

## SPATIAL REGIONAL LAND ALLOCATION FOR LIVESTOCK DEVELOPMENT

Ashari, E. Juarini, Sumanto, B. Wibowo<sup>1</sup>

### ABSTRACT

Land allocation of livestock development in the regional spatial planning is not clearly described. This condition promotes unfavorable consideration for setting planning strategy for the future development. This paper aimed to give more information on land allocation based on the actual development. Spatial land allocation for livestock in Indonesia, is basically consisted of two patterns, namely integrated and special land allocations. The existing traditional livestock husbandry is generally classified under the first pattern, which are the most predominant systems. Animal as a component of farming systems, managed as side line or secondary enterprises under various agroecosystems or as a component of ecosystem. The second pattern consists of two, namely pastoral and livestock enterprise area (LEA) which is known as *kunak* (*kawasan usaha peternakan*). The pastoral area classified into communal pasture and mini ranch. LEA is primarily utilized as potential enterprises, differentiated into three (1) house-pen LEA known as *kunak rukan - disisi rumah ada kandang*, (2) rural LEA is known as *kunak anak desa- areal peternakan pedesaan* and (3) livestock industrial area (LIA). Understanding of livestock land allocation, is one of important strategy for the future development as part of appropriate information system for the intense spatial regional planning purposes.

Key words : Livestock, Land, Spatial allocation

### INTRODUCTION

We have competing demand for land as a result of population growth and development activities. Problems related to lands are so complex. On the other hand, the available land is limited and unevenly distributed among provinces, as is its economical potential. So we have inter regional imbalance and inequalities (gap) In economical growth, opportunity to work and opportunity to entrepreneur. More over land scarcity is ever increasing and conflicts among land users become more intense, particularly land for livestock husbandry in all provinces. In the regional planning, land allocation for livestock activities is not clearly described and understood. This condition promotes unfavorable consideration in the process of land allocation for its development.

Livestock activities as other agricultural commodities are land base subsector. Realizing that land is a basic natural resource and also in its spatial context,

the necessary space for implementation of development activities, a team of Research Institute Animal Production in a collaboration with the Directorate of Livestock Distribution and Development of the DGLS have accommodated and formulated to improve the understanding of livestock land allocation for the regional spatial planning needs, through various field observations, discussions and comments.

This paper aimed to emphasize the importance of land use allocation for livestock regional development planning on the basic essential aspects of technical and regional management, through land allocation description.

### Land Use Policy and Land Allocation for Agriculture

**Land Use Policy.** The concept of land use planning as a subsystem of spatial planning has been formulated in Government Regulation on Land Use Arrangement (Nasotion, 1996). Some important points are:

---

<sup>1</sup> Reseach Institute for Animal Production. P.O.Box 221, Bogor 16002-Indonesia

1. Land as natural resource, should be used for maximum prosperity of the people at present and in the future.
2. Land should be used in an effective and efficient manner, so as to achieve the maximum prosperity of the people.
3. Land use arrangement should be able to accommodate various development activities or locations designated according to their suitability and spatial pattern so as to minimize conflicts of interest

The framework of land use planning any use of land should also consider legal aspects of land right and ownership, the traditional property right, with special attention paid to social functions of land and provision of enough protection to less fortunate people.

While physical planning of land use is an instrument for realizing development objectives, appropriate land tenure arrangements are a prerequisite of a more equitable distribution of development opportunities.

#### Land Allocation for Agriculture.

Land use is continuously changing as a result of changes in pattern and magnitude human activities in conjunction to fulfill their needs for food, infrastructure, housing, public facilities. Java and Bali are the most densely populated islands, while population is the single most important factor in deforestation. About 200 year ago, Java covered by 80 % natural forest, then by 1990 the natural forest covered only 7 % of Java (Whitten, 1992). Ashari (1992) noted that the conversion of rice field in Java to other uses particularly infrastructure, settlement, industrial areas reached up to more than 50.000 ha/year.

In turn, land resources are needed to provide those activities as amount of land is fixed. Land scarcity is ever increasing as population increases and the land supply getting less and less elastic. This situation provokes a response (1) extensification, searching out other areas where land supply is still elastic (2) Diversification, integrating any activities into other areas have been already

allocated for certain purposes (3) Intensification with new technologies that can make land supply more elastic (4) Combination of the tree points above.

Agricultural land use in Indonesia according to Malingreau (1977) is broadly classified into as the following:

1. Cultivated area:
  - a. Sawah
  - b. Dry land: field crops, horticultural, mixed garden crops, home stead-gardens, estate crop area, pastoral area
2. Non cultivated area
  - a. Forest (protected, production, industry, and conversions).
  - b. Alang-alang, rangeland, bushes.
3. Water bodies

On that classification, livestock area is conventionally allocated as pasture (communal pasture). For the traditional backyard live stock farming systems and other new different livestock farming activities are not clearly described. More over under the land use allocation diagram of the Agency for Regional and District Planning (Diagram 1, cited from Bappeda Central Kalimantan, 1994), which is illustrated in each of the Major Data and Maps of Regional or District Development (*Peta dan Data Pokok Pembangunan Daerah*) as the guide line of land allocation, shows the same situation. No characteristics of livestock land allocation (space).

Therefore special descriptions of all the existing space (land uses) for livestock activities that already established or recently performed in different characteristics, are urgently and importantly to be formulated for the needs of near future planning development in spatial management.

#### Spatial land allocation for livestock husbandry

It is the purpose of this paper to describe the type of spatial land allocation for livestock husbandry is presently formulated in some cases by the special team of Research Institute for Animal Production in collaboration with the Directorate of Livestock Distribution and Development of the DGLS

Diagram 1. Land use allocation provided in the agency for regional planning (BAPPEDA)

Resources	Large Field	Field	Sub Field	Land Use	Status		
Land	Forestry	Protected	→	Environment	F	P	
			→	Environment	I	R	
		Production →	Industry	→ Public	X	O	
	Agriculture	Seasonal Crops	→ Wet	Rainfed Rf Irrigated Rf Swamp	E	T	
			→ Dry	Homestead Mixed Garden Field Crops Shifting Cults	D	←	
		Annual Crops →	Estate Crops	→ Large → Small		C	
		Livestock H	→ Large				U
			→ Small				L
		Fishery	→ Land	→ Land → Basin			V
	Non Agriculture	Utilization	→ Mining → Industry → Infra Structure				A
Primary Need		→ Settlement → Public Facility	←	←		T	

Remarks: In this diagram, land allocation for livestock husbandry is not clearly described

The proposed land cover or land use of spatial land allocation for livestock consists seven parts of two categories (see Diagram 2). Comments and discussion have

been made to finalize this formulation. The main two categories are integrated and special allocations. Following are the seven parts of spatial land allocation that is also called

livestock area. Livestock development is managed differently due to specific resources in different programs (intensification, diversification, extensification, and rehabilitation) under various management and scale of livestock tenure or ownership (see Diagram 3).

#### **Integrated allocation area**

Integrated means that animal or livestock takes a role as a component in farming systems or a certain ecosystem.

**Farming systems.** In this system, animals take a role as a component of estate crops, rice field, horticultural farming systems or other farming systems. Animal may be in a position of sideline or branch of the small (traditional) or medium enterprises. This is the most predominant system at present, which is not clearly described in all regional or district planning system (see Diagram 1). Livestock has an opportunity to be integrated in all agro-ecosystems (see Diagram 3).

**Certain ecosystem.** Under this system, animals take a role as a component of certain ecosystem. Our local animal has potentials as tourism commodity, such as Bali cattle, buffaloes in national parks and other local animals have potentials to promote tourism. The existence of livestock in national parks until this time has not been proportionally and professionally managed with the involvement of Livestock Serves. In a special opportunity Ashari (1997) discussed in details the role of livestock as component of national parks.

**Special allocation area.** Special means that over the space of this land, the activities of livestock farming are in a position as the major occupation of the people (group of people' or private commercial enterprises). This area consists of two specific areas, namely pastoral and livestock enterprise area (LEA) which is known as *kawasan usaha peternakan or Kunak*.

Pastoral area, consist of two different specific areas:

**Communal pasture.** This is the most conventional land allocation and the most neglected area from services (legal aspect, development, inventory, data, map systems), but this land is the most potential for village breeding particularly for large ruminant. In this area animal are managed traditionally. Conflicts of uses are more frequently occurred on this type of land use. In addition the local or regional regulations that are generally in the form of compulsory of the animal rearers to tether their animal, make the potentials of large ruminant village breeding getting less and less important and contribute in decreasing animal population. For the future the oboe services are the needs of development demand, that have to be responded.

**Mini ranch (paddock).** Examples: mini ranch in Jayapura, in Central Kalimantan (Tewah sub district).

LEA consists of three specific areas:

**House - pen LEA (*Kunak Rukan*).** House-pen means, animal is confined in a pen close to (besides) the farmer' house (*di sisi rumah ada kandang*). A number of households as units of production with those characteristics are located in a special area. This area may be facilitated with technical/commercial or social/public needs/facilities. Examples: Cibungbulang HP-LEA (based dairy farming), Bupul LEA, Muara Langon HP-LEA (Cattle farming based transmigration).

**Rural LEA (R-LEA).** This is known as *anak desa (areal peternakan pedesaan)* namely an area of one type of livestock intensification, located out of village or settlement. Examples: cattle R-LEA in Ciamis, Garut, buffalo, duck, sheep R-LEA in Brebes, Goat R-LEA in Wonosobo.

**Livestock Industrial area (LIA).** This is a type of LEA that is characterized by high capital and well-equipped investment. Examples LIA: complex of GPS, complex of feed factory, complex of computerized dairy farming or fattening, etc.

Diagram 2. Proposed spatial land use with spatial livestock allocation

Resources	Large Field	Field	Sub Field	Land Use	Status	
Land	Forestry	Protected	→	Environment	F	P
		Reserve	→	Environment	I	R
		Production →	Industry	→ Publics	X	O
	Agriculture	Seasonal Crops	→ Wet	→ Rained S → Irrigated S → Swamp	C O N V E R S I O N	C U L T U R A L
			→ Dry	→ Homestead → Mixed Garden → Crop Field → Shift.Cult		
		Annual Crops →	Estate Crop	→ Large → Small		
			→ Integrated	1.Farming System 2.Ecosystem		
		Livestock Husbandry	→ Special	→ Pasture* .3. Communal 4.Mini Ranch → LEA *, ** 5. HPLEA 6. RLEA 7. LIA		
	Fishery	→ Land	→ Land → Basin	Z	E	
	Non- Agri- culture	Utilization	→ Mining → Industry → Infra Stuctur		0	D
Primary Needs		→ Settlement → Public Facilt		N	E	

REMARKS: LEA -- livestock enterprises area known as kawasan usaha peternakan (Kunak);  
 HP LEA -- house-pen- LEA known as RUKAN (sisi rumah ada kandang);  
 R LEA - rural LEA, known as anak desa (areal peternakan pedesaan);  
 LIA - livestock industrial area, known as kinak (kawasan industri peternakan).  
 Rainted S - Raited sawah

Shift. cult - Shifting cultivation  
 Public facilt - Public facilities

- \* Allocation of livestock activities on a space of land that has already been allocated for certain uses such as sawah, estate crop areas. On a map of ecological suitability shown as Spatial Diversification
- \*\* Allocation of livestock activities on a space of land which has not been allocated for certain uses such as bush, alang-alang areas; this allocation shown on an ecological land suitability recommendation as Spatial Extensivication.

Diagram 3. Proposed Spatial Allocation For Livestock Development

Resources	Spatial Allocation	Agro Ecosystem	Program	Management	Scale
Land	Integrated *	Food Crops	Intensification	Confined And	Lradisional . Very Small . Small . Medium
		Estate Crop		Released	
		Fishery			
		Forestry			
		Forestindustry		Released + Confined	
	Special *,**	Agroindustry	Intensification	Gembala	Semi Intensive
		Coastal Land			. Small
		Ecosystem			. Medium
		Pasture **			. Large
		. Communal Mini Ranch			Tethered
	LEA *, ** . HPLEA . RLEA . LIA	Rehabilitation	Combination	Paddock	Intensive . Small . Medium . Large

Remarks : see the previous diagram

### CONCLUSIONS

1. Description of livestock farming areas is urgently needed in relation to certainty of technical, business and law force for welcoming the dynamic economic development.
2. There are seven different livestock areas (enterprises) described and proposed as part of spatial land allocation for livestock development in regional spatial planning in Indonesia.

### REFERENCES

- Ashari 1992. Prospective of Goat Husbandry under Different Agroecosystem in Java. Doctoral Thesis. University of Padjadjaran. Bandung.
- Ashari 1997. The Role of Animal Husbandry as A Component of National Parks in Indonesia. A Paper presented at The Bogor Information Meeting, carried out by Inet PC. Bogor.
- Bappeda Kalimantan Tengah 1994. Peta dan Data Pokok Pembangunan Propinsi Kalimantan Tengah. Palngkaraya.
- Malingreau, J.P. 1977. A Proposed Land Cover/Land Use Classification and Its Use with Remote Sensing Data. *The Indonesian Journal of Geography*, June 1977 pp: 5 - 27
- Menteri Negara agraria/Kepala BPN 1996. Tata Ruang Nasional dalam Perencanaan dan Pengembangan Pangan, *Seminar dan Konperensi Nasional Persatuan Insinyur Indonesia*, 8-9 Agustus di Jakarta.
- Nasoetion, L.I. 1996. Spatial Management for Economic Development in Indonesia: Land for Food Crops. Paper presented at Seminar Tata Ruang dalam Perencanaan dan pengembangan Pangan, organized by Peratuan Insinyur Indonesia (PII), 9 Agustus 1996, Jakarta,
- Whitten, A.J. 1994. Conservation of Java's Flora. In: Suherman, G. Buttler, Fuaddini, J. Pfeiffer, M. Richardson, Suhendar (eds). *Conference Proceedings. Strategies for Flora Conservation in Asia*. The Kebun Raya Bogor.