

# The Implementation of Ethical Concepts Toward Waste in the Design of Farms and the Cultivation of Ducks in Mojokerto

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**Abstract-** Location of the design object located in Mojokerto Regency, the selection of this location is based on many ducks and the area has a type of duck that has been known in Indonesia namely the duck Mojokerto. In this area, there are problems with the environment caused by the pollution of livestock waste in the region, especially the pollution of rivers that cross the area. Through the application of the ethical concept of waste on livestock planning and processing, duck is a container and a solution to develop the potential of ducks and provide solutions to the environmental problems that cause it. Application. The ethical concept of waste on this design object, as a solution for the development and handling of the problems in this region. The ethical concept of waste is implemented by adjusting the design needs with the environmental problems posed so that the design object optimizes livestock waste potential and environmental potential. Adjustment of needs and problems in this environment is intended as an ethical in object design.



Fig. 1. Concept diagram of the ethical concept of waste [1]

**Keywords—** *etiquette; waste; design; livestock; processing; ducks*

## I. INTRODUCTION

Data about ducks that are scattered in Indonesia, one of which is located in the area of Mojokerto district of Mojokerto Regency. The duck farm in the Mojokerto subdistrict of Mojokerto District is a majority located in the village of Modopuro, wherefrom the livestock they produce two mainstay products namely duck laying and broiler. The flagship product that is produced is certainly through the process of livestock that is not easy and not short. The livestock process, obtained during this time still has problems or weaknesses that need to be completed. The problem is categorized into two namely: internal (in the process of livestock) and external (impact caused by livestock).

Based on the existing data shows the conditions in the planning area that have problems of pollution or pollution caused by the farm, especially in the waters in the river to fight. Mentioned the Brantas River in East Java which also

passes through the design area, it has been contaminated by the estradiol-17  $\beta$  compounds, a hormone commonly produced by the female and human animals. The hormone enters the waters through urine and or feces which can subsequently enter the aquatic environment [4]. A study also showed that one of the problems of the farm in the district Mojokerto is the cleanliness of the cage [2], then this can also result in the environment of the region. This condition which is behind the selection of locations located in Mojokerto Regency by using an environment-based approach and appropriate technology.

Further, based on the influence of the implementation of the method of livestock, and based on external problems and internal farm exposed, then it needs a design that is able to provide solutions. The resulting design aims to provide farms and processing centers that support productivity. Solutions applied to the center of farms and processing by applying the concept of "ethics to waste" in response to the implementation of livestock systems and processing and environmental issues.

## II. LITERATURE

Broadly, there are 2 methods of livestock, traditional and modern. Reviewed from the production rate of a feed that is relatively low or traditional, ranging from 100-150 grains per year is different from the intensively maintained ducks that are able to produce 250 more per year. A considerable comparison of the results of the production of duck farms, making farmers emphasize the farm intensively to advance the ducks that are still less competitive with other animal farmers [3]. The process of raising ducks has 3 basic objectives that produce duck eggs, duck meat, and duck breeding. There are a few steps in the book by H. Rahmat Rukmanan "The Complete Guide for the Duck cattle and broiler in intensive", in raising ducks ranging from before and when grazed, namely:

Based on the appropriate type of ducks selected Mojokerto local laying to be developed. There are several requirements and livestock stages that must be considered, among others:

- Location, expected to be away from the hustle and bustle because ducks are sensitive to noise disturbance
- Availability of marketing access and location
- Cage role protects from any weather
- Protects against predators
- Easy to supervised

- Temperature approximately 39 degrees Celsius
- Humidity 60-65%
- Age-based laying:  
 Dealing with waste is a serious problem, but it is underestimated that some people will have an impact on health and potentially neglected. Because this limbah problem requires a discussion of potential and problem solving to be provided space or place of processing in this design.

As the problem of farmers in general, caused by sewage waste that causes air pollution and also pollutes the waters with estradiol-17  $\beta$  compounds, a hormone commonly produced by the female and human animals. These impurities require special handling to respond. One of them by making waste (dirt) duck into compost and biogas.

The waste that can be utilized from the processing of ducks is ducks. The benefits that can be gained from this duck waste can be processed into the raw material of duck back. The content of these ducks has high protein and amino acids. Several stages of processing as livestock feed, as follows:

1. Feather cooked at a specific temperature and time
2. Dried
3. Milled finely and ready to be consumed cattle.

In the process of processing fur as livestock food, certainly requires specific sterilization and temperature which will be responded to by the relevant design approach, which then spawned a suitable concept.

The concept applied is "ethical against waste". Principles of concept adjusting to the main problem to be among the principles emphasized are related to Control of Energy matters (become Energy production), Urban responses (become Water and waste) and the principle obtained from the study Islamic is a formation of space.

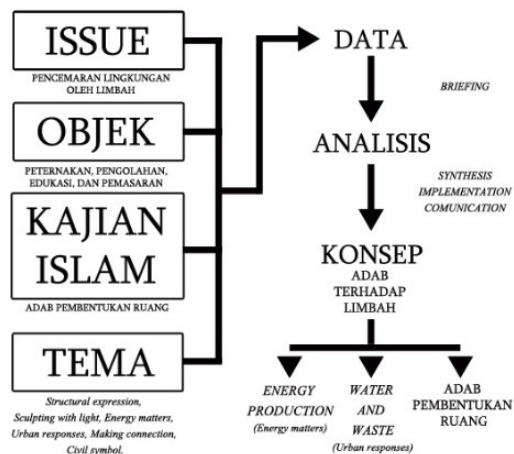


Fig. 2. Plot Diagram of livestock and duck processing planning concept in Mojokerto [1]

### III. METHODS

The analytical techniques that researchers will use in the analysis process, especially at the site analysis stage, is a linear analysis technique known as the "B-A-S-I-C" or

"Briefing-Analysis-Synthesis-Implementation-Communication" process.

- Data collection called a "data briefing" process, conducted by searching literature readings in books, journals, field data, or Suber on the Internet.
- "Analysis data" process, analyzed for researchers to know how to respond to issues or problems that occur according to data, the process is done so that the design can adapt to the environment or its filter in accordance with one Eco-Tech principle mentioned.
- The "synthesis data" process, which is done through an alternative description of analysis by providing alternative issues addressing solutions with a theme approach.
- The "Implementation Data" stage, at this stage, the results of the synthesis will also be explained in more detail, ranging from the form of the solution provided, place the solution on the draft (site analysis, form, structure, and Utilita).
- "Communication data" stage, which is to conclude the results of analysis and obtained the concept of Adab on waste in accordance with the planning of livestock and duck processing area in Mojokerto.

### IV. RESULTS

The answers to the design object requirements can be described in the following table [1]:

TABLE I  
 The answers to the design object requirements

Requirements	Design Results
Location away from the crowd	The separation between livestock function and the processing of the public Area, especially the most crowded Area. So that the main location is private and further away from the crowded center
Marketing Access	Access marketing as special public access, hence the provision of access to the marketing period is conditioned near the center of the crowd
Adjustments to climate	Application of temperature setting technology in the time of the farm and the use of a sandwich panel system on the wall as temperature and noise control
Protection against other animals	The application of closed and open systems on farms, as full control of the activity of the ducks from outside conditions
Ease of supervision	Placing a certain point of breeder's resting place as a required surveillance system

Requirements	Design Results
Temperature control	Use of sensor systems in livestock
Moisture control	The use of plastic slatted floor technology as the floor of the farm that is under the moisture problem cage
Age-based zoning	Separate zoning division as easiness to manage the farm management according to the Age of ducks

In the design method has been explained, that the design of the house and Duck processing in Mojokerto has 3 parameters of forming a concept, such parameters are water and waste, energy production, and ethics formation space. The application form of the resulting concept is:

1. Water and waste

- Use of vines on the side of the pedestrian area.

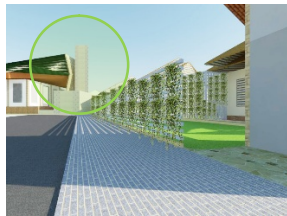


Fig. 3. Images of vines in the pedestrian Area [1]

In this implementation as an application of the principle of the ethical concept of waste that is the principle of water and waste as a contribution to the cleanliness of air pollution around.

- Application of closed drains

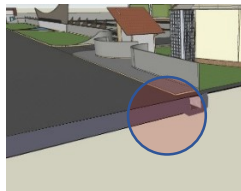


Fig. 4. Application of closed drains [1]

The application of closed water lines on the image following the principle of water and waste, as water handling is not well conditioned so as not to interfere with the user.

- Application of water-absorbent material

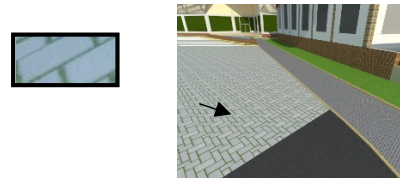


Fig. 5. Application of water-absorbent material [1]

Application of paving material as a material solution that absorbs rainwater effectively, and provides the convenience of using emulation. In this application following the principle of water and waste on the concept.

- A spread of vegetation and ponds at a certain point in the pedestrian circulation area

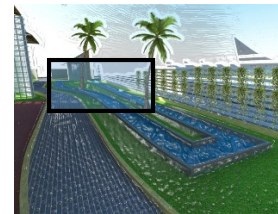


Fig. 6. A spread of vegetation and ponds at a certain point in the pedestrian circulation area [1]

Combination of steering and vines vegetation and pond as temperature reducer, air filter, and temperature controller, so that the user becomes comfortable. In this application refers to the principle of water and waste and ethical space formation.

- Air pollution filtering

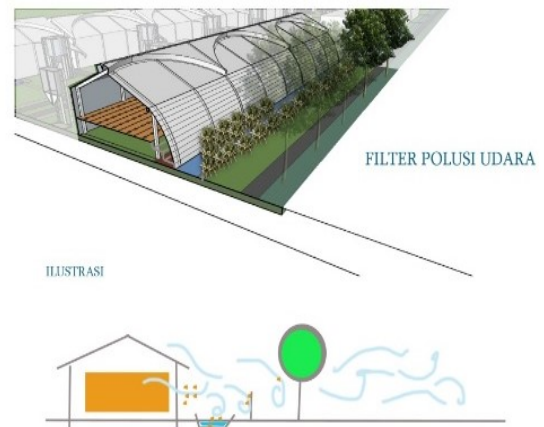


Fig. 7. Air Pollutant filter simulation combination of shady vegetation [1]

The application of water and waste positioning the shaded vegetation in the outer area of the site and near the main building about 10 meters to dampen noise and air pollution caused by farm animals. In conclusion, this farm and processing application principles of the concept, namely water, and waste. Air pollution arising can be well-conditioned so as not to cause odor and also as a filter of the sound of livestock (from within) and activities around (from the outside), to give each other comfort outside and in objects.

The convenience provided is intended as well as the application of the principle of the formation of space.

**2. Energy Production**

- Local material usage



Fig. 8. Expose Material Bricks [1]

The use of brick material is an application of the principle of energy production because it is a local technology that is easy in development and financing and according to the local climate.



Fig. 9. Linear setup on main function design [1]

The application of time-setting linear dominates on the main building is an application of the principle of energy production, to make activities on the object takes place efficiently because it affects the circulation.

- Biogas Utility on farms

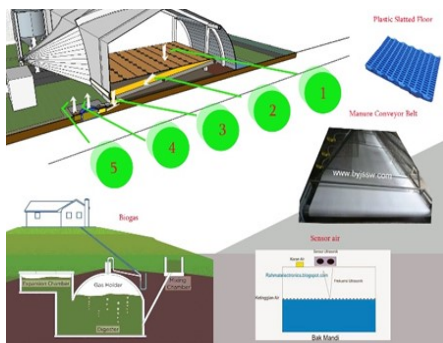
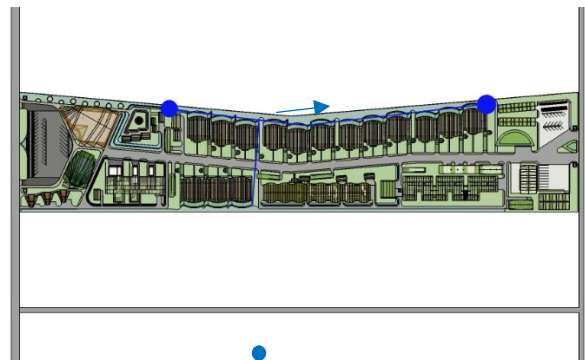


Fig. 10. Biogas Utility flow on farms [1]

The flow of the sewage treatment process with biogas digester is an application of water and waste principle, how this implementation answered the basic problem of livestock waste pollution. Processing of livestock waste is carried out automatically, with the flow of technology use of material Lantai plastic slatted floor has the advantage of easy to clean and hollow so that the dirt is falling and received by Manure conveyor belt that automatically directs to the biogas degester to occur automated processes therein. The flow of processing is also expected to meet the criteria of energy production principle because in the process of processing the biogas itself is mechanically conditioned.

The use of biogas in the design object is focused on building processing and marketing (restaurant) as the principle application of energy production, thereby reducing the cost of production. How to use this biogas by attaching suitable pipes and associated with biogas Degester in series, then distributed to the time of the building in need. So it can be efficient in sustainable energy use.

- River water management utility System



River water and Pond management point  
 Circulation of water usage on objects

Fig. 11. Water Treatment Utilities Flow [1]

On the design object using the two sources of water utilized the first of the groundwater and the second from the river water, the result of the above draft is the flow of water from the river that is utilized on the site for special needs management Duck Farms. This implementation as an application of the conceptual principles of energy production design by utilizing potential sites that have a water source that can be managed, to save energy on its management.

**3. Adab forming**

- Incoming access

Site is the result of the design there are 2 access is Access Manager in the North (private) and visitor access to the South (non-private). In most of its access using a single-way path system facilitates easy vehicle entry and exit of the site.



Fig. 12. Visitor and manager Access placements [1]

- [3] Ketaren, P P dkk, *Produktivitas Itik Silang MA di Ciawi dan Cirebon*, 2000.
- [4] I Syamsuri, *Pencemaran oleh Estradiol-17β Di Sungai Brantas Dapat Menimbulkan Feminisasi Organisme Perairan. Seminar Nasional MIPA 2006*. 2006.

This application as applications of Adab spatial formation because it specializes in private and non-private access areas and also energy production concerning the efficiency of vehicle access flow movement.

#### V. CONCLUSION

The planning of the livestock and duck processing area in Mojokerto is a center of livestock and processing which is functioning as a place for the production of duck farms which is cooperation in the surrounding area and served as a processing Main products and is enabled for waste treatment areas. The next function in this design is as a place for marketing of products that have been ready to consume and still raw, but it is enabled for the place of education and gathering place of residents of the surrounding area.

In the application of ethical concepts to waste on this design, it is hoped to provide examples that inspire similar objects to deliver sustainable and more environmentally friendly technology in response to existing problems. In the planning, it responds to the problem of livestock waste so that it becomes a higher value and reduces the negative impact caused.

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