

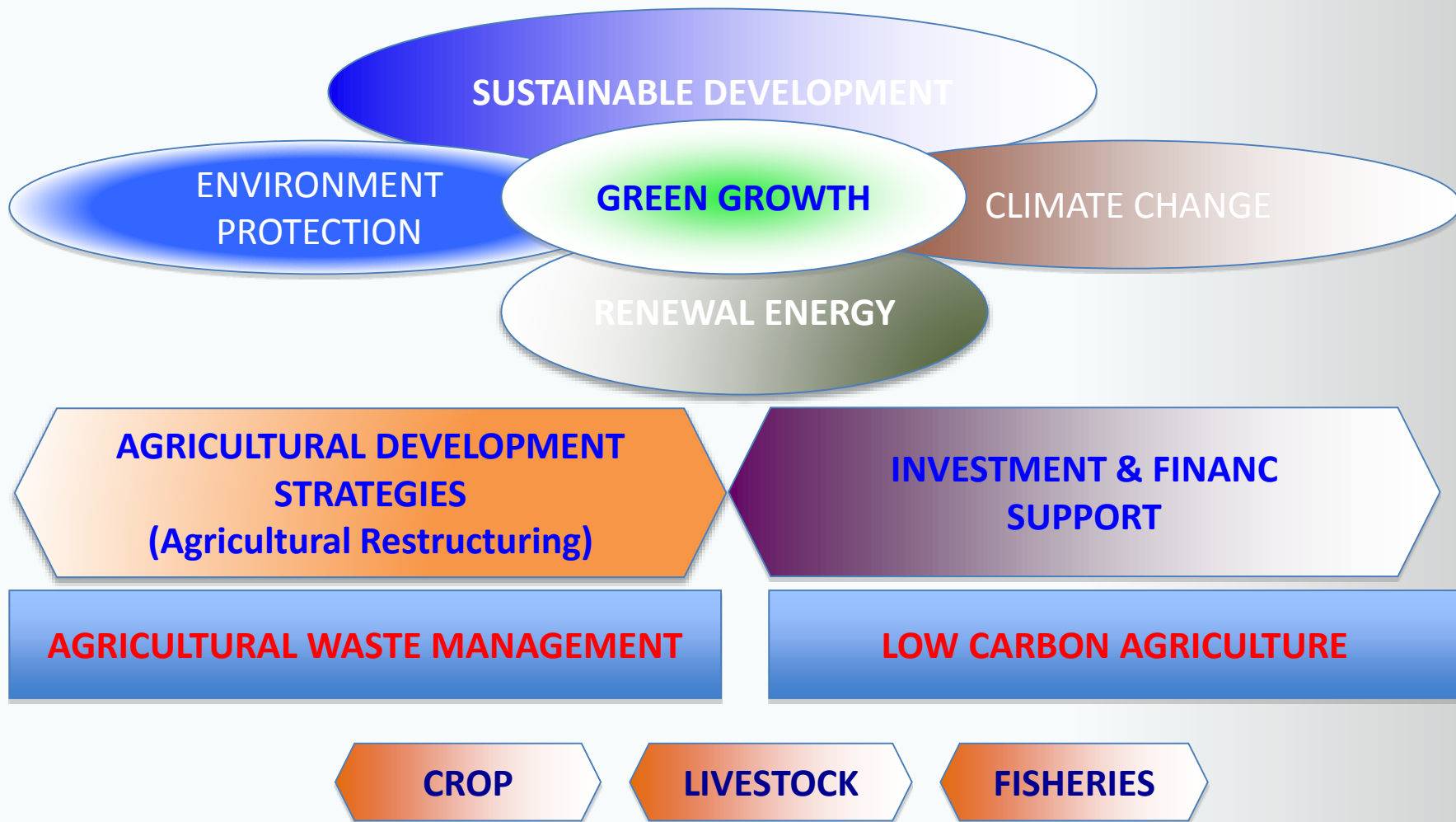
Findings on policy and institutional issues related to management of agricultural waste in Vietnam

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**REVIEW WORKSHOP OF THE CONSULTANT ACHIEVEMENT FOR THE FIRST 6 MONTHS AND WORK
PLAN FOR THE NEXT 6 MONTHS OF 2017 (LCASP L2968 – VIE)**

Ha Tinh, 13-15 July 2017



SCOPE OF POLICY STUDIES ON AGRICULTURAL WASTE MANAGEMENT AND LOW CARBON AGRICULTURE

SUSTAINABLE DEVELOPMENT

Sustainable Development Strategy for the period 2011 -2020 (Decision No. 432/QD-TTg dated 25 December 2011)

Relating to Agriculture

- Pursue **green growth, low-carbon** economic development; to economically and effectively use all resources.
- Consider **sustainable agriculture production as a priority**, promulgate policies on poverty reduction support based on the view of climate change adaptation and biodiversity conservation, apply **cultivation techniques** in order to mitigate the use of fertilizer and chemical substances in agriculture production.
- **Mitigate negative impacts** of economic activities on the environment.
- **Effective management of solid and toxic wastes.**

SUSTAINABLE DEVELOPMENT

National Action Plan on the implementation of the 2030 Agenda for sustainable development (Decision No. 622/QD-TTg dated 10 May 2017)

The Action Plan includes 17 SDGs with 115 targets covering all three dimensions of sustainability-socio-economics, and environment

Relating to Agriculture

- **Target 2.4:** To 2030 **ensuring sustainable food production** and applying **resilient production** methods to increase yield and production, sustaining ecosystems, **increasing climate change adaptability** and gradually **improving soil fertility**.
- **Target 8.4:** Implementing “**Reduce, Recycle and Reuse**” of wastes, moving towards clean technology, reusing and processing wastes, minimizing the release of wastes and environment pollution.
- **Target 12.5:** To 2030, achieving significantly evolved wastes and increasing the economic value of wastes through **prevention, reduction, re-processing, reuse and getting back the energy from waste treatment**.

ENVIRONMENT PROTECTION

Environmental protection in agricultural production

(Article 69 of Environment **Protection Law**)

1. Every entity that produces, imports, sells, uses, transports, stores, transfers, and/or processes **chemicals, pesticides, and/or veterinary medicines** must comply with environmental protection regulations and relevant regulations of law.
2. Chemicals, pesticides, and veterinary medicines with high toxicity, stability, likely to spread or agglomerate in the environment and negatively impact the environment and human health must **be registered, managed, assessed, and processed** in accordance with law.
3. **Expired** fertilizers, products for breeding environment remediation; containers of fertilizers, pesticides and veterinary medicine **must be treated** after use in accordance with waste management regulations.
4. **Every concentrated breeding zone must have an environmental protection plan** and:
 - a) Ensure environmental hygienic of the residential areas;
 - b) Collect, treat wastewater and solid wastes in accordance with waste management regulations;
 - c) Periodically clean the farms, pens to prevent, and response to epidemics;
 - d) Deal with dead animals in accordance with regulations on hazardous waste management and preventive medicine.

ENVIRONMENT PROTECTION

Environmental protection in aquaculture (Article 71 of Environment **Protection Law**)

1. Every entity that produces, imports, and/or sells **aquacultural medicines or chemicals** must comply with environmental protection regulations and relevant regulations of law.
2. Do not use aquacultural medicines or chemicals that are **expired** or not **on the list of permissible** substances in aquaculture.
3. Expired aquaculture medicines and chemicals; used containers of aquaculture medicines and chemicals, mud and feed that deposit while cleaning must be collected and treated in accordance with waste management regulations.
4. Concentrated aquaculture zones must be conformable with planning and satisfy the following requirements:
 - b) **Wastes are collected and treated** in accordance with law;
 - b) **The environment is remedied** after aquaculture is terminated;
 - c) **Environmental hygiene** condition and prevention of aquacultural epidemics are ensured; no harmful chemicals or deposits are used.
5. The concentrated aquaculture zone is not built on an alluvial ground that is forming an estuary.
6. Mangrove forests are not destroyed to serve aquaculture

ENVIRONMENT PROTECTION

Penalties for administrative violations against regulations on environmental protection

(Decree No. 155/2016/ND-CP dated 18 November 2016)

Types of violation (relating to agriculture}

- Causing environmental pollution.
- Violations against regulations on waste management.
- Violations in the fields of import of machinery, equipment, and bio-preparations.
- Violations against regulations on prevention and control of environmental pollution and degradation, and environmental emergencies.

Penalties level

- The maximum fine for a violation against regulations on environmental protection incurred by an individual is **VND 01 billion** and that incurred by an organization is **VND 02 billion**.
- Fine on discharge of wastewater exceeding the standard permits, the fine level is set depending on the volume of water discharge to range from **VND 300,000 - 500,000** for the discharge volume of below 05 m³/day (24 hours) to **VND 750,000,000 - 850,000,000** the discharge volume of 5,000 m³/day or above.

ENVIRONMENT PROTECTION

Some entities subject to environmental impact assessment

(Decree No. 18/2015/ND-CP dated February 14, 2015 on environmental protection assessment, strategic environmental assessment, environmental impact assessment and environmental protection plans)

Project	Scope	Entity required to report results of environment protection works
Construction projects for animal feed processing establishments	Capacity: at least 1.000 metric tons of products per year	All
Construction projects for livestock and poultry husbandry establishments; wild animal raising and caring establishments	Livestock and poultry husbandry area: at least 1,000 m ²	All projects for livestock and poultry husbandry establishments with at least 1,000 m ² in area of breeding facilities
Construction projects for fertilizer plants	Capacity: at least 1.000 metric tons of products per year	All
Construction projects for organic or micro-bio fertilizer plants	Capacity: at least 10.000 metric tons of products per year	All

ENVIRONMENT PROTECTION

Initial gaps in implementing Environment Protection Law

- Although **MONRE is the sole Ministry** in charge of overall implementation of the Law, the responsibilities among management authorities or among ministry to ministry have **not apparently clear**. The **coordination** among different Ministries and local governments to implement the regulations of the Law and the effectiveness of the **law enforcement**, in particular, the imposition of penalties on actions of environmental violations as defined in detail in the Degree.
- **State budget and personnel resource** were insufficient to meet the needs of increased activity load in environment protection.
- **Adverse foreign factors** like the impact of hydroelectric power plants in neighbouring countries or the import of outdated machines or products.
- The **timely issuance of relevant regulations** by Line Ministries (like MARD) is needed to avoid the gaps in applying the law in the respective sectors.

Support development mechanism for biomass power projects

Decision No: 24/2014/QD-TTg, March 24, 2014

Power sale price of grid-connected biomass power projects

- For heat and electricity cogeneration projects: The electricity Buyer will be responsible for buying entire redundant electricity capacity from heat and electricity cogeneration projects which use biomass energy with the electric price at the delivery and receipt point is **VND 1,220/kWh** (not included value-added tax, equivalent to 5.8 US cents/kWh). Electricity price is adjusted according to fluctuations of the exchange rate VND/USD.
- Lam Son Sugar Company is selling electricity to EVN at a price of **VND 1,452/kWh**
- Price of windpower electricity: **VND 1,614/kWh**



Supporting mechanism for the development of power generation projects using solid waste in Vietnam

(Decision No. 31/2014/QD-TTg on 05 May 2014)

Electricity price support for power generation projects using solid waste

The electricity buyer shall buy all power output from power generation projects using solid waste at the buying price at the electricity delivery point (with VAT excluded) as follows:

- For power generation projects by direct burning of solid waste: **VND 2,114/kWh** (equivalent to US cents 10.05/ kWh).
- For power generation projects by combustion gas collected from the solid waste landfill: VND 1,532/kWh (equivalent to 7.28 US cents/kWh).
- Thailand adopted the new policy in 2013, a FIT of Baht 4.5 (**VND 2,976**) per kWh shall be granted for the duration of 20 years **to biogas** (solid waste) power systems with a capacity smaller than 1 MW as compared to VND 2,114 per kWh given to the power generation projects by direct burning of solid waste in Vietnam.

AGRICULTURAL WASTE MANAGEMENT

Subsidy policy to increase the efficiency of household animal husbandry in the period 2015-2020

(Decision No. 50/QD-TTg dated 04 September 2014)

The Decision regulates a number of policies on subsidizing artificial insemination in animal husbandry, breeding animals, treatment of waste matter aimed at improving efficiency in farmer household animal husbandry and environmental protection.

Policy to support the treatment of waste matter in household animal husbandry

- A one-time subsidy up to 50% of the expenses for the construction of biogas work for treatment of the waste matter. A subsidy of no more than **VND 5,000,000** for a biogas plant/household.
- A one-time subsidy up to 50% of the expenses for biological bedding; subsidy of no more than **VND 5,000,000** per household.

To obtain subsidies, farmer households must meet the following requirements:

- Raising regularly at least 05 female pigs or 10 meat pigs, or 03 cattle/buffalos, or 200 breeding fowls; having demands for construction of biogas plant, or biological bedding for the treatment of waste matter certified by People's Committees of communes.
- The household should apply to install biogas plant or biological bedding to submit to the People's Committee of the commune.

AGRICULTURAL WASTE MANAGEMENT

Gaps in Subsidy policy to increase the efficiency of household animal husbandry in the period 2015-2020

- The policy support was focused only on household biogas plant construction and biological bedding for small-scale livestock production. **There is a lack of policy support to households to utilize fully the products from the livestock waste treatment** (biogas, organic fertilizer, and electricity) limiting the economic efficiency and increasing pollution threats.
- For example, farmers tend to construct the biogas plant with a size comparable to the financial support level, but in the case they increase the number of raised animals in response of good market, there will be an **overload for the biogas plant**, resulting in pollution. In the case, there is a surplus of biogas, it is normally released in the environment causing emission pollution.

AGRICULTURAL WASTE MANAGEMENT

Regulations of effluents from livestock: QCVN 62-2016

(Circular No. 04/2016/TT-BTNMT dated 29 April 2016 to define the national technical regulations, namely QCVN 62-MT:2016/BTNMT on effluents of livestock)

- Livestock effluents refer to wastewater that has been treated produced from livestock production facilities including household farms. Wastewater from domestic activities in the livestock production facilities when integrated into the treatment systems of livestock effluents is considered as livestock effluents.
- The water sources receiving livestock effluents include urban drainage systems, residential areas, industrial areas or clusters; rivers, streams, ditches, channels, ponds, lakes, lagoons, coastal sea water areas for specific purposes.
- The Circular specifies the limits of livestock effluents discharged into receiving waters C_{\max} applicable to livestock facilities with the total discharge rate of at least 5 m³ per day. C_{\max} is a multiplication of $C \times K_q \times K_f$, of which C as composition concentration in livestock effluents; K_q as receiving water factor corresponding to the flow rate of the receiving water sources; and K_f as discharge rate coefficient.

AGRICULTURAL WASTE MANAGEMENT

Regulations of effluents from livestock: QCVN 62-2016

Composition concentration (C) is applied to calculate the composition limitations in livestock effluents

No.	Parameters	Unit	Concentration (C)	
			Class A	Class B
1	pH	-	6-9	5.5-9
2	BOD ₅	mg/l	40	100
3	COD	mg/l	100	300
4	Total suspended solid (TSS)	mg/l	50	150
5	Total Nitrogen (N)	mg/l	50	150
6	Total Coliform	MPN (Most probable number) or CFU (colony forming units)/100 ml	3,000	5,000

BOD: Biochemical Oxygen Demand; COD: Chemical Oxygen Demand

Column A presents the concentration (C) of compositions of livestock effluent treated to achieve Class A prior to discharge into receiving water bodies for domestic use.

Column B, presents the concentration (C) of compositions of livestock effluent treated to achieve Class B prior to discharge into receiving water bodies serving purposes other than domestic use.

AGRICULTURAL WASTE MANAGEMENT

Effluent Standard for Pig Farm in Thailand

Parameter	Unit	Maximum Permitted Values	
		Large Farm	Small/Medium Farm
pH		5.5-9	5.5-9
Biochemical Oxygen Demand (BOD)	mg/l	60	100
Chemical Oxygen Demand (COD)	mg/l	300	400
Suspended solids (SS)	mg/l	150	200
Total Kjeldahl Nitrogen (TKN)	mg/l	120	200

Source: Dr.Chao Nokyo

Director of Inland Water Division Water Quality Management Bureau Pollution Control Department
Ministry of Natural Resources and Environment Thailand

AGRICULTURAL WASTE MANAGEMENT

Gaps in implementation of Regulations of effluents from livestock: QCVN 62-2016

- The livestock production enterprises believed that this Circular has set **very high levels of standard for the effluents** to be permitted to discharge into the environments. Actually in practice, it is very difficult to achieve such standards in almost all livestock facilities and household farms.
- In many cases, the livestock effluents **can be used as liquid fertilizers** for crops, but there is a lack of national standards for regulation of this activity, therefore the environment authority does not allow using the effluents as fertilizers
- It is necessary to revise this Circular for feasible application in practice.

AGRICULTURAL WASTE MANAGEMENT

Experiences: Incentive policies offered to large-scale livestock and poultry farms to control pollution and treat wastes in China

- Government shall **arrange land** used for large-scale livestock and poultry raising.
- The livestock and poultry farms that construct the facilities for waste management can apply for environmental protection and other relevant financial support, including **interest subsidies for pollution treatment loans**.
- The livestock and poultry farms **produce organic fertilizer** by utilizing livestock and poultry waste enjoy the relevant **preferential tax policies** and other support policies of the state.
- The state shall encourage and support the **biogas power generation**, self-generation of power for self-use, and access to surplus electricity quantity to the power grid by utilizing livestock and poultry wastes. The livestock and poultry farms, which generate power by biogas by utilizing livestock and poultry wastes, shall enjoy the preferential policies **on the grid purchase prices**.
- Where the pollutant discharge by any livestock and poultry complies **with the pollutant discharge standards**, these farms be offered the relevant financial support for environmental protection and for livestock and poultry raising.

Source: Zhen Zhong (2015) Regulation on the Prevention and Control of Pollution from Large-scale Breeding of Livestock and Poultry

Incentive policies for enterprises investing in agriculture and rural areas

Degree No. 210/2013/ND-CP dated 19 December 2013

Land use support

For project of special investment incentives, **land use fees are exempted**. For project of investment incentives, land use fees are reduced by 70% and for project of investment encouragement, land use fees are reduced by 50%. Incentives in land use rent are also provided.

Financial support

- For raising livestock, the support ranged from from **VND 2-5 billion/project** for building infrastructure on power, water, factories, waste treatment and equipment procurement, depending on the scale of livestock raising. The condition is to use at least 30 percent of local laborers.
- For producing, preserving and processing agricultural, forestry and fishery products, the maximum support level is **VND 5 billion/project** to build infrastructures. The conditions are to use use 60% and 30% of raw materials and laborers, respectively from local zones.
- Support the expense of training in the country, marketing, trade fair, research to develop new technologies.

Gaps in implementation of incentive policies for enterprises investing in agriculture and rural areas

According to MARD, the largest obstacles are land issues and administrative formalities. To obtain the government support, the enterprises should complete 16 steps in formalities.

- There was a **financial gap** as after three years to implement this Decree, there were 64 projects accepted for the government support of VND 380 billion, but to date, the budget actually released was VND 280 billion.
- For **land use**, it is important to commit the assurance of avoiding the change of land granted to enterprises due to the occasional change in land use planning of the authorities. The enterprises in many cases do not need financial support but institutional support.
- The conditions that the processed products must double the values over the raw materials and the investors must use **60% of raw materials and 30% of laborers** from local zones are not feasible.

There is a need to revise the Degree, focusing on opening the knots, including **land consolidation, reducing risk factors through ensuring long-term land use, production insurance, marketing development and support for enterprise start-up.**

Findings in the field study in provinces (South and Central Region)

(The field study was conducted by LIC consultants in March and May 2017)

Current situation

Positive aspects

- Coffee bean husks are utilized to produce fertilizer.
- Sugarcane company produces electricity from using bagasse.
- Satisfactory waste management at the fisheries processing plant.
- Satisfactory waste management at medium and large scale dairy farms.
- Available technology to build large-scale biogas plant (HDPE material).
- Private companies did invest on generator for biogas (although the limited number).
- Some farmers applied biological bedding or small generator for biogas (limited).
- Using microorganisms to treat waste in the shrimp pond.

Findings in the field study in provinces (South and Central Region)

Obstacles

- Difficulties remain in waste treatment from pig and from fisheries ponds (waste deposit in the pond bottom), for poultry and ruminant livestock, difficulties are lesser.
- Release of surplus biogas or slurry after biogas in the environment is popular, causing pollution. Biogas wastewater in most cases is not well treated due to lack of proper stabilized ponds.
- Satisfactory waste management in large dairy cow farms, except there is a surplus of biogas which is not utilized to generate electricity but released in environment.
- In a large poultry farm, biological bedding is effective to treat waste, and waste is collected to sell as manure.
- A few companies produce organic fertilizers at large-scale, but in general there is a low investment for organic fertilizer production, lack of technology standard, and quality control for organic fertilizer. Most companies are very small with low-tech facilities.
- Traditional ways of composting are popular at household or farm levels.

Findings in the field study in provinces (South and Central Region)

Proposed Solutions

- Incentive policy for developing value chains in agricultural waste management at various scale (small, medium, large) to integrate multiple functions in the chain (the first step is to integrate production of organic fertilizer - biogas - electricity in one plant).
- Incentive policy for production of biogas and biomass electricity.
- Incentive policy for production and use of organic fertilizers along with the issuance the relevant technology regulations.
- Filling technology gaps: biogas generator, manure separator, stabilized treatment ponds, treatment of waste deposited on the bottom of fisheries raising pond.
- Incentive policy to scale-up promising and established technologies and invest on R&D for new technologies.

Commercial Production of Organic Fertilizer



Small scale (Eakmak Center, Dac Lac)



Medium scale (Dong Phu Com. Binh Phuoc)



Large scale (Thien Sinh Com. Binh Duong)



Photo by BBB

Generator Using Biogas



Manufacturing workshop (Hoang Lan, HCM City)



Small generator at household (Ben Tre)



Medium generator with H₂S filter (Thanh Phu Com. Binh Dinh)



Photo by BBB

Medium scale biogas



Mr. Hoai Farm Soc Trang



Tinh Toan Com. Ha Tinh



Hop Luc Cooperative Ha Tinh



Binh Minh Breeding Farm Dong Nai

Waste treatment of shrimp pond (Cam Duong Cooperative, Ha Tinh)



Microorganisms used to treat waste



Stabilized pond



Wastewater after treatment flowing in the canal

Photo by BBB

Waste management in a medium scale dairy farm (Vinamilk Farm, Binh Dinh)



Automatic solid waste collector



Manure separator



Manure separated



Wastewater going to the biogas

Waste management in a large scale dairy farm (TH True Milk Farm Nghe An)



Manure separator



Wastewater pond



Wastewater cleaning system



Sao river receiving wastewater after cleaning

Photo by BBB

Some initial proposals in policies for agricultural waste management

Policies to be revised

- Decree 202/2013 on Fertilizer Management (under preparation by Government authority).
- Circular 04/2016 on QCVN 62-2016 for Regulations of effluents from livestock.
- Degree No. 210/2013 on Incentive policies for enterprises investing in agriculture and rural areas (under preparation by Government authority).
- Decree No. 55/2015 on Credit policy for agricultural and rural development.
- Reviewing/updating VietGAP in livestock production.

Policies to be formulated

- Guidelines for construction of wastewater treatment systems using biogas in pig farm.
- Guidelines for using livestock effluents as organic liquid fertilizers.
- Guidelines for construction of medium and large biogas plant.
- Incentive Policy for waste management in large-scale livestock and poultry farm.
- Decree on development and certification of organic agriculture – National Standards.
- Incentives Policies for production and use of organic fertilizer.
- Regulations and standards of microorganisms used in bio-fertilizer.

Organic Agriculture Legislation

Countries with a national standard but without a national legislation 2015

Region

Asia and Pacific Region (9)

Bahrein

Bhutan

Brunei

Hong Kong

Kuwait

Laos

Oman

Qatar

Vietnam

Source: Survey by Carolin Möller and Beate Huber, October 2015

Organic Agriculture Act of 2010

The Philippines is looking at a competitive organic agriculture industry with the government's deeper commitment to organic farming support especially in terms of organic certification and research, development and extension.

Malaysian Organic Certificate



2003-2012

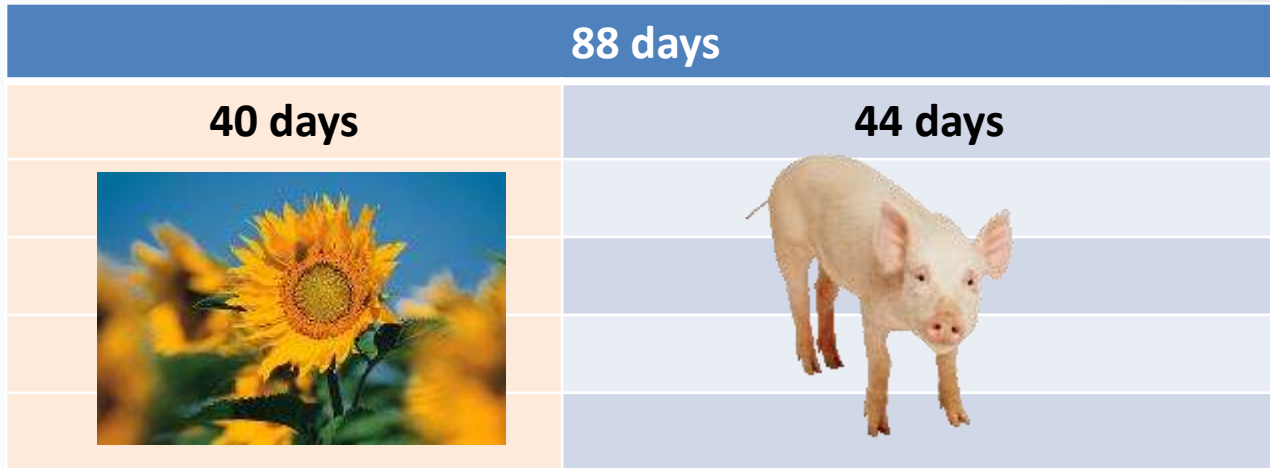


2013-2014



2015

Work Roadmap – Inter. Policy and Institutional Specialist



- Day 29: Submitted Draft Report No. 1.
- Day 40: Submitted Presentation Paper for LIC Meeting on 14 July 2017 in Ha Tinh.

- Day 65: To submit Draft Report No. 2 for internal consultation.
- Day 75: Final Policy Workshop.
- Day 88: To submit Final Report.