policy*, Vol. 1, No. 1, (2007): p. 134-151.
42. BENECKE, Gadrun, supra note 13, p. 349.
43. The Author mentions that "exactly 40% of the CDM projects rejected worldwide originate from India (32 CDM projects out of 87 in absolute numbers)".
44. One possible explanation for this situation is the entrepreneurial spirit of Indian private investors associated to the early successful capacity-building efforts of the international donor agencies as well as consultancies and a DNA which encourages Indian projects developers promoting CDM for business purposes.
45. We can identify three categories of private actors: project consultancies of Indian origins (Ecosecurities, Price Water Coopers, Cantor CO2e, Ernest & Young, Asia Carbon); Designated Operational Entities (the three largest in India are DNV, SGS and TUV SUD) that adapt activities to the needs of their main customers (project developers and consultancies); Financial institutions (a substantial number of foreign bank affiliations as well as national banks that have recently commenced financing CDM projects).
46. BENECKE, Gadrun, supra note 13, p. 355.
47. SCHNEIDER, L., "Is the CDM fulfilling its environmental and sustainable development objectives? An evaluation of the CDM and options for improvement", Report prepared for the WWF, Berlin, Germany, Oko-Institut, 2007.
48. BENECKE, Gadrun, supra note 13, p. 351.
49. SCHNEIDER, L., "Is the CDM fulfilling its environmental and sustainable development objectives? An evaluation of the CDM and options for improvement", Report prepared for the WWF, Berlin, Germany, Oko-Institut, 2007.
50. WARA, M., & VICTOR, D.G., "A realistic policy on international carbon offsets" (Program on Energy and Sustainable Development Working Paper No. 74), Standford, CA: Program on Energy and Sustainable Development, Standford University, (2008): p. 6.
51. TERI, supra note 18, p. 19.
52. BENECKE, Gadrun, supra note 13, p. 348.
53. Ibid., p. 354.
54. Concretely, its functions are CDM project evaluation and approval, recommendation of additional measures, financial reviews, and ensuring that sustainable development is prioritized. The integrity and effectiveness of DNA has attracted concern. Since India has the highest rate of rejections by the CDM Executive Board, the India DNA's objective to accommodate business interests in tandem with promoting sustainable development goals may need to be reviewed. Nevertheless, the administrative hurdles in the international regime can also be the cause of the sub-optimal operation of the CDM Executive Board. NEWEL, Peter and PATERSON, Mathew, Climate Capitalism: Global Warming and the Transformation of the Global Economy, CUP, (2010): p. 135.
55. The CDM Executive Board was created in 2001, during the COP 7 in Marrakech and it supervises the CDM, under the authority and guidance of the COP. During the project life-cycle the Executive Board must formally accept the projects as CDM project activities.
56. BENECKE, Gadrun, supra note 13, p. 361.
57. Ibid., p. 330.
58. As usual the conflict is between financial interests and environmental protection. ZIZEK, psychoanalyst, philosopher and teacher, sums up

the issue most clearly: "(...) but when we recognized the urgency of the issues while we were fighting AIDS, hunger, water shortages, global warming, etc.., There seemed to be always time to reflect, to postpone decisions (...) but with the financial meltdown, the urgency was unconditional financial and effectively were available from one moment to the other amounts of unimaginable proportions. Save endangered species, save the planet from global warming, saving AIDS patients and people who die from lack of resources that give them access to expensive treatments, saving starving children ... well, everything that can wait a moment more. The appeal "We must save the banks! ', By contrast, imposes itself as an unconditional imperative to immediate action (...)". See ZIZEK, Slavoj, First as Tragedy, then as Farce, Relógio D'água, (2009): p. 95

59. GHOSH, Debyani, SHUKLA P.R., GARG, Amit and RAMANA, P. Venkata, "Renewable energy technologies for the Indian power sector: mitigation and operational strategies", in *Renewable and Sustainable Energy Reviews*, Vol. 6, (2002): p. 483.
60. Ibid., p. 368.
61. JOSHI, Vijay and PATEL, Urjit R., "India and climate change mitigation", Chapter 9, in Donald N. Zillman, Catherine Redgwell, Yinka O. Omorogbe and Lila K. Barrera-Hernandez, Beyond the Carbon Economy: Energy Law in Transition, OUP, (2009): p. 192.
62. BENECKE, Gadrun, supra note 13, p. 365.
63. PARIKH, K. Jyoti and PARIKH, Kirit, "Climate Change: India's Perception, Positions, Policies and Possibilities", OECD, Climate Change and Development, (2002): p. 22
64. This approach is in Sharp contrast to its Chinese counterpart, which has a dominant control over market participation. Interestingly, however, both over-regulation and under-regulation of carbon governance structures have the same practical effect on foreign participation: the Chinese control market participation by placing restrictions on foreign investors and the dominance of Indian private sector interests may operate to exclude external interests from the marketplace. Either way, this influences the conditions for CDM investment. This indicates that the carbon governance will take on different forms in different countries. FUHR, Harald and LEDERE, Markus, "Varieties of Carbon Governance in Newly Industrializing Countries", in *Journal of Environment & Development,* Vol. 18, No. 4, (2009): p. 327-345.

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Balancing Economic Development with Environmental Conservation: Challenges Facing the North and South

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Abstract

This paper critically explores how development policies tend to ignore pressing environmental concerns. In the first section development in the North and South and the Bhopal disaster will be juxtaposed to show how development without environmental governance can be deadly. The article then turns to the way in which the Sri Lankan government's Moragahakanda Development Project strives for economic development without concern for the environment. It will be contended in this article that governments and big companies in the North and South have tended to carelessly use scarce resources for development.

Introduction

This article explores how development policies tend to ignore pressing environmental concerns, natural and anthropogenic. Our environment is changing locally and globally and many believe we are approaching a global ecological tipping point. Informed environmental governance is needed to sensibly respond to these challenges that could become threats to access of land, food, and water. However, we often find that governments are deterred from taking corrective measures because they privilege economic gains at the expense of environmental concerns.

What scholars ironically call the "development" of the last two or three centuries has adversely affected the environment: soil, air, and water are becoming increasingly polluted, resulting in a lack of bio-diversity and scarcity of natural resources. Deforestation and desert formation are the secondary results of development. Although some scholars believed that technology and science could manage the degradation of the environment, their idea has lost serious ground. Recent discussion indicates that all development activities should be organised according to environmental concerns as well.

Environmental problems are bound up with the economic and political contexts in which they emerge. Further, environmental problems influence and are influenced by political and economic activities. As one example from Sri Lanka will show, even projects that appear to be examples of environmental governance may be only fronts for political or economic gain.

Development in the North and South

Nataraja Shanmugaratnam (2012) reveals how different factors contributed to the global environmental crises in the North compared to the South. For the North, the industrial revolution was an unprecedented social,eco-

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nomic, and cultural change. Generally speaking, in the colonial era the South provided the North with the resources to industrialise (Gupta 2012: 3). It reduced poverty and accelerated economic growth. According to Peter Hay (2009: 4), the impetus for environmentalism was born with the transformative impact of early industrialisation at the end of the eighteenth century. The total awareness of an environmental crisis in the North manifested in various forms: democratic freedom, student revolt, feminism, and eco-feminism. The crisis in the South was not driven by the industrial revolution, although it was certainly influenced by the systems of colonialism and capitalism that the colonial empires established in the South. Principle crises in the South were environmental degradation in the agricultural areas, natural forests, and mining centres linked to large-scale processes like mining of forest resources for export and shifting agriculture to steep slopes (Shanmugaratnam 2012: 178).

Andre Gunder Frank (1966) introduced 'dependency theory,' a way of thinking about the North and South that was rooted in a heartland-hinterland or core periphery spatial relationship (Mather and Chapman 1995: 59). Here the heartland represents European countries while hinterland Southern part of the world. The transition from peripheral to core status is hard to measure but some countries on the periphery can change their status. For example the United States has given an opportunity to countries in the South to export resource products to countries in the North. Core-periphery trade, however, often disadvantages the periphery, and growth in trade of manufactured goods has certainly been far greater than that of resources products (Mather and Chapman 1995: 59).

In line with Shanmugaratnam's emphasis on the difference between the North and South, political scientists often refer to the North as "developed countries" (DCs) and refer to the South as "less developed countries" (LDCs). Because LDCs tend to be poorer on a per-capita basis (Gupta 2012: 3) economic development might appear more attractive to LDC governments as ways to raise the standards of living in their country. Yet it is becoming clear that environmental governance is needed to genuinely raise the standards of living: because a large population of the rural poor directly depend on land for their food, economic policies in LDCs that tend to alienate the rural poor from land are extremely dangerous.

The distinction between LDC and DC might have outlived its usefulness, however. Some scholars, for example, argue that there are more differences between countries in the South than between the nations of the North and South (Toye 1988). Further, the North and South share overlapping histories of modernisation. Modernisation refers to processes of change like growing urbanisation, and new forms of economic activity, increase in specialisation of labour (Kearney 1978: 3-4).

Karl Marx theorised that these modernisation processes are tied up with the formation of two classes of society, the capitalistic and the labour class. Capitalists, Marx believed, try to gain profits in a short period rather than protecting the environment or human welfare. Marx used the phrase 'metabolism (Stoffwechsel) between man and earth' to explain the ecological disruption under capitalism (Alier 2003: 3). This ecological disruption that began at the end of the eighteenth century became very disruptive for peasants dependant on the environment for their livelihood.

One reason for this disruption was the chemicals created during the industrial revolution that were very harmful for the environment. For example, American pest authorities created and circulated chemicals such as DDT (dichloro-diphenyltrichloroethane) to control pests. Rachel Karson (1965) reveals the harmful reaction of these chemicals that directly affect the environment in her masterpiece "Silent Spring." Suroopa Mukherjee (2010: 20) writes how the excessive use of chemical fertilisers has today resulted in a "pesticide treadmill" that increases the price of foods with profit only going to the manufacturer owners.

The Bhopal disaster is a stark reminder of the conflicts between economic development and environmental disaster. The Union Carbine India Limited (UCLI) prided itself as playing a key role in India's development (Mukherjee 2010: 20). In 1975, the Indian government gave permission to the company to manufacture pesticides. The Indian government wanted to produce pesticides as a development strategy to increase food production in order to combat hunger. Yet the company was careless about safety hazards and in 1984, 42 tons of toxic gas leaked into the atmosphere that resulted in nearly 4000 deaths, and 550,000 after-effect injuries like kidney failure, lung cancer, liver disease, and birth defects as a result of genetic mutation (Mukherjee 2010). This was a stark reminder to countries not only in the South, but all over the world, about the potential harm that pesticide production can cause, especially at factories where safety regulations are not enforced.

Environment and the State

Because there is great pressure on states to bring eco-

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nomic development to countries, many are impatient to see economic growth even if it is unsustainable. After the Second World War, for example, African, Asian, and Latin American countries showed very little limited interest regarding environmental conservation because they had to focus more on development. The Bhopal disaster is only one example of many instances where development that neglects environmental concerns can have dire consequences for the human population.

This section begins with an example from Sri Lanka. In October 2000, the Sri Lankan Ministry of Mahaweli development and the Lahmeyer International Association forwarded a capacity report to the 'Moragahakanda Development Project.'[1] Expected to be the second largest dam in Sri Lanka, the Moragahakanda dam should add 25 megawatts to the national grid, and provide an industrial water supply to the districts of Anuradhapura, Trincomalee, Polannaruwa, and Matale so that agriculture can develop in the North, East, and North-Western provinces. In the project report (2000: 24), section 3.13.4 uses the word 'Cost Recovery' which reveals the idea to sell the water. The section states: Recommendations for appropriate water charges will be given based on discussions with representatives of the concerned authorities and the on progress being made with the introduction of water charges at the time of reporting. (Chapabandara 2007: 26)

The main goal of the 'Moragahakanda Lake Project' is not for the paddy cultivation but for the subsidiary crops to have an economic value. On the one hand, it is under the term and condition of limiting the opportunities for paddy cultivation. Similarly, there is a possibility that the Moragahakanda dam would induce other industries instead of paddy cultivation. As Johnston states, when the state acts according to the whims and fancies of the capitalists, it is impossible to solve environmental problems (Johnston 1989, quoted in Sirisena 2010:194). The state, like in Sri Lanka, has responsibilities to manage bio- physical resources, but it is hard to see whether they accept or handle their duties well (Sirisena 2010:194). Although the government is responsible according to state policy to manage the environment many states have acted irresponsibly. For instance, in Brazil there are industries with out clear environmental laws so the air is polluted leading to health problems (Hardoy 1992, in Sirisena 2010: 198). Although the study is now outdated, Norton Ginsburg's 1957 study of the relationship between resources and economic growth is relevant to this example from Sri Lanka. Ginsburg concludes that to assist in economic development, resources need not lie within a country but they must be accessible. Accessibility implies both transport and export, which accumulate the capital. One means of accumulating such capital is through exploiting resources within a country (Mather and Chapman 1995: 228).

If we examine the condition in China and Vietnam, it can be seen that socialist state policies have contributed much towards social and environmental catastrophe (Hershkovintz 1993, quoted in Sirisena 2010: 197). Some of the so-called third world countries broke away from the world system and reached some alternative lines in order to reconstruct and realign with the North on their own terms to form a more advantageous position. After the fall of the Berlin Wall parts of the Second World became First World, while others were incorporated into the South (Gupta 2012: 3). Today a few East Asian countries are referred to as newly industrialising countries (NICs) or 'the four tigers:' South Korea, Taiwan, Singapore and Hong Kong.

Conclusion

During the past half century, industrialisation of the third world has influenced the environment drastically. Further, third world industrialisation influences and is influenced by changes in international interactions. This phenomenon has been termed by Chase-Dunn, Kawano, and Brewer as "structural globalisation" (2000), whereby changes in density of international interactions are in relation to local networks. The economic policies followed by the state for exporting natural resources such as minerals and different kind of fish has affected local communities drastically who have become marginalised socially and economically. Governments who introduce temporary palliatives must strive for genuine environmental governance. By overusing natural resources we are creating environments of scarcity.

It is a vital requirement for each country to properly manage their natural resources. Projects like the Moragahakanda Development Project must incorporate environmental policies and creatively brainstorm new methodologies for environmental governance. The more governments care only about profit when implementing economic policies, the closer we approach an ecological tipping point, locally and globally. If governments in the North and South integrate environmental governance into their development projects, the North and South can achieve new vistas of sustainable development.

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Conflict of Interests

The author hereby declares that there is no conflict of interests.

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1. Information about this project can be found here: *http://www.treasury.gov.lk/EPPRM/npd/pdfdocs/projecpipeline-chap/Irrigation.pdf*

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Will change in government lead to improvement of Mongolia's environmental sector?

The Mongolian Democratic Party (MDP) won the majority of the parliamentary election in 2012. The MDP is a powerful party in the coalition and has shown a strong interest in local self-governance and a strong fiscal decentralization by supporting the new Budget Law of 2012 (Jargalsaikhany, December 12th 2012, Eurasia Daily Monitor). The MDP won 12 Aimags and the majority of the capital city electorates in the local government election in December 2012, which could mobilize local level politics with the party's agenda (Jargalsaikhany, December 12th 2012, Eurasia Daily Monitor). The Civil Will Green Party (CWGP), as one coalition partner in the government, demonstrates more concern over environmental protection in the party's manifestation (Interview, CWGP 2012.09.26). The CWGP heads the Ministry of Nature, Environment and Green Development (MNEGD) in the new government.

Picture credits: Sisira Withanchchi

Mongolia is considered a vulnerable country in the climate change scenarios. Currently, Mongolia is covered around 30% in Gobi desert area. The rest of the country contains semi-arid or arid areas. Geographically Mongolia is a landlocked country with low precipitation. It is estimated that annual mean temperatures have increased by 2.1°C since the 1940s (Batimaa et al. 2011). The impact of climate change in Mongolia deteriorates the water availability rapidly. Mainly, groundwater resources are overexploited in the hard winter period, (almost seven months in a year), for household consumption, animal husbandry, agriculture and industrial purposes (Tsogtbaatar et al. 2009).

Mongolia has rich mineral resources which are directly used for many industrial products by industries in developed countries. Multinational companies have established mining plants in many parts of Mongolia. Economic liberalization accelerates the trend of investment by foreign mining industries. The mining industry, while boosting the Mongolian economy, affects the ecosystem heavily. It means that the factor for the economic blessing is creating insecure human wellbeing in the country side. Leakage of chemicals and discharging of waste water in surface water and groundwater lead to emerging water pollution and direct effects on economic development and human wellbeing (Tsogtbaatar et al. 2009). In our field research last week with the research team of National University of Mongolia about Environmental Flow Assessment in Orkhan River in Mongolia, we interviewed couple of local peoples including herders and farmers, and governance officers such as governors, local parliament members, environmental protectors, natural inspectors and water security officers in the river basin.

Picture credits: Sisira Withanchchi

In the first photo, the mixing of the contaminated Orkhan River water with one of tributary of the main Orkhan River can be viewed. This water is being polluted by the mining industries in the upper catchment areas of the Orkhan River. The mining industry was started since 1993. Aimag Government gives most of the a licenses without proper Environmental Impact Assessment and without people's hearing. We were not allowed to enter to the upper mining industry (the second photo). This mining industry is located directly on the natural source of Orkhan River. Local people express their concern about arbitrary mining industries activities. They always struggle with these companies. They told us that these lands are belonging to them and they do not want to escape from their homeland. We can be witnesses on how these companies block the natural water flow and by washing mining material with Arsenic and other chemicals. The downstream local people and governors also complain this worst situation of poisoning of Orkhan River Water which led to decrease the water quality.

Another threat is that water quantity is decreasing as a result of climate change. It is a significant factor when comparing local people views about water quantity the last 20 years. However, the local people's right to drink pure water, food security and the right to secure their homeland are being violated in these areas as the negative consequences of the arbitrary and profit-oriented mining industry.

The impact of the global green development discourse in Mongolian governance strategies can be observed through the renaming of the Ministry with green development in new government. Water and forests are the main themes of the MNEDG. Water management is one priority of the MNEDG with reforestation and pollution eradication (Byambadorj, October 5th, 2012 UBPOST). As noted in Chapter 5, there has been institutional restructuring in water and forest management and governance. By terminating the Water Authority, the power was brought into the ministry (Interview, 2012.10.01; Byambadorj, October 5th, 2012 UBPOST). Concerning the water sector, the new government policy demonstrates priority over river headwaters and protected zones of water reservoirs within a comprehensive water management policy (The coalition government platform, 2012).

People in Mongolia are waiting what it means real Justice by them with real human wellbeing with environmental protection. Otherwise, Multinational Companies and local mining companies get rich by giving littlie compensations to Mongolian people which are highly criticized. Even in the development plan of Mongolia, it is neglected balance development with another part of the country. Under the uncontrolled neo-liberal economic policies leads to develop only Ulaanbaatar the capital city with 2/3 of whole Mongolian population. Also, other issue is wealth is accumulated only few people (mainly is driven by mining profit) of the country while other majority are poor. It is created a rhythmic idiom about Mongolian "Mongolia is not only Ulaanbaatar and is not only few rich people".

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Agrarian Transformation in Lower Saxony?

Lower Saxony is Germany second largest and second most populous state (or "Land"). With close to 8 Million inhabitants, it hosts more people than, for example, EU member state Denmark.

Lower Saxony is also one of Germany's biggest producer of agrarian produce. It is home to some 2.848.000 cows and 8.428.00 pigs, as well as 56.609.000 chicken (Numbers from 2011). However, most of the animals reared for meat production are found in factory farming; organic agriculture only makes up 3% of the agricultural sector (compared to 9% in Hesse). Poultry farming is the biggest trend, it has risen by 81% over the last decade. The huge concentration of animals in factory farming, des-

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tined for cheap production, has led to social conflict.

Increasingly, citizens worry about environmental and health risks connected to intensive meat production. Fear of disease due to overuse of anti-biotics, groundwater contamination, over- fertilization of arable land, obesity, unfair trade practices: some keywords in the discourse on the dangers of factory farming. Mr Hettwer, Chair of the Lower Saxon branch of the Alliance for Farms not Agro-Factories, believes that the movement for cleaner, healthier food has the potential to be the biggest contemporary social movement. Mr Hettwer and his allies are involved in awareness raising – their enemies call it fearmongering. Nevertheless, tenthousand people walked the streets of Berlin in January to declare "We are fed up" – with what they see as perversions in the German (and global) food system.

One day after the protest march, on January 20, Lower Saxony held general elections. The incumbent, Mr. David McAllister, had followed Mr Christian Wulff as Prime Minister when Mr Wulff was elected President of the Federal Republic. Mr Wulff had to leave office after only 20 months due to accusations of corruption, a fact that hardly featured in electoral campaigns of January 2013.

It was going to be a close call: The ruling parties, the conservative Christian Democrats (CDU) and the Liberal Party (FDP), had been in power for ten years. Especially the former are closely connected with conventional, often large-scale farming enterprises. One example: In 2010, Minister of Agriculture Mrs. Astrid Grotelüschen (CDU) had to resign from office because she was obviously too close to vested interests in the poultry industry.

A center-left coalition of Social Democrats (SPD) and Greens was challenging the cabinet of Mr. McAllister and managed to marginalize other political parties, namely the Left and the Pirate Party, in public opinion. After a long election night, the so-called red-green coalition won the day by only a few thousand votes. Mr Stephan Weil (SPD), former mayor of the state capital, the City of Hanover, was elected Prime Minister. Some believe that the votes for the exceptionally strong Greens made the difference; votes quickly connected to the wide-spread discontent with agrarian policies.

Mr Christian Meyer of the Green Party was one of the most outspoken critics of factory farming; he campaigned vigorously for stricter legislation, better animal protection and against what he saw as an increasingly excessive livestock industry. Now, on February 19, 2013, Mr. Meyer was made the new Minister of Agriculture. Among revelations of new food scandals, Mr Meyer promised to take on problems and work towards agrarian transformation. As a first step, his ministry anounced a drastic increase in handouts for organic farming, creating incentives to switch from conventional to organic.

Picture credits: Sören Köpke

Now it is the part of the powerful lobby of agrarian industrialists to take part in fear-mongering. While citizen initiatives and environmental organizations put their hope in some policy change, conventional farmers are afraid to lose some hard-earned privileges. Lower Saxony's countryside is a conservative social space. Only the future will tell whether a switch towards more sustainable practices in farming can be made.

Reported by

Sören Köpke

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Bitter Bananas – the story of Nemagon

Florina Dörr

To this day, up to 22 000 people in Nicaragua suffer or have died[1] from the late effects of a pesticide that, despite being banned in the U.S. for its horrendous effects, American companies continued to use in their plantations in other countries during the 1970s and 1980s[2] . Nemagon, a highly toxic pesticide, poisoned humans and the environment in Central America, the Caribbean and Asia, where it was used by Standard Fruit Company (now Dole), Del Monte and United Fruit (now Chiquita) to grow their crops faster and stronger.

Worldwide, the number of victims is estimated at up to 60,000[3] . Almost all were labourers working in banana and other crop fields in rural areas with favourable hot climate conditions for crops like cotton, banana and sugarcane.

Promises of the "Green Revolution"

In the middle of the last century, the emergence of the "green revolution" shaped a new era of agricultural production, greatly increasing global food production. Big chemical laboratories and agricultural enterprises promised new and better pesticides and increased production that would end hunger, generating attractive profits.

The Rise of Nemagon

One of its outcomes is Nemagon, or Dibromochloropropane (DBCP), which was created in the laboratories of the Occidental Corporation, Dow Chemical and Shell Oil to combat nematodes attacking crops like bananas, sugarcane, pineapple and cotton. These microscopic worms live in the soil and discolor the fruit, making it less attractive for the international market, obsessed with appearances.

Picture credits: Florian Dörr

In the 1960s, Standard Fruit Company (now Dole), Del Monte and United Fruit (now Chiquita) extensively used the pesticide to help the plant to grow faster, but it is a slow decomposition toxic chemical and can remain in the ground for hundreds of years, causing damage to human health and the environment. After discovering its side effects like infertility, Nemagon was banned in the United States in 1979, the year of the Sandinista revolution in Nicaragua. Nevertheless, Standard Fruit, a company which had already bought enough Nemagon for several years to come, threatened Dow to sue them for the breach of contract if it wouldn't continue to provide the pesticide. Under these circumstances, the companies simply concluded that the chemical was prohibited only in the U.S. but not in the so called "banana republics", where they could continue to use it with impunity, having workers mixing the poison by hand and pumping it directly into the ground without any protection. In Nicaragua, the Nemagon was still used until the middle of the 1980s, mostly in banana plantations in the department of Chinandega.

During the early 1990s, first deaths related to the chemical occurred as the number of people affected multiplied. Wells, rivers or springs were contaminated with the pesticide, spreading the chemical also to the population which had not been in direct contact before. In the rural areas of Chinandega, only 4% of households have drinking water from pipes[4], the chemical started to affect the population with disease patterns from the loss of hair and fingernails, migraine headaches, loss of sight to kidney diseases and stomach cancer. Women are affected by uterine and breast cancer and miscarriages, while 67 percent of men are considered sterile[5] .

In the neighbouring countries, the situation is similar. In Costa Rica 15,000 to 20,000 workers suffer from health problems that are attributed to the highly toxic pesticide, in Honduras until 8000 banana pickers are affected. Worldwide, the number of victims is estimated at up to 60,000[6] .

Protest camps and empty laws

It is not until the beginning of the new millennium that the banana workers movement in Nicaragua organises and begins to take action. Thousands of affected people

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marched a total of six times in 12 day walks from Chinandega to the capital, demanding justice and seeking help by the government in Managua.

Not receiving any attention, they feel forced to stay in poorly equipped protest camps in the middle of main roads in front of the Nicaraguan parliament in Managua with nothing to protect them against the tropical weather but black plastics and hammocks. Children would suffer the same hunger and poverty their parents did, being marginalised every week since their arrival.

Picture credits: Thomas Strothjohann

The polarized political landscape of Nicaragua put another obstacle to the negotiations. After the Sandinista Revolution in 1979 which ended decades of dictatorship by the Somoza family, President Daniel Ortega and his Sandinista National Liberation Front (FSLN) lost the elections in 1990, bringing the US-supported liberal Violeta Chamorro, the first elected female head of state in the Americas, into office. Many of the affected labourers fought in the Sandinista revolution, which was used as an excuse by the liberal government who ignored their demands for years with the excuse that they were serving the Sandinista National Liberation Front (FSLN). Back then, the Sandinista party itself provided little help to the victims.

Blockades and hunger strikes ultimately drove attention to them. In 2001, after long debates, the National Assembly passed the law 364 called the Special Law for Processing Trials for People Affected by Pesticide Use based on DBCP. This law became the only hope for farmers to be compensated, providing them with financial and legal support of the state to bring lawsuits against the multinational companies.

Thanks to this law, in March 2001 the first lawsuits were brought against the Shell Oil Company, Dow Chemical Company, Occidental Chemical Corporation, Standard Fruit Company, Dole Food Company and Chiquita Brands International. A year later, a Nicaraguan court ruled in favour of about 600 campesinos, by commanding the payment of $ 490 million by transnational corporations. Such high amounts of money attracted people who wanted a slice of the pie from the workers tragedy, which served the companies as the perfect pretext to delegitimise the workers' demands and to increase internal tensions. Ultimately, none of the companies recognised the court in Managua. To that date, over 2,000 banana workers had died by kidney failure or cancer only in Nicaragua[7] .

Hidden Agendas

From the Chamber of Commerce in the U.S., Down Chemical wielded enormous pressure concerning the elimination of law 364. With its power , Dow Chemical introduced an addendum to the Fourth Amendment of CAFTA, which allows investors to bring lawsuits for compensation against contracting states if they consider that a national law or a judgment issued by local judges violates the principle of "fair and equitable treatment"[8] . Hidden under the guise of promoting free trade and foreign investment, the specific aim concerning Nicaragua is to neutralis.e the Law 364[9].

Picture credits: Thomas Strothjohann

The Dole Deal: jobs instead of compensation

That "fair and equitable" treatment transnational corporations seek seems a mockery when claimants are poor farmers, combined with an almost nonexistent capacity of the Nicaraguan state to lobby CAFTA negotiations. What could the second poorest country in Latin Amer-

ica offer besides cheap labour and investment facilities for exports? Meanwhile, Dole Foods offered to reinvest in Nicaragua if the government withdrew the lawsuits against them for the use of pesticides. The affected workers were upset and afraid, the government could be negotiating with the corporations, with them being nothing but bargaining chips.

Ortega's modest compensation

Under three different governments, the victims demanded medical care, the commitment not to change the Special Law No. 364, strict compliance with of the ban on 17 pesticides and the payment of a pension for those affected.

Altagracia Solís has worked 14 years on banana farms. Now, she is the chairman of ASONEF, an association of banana workers and now living in Managua. She says the organisation is just "another step in the fight" which has started over 20 years ago to remind the companies about their responsibility. "I feel proud, because the battle is not yet over. 2,500 workers have died and many more are seriously ill, but here we are and fight without ceasing"[10] she said tearfully.

Picture credits: Florian Dörr

Years after the reelection of Daniel Ortega in 2006, the street camps disappeared and the Sandinista government gave homes to 182 persons who are now living in Managua. Altagracias says "we are the legitimate banana workers which have evidence where, in which area and in which position we have worked", thanking the Ortega government as being the only which helped them and giving them a modest compensation with basic housing, food, water, electricity and medical care. Here they sit on plastic chairs, waiting for death to come.

New generations of sick workers

It is the same "left" Ortega government which since its reelection promotes labour intensive monocultures like sugar cane and allows for the concentration of land in the hands of fewer and fewer large landowners and agricultural corporations.

Sugar, palm oil and soya grow particularly well in Latin America[11] . These so-called "flex crops" can be used in the food industry and for energy. Therefore, they represent such an attractive investment for the national and regional elites in Latin America. In Nicaragua, the sugar cane industry is growing at double-digit figures and the oil palm is spreading, exploiting poor rural people without alternatives, dismissing them shortly after ruining their health without money for treatment. The state, however neither does anything against the exploitation, nor against the destruction of the environment. Too tempting are the duties of the agricultural industry for the state budget, too big their influence on the political level.

Each year, a new generation of sick workers is dismissed penniless, doomed to repeat history. The next human tragedy is already paving its way. From southern Mexico to Panama, over 24,000 workers who cut sugar cane have been killed by a mysterious kidney disease since 2000[12] . Scientific investigation about the reasons for the epidemic is just beginning, but besides the inhuman nature of the work, suspicions about involved agrochemicals[13] gain considerable ground.

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Report

United Nations Conference on Sustainable Development (UNCSD) – Rio+20: What an effort for such a meager result

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Looking back

20 years after the "UN Conference on Environment and Development" in Rio de Janeiro and 10 years after the "World Summit on Sustainable Development" in Johannesburg, the world community met again to look at the achievements of the far reaching action programmes from the previous conferences. At this year's "World Summit on Sustainable Development" in Rio (Rio+20) a number of new topics were on the agenda for consultations: The so called "Green Economy" and the development of "Sustainable Development Goals" as political goals. In the institutional arena the upgrading of the United Nations Environment Programme (UNEP) to a United Nations Environment Organisation and a change in the UN-Sustainability Architecture.

Originally the Rio+20 summit was not in the long term conference programme of the United Nations. It was the initiative of Brazil with a speech from its the President Luiz Inacio Lula da Silva before the UN General Assembly in 2007, which lead one year later, on the basis of an application by the G-77 States, to the decision to hold the UNCSD in Rio in 2012. In contrast to the 2 previous

conferences, the expectations for sound and far reaching results were very low. The discussions about sustainability worldwide are too much shaped by the deep and contrasting differences, which have been the reasons for the spectacular break-up of the UN Climate Summit in Copenhagen in 2009 and a deadlock in any further negotiations in the frame of the UN climate convention. For different reasons industrialized countries like Japan, Canada, Russia and the USA, the ALBA-countries like Venezuela and Bolivia or the emergent nations like India have for some part great reservations against significant improvements regar- ding the contents and the institutions, with which the Rio-agenda could be moved forward. The low expectations and the "Copenhagen-Effect" lead to the result, that important Heads of States did not attend the Rio summit, like among others Barack Obama, Angela Merkel, Wladimir Putin and David Cameron.

Low expectations

Measured on the low expectations, the Rio summit in general produced those results which one could realistically expect. Looking at the meager realisation of "Agenda 21" (1992) and the Johannesburg "Action Plan" (2002) from the beginning on this summit could only be a disappointment. After all, "Agenda 21" starts with the sentences: "Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being" and lists on 300 pages, what all needs to be done, to make the so far non-sustainable economic model truly sustainable. 10 years later in Johannesburg the world community again stated, that "human kind is at a crossroad" and the obligations of "Agenda 21" were reinforced in the "political declaration" and the "plan of implementation" (A/CO NF 199/20) under headlines like "Our commitment to sustainable development", "Making it happen" and "Multilateralism is the future".

"Green economy" remains undefined

How far the Member States of the United Nations (UN) have departed from the "spirit of Rio 1992" today, is demonstrated in the discussion about the "green economy", a catch word that is as vague as "sustainable development". In the "Zero Draft" of the final document from

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Picture credits: Luiz Filipe Barcelos

Rio+20 in Brazil- Civil Protest

Jan. 10th 2012 it was formulated: "We are convinced that the green economy in the context of sustainable development and poverty eradication should contribute to meeting key goals…" (§25 in the UN document). In the agreed final document one can hardly recognize the original intention, what "green economy" actually means. In the deeply sceptical text one finds a great number of conditions which a "green economy" must fulfil. Among others it should not negatively effect global trade; it has to be in line with the law of nations and it must increase the wealth of indigenous people. Which concrete actions will follow on the basis of such a text anyway is "written in the stars". Suggested is: "We encourage all states to develop their own green economy strategies through a transparent process of multi-stakeholder consultations" (§39 in the UN document).

Upgrading UNEP

The upgrade of UNEP to a full UN-special organization as demanded by the EU and great parts of civil society could not be realized in Rio, because besides the USA also Russia, Canada, Japan and important groups of the G-77 were not supporting this proposal. In the final session on Monday, June 18th, the American representative made clear, where the red line for his country was: neither the upgrade to a full UN-special organization, nor the change of the name of UNEP was acceptable. Nevertheless, in the new UNEP-governing board all member states will be represented and not only the 53 states so far. In addition, UNEP will be receiving a secured basic finance as part of the official UN-budget, in contrast to the very insecure finances entirely through donations of those 53 countries in the present UN-governing board. Additional donations to UNEP by member states will also be possible in the future.

This is a very important step on the road to a full UN-special organization, for which the very first proposal was already made at the Rio+5 special General Assembly in 1997 by the former German Chancellor Helmut Kohl together with the Heads of States from Brasilia, South Africa and Singapore. It took long and difficult discussions and negotiation processes over the International Environmental Governance and especially Germany and France promoted for a UN-environment organization since many years. For long it was just a European idea, however since the African states made this into a prestige question for their continent (why should the only UN-institution in Africa have a lower status?), the chances to substantiate the idea have increased. But more could not be achieved realistically at present, even if in most UN member states well established Ministries of Environment exist. However, the increase in prestige for UNEP with the decision at the Rio+20 summit should not be rated low: in future resolutions of the UNEP- governing board will be carried by all member states and with a finance based on obligatory fees it will be possible for UNEP to develop a greater independence from big donors.

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No Sustainable Development Council

The activity to substantially alter the institutionally established "sustainability architecture" in the UN headquarters also brought about only a second grade result. The 1992 established "Commission for Sustainable Development" (CSD), which was intended as a body to actively accompany and support the so called Rio- follow-up-process, has not at all fulfilled the expectations. It has not produced any decisions in recent years, or if so they existed of recycled "agreed language". Hardly any Minister attended any of the CSD meetings and it was, therefore only consequent to terminate this Commission. The original idea was to replace the CSD by a Sustainable Development Council (SDC) in line with the example of the UN-Human Rights Council. However, this was too far reaching for many member states. Mexico put forward the proposal for a "High Level Political Forum for Sustainable Development" within the frame of the existing "Economic and Social Council" of the UN. This idea was supported by the G-77 and was accepted at the end.

All 193 member states will belong to this new Forum, which puts more weight on it (but will not necessarily enhance its workability and effectiveness). The final Rio-document states that the new Forum "should avoid an overlap with existing structures, bodies and entities". This makes clear, that the Forum will have no mandate to seriously persue the cross-section duty sustainable development. In addition, it seems very likely that in the new Forum all the same diplomats will be involved, who were already unsuccessful with the CDS and this means, one can have no really high expectations for substantial results from this Forum. The format and the organizational structure should be decided at the next UN-General Assembly in the fall of 2012. The first Forum should be called at the beginning of the 68th General Assembly of the UN in September 2013.

Sustainable Development Goals as an addition to Millennium Development Goals

The proposal from Columbia and Guatemala to agree on Sustainable Development Goals (SDGs), to com-plement the 2015 ending Millennium Development Goals (MDGs) was principally not questioned. However, to fill these with definitions of any content, which was tried for by the EU, was bound to fail. Now, the SDGs will be negotiated over the coming years, but in contrast to the MDGs they should then be valid for all member states and not only for developing countries.

This was heavily opposed by the USA. How they will stand to the "Post-2015-MDGs" and how the two negotiation processes will be coordinated is yet unclear. The final "Rio Document" has decided only, that both processes should proceed "coordinated and coherently". A commission of 30 persons should work out proposal until the end of 2013.

Brazil puts the Europeans under pressure

In essence: these were the results from Rio+20. Agreed: this would not require having 12.000 Government delegates flying around the world. All that could have been achieved in a meeting (one day long) in the General Assembly of the UN in New York! However, the main purpose of the summit - at least for the host-was not to achieve concrete results, but to increase the prestige by hosting such a conference Brazil took over the lead in the negotiation process with the goal, that the negotiations for the final document would be finalized before the Heads of States would arrive. The Europeans withstood this absolutely unusual request for a long time, but were finally soft- boiled with the ruthless blackmail policy of the Brazilian Foreign Minister who declared, that everybody who would oppose this process would break up the summit, because there would be no further negotiations in the Heads of States section. In this moment Europe was in a weak position, because only very few Heads of States had declared their participation in the summit. It was obvious that for Brazil the only important point was the unity of the G-77 and China. A split like it happened at the last climate conference in Durban 2011 needed to be avoided.

It was obvious that Brazil had no real self interest and no specific subject matters to work for in this conference and this gave an advantage to those countries, which did not want any substantial changes of the status quo. The EU found itself quickly in the awkward situation to demand changes without offering much itself. For the demand to set some substantial points for the negotiations of the SDGs the EU found no supporters; for the demand of an UNEP-upgrade at least the African States.

For different reasons the situation in Rio for negotiations was such, that the advocates of the status quo were always in a stronger position. If a "nice summit show" is not allowed be "disturbed by serious negotiations" and the unity of various groups of States is more important, than real results, then the contents are lost, and the question of the sense of such Mega-Conferences is even more pronounced as before such an event. The question what Rio+20 has really brought about will only be answered

in a few years when the new UNEP possibly will show some measurable results and the new "High-Level-Political-Forum" has taken up its work and the SDGs will be finally negotiated.

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Green Consumption' beyond mainstream economy: A discourse analysis*

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Abstract

In contemporary society, green consumption is a popular concept. The life styles of people and consumption behaviors are moderated in accordance to the 'green ideology'. The process of green consumption can be observed through social behaviors such as preference of bio foods, recycling, reusing, limiting the over consumption and using environmentally friendly transport systems. However, mainstream economic analyses on green consumption argued that consumer behaviors are due to the rational choice of individuality based on utility and self-preferences. The hypothesis of this paper on consumer behavior in green consumption is configured by discourses according to the discourse analysis.

Introduction

Contemporary society has become more aware of environmental issues than ever. The multiform concern about the environment spreads to a range of activities and social practices. 'Green consumption' and 'Green Economy' emerged as novel themes in political economy. The green consumption is one major thematic area in the discourse of consumption. Consumers' behaviors, attitudes, marketing strategies, productions methods and business ethics have been moderated in terms of the 'green consumption'. In recent literature, 'green consumption' is the vital topics of environmental governance and ecological economies. When observing the available literaturein green consumption, most of studies analyze the green consumption on the basis of rational consumption as in mainstream economy (Elkington, 1994; Pedersen, 2000; Alfredsson, 2004;Smith, 2010; Abaidoo, 2010). However, some literature refers to the critical approach to analyze the green consumption (Andrew et al, 2005; Connoly and Prothero, 2008; Turner 2010; Mansvelt and Robinson, 2011).

Literatures which theoretically based on the mainstream economic argument focuses the green consumption and consumer behavior in the glance of the rational choice theory.Consumers are identified in the mainstream economy as a rational individual based on the logic of consumption as rational decision making process. Milton Friedman (1957) explains that the consumption depends on the individuals' preferences and restrictions which are based on the assumption that eachindividualat every time is achieving the best option from their selection (Friedman, 1957).RetoFoellmi (2005) denotes that economic activities such as production and consumption, finally, decide on the individual needs and individual desires (Foellmi, 2005). The rational choice theory presumes that choices of buyers and sellers in market are configured by particular assumptions: consumers are aware ofa set of alternative choices which can be easily moved between those preferences, consumers are independently without any exterior influence about their choices and responsive to utility function which refers the marginal utility that the marginal utility is gradually decreasing in order to consumption (Green, 2002). Mark Irving Lichbach by examining in ontology of rational choice theory explains that social outcomes are the unintended consequences of intentional human action which are driven through invisible hand of rationality. Moreover, in the anatomization of institutions and formation asociety or economy, rationalistic ontology is that patterns of individual behavior on rational choice

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design the institutions (Lichbach, 2003). The ontology of rational choice theory is critically questioned in discourse theory.

The discourse analysis examines that consumption is also a social construction of identities by reflective discourse practices (Fairclough et al., 1997). The consumption is a divergence subject that is oriented in terms of the positional characteristics which are given by discourses. A rational person who is independence from the structure as in realist theory is refused by the structuralisms and post structuralism. Especially, the position of the post structuralism argument is that no coherent subject as well as no coherent structure exist (Wullweber and Scherrer, 2010).

The purpose of this paper is to critically examine the base line argument in mainstream economic that is rational individual consumer in consumption process. This study is scrutinized the green consumption as the case study by applying discourse analysis. In that analysis, it will address the research questions: "how consumers can name into nomenclatureas rational individual?", "Is it green consumption a normative configuration of individual behavior?" This paper is organized as follows: the first section is dedicated to briefly examining the existing literature on green consumption. Under the theoretical framework, the second section with three subsections will present the basis of the argument by illustrating main analytical tools and logics in discourse analysis, mainlyfocussing on innovative contributions into discourse theory by Ernesto Laclau and Chantal Mouffe. The discourse analysis of green consumption with critical examination of mainstream economic arguments is analyzed in the third section. The research paper concludes with a brief summary of the findings.

Green consumption and consumer behavior: mainstream economic argument

Green consumption has been defined with reference to the natural science phenomenon. E.C Alfredsson (2004) explains that green consumption relevance to the scientific indication which is energy usage and CO2 emission. The green consumption spreads over the institutional arrangements to individual behavioral changes. Alfredsson identify four categories in the definition of green consumption. Travel, housing and food are considered the first three categories. In the forth category called 'green scenario' is included above three categories (Alfredsson, 2004).These categories illustrate the framework of environmental friendly behavior of consumer. For instance, the 'green diet' concept, one of key theme for CO2 emission reduction, is promoted by Scandinavia countries as major policy implementation on national level for training environmental friendly consumers (Alfredsson, 2004). The organic farm production and biofood consumption, and CO2 emission low energy usage are illustrious consumption patterns in 'green consumption' (Pedersen, 2000).

Photo credit: bluebus via flickr *https://flic.kr/p/ajbESw*

Within the last thirty years, the concern on market and economy has dramatically changed. Ken Peattie and Martin Charter (1992) show the transformation of market outlook from 1970s to 1990s. In 1970s, there was the concern about environmental issues on the emphasis as 'environmental problems on market' with focus of local problems such as pollution. Also, the connectivity between environment and business was negative effects. After 1990s, the paradigm was changed into 'green' with boarder systematical issues such as politics, economic and legal with focus on global scale. The interrelationship between the economy, society and the environment is designed market oriented patter in environmental protection through concept of 'green'. Moreover, Peattie and Charter allude that this transformation is a reason to change the key concepts in marketing concept with new products styles (bio products), sustainable market concept and eco-friendly auditing system (Peattie and

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Charter, 1992). Primarily based on the John Elkington and Julia Hailes's 'the Green Consumer Guide' (1988), the green consumerism is defined as follow:

> "[the]……use of individual consumer power to promote less environmentally damaging consumption, while still satisfying consumer wants and needs" (Charter et al., 2002:10).

In other words, this quotation indicates that green consumption rely on individual consumer behaviors' on the rational decision.

The existing literatures on green consumption and consumerism approximately signify the individual consumer and social value which indicate altruism on environment in the policy framework. To John Connolly and Andrea Prothero (2008), environmentally friendly normative characteristic as the momentums in the consumer culture impacts on the environmental and economic reform in the western societies and supra-national bodies such as European Union. The concept Consumer voluntary engagement in consumer practices is identified as the core of in marketing system adjustment, academic reorientation on green consumption and political decision making mechanism (Connolly and Prothero, 2008). The main argument of the study traces out that green consumption as the continuation of green subjectivity which emphasizes the individual responsibility on environmental risk through individualization (Connolly and Prothero, 2008). If Connolly and Prothero mention about the political, social and cultural conditionwhich would be impact on 'green' consumer practices, based on the theories of reflective modernization, the conclusion of the argument underlines the importance of individual behavior and their norms of environmental protection and preservation which are inbuilt self consciousness (Connolly and Prothero 2008:128- 142). They assume that individual responsibilities which are examined through case studies are the real for people.

Rexford Abaidoo (2010) on his study refers to the 'go green' and rational electric consumer that indicates the adoption of process describes that consumption pattern moderation is regarding on the environmental friendly energy usage (Abaidoo, 2010). The main hypothesis is that consumers are always rational individuals who consume goods and services in order to fulfill their preferences (Abaidoo, 2010). The 'green' electric energy consumers are willing to pay for green source energy on the rationality of transitive preferences and maximization of utility. The failure of the system which cannot participate in consumers into green consumption of electricity is the lacuna of government policies. The structural adjustment of the macro economy would proceed with respect to the rational individual consumer. Just as, in reference to the electric consumption, Lene H. Pedersen describes that the behavior of consumers in green consumption based on certain social norms on energy conservation (Pedersen, 2000).

Andrew Glig et al. (2005) analyze the dichotomy of green consumption and sustainable consumption with a focus on a 'new life style' of consumers that adapt new purchasing styles. Especially, this analysis mentions the relation of language and social behavior of consumers in the transformation of 'green' to 'sustainability' (Andrew et al., 2005). In the analytical part, by using this finding, authors connect the characteristic of individual consumer behavior with green consumption.

Discourse and Discourse analysis: theoretical framework

Discourse analysis is considered as a prominent approach in post structuralism. Generally, discourse analysis is a frequent application in linguistic analyses which have been utilized to analyze the activities and subject matters in diverse linguistic disciplines such as sociolinguistic, psycholinguistic with different phases of dis-

course (Brown and Yule, 1991). Some scholars apply discourse analysis as a research tool in political, economic and sociological studies (Hastings, 2000; Howarth and Stavrakakis, 2000; Burgos, 2000).

Barbara Johnstone (2002) explains why it is called discourse analysis rather than saying "discourseology" or "discourse criticism" or "discourseography". For clarifying this fundamental question, Johnstone ascribes the chemical analysis that highlights two important characteristics. Firstly, discourse analysis is a methodology that examines the explicit way. Secondly, discourse analysis based on inquiring a particular research question. Furthermore, in the explanation on different between linguistic and other discourse analysis, Johnstone points out that linguistic discourse analysis refers to the language structure, change and acquisitions. Critical Interdisciplinary research questions are the main methodology with questioning the social roles and relations, communications, identity and power relations in other discourse analysis. (Johnstone, 2002). David Howarth and Yannis Stavrakakis (2000) portray discourse analysis as the practice of analyzing empirical raw material and information as discursive forms. For this analysis, linguistic and non-linguistic elements are considered (Howarth and Stavrakakis, 2000). Philip Macnaghten (1993) alludes that discourse analysis is the process of disentanglement of the discourses which is constituted the socially constructive or constructed nature of reality by discourses (Macnaghten, 1993). In referring Laclau and Mouffe, discourse analysis is the mapping out the discourses through four basic analytical tools and logics of discourse theory.

Four basic analytical tools

In concept of identity of discourse analysis, Laclau and Mouffe's arguments are centered on four basic analytical tools. They are elements, articulation, moments, and nodal points. Ernest Laclau and Chantal Mouffe, (1985) define articulation as any practice which constitutes a relation among elements. This articulation causes to modify the identity of elements (Laclau and Mouffe, 1985). In other words, all identities are originated by the articulation or re articulation of signifying elements (Howarth and Stavrakakis, 2000). On that rationality, discourse is defined as the structured totality of articulatory practices (Laclau and Mouffe, 1985). The intention is to indicate that discourse is not a practice intrinsically. The practices consist in a discursive setting rather than determine detaching from discourses (Andersen, 2003).

The elements are not discursively articulated. On the other hand, elements are called as floating signifiers which cannot articulate completely into discursive field (Laclau and Mouffe, 1985). The different positions which articulated in discourse are named as moments. Here, all signs in a discourse are called as moments (Laclau and Mouffe, 1985). The meanings of moments are dissimilar from one another in accordance to 'positional differences'. Marianne Jørgensen and Louise Phillips (2002) argue that the meaning of signs as

moments is decided upon the relation to other signs within discourse (Jørgensen and Phillips, 2002). In the articulated discursive totality, 'elements has been reduced to a moments of that totality' (Laclau and Mouffe, 1985). However, Laclau and Mouffe argue that the transformation of elements to moments is never accomplished completely. They explained this incapability by applying the tool nodal points (Laclau and Mouffe, 1985). In referring the Jacques Derrida's view, Niels Andersen (2003) explains that every discourse has a point of reference or center of discourse that originate the positional meaning for signs as moments. This center is constantly within discourse. Laclau and Mouffe explain Derrida's idea moreover through the idea of nodal points. The nodal point is contained in the practice of articulation (Andersen, 2003). The nodal point is a privileged sign which other signs are ordered and gained meanings (Jørgensen and Phillips, 2002). The discourse is constituted thorough this partially fixed of meaning circumference to nodal points (Laclau and Mouffe, 1985). The certain nodal point in particular discursive field is impact on conversion elements into internal moments of different context (Howarth and Stavrakakis, 2000). These analytical tools of discourse theory of Laclau and Mouffe assist to analyze discourses.

Logics of discourse analysis

Laclau and Mouffe have differentiated the 'discourse' and the 'field of discursivity'. As mentioned above, discourse indicates the partial fixation of meaning. The field of discursivity means the surplus of meaning of articulated practices which are exterior to the considered discourse. Simply, all potentialities of meaning of objects which are ejected out from discourse belong to the 'field of discursivity'. This exclusion from a particular discourse is concerning to construct a 'unified system of meaning' (Jørgensen and Phillips, 2002). For instance, the 'bus' as an object belongs to the field of discursivity in 'literacy discourse'. The term 'order of discourse' illustrates a social space that emerges when different discourses in same realm attempt to constitute or establish the meaning. This term refers the area of discursive conflict. Laclau and Mouffe's applications of 'hegemony' and 'antagonism' in the discourse theory represent this area of discursive

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conflict – 'order of discourse' (Jørgensen and Phillips, 2002). The 'hegemony' refers in the discourse theory the closure of the conflict through a disarticulation of the frontiers between discourses. The term 'antagonism' in Laclau and Mouffe's analysis denotes 'the open conflict between the different discourses in a particular order of discourse' (Jørgensen and Phillips, 2002).

According to Antonio Gramsci, hegemony is the process of establishing the existence of predominance by the social class through expanding their political, intellectual, economic control and moral view through 'culture' and 'common sense' over whole society (Jacobitti 1980:66). Laclau and Mouffe advance the Gramsci's concept of hegemony by deconstructing the essentialist assumptions such as class based analysis towards dynamic of articulation (Sutherland, 2005). Laclau and Mouffe critically examine the Gramscian implication 'historic bloc' through historico-discursive formation and the capability of entire articulation through widening hegemony in a field of discursivity (Laclau and Mouffe, 1985). Laclau and Mouffe define the 'historic bloc' as the hegemonic formation which indicates 'a social and political space relatively unified through nodal points and tendentially relational identities' (Laclau and Mouffe 1985). Joscha Wullweber and Christoph Scherrer (2010) explain that hegemony is a social relationship and also, an expanding discourse by excluding of competing discursive elements (Wullweber and Scherrer, 2010). Laclau and Mouffe applied the concept of hegemony to figure out the political constitution of the social. The ontological assumption of their discourse theory is that the obtaining meanings are only within a specific discourse thorough articulation of elements into moments. Thus, the acquiring of a hegemonic position in the course of the articulation is the purpose of the discourses (Beverungen 2006). Thus, Laclau and Mouffe analyze the hegemonic practice in the general field of articulatory practices. The hegemonic articulation should achieve a considerable articulatory moment thorough confronting the antagonistic articulatory practices. Hence, the hegemonic articulation confronts antagonisms which presume the phenomena of equivalence and effect of frontiers that divide antagonistic forces. Thus, Laclau and Mouffe identify the occurrence of antagonistic forces and instability of the frontiers as two conditions for hegemonic articulation (Laclau and Mouffe 1985). These two areas explain the hegemonic practices in the logic of hegemony (Howarth and Stavrakakis 2000).

The subjects have different identities in the same social domain whereas those are not opposite each other (Jørgensen and Phillips 2002). Jørgensen and Phillips argues that when it happen antagonism of identities, individual discourses excluded each of them for partially fixity of meaning as the position of contingency noticeable (Jørgensen and Phillips 2002). Moreover, in refereeing to Laclau and Mouffe, 'hegemonic intervention' as the process that befall in antagonistic terrain articulate the uncertainly of meaning through applying forces, antagonism will absorb (Laclau and Mouffe, 1985). Under those circumstances, it is clearly explained that hegemonic intervention captures the fixation of elements in moments by break up antagonistic relations. However, if discourse and hegemony is equal in terms of the fixation of elements of moments, noticeably, the different between discourse and hegemony is optimal, because the fixation of meaning constitutes across discourses by colliding antagonistic relations. However, it is considered that to be successful hegemonic intervention, one discourse would dominate though dissolving antagonism (Jørgensen and Phillips, 2002). In reference to Laclau and Mouffe's example myths and social imaginaries, Howarth and Stavrakakis (2000) show that myths are regarded as structural dislocations which construct new spaces of representation through the hegemonic re-articulation of dislocated elements. Thereafter, myths transferred into the social imaginary, in Laclau and Mouffe's term, 'horizon', when it is neutralizing social dislocations and the social demands (Howarth, and Stavrakakis, 2000). Laclau applied this discourse analysis in his thesis 'Beyond Emancipation' (1992), to examine the concepts of universality which is propagated in Christian eschatology and particularity. The 'universal' has no its own content meaning as a signifier. Thus, its meaning is constructed conversely to the content of 'particular' in terms of an-tagonistic relation or hegemonic operation. This is an empty signifier (Laclau, 1992). The logic of discursive structuration is advanced through moderating the 'concept of empty signifier' by Laclau. Laclau defines an empty signifier as 'a signifier without a signified' (Laclau, 1996). Furthermore, by advancing Saussure's idea of language as system of signifiers, he describes that the empty signifier as absence of totality which is unreachable because of the systemic effects of the unstable compromise between equivalence and differences (Laclau, 1996). Therefore, the meaning of empty signifiers would depend on self interpretation or self understanding of the context, because of the plurality of significations as result of variability, non-existence or no specific. Thus, the articulation of a discourse should have to occur around an empty signifier as the nodal point. Accordingly, the emptiness of a nodal point is fundamental factor for its 'hegemonic success' (Howarth and Stavrakakis, 2000).

The logic of equivalence and difference is an explanation of the impact on antagonistic relations to the discursive system. The purpose of the logic equivalence is that construct 'equal identities' which stand against a particular a discursive system (Howarth, and Stavrakakis 2000: 16). Andersen describes that there is positive correlation between the potentiality of compatibility of elements and the articulation of equivalence between elements (Andersen 2003:60). Laclau and Mouffe explain that relation of equivalence avert the closure that mean 'specificity of each position should be dissolved'. Hence, logic of equivalence undermines the disparity of moments by obtaining 'the floating character of an elements'. The context is given a 'second meaning' through logic of equivalence (Laclau and Mouffe, 1985). If it has differential identities for elements, the hegemonic articulation could equalize the positive determinations. The process of equivalence is constructed within a particular discourse. However, Laclau and Mouffe mention the captivating of all positive determination against a specific discursive system not a construction of a 'system of positive differential position' in terms of negative relation (Laclau and Mouffe, 1985).

On contrary to logic of equivalence which is construct the 'antagonistic poles', the logic of difference explains the process which enervate the 'antagonistic polarity'. In other words, logic of differences expand the system of differences by integrating the 'disarticulated elements into an expanding order' (Howarth and Stavrakakis, 2000). Laclau and Mouffe allude that in logic of difference means the 'breaking the system of equivalence' through transforming objective differences by relocating the antagonism in the system (Laclau and Mouffe, 1985).

The discourse analysis on 'Green consumption'

The significance of the term 'green' is determined by the particular social context which creates and uses it. Yannis Stavrakakis (1997) argues that the 'Green ideology is the certain political project which origin in the Western politics. In reference to R. Eckersly (1992), Stavrakakis reports that the 'Green' symbolizes the new political force which opposes technocratic environmentalism that is the reliance on technology alone to address environmental degradation (Stavrakakis, 1997). John Dryzek (1997) demonstrates the environmental discourses as the deliberation of environmental policies and politics (Dryzek, 1997). Since 1970s, environmental activists turned more towards the radical sides of the environmental movements. The foundation of the 'Greenpeace movements' in 1971 was the anti-nuclear policy of the USA which was formed by a small group of activist (Greenpeace, 2011). In the context, it is clear that the 'green' is a socially constructed meaning rather than a neutral signification.

The term 'green' can also be analyzed as an empty signifier. The absence of totality in the discourse is due the equivalences and differences causing a systemic effect of uncertainty. Therefore, because of the lack of clarity and the widespread use of the term, the given meanings for 'green' are different from context to context. For example, political parties bestow the 'green' as title to the party names such as 'green party' (many countries in the Europe) or 'green democrats (Hungary).

With reference to the Carolyn Merchant study on the Green Politics (1992), Stavrakakis explains clearly that Green Parties agendas and manifestations are concerned more with grassroots democracy, social justice, non-violence, decentralization, community based economies than actual environmental topics (Stavrakakis, 1997).

There was 'order of discourse' before 1980s that refers to the social space between the green discourse and the discourse of consumption. These different discourses in the same realm attempt to constitute or establish the meaning in late 1980s. An important factor is the merging of the two discourses; green discourse and discourse of consumption. Rita Turner (2010) notes 'green' as the as the components of the discourse of consumption (Turner, 2010). In late 1980s, it was observed, in the ideology of green converts as the 'privileged empty signifier' or the nodal point of the discourse of consumption. Sandy Irvine (1989) indicates that if habits of buying green foods have been a long term tradition, the green consumption was popularized after the British company 'the Body Shop' won the award as 'Company of the year 1987'(Irvine, 1989). This commercial attention on the unpopular social practice was the triggering point of the start of green consumption.

The ideology of 'green' could also be a hegemonic intervention in (the discourse of consumption). As mentioned previously, the ideology of 'green' as a political slogan, which was utilized by radical environmentalists and political parties, have transformed it into market and business discourses. Here, the 'green' was in the field of discursivity in relation to the discourse of consumption. If there were groups practicing green consumption, they were not noted as green consumers, nor were they considered to be as significant as the actual green consumers in the discourse, because discourse of consumption was not a response to the 'green' ideology.
These practices could capture the new positional meaning of the social context through hegemonic intervention by applying market strategies and media propaga-

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tion. According to the discourse analysis, the nodal point 'green' explains internal elements as internal moments in the discourse of consumption. This articulation determines meanings for the pre-existing and currently existing elements in market and economic context. The market strategies such as product, price, promotion, and distribution (Encyclopedia of Business, 2011) obtained new meaning by being applied with the nodal point 'green'. As the discourse theory argues, the society is never complete and the meaning of institutions, relations and subjects tend to be change. Accordingly, the consumption as the process of the identity formation and subjectivity, the human relation with commodities is restructured based on the new nodal point of that particular moment (Mansvelt and Robbins, 2011). This is can be identified as the partly fixation of meaning.

The green consumption configured as dominant material representation of a linguistic sign (Turner, 2010). Moreover, Turner argues that the term 'life style' for green consumption defines through market and political propagation. The social practices such as buying "green" products and how to be a "Green Shopper" are the new trends of the green discourse (Turner, 2010). The material representation is determined through labeling the products as a green and shops using the color 'green' to identify products and attract 'green' customers. These trends are evident in many of German supermarkets and 'bio-food' is growing in popularity amongst German consumers which is represented clearly high demand for such products. Organic foods are classified as merit foods, which refers to the quality of production rather than the aggregate demand in market (Mann, 2003). The conceptualization of green-foods in a society, such as Germany is changing the common sense about consumption of the society.

The position of the consumer is directly related to green consumption. Lowering consumption, recycling, reusing, and consuming green foods are all examples of this form (Mansvelt and Robbins. 2011), and could divide and label consumers as either an environmentally friendly or not. These divisions could indirectly moderate consumer practices or consumption patterns of people who are not involved in green consumption. In the discourse of consumption, people are acquiring meaning as consumers. Though, these consumers are not homogenous groups, because of cultural practices, historical tradition and social behaviors. However, these different identities are integrated by the weakening of their internal differences, and transform into green consumers. According to the logic equivalence, this process requires hegemonic intervention. As Maar-ten Hajer (1995) mentions, there would be discourse coalition which consist of 'the story line' that produces another narration and actors who reveal this to resist the existing hegemonic discourse (Hajer 1995 in Bøgelund, 2007). The mass media, social and market agents which stand for green consumption as the actor of this hegemonic intervention use media propagation and advertisements as the technology to produce the 'story line' and therefore provide the intervention which leads to change.

Conclusion

According to this discourse analysis, it can be argued that rational individuals cannot be observed in the discourse of consumption. The consumers' preferences are moderated by the hegemonic discourse. If mainstream economic literatures analyzed the rational choice theory, consumers' transitive preferences and maximization of utility do not exist outside of the discourses. The external truth cannot be existed; all meanings are acquiring meanings within the discourse. However, social agents are not stationary, nor can they be permanently fixed. The meanings of social agents are the origin of discourses. Thus, a green consumer in one discourse can be a harmful practitioner against environment in another. These internal paradoxes can be observed in green consumption through the discourse analysis. Also, voluntary engagements of consumers in consumer practices cannot be occur. In contrast, the consumer's behaviors are controlled by the hegemonic discourse. The tastes, preferences, perceptions are the socially constructed. The consumer culture, consumer ethics, and consumer values within green consumerism is configured by the discourse. In brief, the rational individual consumer, according to mainstream economic studies, does not exist in the discourse analysis and there is no normative configuration of individual behavior in green consumption.

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Looking back dOCUMENTA 13 - a new experience for urban gardening and an organic agriculture life style

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Every five years an art exhibition is held in a city called Kassel, in Germany, which lasts for one hundred days. This art exhibition, of specifically modern and contemporary art, is called dOCUMENTA and the thirteenth edition takes place this year. The first dOCUMENTA was held in 1955 and was the creation of artist Arnold Bode. The director of Documenta 13 is Carolyn Christov-Bakargiev who states that dOCUMENTA (13) is "dedicated to artistic research and forms of imagination that explore commitment, matter, things, embodiment, and active living in connection with, yet not subordinated to, theory. These are terrains where politics are inseparable from a sensual, energetic, and worldly alliance between current research in various scientific and artistic fields and other knowledges, both ancient and contemporary."

To try and articulate this there are several different venues dotted around Kassel. The Fridericianum and Documenta Halle are central locations where the main exhibitions are shown but there are also exhibits shown in the Neue Gallerie and Ottoneum. Interestingly there are also many exhibits which are outdoors in the Karlsaue park.

Kassel is situated in the centre of Germany but one would not assume that Kassel is a city at the centre of the art world in the five years which pass between each dOCUMENTA edition. The city was heavily bombed by the Royal Air Force during the Second World War which gives the city its somewhat planned and functional lay out. This has lead visitors to Kassel to comment on how ugly and grey the city is, especially when compared to the city of Göttingen which lies just north and was more or less untouched by bombs. However, when the dOCUMENTA begins Kassel transforms. Now the whole of Kassel literally becomes a museum and art exhibition. With a population of approximately 200,000 people there is a distinct shift in the people who frequent Kassel when dOCUMENTA begins. The restaurants are fuller and the bars are busier.

When walking around the outside art installations there is the obvious cosmopolitan feel to the event with multiple languages being spoken by the hordes of art enthusiasts which carry the thick green dOCUMENTA guide book. Their enthusiasm for dOCUMENTA can not help but rub off on the locals.

The theme this year is the "may be". It "reflects the fact that knowledge are difficult to express and hard to pin down, and that art and artistic research often avoid any form of stable meaning". Thus this dOCUMENTA (13) "indicates the impossibility of reducing art—and any other complex form of knowledge—to a single explanation, question, subject matter, or paradigm". A further theme which is tied up in the dOCUMENTA (13) intricacies is agriculture and urban gardening.

Organic Agriculture as a new trend…

Organic agriculture has become popular in the whole Europe, especially in Germany. Therefore a major role in dOCUMENTA was allocated for organic agriculture and urban gardening as a pattern of life. While dOCUMENTA mainly focuses on historical and contemporary arts, there is a clear focus on the how green consumption of people in day to day life can be embedded in art. Organic agriculture is an old tradition in small scale farming, with environmentally friendly farming styles used to gather their harvest. However, fertilizer companies and multinational GM (genetically modified) companies involved the agricultural sector into chemical oriented and GM agricultural patterns. However, new trends have arisen. Many social groups and research groups stand against this agricultural tradition which is environmentally unfriendly, unhealthy to humans and destroys diversity by monoculture. Organic agriculture in the German context fulfils its definition. Included is: a localisation of the agricultural system, the empowerment of rural or small scale farmers, the protection of bio-diversity in agriculture and the use of organic fertilizer for growing vegetables. The Federal Ministry of Food, Agriculture and Consumer Protection in Germany introduced the concept of har-

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Photo credit: Peter Wassenaar

Photo credit: Sisira Withanachchi

Figure 1: The Urban Garden and Tea Hut

Photo credit: Sisira Withanachchi

Figure 2: The Urban Garden and Tea Hut

mony with nature as the guiding principle of organic farming. It aims to promote sustainability through soil conservation, water conservation, species conservation and welfare-oriented animal husbandry.

And And And -Urban Gardening and Tea Hut

At dOCUMENTA (13), the group of global artists who are dedicated to the organic agriculture movement are called And And And of which they introduce their cultural impression of promoting organic agriculture and urban farming. The aim at dOCUMENTA of them was to amalgamate agriculture with culture and art. Their slogan at dOCUMENTA (13) was "fair food instead of fast food". Among their open and experimental public programmes at dOCUMENTA (13) was their organisation of a natural and healthy tea drinking stall. This And And And stall makes clear that the first aim of this programme is to convey the necessity of introduce a consumption system based on herbal and natural tea. Moreover, there is the aim to promote organic farming system and consumption patterns which do not harm nature. People could drink four varieties of herbal tea at the "Tea Hut" (Figure 1).

The herbal tea was prepared with a mixture of Anis+Calendula+Mint, Rose+Black Tea+Anis, Calendula+Cammilla+Mint and Calendula+Mint+Cola.

All of the ingredients were taken from their garden in front of the "Tea Hut". The lesson of the programme is to create awareness among people about the possibilities to prepare their own tea from their garden. Also in the garden was an example of urban gardening towers (Figure 2). The towers are made up of organic content such as degraded leaves, natural fertilizers, sand and soil.

These towers allow vegetables and fruit to be grown in a limited space and are an example of a cultivation system which is suitable for highly urbanised areas where there is no space for planting or farming.

Figure 3: small organic shop in the Orangerie Park

Organic small scale agriculture-Networking between farmers and consumers

The next area of interests concerning agriculture was a small organic shop in the Orangerie Park (Figure 3). The shop was a hive of activity, with many customers. The shop contained the organic food products of small scale farm production in Kassel. Customers could buy dairy products, verities of fresh fruits including strawberry, berries, cherries, small apples, grapes, red currants, fresh vegetables including cucumber, radishes, and varieties of tomatoes. There were also sandwiches, pastries, and cheese rolls available. Ms. Patricia Nuegart was working at the shop on the day of our visit and said:

"This shop is installed by a group called And,And,And to show the strength of small scale farmers in food production. This is a self service shop where people can buy products from the Kassel region. Today we have cherries which come from farmers in Witzenhausen. The cost of production is included in the price which goes to the farmer and a small slice going to the And And And organisation.

The urban gardens which are located next to the shop belong to the Claire Pentecost Association. The group combines with And And And. The aim of the urban gardens is to demonstrate how fruit and vegetables can be grown in urban areas with little space. The tower takes up only a small area on the ground and is built vertically. You can also see these urban gardens near to the Herbal Tea shop".

One customer in the shop who had a particle interest in urban gardening and consuming organic products was Ms. Barbara Mumm (Figure 4) from Blücherstraße in Kassel. In her opinion urban farming was getting popular in Kassel and other parts of Germany.

Figure 4: The talk with Ms. Barbara Mumm

Ms. Mumm was part of an urban gardening project where 33 members contribute to an urban gardening commune which based on organic methods of agriculture. She said young people are especially enthusiastic in joining this urban garden cultivation. Moreover, she also said that this urban garden acts as a playground for children who could roam around the garden. This meant they could learn about bio food culture from an early age. In her opinion, people would like to buy or grow organic vegetables, organic fruits and dairy products

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rather than buy foods which were grown using chemical fertilizers. Obviously, organic food production is can quite expensive for some families. However, in the long run organic foods can benefit consumers through good health and the producers like small scale farmers who are able to keep growing food organically. In some instances, consumers can buy their foods at home because farmers visit residential areas with their products on a weekly basis. This highlights the fact that food is locally sourced meaning that carbon emissions are low in this food production chain.

Overall, the urban gardening and organic farming aspect adds value to the dOCUMENTA (13) experience because it highlights different forms of life through the arts with a clear message of the value of a sustainable model of food consumption and the support of small scale local farms, rather than the current system of multinational companies dominating agricultural systems.

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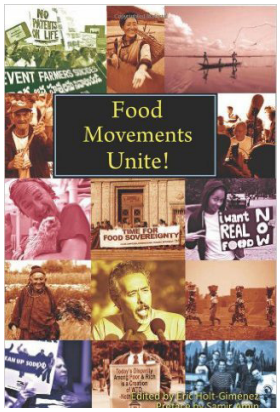

Food Movements Unite!

A review by Nimisha Bastedo

Editors: Eric Holt Giménez
Publisher: Food First Books
Published year: 2011
ISBN: 0935028382
Length: 372 pages

In the face of precarious food prices, monolithic industrial agri-business, and an ever uncertain climate, it is books like Food Movements Unite! that build a web of hope to hold on to. In the words of the book's editor, Eric Holt-Giménez, "another food system is possible."

How do the roles of consumers, food producers, activists, and policy makers fit together to bring concepts like food sovereignty and agroecology to life? How do food movements tie in to human rights, climate justice, and feminist movements? What are the toughest roadblocks and what will be the drivers of change? Through a diverse collection of voices, this timely book shines a light on these vital questions. Each contribution explores a different aspect of our globalized food systems, tying together the experiences of farmers' networks in West Africa, immigrant restaurant workers in the United States, fair trade activists in Spain, landless rural workers in Brazil and many more.

Each perspective digs deeply into the problems inherent in our current food system. The book tackles the dominating neo-iberal approach to feeding the world, exposing how it crams a whole lot of power and wealth into a very small portion of the world's piggy banks. We see the consequences of the boundless deregulation of markets, privatization of common resources and growth of transnational corporate monopolies. Food Movements Unite! makes it blatantly clear that this system does not work.

Representatives of the world's largest peasant movements tell of small-scale farmers who find their local markets flooded with cheap imported goods, or who are trapped in a cycle of dependence on the companies that supply their genetically modified seeds and specialized chemical fertilizers. Founders of workers rights coalitions explain how the status quo also fails to bring decent livelihoods to the employees of big industrial farms or the kitchen workers in popular restaurant chains. Other community and health organizations describe how the system doesn't even work for consumers, who run into health problems from eating all the over- processed chemical-laden foods that line grocery store shelves.

It is time for a major transformation in how the world fills its 7 billion stomachs. "The reality is too urgent, and the outlook far to bleak to settle for anything less", says Brian Tokar from the Institute for Social Ecology in his chapter on climate justice and food sovereignty.

The power of Food Movements Unite! is that it allows us to understand not only the scope and complexity of the problem, but also the breadth and diversity of solutions. The contributors aim to forge a new path, away from the plethora of over-simplified or false solutions that lull us into inaction. The book exposes the hypocrisy of green consumerism, denouncing companies like Coca-cola and Walmart who are pouring millions of dollars each year into disguising business-as-usual with advertisements that have an environmental focus.

The book also explores the limitations of certification labels such as 'organic', 'local' and 'fair trade', and deconstructs the concept of 'voting with your fork' as a universal solution. Josh Viertel of Slow Food USA explains how these foods may simply not be as environmentally and socially friendly as they make out to be. As these product lines enter the mainstream and attract larger corporate participation, standards are slipping into the hands of Northern market-centric certification agencies that mute the voices of smallholders

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and activists. One label can also hide the lack of another. An organic banana for example, could have been harvested by an underpaid plantation worker. A local tomato might have been grown in an energy intensive greenhouse and sprayed with pesticides. Viertel also makes it clear that while we should all try to eat food that reflects our values, many people do not have this option. We cannot simply advocate the power of consumer choice, when so many people do not physically or financially have access to more sustainable, healthy options.

A common thread throughout the book is that in order to create real change in our food systems, the actions and choices of individuals must be accompanied by a structural overturn that empowers producers, communities and consumers to control their own food systems.

The book takes the reader beyond the "reformist" response to the food crisis – the kind of 'solutions' that still follow rules of the corporate food regime – towards what Holt-Giménez calls "the progressive" and "radical" food movements, that embrace principles like food justice and above all, food sovereignty.

Food sovereignty is introduced in the opening pages of the book as defined in the Nyéleni Declaration, the outcome document of the 2007 world food sovereignty conference in: "Food Sovereignty is the right of peoples to healthy and culturally appropriate food, produced through ecologically sound, and sustainable methods and their right to define their own food and agriculture systems."

The book shows how food sovereignty is gaining momentum, from its origins with the radical peasant movement, la Via Campesina, to how it is now beginning to enter United Nations debates through forums like the UN Committee on World Food Security. The concept takes on new dimensions as each organization articulates it in its own terms. Hearing from climate justice activists, and feminist movements like the World March of Women, we learn how reworking our food system ties into gender equality, economic stability and climate change mitigation. And we begin to see how all these pieces need to come together in order to make change happen.

Although the book lacks representation from the fisheries sector, and leans heavily on examples from the U.S., it is still remarkably thorough. It would have been impossible to represent the voices of all those working and depending on food systems. The contributors in the book are only telling a sampling of stories, but they provide hopeful windows into the vast number and diversity of people, organizations, and global movements that are working towards more sustainable and just food systems.

This is the power of Food Movements Unite! It will feed the determination of farm-workers campaigning for their rights; it will inform the decisions of NGO's that want to help communities who can't bring healthy food to the table, and it will help consumers understand their role and the impact of their choices.

We all have to eat. It is something that links all humans together and ties us to the Earth. Food Movements Unite! shows us how this simple fact turns food into a driver of many of the world's problems, but also gives it the potential to be a driver of many solutions.

To quote the title of one of the chapters, "Now's the time to make it happen." Nora Mckeon is the coordinator of Terranuova, an exchange and advocacy program for African and European farmers' organizations. She writes: "There are cracks in the corporate armour, people's food sovereignty movements have never been stronger, and there's a new global forum [the United Nations Commission on World Food Security] in which their experiences can be brought to bear." All the dots are lining up, and pointing towards significant change.

Food Movements Unite! is a call to link conscious shoppers with restaurant workers, activists with educators, farmers and fisherfolk with community gardeners, policy makers with grocery store owners.

Rosalinda Guillén, from the grassroots organization Community to Community, explains that if this movement is going to work, we have to go beyond trying to make small dents in the same old structure. We must "move out of that box", she says, "and think as human beings of our own personal dignity, and the dignity of our communities, in a deeper, transformative way". Food Movements Unite! builds the power to break free from that box and find unity in this growing "meshwork" of food movements.

Information about the author:

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Manifesto on the Future of Food

A review by Sisira S Withanachchi

Author: The International Commission on the Future of Food and Agriculture
Publisher: The International Commission on the Future of Food and Agriculture
Published year: 2003

The International Commission on the Future of Food and Agriculture (2003): Manifesto on the Future of Food. San Rossore, Italy: ICFFA. Available online at: *http://commissionecibo.arsia.toscana.it/U serFiles/File/ Commiss%20Intern%20Futu ro%20Cibo/cibo_ing.pdf*

The International Commission on the Future of Food and Agriculture published the Manifesto on the Future of Food as the synergy of the participants who gathered in Tuscany, Italy in 2002 and early 2003. This manifesto stands to strengthen sustainable agriculture, food sovereignty, biodiversity and agricultural diversity with localizing the power of decision making on food production and consumption pattern according to the interests of local people.

The first part of the manifesto with the heading of "Failure of the Industrialised Agricultural Model" discusses the negative consequences of the industrialised food production in the globalised market system. In the Manifesto's own terms, this force is identified as a corporate controlled, technology-based, monoculture and export-oriented system of agriculture (ICFFA 2003:3) which promotes pseudo assumptions for resolving the global problems which are related to food such eradicating hunger and malnutrition on a large scale.

The Manifesto criticises the situation as the reason for growing hunger, landlessness and the immiseration of farmers which should be addressed on a global scale with food and hunger programmes. Furthermore, it is analysed how the global governance of the world food trade system controls farmers' and consumers' rights. For instance, WTO trade principles which support free trade as binding regulation among member countries never allow either sustainable environmental policy or realistic poverty alleviation in poor countries. The only support given is for export-oriented mass production which drags small scale farmers into poverty which transfers onto countries a vulnerable future and environmental pollution as a result of the long distance trade of food production (food miles) (ICFFA 2003:4).

The second section "Principles toward an ecologically and socially sustainable agriculture and food system" elaborates 16 principles which the Manifesto emphasises towards a socially sustainable agriculture and food system. In these principles, it is manifestly urged to consider access to food as a fundamental human right and the production of adequate food for the maintenance of human lives with respect to food sovereignty for every community. Moreover, diversity in agricultural production in the small-scale farming mechanism is proposed as a main principle against globalised and homogenised farming practices. Within those progressive ideas, localisation of decision-making by local farmers according to their agricultural preferences and consumption limitation is highly emphasised with greater attention to a non-corporative and a more decentralized and democratic food governing system. Especially, modern-day popular food technologies such as genetic modification of seeds, synthetic pesticides and fertilizer, and food irradiation are rejected concerning public health and food safety (ICFFA 2003:5). The intellectual property rights and commercial patents of multinational companies over food and local medicine violate local people's long term traditions. Local people are losing their own rights on their own foods and agricultural materials. Also, big multinational companies in the agricultural sector attempt and accomplish to creation of a monopoly over seeds and foods. The Manifesto urges from national and international governance bodies the eradication

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of these monopolies behind the commercial patenting. The Manifesto would support the principle of subsidiarity which will affect local-self reliance and long term food security. On the other hand, this will support the alleviation of the environmental pollution because of long distance food exports. However, it is clearly pointed out that the manifesto is not in opposition to trade. It wants to establish fair, voluntary and sustainable trade system based on the standards of communities without international accords where outsiders can control the trade regulation in favour of multi-national trading companies.

The third section, "Living Alternatives to Industrial Agriculture", illustrates some social movements which stand for organising society towards a community friendly food and farming system. The aim of the section is to highlight the practical examples that are already in existence in the real context. The Landless Workers' Movement (MST) in Brazil organises landless farmers who endure rural poverty to capture 15 million acres of land all over Brazil. They established about 3000 communities with new socioeconomic settlements with schools and local businesses under the democratisation of access to the lands. The second social programme is the Grammen's Microcredit programme which was introduced by Professor Nobel laureate Muhammad Yunus in Bangladesh (ICFFA 2003:8-9). This programme allows poor people who are denied being

given credit by conventional banks to access credit for improving local business. In the other examples, the Manifesto points out "Buy Local" campaigns as a community-supported agriculture movement which links local farmers and consumers in EU countries and USA. Furthermore, local stakeholders' progressive activities such as in Brazil Belo Horisonte local government's constitutional implementation for food and citizenship right, Indian dairy cooperative societies who collaborate for fair prices in a fair trade system and moreover disallowing non-family farming so as to encourage family owning farming in nine states and two Pennsylvania townships in USA. On the national scale, some governments in Europe such as Denmark, Austria, Switzerland and Germany are encouraging and initiating organic farming. In the international scale, the Convention on Biological Diversity and the Cartagena Protocol on Biosafesty empowers stakeholders including states to protect seed diversity and regional food specialties of local people.

In the fourth section "Trade Rules to Achieve the Aims of the International Commission on the Future of Food and Agriculture" presents seven revisions which would be advocated for directing the World Trade Organisation (WTO) towards a fair and sustainable trading system which would facilitate the empowerment of the localisation process of food production and sustain small scale farmers. Recommendations include: permitting tariffs and import quotas that favour subsidiarity, reverse the present rules on intellectual property and patenting and recognise and eliminate the adverse effects of WTO market access rules which would directly address the fundamental changes of the WTO current base of regulations (ICFFA 2003:13-14). However, the paradoxical situation is that while the Manifesto has criticised international intervention over the governance of the voluntary and fair trade system, these recommendations accept the WTO as the international body for the governance of the world trading system without moving towards alternative institutionalisation. Also, some of the recommendations do not align with the WTO structure. Those are corresponding with national level policy implementation without any international policy mediation. For instance, they promote redistributive land reform in national matters which should be dealt with inside the national and local policy setting. Land reform is a factor which directly affects national sovereignty in the international political discourse.

In conclusion, the Manifesto can be recommended as a crucial international contribution. It argues that to achieve and maintain a sustainable and equitable economic system which will directly empower local communities with food security and food sovereignty while respecting local knowledge and practice of agriculture, there must be the establishment of democracy in the trading and decision making process which would orientate inwards towards a localisation of governance.

Information about the author:

Sisira S. Withanachchi is a researcher at the University of Kassel, Germany.

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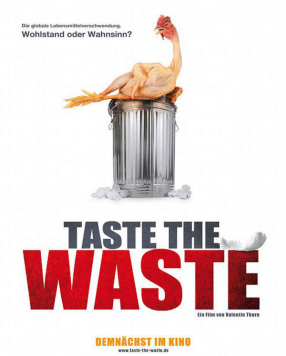

Taste the Waste

A review by Eva Krapohl

Director: Valentin Thurn
Production year: 2011
Lenght - 92 Minutes

For someone who cannot bear to see food being thrown away, watching this film is torturous. It is, however, worth while at any rate. "With the food we throw away in Europe and North America, all the hungry people in the world could be fed three times over." Interviewing protagonists along the supply chain around the globe, "Taste the Waste" offers an informative yet inspiring view on the drawbacks of conspicuous consumerism.

In a lengthy discourse the film reveals how oodles of food are thrown away, and with them all expenses contributed along the supply chain. A disgusting picture of overabudance arises. This perverse "wastefulness" is contextualised by exploration of the link between the surplus on one end and privation on the other end of the supply chain. Arguably, the most shocking about this economy is that it is lucrative. The disposition of large amounts of food is more profitable than exploiting/utilising goods as much as possible.

Examining the vast discrepancy between commercial selection criteria grade and quality of nutrition, the film challenges the sensibility of current consumer standards of waste/food. After all, it is consumer choice that dictates commercial grade. Contrasting commercial quality set by retailers with nutritional quality, the documentary encourages a cutting short of the chain between agriculture/farmers and households/ end-consumers. Among those individuals defying the trend of escalating consumer friskiness and

governmental over-regulation of food standards, are two German dumpster divers whose nutrition (almost) exclusively consists of still edible food stuffs disposed by supermarkets; a French food bank that feeds discarded commercial food to the needy; an Italian Slow Food convention which serves a meal to patrons created entirely from remnant ingredients; and a French baker who started recycling remnant bakery goods as fuel for his oven thereby evading food waste producing climate affecting gases such as methane. Viewing these pragmatic activists adds an upbeat tone to this grim topic. However, arguably, as smartly observed by one of the dumpster divers, many of these initiatives may be seen as an alternative product of the "food system" rather than a solution to it.

"Taste the Waste" nicely illustrates the paradox and perversion which is characteristic of many global issues that arise from large-scale commercial interests which trump/ defeat local living and well-being. Eluding narration by letting interviewees' voices tell the story, the documentary manages to inform without being supercilious. Although the film reveals a ghastly imbalance between superabundance and deprivation and the complete turning upside down of the notion of food and waste, with its pragmatic approach it offers the opportunity for the necessary discourse that comes before change.

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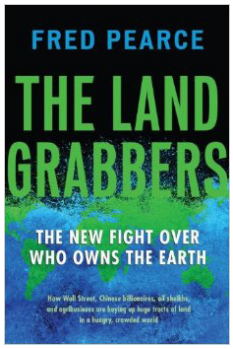

The Landgrabbers

A review by Sören Köpke

Author: Fred Pearce
Publisher: Beacon Press
Published year: 2013
ISBN: 978-0807003411
Length: 336 pages

Fred Pearce is an environmental journalist well-known for his thoroughly researched works. This is also the main characteristic of his newest effort, "The Landgrabbers". Pearce's research on the global phenomenon of large-scale land acquisition, dubbed "Landgrabbing" by its critics, takes him on a journey from the wheat fields of the Ukraine to the rubber tree plantations of post-war Liberia, from the vast wilderness of Patagonia to the chaco of Paraguay. It is a huge advantage of Pearce's research that he puts the phenomenon in perspective and does not confine his focus to Africa – a continent which is nevertheless in the centre of international investment activities and rightfully takes up greater parts of the book.

Pearce makes out the important drivers of the global landrush: financial speculation has inflated food commodity prices which means rising profits are to be made from agricultural production. The growing appetite for animal protein in the most successful developing countries also has an impact – for example on the continuing soy boom. And there are always indications of the competition between food production and agricultural production of non-food commodities. Agrofuels such as bio-ethanol made from sugarcane play a huge part in the new scramble for land. Other renewable resources are equally in demand: cut flowers, rubber, timber, and pulp. Finally, even conservationists and their efforts to protect endangered species and their habitats make up part of the global landgrab that alienates local populations and deprives them of their livelihoods.

Fred Pearce's work provides a remarkable piece of solid reporting. He goes out to see these processes for himself, talks to parties involved and does his homework on their backgrounds. Pondering intentions and practices, Pearce never withholds moral judgement, but in a distinctive manner. He is careful to analyse facts and numbers. For instance, he does away with the myths of China as a landgrabbing monster, which has been painted by some media; in reality, a lot of the reported Chinese land deals fell through.

"The Landgrabbers" is a book about actors. It likes to tell their stories, more often than not narratives of adventurous, often megalomanic business practices. It reports delusions and failures, dangers and conflicts that come with large-scale foreign investment in land; after all, land is closely tied to human culture and identity, to knowledge about the environment, and always to political and economic power. Sometimes Pearce loses himself in the curiosity of his stories, in the kind of oddities that journalists (and readers) love so much. His account is weakest when he reverts to shear name dropping, giving names and numbers of acquisitions that do not mean much to the reader. It is strongest when he reconnects current trends to older histories of colonialism, imperialism and intervention. Maps in the beginning of each chapter, which mostly covers one region or country, are a good feature, but some graphs and tables would have helped to visualise the numbers given in the text.

With "The Landgrabbers", Fred Pearce has created a very readable account of an urgent issue. It's major problem might be that its outdated soon, since players in the international land acquisition game change more rapidly than underlying structures. Nevertheless it will be a good starting point for many readers and is thus highly recommended.

Information about the author:

Sören Köpke is a researcher at the TU Braunschweig, Germany.

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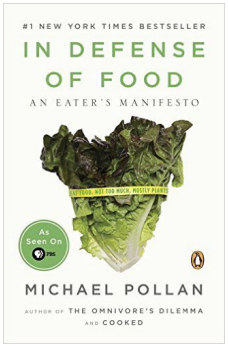

In Defence of Food: An Eater's Manifesto

A review by Sally Yip

Author: Michael Pollan
Publisher: Penguin Books
Published year: 2009
ISBN: 978-0143114963
Length: 256 pages

Food is a simple four-letter word. It is also a crucial part of life in which we consume to survive on a daily basis. Before you take every bite of your breakfast, lunch or dinner, have you ever wonder how food on your plate is made?

With our ever-increasing busy work and family schedules, many people overlook what they are actually consuming as food. In the book of "In Defence of Food: An Eater's Manifesto", Michael Pollan opens up the world of food industry and the Western diet to allow consumers to rethink what type of food they are purchasing and eating from their local supermarkets in reality. Instead of understanding the science of all the processed food readily available, Pollan wants people to focus on and learn from our eating traditions in the past. This means we should look into the old-fashioned ways of consuming food which our great-grandparents or ancestors would have practiced. He suggests that we should "eat food. Not too much, but mostly plants" (Pollan, 2008: 1).

Pollan also outlines the problems of the Western diet. He believes the current consumption of food in America is the main factor in major health issues such as diabetes. He portraits food companies as a nation of scientific food creators that lead to the diabetes epidemic (Pollan, 2008: 61-62). One of the main leading causes of this health phenomenon is the cheap value of large quantity food, which is easily found in every supermarket of a typical American neighbourhood. He recommends purchasing food outside of

supermarkets, and suggests people should return to local markets to purchase food grown on local farms. Americans are too used to spending only a small portion on food expenditures. Pollan recommends people to spend more money and time on food. He believes families and individuals need to opt out of fast convenient food. Instead, he recommends the practice of traditional cooking like slow food movement.

Another important point described in the book is about nutritionism (Pollan, 2008: 27). We have been educated to read too much into nutrients that leads to the fountain of youth on every food label. Instead, Pollan asks us to forget about reading these nutritional information and health claims on the food packaging. In his perception, the food industry has used packaging as their marketing tool to misguide Americans into buying popular processed food products over real food since the '80s (Pollan, 2008: 36). He urges people to seek for real grown food over processed food that has been reformulated to fit on a shelf.

Overall, Pollan introduces many insightful facts for food consumers to re-examine their food diet. In terms of food science, he has brought in some new perception for the food industry. However, he does not make comparisons with the diet of the rest of the world. He focuses solely on the way American eats, which have easy access to fast food and big box chain store on every street corner. This book offers a good read and provides some useful advice for people who have a habit of purchasing processed food. Go pick up "In Defence of Food" and judge for yourself.

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