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Many human activities induce climate change. The future change in our climate could be accelerating if an escalation of CO₂ concentration in atmosphere from industrial and daily human activities fails to be controlled. The impacts of climate change are widespread and complex, and are projected to various aspects according to the timing and magnitude of change, as well as according to adaptive capacity. It is clear, however, that climate change impacts have serious implications for the livelihoods of billions of people worldwide, and pose one of the greatest challenges to development in our time. Therefore, urgent actions are required to respond on a global scale to avoid irreversible damages imposed by climate change.

Assessments of climate change impact on a variety of area and facets are the first steps toward better planning in and developing the mitigation, preservation and adaptation strategies. This proceeding compiles articles categorized in six chapters which reflect the broad spectrum and perspectives of authors in dealing with impact of climate change and developing mitigation, preservation and adaptation strategies. The first chapter comprises investigations of climate change effect on climatology and ecosystem. The chapter also offers approaches to combat the effect and provide protocols which could help in recovering environment. Chapter two assesses interrelation between water resources and land management with environment and climate change including protocols to preserve the resources. Aspects of climate change impact on urban planning and housing are presented in chapter three. In chapter four, environmental awareness is implemented in construction activities and their products such as introduction of low energy building, utilization of waste materials and possible obtaining renewable energy from non fossil fuel. Politic, economic and social issues related to climate change are dealt in chapter five. And the last chapter suggests the use of vegetation for obtaining healthy food and medicine with less impact on environment. The knowledge shared in this proceeding may contribute in our efforts to make the earth be a better place.

Solo, March 2011

The Editors
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GENDER EQUITY BASED ENVIRONMENTAL MANAGEMENT MODEL TO SUPPORT SUSTAINABLE DEVELOPMENT.

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Abstract:
This research underlines the strategies to manage the environment based on gender equity perspectives and is qualitative in nature. Data were collected using interviews and focus group discussion. The techniques of analysis employed in this research was interactive analysis. The results of this research were a model of environmental management based on gender equity perspectives. The model is called GEBEM (Gender Equity Based Environmental Management), and is intended specifically to be a strategic guidance for managing the environment of the Laweyan area by enhancing equal opportunities for both men and women to participate in and control the environmental management of the area.

Key words: environmental management, gender equity.

1. INTRODUCTION
Both Indonesian government’s and global commitments related to the increasing of women’s participation in environmental management have been strictly stated in various documentary policies. On the global scale, the World Summit on Sustainable Development in Rio de Janeiro in 1992 had resulted in Agenda 21, in which women have been considered as a group who has significant roles in achieving sustainable development. It is stated in Chapter 24 which is entitled “Global Action for Women towards Sustainable Development”. Kementerian Negara Lingkungan Hidup [9] also stated that one of the results in the World Summit on Sustainable Development held in Johannesburg – South Africa in 2002 emphasized the need for women empowerment in the environmental management.

At the national level, Undang-Undang Nomor 23/1997 states that “Every human being has the equal rights for good and healthy environment.” Further more Section 5 (3) states that “All human beings have the rights to participate in the environmental management in accordance with the prevailing law and regulations” and Section 6 (1) states that “Every human being is obliged to care for the preservation of functions of the environment and prevent and cope with the environmental pollution and damage.” The legislation shows that basically both men and women have the same rights and obligations in managing the environment in case of access, participation, control, and benefit of environmental management.

Even though the formal and constitutional legal bases have guaranteed the need of active participation of women together with men in the environmental management, the realities show that there is still limited chance for women to participate actively in the environmental management. The result of research done by Nurhaeni [11] in Kampoeng Batik Laweyan Surakarta suggested that the management of environmental pollution caused by the waste of Batik home industry had not yet been managed based on the principles of gender equity and justice. Women have not yet
given attention and opportunities to be involved in the planning, implementation, monitoring and evaluation processes. Djuangsilih [4] explains that women are susceptible towards environmental pollution. The fact that there has not yet been sufficient attention for women’s involvement in the environmental management, according to Suparno [14], is because the ongoing development approach has not yet considered the fair benefits of the development for both women and men. Goldin [5] states that gender equity and justice in every aspect is worsened by limited women’s involvement in the process of public policy making. It is related to the strong influence of patriarchal social cultural values which place men and women on different and unequal positions and roles, so that it causes the discrimination towards women to happen. On the other side, Hemmati & Gardiner [6] mentions that there are still many development policies, programs, and activities which are not gender-sensitive and they do not yet consider the differences of experiences, aspirations, and interests between men and women and not yet determine gender equity and justice as the goals of the development. Therefore, the arrangement of gender equity based environmental management model to support sustainable development, especially in case of the environmental pollution caused by the industry waste of Batik Laweyan, becomes important to implement.

This article intends to describe the Gender Equity Based Environmental Management Model to support sustainable development. The process of the model formulation persists through the competitive research done for two years, in 2008 and 2009. The model formulation was carried out through focus group discussion together with the environment stakeholders consisting of local government, higher educational institutions, NGO, businessmen and also public figures. The focus of the discussion is to formulate the components of the gender equity based environmental management model, which consists of:

1. The form of the institution/forum: is it in the form of Gender Focal Point or of Gender Mainstreaming Team Work or both?

2. The network formation and reinforcement: discussing whether it will use communal or individual network in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan, without ignoring the access, roles/participations, control, and benefit of the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan for both women and men.

3. The strategy of opening equal access, participations, control for both women and men in decreasing waste pollution caused by the batik production in Kampoeng Batik Laweyan: discussing the operational mechanism of the management of pollution which involves active roles of women together with men.

The research informants are appointed purposively and the data validity is carried out by using triangulation of the source of data. The technique of data analysis is referring to Miles & Huberman in Denzin dan Lincoln [3] which is called interactive model of analysis with three main components: data reduction, data display, and conclusion drawing.

2. DEFINITION OF GEBEM

GEBEM (Gender Equity Based Environmental Management Model) is an environmental management model based on gender equality. This model is developed to guarantee that gender equality is taken into account in environmental management, especially in case of the same access, participations, control, and benefits between women and men in the environmental management, including the processes of planning, implementation, monitoring, and evaluation.

The implementation of GEBEM is utilised to explain about:

a. An equal access for women to participate optimally together with men in the planning, implementation, monitoring,
and evaluation of the policy of managing environmental pollution;

b. The women’s equal participations to men in the processes of planning, implementation, monitoring, and evaluation of the policy of managing environmental pollution;

c. The improvement of women’s control together with men in the processes of planning, implementation, monitoring, and evaluation of the policy of managing environmental pollution.

d. The existence of warranty for women to obtain equal benefits to men’s in managing environmental pollution.

Hence, by using “GEBEM” model: (1) gender sensitivity is integrated in the environmental management; (2) the collective learning mechanism through a network among stakeholders which is relevant with gender and life management by placing egalitarian values will take place. By implementing this model it is expected that gender equity based environmental management will be realized so that it can support the sustainable development with some indicators including: (a) sustainability of the environment; (b) sustainability of economy; (c) social sustainability and (d) sustainability of technology.

3. THE ANALYSIS OF ROLES OF STAKEHOLDERS

Parties who are responsible for the warranty of gender equality in managing pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan are all elements of stakeholders, including the local government (Office of Environment; Office of Society Empowerment, Women Empowerment, Children Protection and Family Planning; Board of Regional Planning), higher educational institutions, (Center for Gender Studies; Center for Environmental Study), the society (Environmental Forum of Laweyan Society; Religious figures & Public figures; Institution of the Empowerment of Village Society; Gender and Environment Observers), cultural observers, NGO, Group of The Empowerment and Prosperity of Families, and private companies and businessmen.

4. INSTITUTIONALIZATION ON THE GEBEM MODEL

One of the main components supporting the effectiveness of GEBEM model implementation is the existence of institution or forum which is responsible to ascertain that women and men have equal access, participations, control, and benefits in the environmental management. The institution/forum can be in the form of an individual called Gender Focal Point or a group called Gender Mainstreaming Team Work in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan. Membership representation in the team work is striven to the maximum extend in order that there will be a balance between women’s and men’s participation.

Gender Focal Point are people comprehending the justice and equality of gender and the environment, who have sensitivity to take roles as initiators, advocates, dynamists in integrating the justice and equality of gender to the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan. The duties of Gender Focal Point are:

a. Promoting gender mainstreaming in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan.

b. Arranging the work plans of management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan with gender perspective.

c. Doing training, socialization, advocacy of gender mainstreaming to all the environment stakeholders in the area of Kampoeng Batik Laweyan.

d. Reporting the implementation of gender mainstreaming in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan to the
institutions handling the environmental management.

e. Encouraging the realization of gender analysis on the policies, programs, and activities of management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan.

d. Formulating recommendations of policy related to the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan to the government.

e. Arranging plans for actions of gender mainstreaming in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan.

The members of Gender Focal Point are appointed by the local society. Gender Focal Point of gender equity based environmental management consists of people living in the Laweyan territory who are doing activities related to the management of batik production. The carrying out of the Focal Point duties of gender equity based environmental management is coordinated by coordinators from the Forum of Laweyan Society Concerned with Gender Equity Based Environment who are experts in the duties of women empowerment. Focal Point of gender equity based environmental management are chosen and appointed by Focal Point of Gender Equity Based Environment. The carrying out of the Focal Point duties in the gender equity based environmental management is coordinated by the officials who are experts in managing the environment.

The Gender Mainstreaming Team Work are people joined in a group of and comprehending about gender. The main duties of the Gender Mainstreaming Team Work are:

a. Promoting and facilitating the mainstreaming of gender in the management of pollution to the environment stakeholders.

b. Doing socialization and advocacy of gender mainstreaming in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan to all the stakeholders and to the components of local society.

c. Arranging the work plans of the implementation of gender mainstreaming in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan.

d. Formulating recommendations of policy related to the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan to the government.

The Gender Mainstreaming Team Work in the management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan works to represent balanced memberships between women and men.

5. NETWORK AMONG STAKEHOLDERS AS A STRATEGIC ALLIANCE

Networking approach examines the relational and informational aspects in the policy making. Tulloch in Parsons [12] and Blackburn [2] explains that network is used for two things. First, as a verb, to network means making contacts to get profit. The second meaning is derived from the language of computer technology, which means connected computers.

Network is a very important component in building strategic alliance among various
interest groups in realizing environmental management which is gender responsive. Through the network the process of collective learning among stakeholders can be done because in networking the process of togetherness to listen to each other occurs. Network can be done functionally giving importance to participations, relevance and pragmatism. It can also be done institutionally giving importance to the membership, coordination, and formality.

By using network there will occur the processes of exchanging of informations, sharing of experiences, supporting each other for the campaigns and issues of collective concern, developing the same collective commitment in issues of equality and justice of gender. Building network is very important and needed to solve several limitation, which exist in individuals, groups, and organization. Riege and Linsey [13] mentions that network is the realization of working partnership which needs to be constructed so that the organization can divide the work effectively and efficiently in reaching the goals. Partnership can be interwoven among organizations, whether it is government organization or social organizations in the local, national, regional, and international levels. Working network is also a manifestation of public participations.

There are three basic principles in networking. They are; (1) social equality and justice; (2) democracy and public participation; (3) sustainable development. In the efforts to reinforce and legitimize the already-built network, it needs to rise principles of appreciating and trusting each other, transparent accountability, feedback process, mutual understanding of context and issues which are the focus of struggle, the attitude of being open to each other for the collective learning among fellow, and also long-term commitment to keep building co-operation.

With the network building, hence the cooperation relationship among institutions involved in it can be improved because they learn from each experience, improve communication, maximize the use of the existing resources owned by each institution, and assess together each of the institutional structure of which institution involves to ascertain that the involved institutions have the same vision and mission about the fought issues which are issues of environment and issues of gender equality and justice.

In networking, a clash often happens or that the same working relationship cannot run smoothly because each party defends different interests. There are three patterns of relationship which can be interwoven between government institutions and stakeholders. They are associative, parallel, and conclusive relational patterns. In the associative relational pattern (a very close relationship, supporting each other in implementing policies and programs), stakeholders are often considered as the government’s agents. In the parallel relational pattern, there is an equal relationship between the government and other involved institutions, dependent on each other in financing events; supporting, influencing, and changing/correcting each other, among the involved institutions the process of mutual learning and equal positions with team work pattern take place. In the conclusive relational pattern, there happens the relationship of distancing each other, independent and there is opposition, it is characteristically corrective and opposing. In the context of gender equity based environmental management, the pattern of relationship seen as ideal is the associative and parallel ones.

In the context of environmental management, the network relational pattern can be used as a medium for collective learning through discussion among stakeholders related to issues of environmental pollution so that there is a collective analysis about the best alternative in the environmental problem solution without ignoring the active involvement of women and men; thus eventually there is a decrease in environmental pollution. Therefore, the formation and reinforcement of network which are done communally and
individual in the environmental management caused by batik manufacture in the area of Kampoeng Batik Laweyan is expected to be able to guarantee the equal access, roles/participations, control and also benefits of management of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan between women and men.

6. STRATEGY TO GUARANTEE GENDER EQUITY AND EQUALITY IN ENVIRONMENTAL MANAGEMENT

The main strategy to guarantee gender equity and equality in decreasing pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan can be done by three ways. The first strategy is affirmative action which is chosen to guarantee the representation of women in the planning, implementation, monitoring, and evaluation of the management program of pollution caused by batik manufacture in the area of Kampoeng Batik Laweyan. Affirmative action needs to be accompanied by regulations which have legal power in which the regulations need to firmly draw up the representation of women at least 30% in the environmental management so that they can speak out their aspirations effectively.

The second strategy is the gender mainstreaming, in which women’s involvement in the environmental management needs to be integrated in the mechanism of development planning starts from the low level to the top. Therefore, there is a warranty that environmental development plan really takes into account the active involvement of women and men. This development planning needs support by providing responsive budget, for: 1). fulfillment of women-specific needs, 2). fulfillment of common needs which pays attention to the differences between women’s and men’s needs, 3). fulfillment of needs for affirmative action in pursuing the progress for one of the sexes, 4). fulfillment of needs for the institutional reinforcement which fights for gender justice and equality in the environmental management.

The third strategy is capacity building, which whether towards individual as focal point or towards team work is totally needed, especially for comprehending environmental problems and its solutions by integrating gender perspective. In addition, it needs community empowerment, especially for women so that they will have capability to make the best decisions for themselves and for their environment in environmental management. The approach can use Sara Longwe’s model in Nurhaeni [11], in which women empowerment includes five dimensions: prosperity, access, awareness, participation, and control dimensions. These five dimensions are done dynamically, synergically, reinforcingly, and completely. The higher the hierarchy, the higher the empowerment. Capacity building can be done by training on the techniques of arranging responsive gender programs/activities. Bappenas [1] and Kementerian Lingkungan Hidup [7] & [8] mentions that one of the ways to undertake capacity building is by Gender Analysis Pathway (GAP). By using this technique, women are trained to analyze the gender responsiveness on the running policies, identify the separated data based on sex, search for causal factors of gender gap, reformulate gender responsive policies, arrange plans for gender responsive actions and arrange indicators of gender responsive work performance.

7. CONCLUSIONS

GEBEM model is an environmental management model on the basis of gender equality in supporting sustainable development. This model is developed to guarantee the equal access, participations and control of both women and men in the environmental management so that both women and men can obtain equal benefits from environmental management. All the elements endorsing the interests, whether it is of the government, public, or private parties, are responsible to guarantee gender equity in the environmental management. The main components supporting the effectiveness of implementation of GEBEM model are the institutionalization or forum in the form of gender focal point or gender mainstreaming team work in the
environmental management, network as the power in building strategic alliance for realization of the gender responsive environmental management, affirmative action to guarantee certain representation of women with regulations which have legal power, integration of gender perspectives in the environmental management through gender mainstreaming, and capacity building, both on individual as focal point and on team work, especially for comprehending environmental problems and its solutions by integrating gender perspectives.

8. RECOMMENDATION

In realizing gender equity based environmental management to support sustainable development several steps should be undertaken including: (1) intensively socialize the model to all environmental stakeholders from the local level (area of Kampoeng Batik Laweyan) to the subdistrict area of Laweyan and to the city of Surakarta; (2) develop capacity building about gender mainstreaming in the management of polution caused by batik manufacture in the area of Kampoeng Batik Laweyan by involving all environment stakeholders from the local level (area of Kampoeng Batik Laweyan) to the subdistrict area of Laweyan and to the city of Surakarta; and (3) advocate institutions which are responsible for managing polution caused by batik manufacture in the area of Kampoeng Batik Laweyan to result in the regulations in the form of affirmative action which is able to guarantee the representation of women 30% at the minimum in the management of polution caused by batik manufacture in the area of Kampoeng Batik Laweyan.

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