Legislation on genetic resources conservation in Vietnam

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For Topic: Internalization of International Environmental Law in national legislation, and follow-up of IUCN Resolutions

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List of Abbreviations

BD	Biological diversity
CBD	Convention on biodiversity
IUCN	The World Conservation Union
GRs	Genetic resources
GMOs	Genetically modified organisms
LB	Law on Biological Diversity
LGRC	Legislation on genetic resources conservation
LEP	Law on environmental protection
LFPD	Law on Forest protection and development
LOF	Law on Fishery
LL	Land law
MARD	Ministry of Agriculture and Rural Development
MONSTE	Ministry of Science, Technology and Environment
MOST	Ministry of
MONRE	Ministry of
MOF	Ministry of Fishery
NGO	Non government organization
PA	Protected Areas
PPC	Provincial People's Committee
PM	Prime Minister
OPV	Ordinance 15/2005/UBTVQH on Plant Varieties
OLB	Ordinance 16/2005/UBTVQH on Livestock Breeds
VACNE	Vietnam association of conserve of nature and environment
VEPA	Vietnam Environmental Protection Agency
VND	Vietnamese currency

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PREAMBLE

The pressing issue to research

Vietnam has endowed abundant and rich biodiversity resources, especially genetic resources (GRs). Biological diversity (BD) in general and GRs diversity in particular plays an important role in national economy, especially in agriculture- based economy like Vietnam. GRs have not only got economical value such as agriculture, forestry, fishery, but also got value of science, culture , society, education, healthcare, environment…so that, GRs diversity conservation has special great meaning that determined to be a key responsibilities of biodiversity conservation process.

This issues was also confirmed by resolutions **15/10-genetic resources** of International Union for Conservation of nature and natural resources (IUCN) **15th Session of the General Assembly in Christchurch, New Zealand, 11-23 October 1981 and**

However, in fact, GRs conservation in Vietnam has not satisfy the requirement of the practice and its importance, the awareness of its value and importance is limited, genetic using and exploitation is unsustainable. GRs access and benefit sharing (ABS) is not paid attention properly and effectively. The rare and precious GRs are continently degraded. From the problems, GRs conservation is becoming a pressing requirement and legislation is the most important tool, measures to protect GRs conservation.

International agreements like Convention on biodiversity (CBD) mentioned and affirmed the role of legislation for conservation. Vietnam joined and become member of convention on biodiversity in 1994 and make it affords to implement provisions of the Convention and the other related conventions, treaties, agreement to conserve biodiversity

Internalization to CBD and related conventions and agreement to conserve biodiversity in Vietnam legislation is necessary and urgent to develop Vietnam's legislation on genetic resources conservation (LGRC).

The situation of this topic's research

In past time, there were some projects implemented with one their main content to improve LGRC such as: researches serve for LB development, the project of "development of law on plant GRs access in Vietnam, 2000-2001" by VACNE coordinated with Department of Law, MONSTE, supported by the International Development Research of Canada (IDRC), the project of "Capacity building for development of LGRC ABS, 2002-2004" by VEPA, MONRE, MOST, VACNE and IUCN Vietnam coordinated with GTZ. Besides, there were some research related to LGRC such as: "Studying scientific and practical basis to develop policy of implementation of CBD and RAMSAR convention" carried out by VEPA, "State and orientation to improve legislation on biodiversity", 2001- research thesis of Nguyen Thi Thu Ha, Hanoi University of Law…However, the above projects and researches only implemented concrete certain activities of conservation or studied one or some legal aspects of GRs conservation but not studied theories of LGRC, assessment of its implementation,

level of internalization of related international legislation in Vietnam's legislation and comprehensive recommendation.

The scope of this research

This research concentrate to analyze, assess basic contents of legislation on genetic resources conservation through legal provisions on forest, fishery, plant, animal, plant varieties, animal breeds, biodiversity and environment that mentions directly or indirectly to fauna and flora genetic resources conservation with recommendation

Methods of doing research :

Methods of doing research were analysis, comparison, synthesis, statistics, survey, matrix, and assessment.

Objectives of research

- To overview of LGRC theories as basis to development of LGRC in Vietnam.
- To assess legal provisions of Vietnam on GRC and its implementation in order to clarify what Vietnam has implemented to satisfy requirement of international LGRC and IUCN's resolutions and its own country's practice, what Vietnam has not implemented yet and;
- To recommend to improve LGRC in Vietnam with internalization of international law on GRC in to Vietnam law.

Effectiveness research for LGRC development needs a comprehensive view of assessment from the theories to the practice and recommendation.

Part 1 - SOME THEORIES RELATED TO LGRC

1.1. DEFINITIONS

1.1.1. Definition of genetic resources

There are various definitions of GRs at international level and national level. The CBD defined that "GRs" as "genetic material of actual or potential value" [1, 7].

Following the Guidelines for implementation of CBD of the IUCN 1994, "genetic unit" includes all related factors to gene contains AND (axis dioxide binuclear) and in some cases are ARN (axis ribonuclearic), for such as: seeds, layer, sperm or creatures…it also includes AND grafted from a plant, animal or microbial or individual organism, such as a chromosomes, gene or plasmid of microbial or any part of the above factors. However, materials of heredity will not include grafted bio-chemical if it does not contain functional units of heredity [5, 41].

Through the above definition shows that "GRs" is a branch of genetic materials. The difference between GRs and genetic material bases on whether materials of actual or potential value. This means genetic materials will only become GRs when having functional unit of heredity or are able to have functional unit of heredity. So that this definition will narrow the scope of GRs, while in fact we can see in nature the potential value of genetic material until at least view justify again.

The Definition of GRs of CBD is the official one that understood and applied the most broadly at present.

Following the dictionary of biodiversity and related sustainable development GRs defined as "hereditary materials of animals, plants and micro-organisms, including modern Plant Varieties, *Livestock Breeds,* original Plant Varieties, *Livestock Breeds and their wild relationship, have values as resources for the future human generation.*" [3,168]. This definition explained more clearly and detail about GRs with the list of components belonging to GRs. This may be the bases to determine GRs scope to carry out conservation.

Under the Regulation of plants, animals and micro-organisms GRs conservation and management issued together with Decision No 2117/1997/QD-BKHCN&MT dated 30/12/1997, GRs means "whole living plants or living parts thereof carrying hereditary information, able to create, or take part in creating plants, animals and micro-organisms"

Under Regulation on biosafety for genetic modified organism issued together with Decision 212/ 2005/QĐ-TTG, "gene means hereditary unit, a section of hereditary materials that provide the hereditary situation of organisms".

Under the Ordinance 15/2005/UBTVQH on Plant Varieties (OPV) " Plant gene source means whole living plants or living parts thereof carrying hereditary information, able to create, or take part in creating, new plant varieties" (Clause 4, Article 3)

Under the Ordinance 16/2005/UBTVQH on *Livestock Breeds* (OLB) "Livestock *gene source* means whole living animals and their breeding products carrying genetic information, capable of creating or taking part in creating new livestock breeds" (Clause 16, Article 3)

These can be understood as official legal definition in Vietnam.

1.1.2. Definition of genetic Resources conservation

There are many definitions related to GRC such as “Natural conservation”, “biological resources conservation”, “biodiversity conservation”. Further more, “conservation” can still be defined and used under various way and means making confusion easily. The CBD even used the term of conservation in many articles but it was not defined what is “conservation”. Moreover, the CBD considered “biodiversity conservation” in separation actually with “using in sustainability components of biodiversity, while they are linked by the IUCN under clear way since 1980.

Normally, “Conservation” was defined by most of the dictionary in narrow meaning of maintaining environment and natural surrounding [10, 1]. However, in fact the term “conservation” is used with broader meaning that is not only maintaining originally but also including protection, using and development. Under the pressures of developing countries, the evolution initiated by idea of the American forester Gifford Pinchot, “the fist basic factor of the conservation need a synonym word of development”. Carl Jordan reaffirms this, as "conservation is the philosophy of environmental management without wasting, making exhausted or perished any resources and values" [10, 1]. Above analysis is the reason to choose term of conservation replacing to “protection” or “preserves”

GRC, for the purpose of this study, has been defined below as the following. This definition is a distillation of all sources outlined in sub-section 1.1.2.GRC offers a new approach for conservation.

“G*enetic resources conservation” is the comprehension of activities, methods implemented conservation actors including protection, using, recovering, development of GRs with the diversification of plant, animals, microorganism heredity materials, in order to bring the greatest interests for present generation but still maintain their potentiality to meet the demands and aspiration of future generation”*.

1.1.4. Definition of legislation on genetic resources conservation

LGRC is still a new area of law. There is no definition of LGRC. In fact, it is known through Legislation on biodiversity conservation as GRs diversity is a part of biodiversity. The clarification of definition of LGRC is a significant theory basis for development and improvement of provisions of LGRC. Therefore, based on the above definition of GRs, GRC and theory of the State and Law, LGRC can be defined under distillation as: *the system of legal norms that regulate activities, methods implemented conservation actors including protection, using, recovering, development of GRs with the diversification of plant, animals, microorganism heredity materials, in order to bring the greatest interests for present generation but still maintain their potentiality to meet the demands and aspiration of future generation.*

1.2. The role and necessity of development of legislation on genetic resources

1.2.1. The role of legislation on genetic resources in Vietnam

Development of LGRC in Vietnam should rise from the role and effectiveness of LGRC to GRC activities. The role of LGRC in Vietnam is provided by more preeminent characteristics of the legislation than other methods and tools. Thus, there are many tools and methods to implement GRC, but the legislation is the most effective and decisive methods. Legislation is enacted law. The law is promulgated and guaranteed to comply and implement by the State's authority with the State's powers [6, 71], the law is able to effect to everybody. This characteristic shows that the legislation is able to adjust the activities related to GRC of all the subjects in a specified scope to conserve the best GRs.

Furthermore, law is the system of rules of behaviors, defined pattern and standards. The legislation stipulates limit, scope of implemented activities. Exceeding the limit and scope is breaching law and would be punished; the limit is promulgated by various aspects, such as allowance, prohibiting, compulsory, and obligatory. Specially, in the fields of GRC, the legislation provides the limit to allow implementing protection, wise, sustainable usage, exploitation of GRs, prohibiting activities causes degradation, exhaustion of GRs and obligating conservation activities. Thus, under law, the subjects, who have activities to exceed the regulated limit causing negative effects to the GRs, will be handled.

The legislation ensures to implement the State policies on GRC the most quickly, comprehensively, and effectively with the largest area of scope, so, it affects the most powerfully to GRC operations. Concurrently, the legislation also is the bases to inspect whether GRC's implementation, complication of the individuals, organizations has been in accordance with the rules of behaviours or not, whether methods and ways to inspect and handle violation have been correct or not.

The role and effect of legislation in GRC is affirmed by international agreements on environment and biodiversity conservation. Especially, by the CBD, legislation development and improvement is considered as the most effective tool to attain the Convention's goal and objectives. It is also the responsibilities that CBD requires country members.

1.2.2. The necessity of development of legislation on genetic resources conservation

1.2.2.1. The necessity of development of legislation on genetic resources conservation is originated from the role and importance of GRs, the state and necessity of GRC in Vietnam.

The role and importance of GRs is presented in many aspects and various sectors.

Genes are a basic unit of heredity and descended from generation to the other generation. It includes axis nucleic and comprised by on chromosome of organism, in plasmid of microorganism and form of other additional chromosome. Genes play role to control variety of processes of living body. Genes also contribute much to particularity of an organism to confront with severe natural conditions. The importance of diversity of genes and diversity of heredity risen from actual individuals of species created from sexual reproduction, having a collection of genes with a bit difference with their mother, father individuals. Heredity diversity lets the species gradually to get used to pressures of surrounding environment following time. Not that individual or species have genes or collection of genes let them maintain their life in a special

condition. The evidence is some individuals or species disappears due to their living environment destroyed or other conditions making total quantity of species' gene decrease to restrict capacity of adaptation or evolution of the species. Therefore, if the diversity of genes is maintained, it will increase opportunities to live for the species.

For thousand of years, along with time, man has taken advantages of genes and increased gene quantity, especially in agriculture. Gene diversity helps species to exist in living. Man bases on gene diversity to create varieties of breed of animals, plant and microorganism with various genes to increase capacity of their own existence. Therefore, genetic diversity conservation is more important than species conservation merely. If only conservation of some species can live that is not enough, because, the species cannot have genetic diversity necessity for the life themselves as well as human [5, 40].

Following the summary of IUCN, the diversity of genetic resources allows crops, livestock and human beings to adapt to changing conditions. Every loss of even one species, variety or traditional remedy diminishes the available options for the future, not only of human uses, but also of the natural processes that are critical to continued life on this planet. News Release *Embargoed15 April 2002 in* The Hague, the Netherlands

Resolution 15/10 of 15th Session of the General Assembly of IUCN, Christchurch, New Zealand, 11-23 October 1981, on genetic resources, aware that the conservation of genetic material is essential for the maintenance and development of animal and plant resources for a large number of present and future beneficial uses and recognized that genetic material forms part of the natural heritage of mankind and should therefore remain available to all nations;

Basing on the above roles of RG, following the Food and Agriculture organization of United Nation, GRC has five following targets [1, 1]:

Business target: genetic diversity is precious material resources to create a new variety by crossbreeding corresponding to changing requirements of the markets.

Cultural and social target: varieties contribute to enrich tourism areas and training teaching models.

Protecting breeding system, reducing risks: diversity of breeding, varieties will reduce risk factors, increase sustainability in production system, especially when the environment changes and decreases.

Ensuring demands of the future: consume and production demand of the humankind in the future is limitless. The GRC is the best method to conserve production raw materials for future.

Researching and training target: diversity of breeding, varieties is precious materials for research and education, especially for science of immune, heredity, nutrition and reproduction…

For Vietnam, GR plays an important role when its economy mostly depends on natural resources and agriculture accounts for a great part of GDP. The role, importance of GR is described as the following:

In agriculture, the role of GR is expressed clearly. Economic value of GR is very big, concurrently full of promise and potentiality contributing to economic development of the country.

Vietnam is rich in rice and fruit trees GRs. The rice GRs of Vietnam is one of the most abundant with specific varieties of the world. For example, fragrant rice is the precious materials to help countries in temperate zone to plant these rice varieties. Fifth-month rice with anti-insect, enduring acid, alum soil and soil is poor with phosphorus, bearing cold that many countries and international Institute of rice research used to create high-productive rice by cross breeding. Rice of Mekong delta with specific characteristic such as floating, growing in deep water, and high quality serves to export. At present, Hanoi National bank of plant genes is preserving 6000 varieties of local rice. Mekong delta Institute of rice is keeping in good conditions of 1800 samples of traditional rice of the South Vietnam and 160 populations of wild rice [7, 36].

In addition to rice, in Vietnam, fruit trees also are plentiful heredity and unique resources. Following the investigation results of Institute of Fruit trees research, there are more than 130 kinds of 39 plant families with hundreds of various fruit trees varieties. Due to large area of their arrangement, this resource of fruit tree is very meaningful for various aspects, especially nutrition, environment and economic development of local people [7, 176].

For animal GRs, Vietnam has many precious traditional domestic animals with high economic value such as Dong Tao, Mong chickens, Bau Quy ducks, Muong Kuong, Meo, Soc, Van Pa, Ba Xuyen pigs, H'mong bulls, Phan Rang sheep, black and grey rabbit, Quy Chau fat ducks [18, 1]. For example, Mong chicken breeding benefits to each Mong village 3 million VND, each village's household 4 billion VND in average [14,1]. Concurrently, Vietnam has many precious gene for technology of creating new verieties in breeding avoiding close blood- relationship, reproduce weak generation, gradual degeneration. For example, grey ox is potentiality of important heredity materials, contributes to reproduce breeding cow and bull in degeneration. This natural GR is valued as the most precious one in the world. Using this GR to create new verieties by crossing –breeding takes opportunity to benefit billions of Us dollars [7,181]…

Besides, primate collection is also diversity. Following the assessment of biology specialists, primate collection of Vietnam compries of 25 species belongs to 3 families, in which there are many precious endemic species with high economic value such as: tonkin snub-nosed monkey, golden-headed langur (Cat Ba langur), black langur, stripe-headed black langur (Hatinh langur), delacour's langur, white rumped black langur... are able in extinction that the RedBook of Vietnam arranged in to vulnerable type [7, 181+182].

In trade and tourism: plant and animals are one of important of trade, especially for agricultural, forestry, aquacultural products....GR development creates many precious animal, plants as legal products that will bring high economic value that promote trade development.GR diversity also become a special attractive factors for tourisms.

In health care field: traditional knowlege has become popular and use widely, using medicial plants is usual to contribute importantly to treat and take care people's health. Now there are more than 800 species of medicial trees used offically, in which many trees have been domesticated and planted in large area, and high productive harvest. Many medicial trees are not only to cure normal diseases, but also combined with modern medicine to treat irremediable diseases. In addition, high-level flora system of Vietnam is very diversified. It is estimated about 12.000 species, in which, determined about 3830 species for medicial purposes, accounted for 36% of total 10.5000 defined plants. In comparison with 35.000 species of medicial trees world wide, Vietnam species accounted for 11% [11,2]. This is unfull numbers, because, there are many medicial trees of ethnic minorities groups commnunies (also reffered to traditional medicial trees) that still not dissemminated widely.

However, the GR extinction and degradation, which is due to various reasons, still existing without effective sollution of prevention. At present, total of plants, which are at risk, are 350 species and more than 300 species of animals named by Vietnam Redbook are in alarming condition. The extinct risk of 28% of total animal, 10% of total birds, 21% reptiles and amphibian of Vietnam is existing [7,141].

Species of Asian elephants, one-horn rhinos and saola will endanger in near future if there are no timely conservation. Together with this endangered situation, invaluable and unregenerate genetic sources will be disappeared forever. Simultaneously, the extinction of species, disintegration of species distribution area, internal degradation of fauna, flora will bring about the extinction of many precious genetic sources.

The extinction and degradation of GR caused by many reason and that can be summarized as the followings:

Firstly, the increase of human population bring about the increase of demand of animal, plant consume. Limited plants, animal sources are unable to bear this pressure and leading to decrease of varieties and breeding.

Secondly, impacts of agricultural, forestry, aquaculture trade with large scope of trade, many endemic varieties and breeds have been replaced by the other that can meet immediately the human demand.

Thirdly, planning economic policies has been not estimated all value of environment and natural resources. Due to pressure of economic increase, some national policies still not pay attention to negative impact to biodiversity and genetic diversity such as timber exploitation…

Fourthly, unfairness in ownership and benefit sharing, most of benefit raise from GR under the group of businesses not local communities that are conservation GR.

Fifthly, lack of knowledge and restriction of knowledge using. With weak knowledge, individuals and communities exploit and destroy environment in general and biodiversity in particular unconsciously.

Sixthly, legal system and institutions have not facilitated to exploit sustainably. Violation of environment and biodiversity has not been handled timely or ineffectively.

In addition, Vietnam has specific reasons. First, it was severe consequences of American war. Nepan bomb and poisons of orange agent that caused the extince of ecosystem and precious GRs destroyed millions of hectares of forests. Then, it is the environmental pollution because of industrial development without effective prevention right from the start. Situation of shifting cultivation and nomadic life of ethnic minority groups with habit of burning forest for milpa cultivation becomes popular. Demand of consuming food, drink processed from wild animal and plants is increasing that causes situation of hunting precious wild forest animals, plants to sell to restaurants or illegal organizations of export to neighboring country. Demand of agricultural production development caused degeneration of GRs and alien invasion in to Vietnam ecological environment.

The above degeneration and extinction of GRs and unrestricted reasons indicates the necessity of GRC.

1.2.2.2. The necessity of LGRC development originated in responsibilities to implement legal international agreements that Vietnamese member. When the country ratified or recognized an international agreement, the country must observe and implement self consciously the provisions of the international agreement, this is a basic content of international principle of fulfilling in good faith the their obligations. This principle is recognized by the Charter of United Nation, 24 October 1945, Vienna Convention on law of international treaties, 1969, Montevideo Convention on fundamental rights and responsibilities of nations, 1993…[9, 35]. By Law on the conclusion and implementation of international agreement, 2005, Vietnam strictly implements international commitments and agreement to which Vietnam is a signatory. However, international laws only determined responsibilities of the countries**,** shall fulfill in good faith the obligations assumed by them in accordance with the international agreements without defining process and methods to implement the international agreement that stipulated by the countries, thus, there are some various point of views of international treaties. At present, there is 2 point of views: *firstly*, provisions of international agreement are parts of national law and take direst effect of implementation in the countries' territory, such as France, US, Russia. Those countries have process to implement international agreements, procedure to implement and apply strictly [12, 87]. *Secondly*, international law is separated international legal system with national law, legal norms of international law cannot be applied directly as legal norms of national law, and they need to be transformed in to national law. Through transforming, legal norms of international law applied as national law [9,35]. International agreement transform is procedure stipulated by national legislation with purpose of fulfillment of international agreement in the signatory countries. For Vietnam, following the Clause 3, Article 6, Law on conclusion and implementation of international agreement, 2005, "based on requirements, contents and natures of national agreement, when deciding approval binding of the international agreements the National Assembly, President, Government shall concurrently decide to apply directly one part or whole international

agreements for agencies, individuals, when provisions of international agreements are clear, concrete to implement, decide or propose to amend, supplement, revoke or promulgate legal normative documents to implement those international agreements". Accordingly, not that all the international agreements contains provisions on GRC that Vietnam is signatory member, will not take their effects immediately and apply directly in Vietnam territory. Some international agreements need be transformed before implementation through amendment, supplement or promulgation national legal normative documents.

International law of GR impacts to national law of GR. Genetic material forms part of the natural heritage of humankind. Facing with the state of GR degeneration and extinction, GRC become the same concerns of all nations around the world. GRC is not only the responsibilities of one country and handle effectively in national level but also international liability and international level. Variety international agreements related to GRC are established with full participation of many countries, typically as CBD and other related multilateral and bilateral treaties that created international law on GRC. The international LGRC has principles that are the base to develop national legal principles of GRC.

- *The principle of the sovereign GR and national responsibilities of sustainable use and conserve GRs.* This principle concretizes the principle of the sovereign and endlessness for biology resources that recognized by the UN's members. It is repeated by Article 3 of CBD. Deriving from national sovereignty, each country has separate and comprehensive right to exploit natural resources in their own territory. However, in the field of biodiversity, jurisdiction of the nations is restricted by the compulsory for the nations should be responsible to the other nations as well as international communities when the nations exploit and conserve in scope of their jurisdiction. Because, the components of biodiversity have interaction relationship in an overall unity, the nations implement their national sovereignty in GR do not cause damage to the environment of the other nations and must be respect the sovereignty of the other countries.

  Following *the sovereign of nation for GR*, countries have right to use, exploit, dispose GR their own territory, but at higher level, GR is common natural heritage of mankind located in nations territory, so that international communities require nations are responsible to protect the common natural heritage.

- *Principle of Fair and equitable sharing of the benefits arising out of the utilization of genetic resources.* Based on right to access GR that can be adjusted by national law, conditions of common agreements between parties, results of research and benefit arising out of utilization of GR must be shared fairly and equitably. The principle also shall be applied to results and benefits arising out of biological technology based GR. *Fair and equitable sharing of the benefit* is one of the three objectives of the CBD, as set out in its Article 1 and is contents of Bonn Guideline on access to genetic resources and the fair and equitable sharing of the benefits arising from their utilization.

- *Principle of prior informed consent (PIC),* content of this principle is that access to genetic resources shall be subject to prior informed consent of the contracting Party

providing such resources, unless otherwise determined by that Party. The principle is provided by paragraph 5, Article 15 of CBD and one of main content of Bonn Guidelines

The provider and user should have mutually agreed terms (MAT) to ensure the fair and equitable sharing of benefits. The agreements should be based on principles: the providers have right to require the users supply necessary information about who use the GR, objectives of use, risks and potentiality arising out of GR exploitation and use. Basing on these information, the provider decide to access or not, how to access, how to share benefit, plan of benefit sharing, form and rate of benefit sharing, GR access only recognized basing on conditions that mutually agreed by two parties. The countries provide GR must be the country of origin (the countries are owners of GR in in-situ conditions) or countries supplied GR legally following certain regulation. All concerned local communities and particular indigenous should implement this principle. In addition to GR access, traditional knowledge is concerned.

GRC is regulated by both global international agreements and regional international agreements. GRC is not only regulated by some global international agreements in much aspect. In addition, in international law on GRC, the most important international agreement and common is the CBD and its protocols. By the CBD, in the first time GRC was considered comprehensively and become the general concern of humankind. In order to implement better genetic ABS, at the sixth Conference of the Parties in The Hague in March 2002 contracting parties adopted the **Bonn Guidelines** on ABS by Decision VI/24. The Guidelines provide the contracting parties the clear work frame to promote ABS. The Bonn Guidelines are intended to support the Contracting Parties and other relevant actors in shaping national policy, legislative and administrative frameworks on ABS, and/or negotiating bioprospecting projects in line with the principles of the CBD. From the perspective of many developing countries, however, the Bonn Guidelines are not adequate to ensure that the benefits from the utilization of genetic resources are equitably apportioned between the countries of origin and the users of the resources. Implementation of the Guidelines is not binding. Furthermore, there are other international forums dealing with and regulating the relevant intellectual property issues: TRIP (The WTO Agreement on Trade-Related Aspects of Intellectual Property Rights) and WIPO (World Intellectual Property Organization) which deals with the protection of traditional knowledge (Implementing the Convention on Biodiversity-Genetic resources.htm)

In addition to the CBD, there are some global conventions mentions to one or more various aspects of GRC. For wild plant and animal GRC, Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES) consist of important provisions to prevent illegal Tran boundary trade in Endangered Species of Wild Fauna and Flora that is one of the main reason of loss and degeneration GR. For oceanic organism GRC, provisions of UN's convention on Law of the Seas of use fairly and effectively natural resources coordinate with conservation contribute significantly to conserve this GR. For GR in wetland, RAMSAR convention is one the most international convention with its provisions regulate all

issues related to wetland including using, exploitation, maintain components of wetland (resources and benefit)

In addition to global convention, Vietnam also participate regional agreements related to GRC such as ASEAN Frame Agreement on Access to Genetic Resources and biological Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization. This agreement marked the concern and awareness of GR importance and biological resources of ASEAN countries, in which is Vietnam.

1.2.3. The principles of Vietnam LGRC

In general, law always has principles to regulate law implementation and compliance. The principles are mainly thinking and point of views compelled to obey. Therefore, in addition to the system of the principle applied to the legal system, each area of law always has its specific principles. Similarly, the Vietnam LGRC has its own principle in accordance with international law on GRC and national law. Namely:

- *Principle of the State performs the uniform management over GRC.* This principle derives from Article 17 of the 1992 Constitution of the S.R. Vietnam *"Land, forests and mountains, river and lakes, water resources, […] are under ownership of the entire people".* Accordingly, under 1992 Constitution, GR belongs to the entire-people ownership with the state acting as the owner's representative. Therefore, The State performs the uniform management over natural resources in general and GR in particular. This principle was also prescribed by Article 121, Law on environmental protection, 2005 (LEP), Article 6, Law on Forest protection and development, 2004 (LFDP), Article 3, Law on Fisheries, 2003 (LF), Article 4, 7, OLB, 2004 and Article 4 OBV 2004.

- *Principle of GR conservation and sustainable development.* Content of this principle is combination of conservation and wise exploitation and development of GR to ensure short term benefit and long term benefit, bring the greatest interests for present generation but still maintain their potentiality to meet the demands and aspiration of future generation. Legal basis of this principle are Article 8, LF, Clause 2 Article 9 LFPD, Clause 6, Article 4 OLB, Clause 6, Article 4 OBV. This principle also is mentioned by Agenda 21 of Vietnam and point c, clause 2, section 3, part 1 of National strategy of environment protection to 2010 toward 2020.

- *The principle of Encouraging and facilitating the involvement of all organizations, residential communities, households and individuals in GRC.* GRC is only promoted its effects with the public participation. One of the objectives of GRC is public participation, especially with ABS. This principle expresses policy of socialization of environmental protection of Vietnam Government and prescribed by the Article 1 National strategy of environment protection to 2010 toward 2020, and Article 4 – LEP "Environmental protection is the cause that the whole society fights for, and is the rights and obligations of the State, all organizations, households and individuals", Article 6, OLB and Article 4 OBV.

- *Principle of Fair and equitable sharing GR.* Following this principle, accessing GR that under the sovereignty of Vietnam must be agreed by the State competent agencies of Vietnam through negotiation. Basing on conditions of the mutual agreement, the research's result, benefit arising out of GR using for trade or other aims must be shared fairly and equitably and also shall be applied to results and benefits arising out of biological technology based GR

- *Principle of GR conservation ensures environmental protection objectives,* this principle derives from GR is one components of biodiversity being components of environment. Clause 3, Article 4 OLB, 2003 and Clause 4, Article 4, OBV, 2003, provide this principle.

1.3. Basic contents of LGRC

Together with determining definition, principles of LGRC, determination of main contents of LGRC is very important and necessary to guarantee implementation and improvement of LGRC. Basic contents of LGRC defined basing on two contents of conservation: in situ and ex situ conservation.

In-situ conservation" means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

For in-situ, the most effective method is to establish the system of protected areas (PAs) or areas where special measures need to be taken to conserve biodiversity (Article 8, CBD). The most important target of establishing PAs system is to conserve ecosystem to maintain population enough for species to exist by themselves as well as recover degraded ecosystem, promote to restore threatened species. In fact, conservation of diversity within species and ecosystem also contributes to GR conservation. To attain the above target, requirements for responsible actors should be based on legislation and other compelled means. Concurrently, legislation should be basis to implement measures of conservation and require the compliance of the other actors.

In addition, in situ conservation includes to establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health; and ecosystem. Genetic technology transfer and utilization of living organism being products of genetic transfer may cause adverse impacts to genetic diversity and its conservation. Therefore, this activity requires concerned parties who receive biotechnology transfer, GR exchange are responsible to ask agencies supply necessary related information.

Ex-situ conservation" means the conservation of components of biological diversity outside their natural habitats *(Article 2, CBD).* It is considered as assistant measures for in-situ conservation to rehabit and recover threatened species and reintroduce them in to their natural habitats under appropriate conditions. The measures and means of ex-situ conservation consist of:

establishing banks of genes, breeds, eggs, sperms, reserves plant tissue invitro, domesticating and artificial multiplication of flora, and conserving living organism in zoos, botanic gardens. The chosen types and measures for ex-situ conservation depend on level of science, technology, financial capacity, human resources. The ex-situ conservation measures includes:

- Determining GR needs ex situ conservation through investigation and supervision of GR and set of genes with socio-economic importance that includes new research and available information collection. This information will help conservation. In addition, results of investigation and supervision are important to develop conservation strategies and plans.

- Assessing financial capacity, technical materials, and human resources to perform ex-situ;

- Regulating and managing collection of biological resources from natural habitats of plants and animals;

In addition to in-situ, ex-situ conservation, genetic access and benefit sharing (ABS) is activities impact directly to GRC and basis of GRC. Consevation activities only implemented effectively when GR is used and exploited appropriately, benefit arising out of GR utilization is guaranteed. Benefit of GR can contribute to poverty reduction and industrialization and modernization of Vietnam, fair and equitable genetic ABS will guarantee 3 objectives of biodiversity conservation, sustainable development and social justice. It should be target to strive for Vietnam LGRC. It also recognised by CBD and Bonn Guidelines. Therefore, ABS should be considered as a main and significant of GRC and development of legislation on ABS as a part of LGRC and legislation of biodiversity conservation. ABS performed basing on PIC and MAT. Accordingly, when exploiting, the user's party should have PIC of the provider party. The provider country will establish procedure of grant licenses of ABS. Following Bonn Guidelines, in general, the procedure of grant licenses should include status of subjects of access, quantity, kind of GR to exploit, time of starting and finishing, place of exploitation, environment and ecosystem impact assessment for exploitation activities, information of utilization's aims, research and production methods, attained benefit and plans of benefit sharing. The benefit will be shared basing on the mutual negotiation of the parties that based on assessment of benefit and potential risks arising from genetic exploitation, process of sharing and form of benefit sharing like allowance the provider party participate to scientific researches on GR and direct financial benefit sharing.

Based on above contents of conservation, in general, LGRC consists of following main contents:

- Legal provisions of the system of protected area
- Legal provisions of preventing evasion of alien species
- Legal provisions of biotechnology and safety for genetic modified organism control. (GMO)
- Legal provisions of rare and precious plant and animal GR and species
- Legal provisions of GR ABS
- Legal provisions of intellectual property rights to new varieties and breeds.
- Legal provisions of the State management of GRC

Part 2 - LGRC IN VIETNAM : STATE OF REGULATION AND PRACTICE OF IMPLEMENATION

2.1. STATE OF REGULATION

2.1.1. General view of LGRC of Vietnam

The establishment and development of LGRC has combined and linked closely with the establishment and development of legislation on BD in particular and legislation on environmental protection in general in the aspects of GR is one component of biodiversity and environment. So, regarding to LGRC, it was realized that legal provisions on fauna, flora protection was promulgated since 1960s, 1970s of last century such as Direction 134/ TTg of PM dated 7/7/1960 prohibiting to hunt elephants, Decision 72/ TTg of PM dated 7/7/1962 on Cuc Phuong forest, Decree 39/CP of the Government dated 5/4/1963 issuing temporary Regulation on hunting forest birds and animals. Those legal documents had important meanings for conserving precious GR as a living animal organism or protecting habitat for GRs. Although, with a few quantity and narrow scope of regulation, the above promulgation of those legal documents has marked important progress of awareness on the importance and necessary of conservation. By the end of 1980s and early 1990s, legal provisions on biodiversity and GR was promulgated and scattered in high legal validity legal documents such as: Ordinance on aquatic resources protection and development 1989, Law on Forest protection and development (LFPD), 1992, Law on environmental protection (LEP), 1993. These legal provisions initially created basic legal base for biodiversity conservation, in which GRs. With the promulgation of a series of by-law documents related directly to GRC such as Decree 07/ND-CP dated Feb, 5th 1996 on plant varieties management, Decree 14. ND-CP dated Mar, 19th, 1996 on livestock breeding management, Regulation on fauna, flora, micro-organism GRs conservation and management issued together with Decision 2117/1997/BKHCNMT of Minister of Science, Technology and Environment dated Dec, 30th 1997, Decree 13/2001/NĐ-CP dated 20th April, 2001 of the Government on new plant varieties protection that show the establishment and development of LGRC of Vietnam.

In recent time, GRC was cared by the State and expressed by legal documents toward to comprehension and completion, as well as legal instruments has had higher legal validity such as LFPD 2004, Law on Fishery (LOF) 2003, OPV 2004, OLB 2004, Decree 109/2003/ND-CP on wetland site conservation and development and related guiding implementation legal documents. The newly promulgated legal documents with provisions on GRC created legal circle of this issue gradually closed and promoted actual effectiveness that justified for the development of LGRC. With the above-mentioned legal provisions, Vietnam initially implements GRC, prevents GR degradation and decreasing and transforms contents of international agreement, which Vietnam committed to its legislation. Therefore, provisions of GRC are prescribed by various legal documents of various law fields such as legislation on forest, legislation on aquatic resources, legislation on biodiversity, legislation on environmental protection and the other natural resources.

Most of related legal document of environmental protection and biodiversity has certain meanings to GRC as the main law sources for LGRC in Vietnam. Each legal instrument mentions to GRC under various aspect and toward different aim. The LEP and its implementing legal documents have provisions aim to GRC as the component of biodiversity and environment. Moreover, provisions of LEP of protection of other components such as land, water, air, forest, sea, natural conservation zones, do conditions for GR exist. The LEP 2005 provides to regulate activities of GRC in Clause 8, Article 6, and Article 30.

LOF, 2003 provides to protect aquatic GRC by affirming the State has policy of aquatic GRC and protection, especially kind of threatened aquatic organism, rare and precious, high economic value, scientific importance; encouraging researching, investing to develop aquatic varieties, to conserve genetic and aquatic biodiversity fund. LFPD, 2004 provides to conserve forest organism GRs by affirming to protect rare, precious forest fauna, flora, endangered forest animals and plants. The law provides that the State protects all kind of forests in which the special use forests have important meanings for GRC, they are used to conserve nature, standard model of forest ecosystem of nation and forest organism GRs. The OPV 2004 and OLB 2004 regulates plant, livestock's GR conservation and management, research into, selection, creation, assay, expertise, test, recognition and protection of, new plant varieties; new livestock breeds, the evaluation, selection and recognition of maternal plants, initial plants, variety gardens, variety forests; the production and trading of plant varieties, management of the quality of livestock breeds, plant varieties. These are two important legal documents for purebred GRC that expressed the awareness of GR importance for socio-economic situation and demand of adjustment by law in this field. They are assessed as significant progress of LGRC because of high validity of legal documents, which regulate directly GRC and behaviour orientation.

Besides above legal documents, line Ministries, Agencies issued legal documents regulated directly GRC, namely Decision 2117/1997/QĐ-BKHCNMT dated Dec, 30th 1997 of MOSTE issuing Regulation of plants, animals and micro-organisms GRs conservation and management. With the affirming plants, animals and micro-organisms GRs are very important national resources, this is a pioneers legal instrument in GRs. Concurrently, it has been the first legal document on GRC after Vietnam's accession to CBD, although the provisions of the Regulation was only general, commitment but not concrete behavior orientation.

Supporting the above legal document in GRC, there are strategies, plans relating directly to GRC as important factors promote, orient implementing legal provisions on GRC in Vietnam, such as Action plan on biodiversity protection in Vietnam approved by Decision 845/TTg dated 22/12/1995 of PM, Strategy of environment protection in Vietnam to 2010, toward 2020 approved by Decision 256/2003/QĐ-TTg dated 02/12/ 2003 of PM, Program on aquatic resources protection and development approved by Decision 131/2004/QĐ-TTG dated 16/7/2004 of PM, National Action Plan on strengthening to control wild animals, plants trade to 2010 approved by Decision 1021 dated 27/9/2004 of PM, Agenda 21 of Vietnam issued

together with Decision 153/2004/QĐ-TTg dated 17/8/2004, Action Plan of wetland conservation and sustainable development approved by Decision 04/2004/QĐ-BTNMT dated 5/4/2004 and other strategies.

After generally researching legal provisions on GRC, the following comments are given:

As a first step, Vietnam has established the State management with unity to GRs by developing legal system on GRs. System of the State agencies, which are accountable for environmental protection, and GRCs, to enable the feasibility of the legal system. Concrete normative legal instruments are also supplemented to improve the legal system such as determination of legal concepts of GRs and GRC. Through promulgation of legal provisions on LGRC, the State expressed the interest and encourage people participate to conserve GRs, research science for GRC, protect copyright to new plant varieties and affirm the principle of sustainable development in the GRC domain.

However, based on the criteria to assess level of perfect legislation, including fullness, comprehensiveness, unification, feasibility and high technical legislation, restriction and constraints of LGRC has been found as the following

Firstly, LGRC has not has high practicability. Existing legal provisions on GRCs only are declared generally or are principle. Many regulations lack concretized behavior orientation, so, they can not enable to implement effectively.

Existing legal provisions on GRC are scattered in various legal documents without codified and concentrated under a high legal validity law. This caused difficulties to apply and implement LGRC effectively. For example, legal documents regulated directly on GRC now is Regulation of plants, animals and micro-organisms GRs conservation and management issued together with Decision No 2117/1997/QD-BKHCN&MT dated 30/12/1997, but it has low legal validity as it a ministerial legal documents and its provisions are principles and declaration that can not be applied directly to handle in certain cases. Being dispersed, legislation creates restriction to comply LGRC, for instance, conservation of aquatic GRs should be complied according to not only LOF, 2003 and its implementing legal instruments, but also Decree 109/2003/ND-CP on wetland protection and sustainable development, as well as various Circular guiding it, in case, the aquatic GRC in the wetland site provided by the Decree 109/2003/ND-CP.

Secondly, LGRC still has not been uinification. Some provisions of legal documents are not correct and reasonable. For example, whole provisions of OLB, 2004, from the first Articles to last Artiles, there are no mention to the terms of protection copyright for new livestocks breeds, but the Artile 31 provides the solution to handle disputes of copyright to livestocks breed. It is clear that redundant, due to there are no provisions recognizing the copyright of livestock breed, there are impossible to solutions to handle disputes of them. In fact, researching carefully provisions of OLB, 2004 showed that, its provisions of research, selection, creation, assay, expertise, test, recognition are close to and possible premise for legal provisions on copyright of livestock breeds but the OLB has not stipulated.

Thirdly, LGRC has not been full and comprehensive. Comparing with content of LGRC as mentioned in theory part, existing LGRC still lacks some important legal regulation such as: mechanism on GRs ABS, protection copyright and knowledge of traditional plant varieties, livestock breeds of local communities.

2.1.2. Main contents of LGRC in Vietnam

Basing on contents of LGRC researched in Part 1, this section will concentrate to analyse in detail and clarify each content of LGRC.

2.1.2.1. For stipulations of GRs ABS

In Vietnam, legislation still has not had concrete legal provisions on GRs ABS [24,1], as well as mechanism of GRs ABS, the stipulations are declaration and commitment or only mention some aspects of right to assess GRs and benefit sharing such as right to product and purchase plant varieties, livestock breeds, exploit aquatic resources, forest products, copyright to plant varieties, GRs export.

For livestock GRs, Article 4, OLB 2004 states that important principle is promote right to self control, ensure equality and legitimate benefit of organizations and individuals in activities of livestock breeds. The state encourage organizations and individuals to produce, use new livestocks breeds, take part insurance for livestock breeds. The OLB, 2004 also provides conditions of business, subjects of business, label of products, quality of livestock breeds, that are main ways for individuals and organization access and exploit maximum benefit from livestock GRs.

For plant GRs, following OPV, 2004, the State encourages and facilities to individuals and organizations invest to collection, research, sellection, test, verification, production and buiness of plant varieties; agricultural, forestry encouragement to technology transfer of plant varieties combining with production.

For aquatic GRs, LF 2003 encourage and facilitiate individuals and organization exploit and use wise aquatic resources, ensure recreation of aquatic resources and aquaculture development. The law also provides the conditions to aquatic resources exploitation including licence and cerificate to right to exploit.

For forestry GRs, following LFPD 2004, individuals and organization has right to exploit forestry products depending on each kind of forest. Right and benefit of organizations and individuals are provided rationally and according to the efforts and responsibilities of organization and individuals for forest protection.

Regarding to GRs access as GRs export, Vietnam legislation regulate by using traditional method of listing with list of allowable subject to export or not. However, regulation of the list of plant varieties and livestock breeds are not allowable to export that issued by MARD and MOF, list of rare and precious issued to gether with Decree **32**/2006/NĐ-CP dated March 30, 2006 managing endangered, rare and precious forest animals and plants, cases under the Decree No. 82/2006/ND-CP, on management of export, import, introduction from the sea, transit, breeding, rearing and arificial propagation of endangered species of precious and rare

wild fauna and flora according to CITES convention that can not cover all rare and precious GRs under sovereigty of Vietnam. Thus, the organism GRs, which are outside the above list, only passed to quarantine verification, can be taken to abroad. Therefore, in recent time, many foreign organizations and individuals in name of research, science, collection, tourism has brought GRs for business and created or restored a new variety by cross-breeding for business. Also, some foreign individuals and organizations co-operated with domestic stakholders to GRs assess and supply foreign stakeholders certain benefit but the domestic stakeholders only enjoyed unappropriate and small attained benefit in comparison with ones of foreign partners. Moreover, due to lacks of internal equipments and means, scientists must send samples to abroad to analyse and categorize without clear agreement to ensure benefit of Vietnam party. Many annoucement of new varieties of Vietnam were carried by foreigners and standard samples are in abroad [17,5]. It is clear that, stipulating clearly which organism are allowable and which are prohibited to take outside Vietnam, can not implemented, because, Vietnam has still had inumberable species, verieties the scientist still has not listed all, even present popular species have not useful value now but are potential to bring benefit in future.

Regarding to copyright (or intellectural property right) of plant varieties and livestock breeds, good protection of copyright of plant varieties and livestock breeds will enable to fair and equitablesharing benifit arising out GRs using, concurrently promote creation of useful plant varieties and livestock breeds, conserve and develop sustainably diversity of GRs. Therefore, OPV 2004 has a specific chapters of ownership and copyright to new plant varieties with concrete provisions. Copyright of new plant varieties is also one of subjects of regulation of Law on Intellectural Property, 2005 with provisions of strict process and procedures to implement. It's also one of the subjects of regulation of Bilateral Trade Agreement between Vietnam and US as one of first requirements of US, and of course, it's a requirement for Vietnam's accession to World Trade Organization. With the legal mechanism will promote copyright of plant varieties protection as well as benefit may be shared fairly to all stakeholders

Following OPV 2004, the kind of protection of copyright is to grant protection title of new plant varieties protection with the conditions for them to be protected including bbeing on the list of State-protected plant varieties, promulgated by the MARD, Being distinct, uniform and stable, being commercially novel, having appropriate names as prescribed in the Ordinance. The OPV, 2004 stipulated process, procedures for new plant variety protection titles, right and responsibilities of the owner of new varieties protection titles, cases of Restriction of the rights of owners of new plant variety protection titles, Rights and obligations of authors of new plant varieties, duration of new plant variety protection, Cancellation of new plant variety protection titles

The OLB 2004 has no provisions on copyright to new livestock breeds, there have provisions on research, selection, creation, assesst, name and recognization of new livestock breeds. While new livestock breeds protection title is neccessary for research, selection, test, experiment new livestock breeds serve for agriculture, control, raise the awareness, through

right and responsibilies of authors to control quality and prevent negative impact of livestocks. Now, besides, natural domesticated livestock, GMOs livestock and agamic reproduction should be critically control while the roles and impacts of them are still being debated. *The World Conservation Congress at its 2nd Session in Amman, Jordan, 4–11 October 2000* of IUCN whereas there is widespread concern that GMOs could have potentially dangerous effects on living organisms and their ecosystems; aware of the growing movements throughout the world opposing genetic modification and aware of rejections of genetic modification in agriculture and food production. Moreover, existing legislation lacks of a mechanism to protect tradional livestock breeds of local community while the demand of protection is high and urgent such as Mong, Dong Tao chicken's breed [14, 1].

Also, there lacks legal provisions of traditional medicine knowledge prtotection of ethenic minority living in Vietnam territory combining with source of plant and animal for medicine and conserve that source. Although, GRs of plant and animal for medicine has high value and excessive exploitation, the national policy of traditional medicine development to 2010 approved by Decision 222/2003/QĐ -TTg ngày 3/11/2003 also mentions a little and in detail to conserve and develop resources of animal and plant for medicine.

Following the contents of Aritcle 15 of CBD and Bonn Guidelines mentioned by part 1, many main, important contents of GRs ABS are not regulated by legislation, especially mechanism of fair and equitable sharing to ensure principle of conserve sustainably GRs. In fact, there are many countries in the world like Vietnam that have no or have inefficient mechanism of GRs ABS . Now, there are some countries have regulations of this issue such as the Phillipin, Africa Union, South America [8,1] that are country endowed abundent and rich GRs. *Namely*, the lack of provisions on GRs ABS as the following: Vietnam has not had provisions of mutually agreed terms (MAT), prior informed consent - PIC, that determine which agencies receive information of GR access and grant licences to exploit reasonably GRs, duration of licences, provisions of negotiation, who keeping. Moreover, other provisions of access still are not developed such as: means, methods, aims, plan, time and subject of access, conditions to protect biological safety, environmental protection of ecosystem. Contents of benefit sharing are not provided such as: ways and forms of sharing including monetary or material benefit of other non-material benifit such as technology transfer, training, scientific research, rate of benifit sharing, verification and determination value of GRs as base to share benefit, agreement of technology transfer, copy rights and invention.

2.1.2.2. For provisions of Protected Areas

Following Article 8 of CBD, in-situ conservation with establishing a system of PAs or areas where special measures need to be taken to conserve biological diversity. Resolution 15/10 on GRs of 15th Session of the General Assembly of IUCN, Christchurch, New Zealand, 11-23 October 1981recommends that all countries maintain maximum genetic diversity by means of both *in situ* and *ex situ* conservation measures and resolution adopted by General Assembly (n° 246)on national parks and natural reserves "Believing that these National Parks and Reserves are valuable for cultural, scientific, educational, economic and recreational

purposes, and are areas for the future preservation of flora and fauna and geological structure in their natural state (6th General Assembly AThens, Greece – September, 1958). Following the concept of "Protected area" means a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives". Vietnam has established a system of PAs.

PAs in Vietnam under Vietnam forest law are called Special-use Forests (SUFs) – one of the three principal forest management categories (the others being Protection and Production forests). Based on comparison with Protected Areas IUCN category and new SUFs category of Regulation of forest management issued together with Decision 186/2006/QD-TTg dated 14th August 2006, Special-use Forest sub-categories approximate to the IUCN categories as follows**:**

Special use forest category		Equivalent IUCN category
National Park		II
Nature conservation area:	Nature Reserve	I
	Species/Habitat Conservation Area	IV&III
Landscape protection Area		V
Experimental science and research forests		Ia

The first national park "Cuc Phuong" was established in 1962, since then many protected areas have been established. (*) To 2005, 128 SUFs have been formally established by the central and provincial levels. SUFs cover 2.4 million ha or 7% of Vietnam's land area [16]

Accordingly, PAs in Vietnam have still no the last one PAs of IUCN category that is the *VI-Protected area managed mainly for the sustainable use of natural ecosystems.*

Implementing provisions of CBD, VN interest with special important to regulate PAs

Following existing laws, terrestrial PAs regulated by LFPD, 2004 and its guiding legal documents. Wetland sites regulated by Decree 109/2003/NĐ-CP on wetland conservation and development. Sea PAs regulated by LOF and Decree 27/2005/NĐ-CP, dated 08/3/2005 of Government providing in detail and guiding to implement LOF.

Under LFPD, 2004, development PAs aims to natural conservation, standard model of forest ecosystem, forest GRs. One different principle of PAs is ensuring natural development of the forests, biodiversity conservation and forests landscape. Management of PAs must be strict and close for forest exploitation, visiting, scientific researches. MARD also promulgated criteria to determine and classify SUFs (or PAs) under the Decision 62/2005/QD-BNN dated 12th October, 2005, and now there is a project implemented by Institute of Forest Investigation and planning of MARD to adjust and re-determine criteria of SUFs classification criteria.

By Decree 109/2003/NĐ-CP, the Government requires to establish wetland reserves. The Decree stipulate wetland reserves must be protected strictly, to prohibit to construct works and emigrant inhabitant in to the wetland sites. Buffer zones of wetland site must be managed

and restricted to exploit. Strictly prohibiting to construct works in the buffer zones causes high risks to wetland sites conservation.

For marine PAs, Decree 27/2005/NĐ-CP provides conditions to establish marine PAs, categorise with proper mechanism to conserve them.

Therefore, different PAs are under State management of various line ministries and agencies. Tterrestrial PAs are under the management of MARD. Marine PAs are under the management of MOF and wetland sites under the management of MONRE.

In order to manage and develop the system of PAs, Vietnamese PM approved Strategy of management of PAs system to 2010 by Decision 192/2003/QĐ-TTg dated 17/9/2003 with main goal is to establish, manage effectively PAs located in various ecosytem, contribute to protect natural resources, biodiversity, plentiful and unique landscape of Vietnam. Variety acitivites to develop and manage PAs are provided by this Strategy. In which, conservation activities should be combined closely with development, promote roles and functions of PAs system. The decisive principle of the Strategy is sustainable development.

2.1.2.3. For provisions of preventing Invasive alien species

Besides developing and managing PAs, preventing Invasive alien species is one of important methods of in-situ conservation of GRs. Like The World Conservation Congress at its 2nd Session in Amman, Jordan, 4–11 October 2000 "concerned that invasive alien species are now one of the most serious global threats to ecosystem integrity and species survival", combating Invasive alien species has significant meanings for GRC. The alien species will make to decrease indigenous species because their rapidly development, their competition to feed and annihilate indigenous species and decrease indigenous GRs. In Vietnam, preventing invasion alien species are carried out through controlling importing and exporting plant and animal crossing Vietnam border and control the spread of alien species in Vietnam territory.

Vietnam legislation provides quite cleary plant, animal import by legal instrument that include Article 7, Article 87 of LEP 2005; Decree 82/2006/ND-CP dated 10th, August, 2006 on import, export, re-export, import from sea, transit, breeding for reproduction, breeding for grow and artificial transplanting of endangered wild rare precious plants and animals; Ordinance on veterinary, Ordinance on plant quarantine; Article 44 of LFPD 2004, Article 34, LOF 2003 and their implementing and guiding legal documents.

Plant, animal export, import must comply the legal provisions of animal, plant quarantine and animal, plant import into Vietnam for breeds must be granted Certificate of quarantine by competent agencies of expoet country and no alience species, if have, they should be handled. In case, imported plant, animal species catched by alience species that cause risks to environment or biological resources, they should be applied the methods such as giving back to original place, destroying or absolute handling.

The control of spread of alien species in territory of Vietnam implemented by provisions of Decree 58/202/ND-CP dated 3/6/2002 of Gov issuing Statute of plant protection and plant quarantine, Decision 16/2004/QD-BNN dated 20/4/2004 of MARD regulating procedures and

dossiers of plant quarantine and provision of bring plant and animals in and out of PAs and wetland site following the provisions of LFPD 2004 and Decree 109/2003/ND-CP dated 23/9/2003.

All the above legal provisions for combating against alien species comprehensively and timely to regulate this problem that are provided in *Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species* by the 51st Meeting of the IUCN Council in February 2000; and the Global Invasive Species Programme of The World Conservation Congress at its 2nd Session in Amman, Jordan, 4–11 October 2000; and CBD.

2.1.2. 4. For provisions of genetically modified organisms

Biotechonoly has important meaning to GRC. Using measures to modify gene or impact to genetic code through biotechnology to create products are GMOs will effect directly to GRs. The roles and effectiveness of GMOs are great but its negative consequences is not measured. Many countries like EU, Japan, US had issued Law on GMOs control and checked, controled strictly this special subjects. The *World Conservation Congress, Amman, 4–11 October 2000, IUCN whereas* there is widespread concern that GMOs could have potentially dangerous effects on living organisms and their ecosystems; releasing GMOs into the environment may pose a threat of significant reduction or loss of biological diversity

In fact, biotechnology has been applied and developed in Vietnam, especially Genetic modification and GMOs has appeared widely. Research units of this areas were established and operated such as Laboratory of plant cells-Institute of agricultural hereditary (established by Decision 69/2002 dated August, 5th 2002 of MARD, Laboratory of animal cells - Institute of breeds established by Decision 119/2003 dated November 5th 2003 of MARD.

In spite of the fact that promulgation is quite slow and late, OPV, 2004 and OLV, 2004 has provisions of genetic modified plant varieties and genetic modified livestock breeds to regulate this area, but provisions of two Ordinances are quite general and all related issues to GMOs must be in accordance with legal provisions of the Goverment. In August, 26th, 2005, PM issued Decision 212/2005/QD-TTg issuing Regulation of biosafety management for GMOs and products, commodities originated from GMOs, it is really comprehensive legal instrument to regulate this issue. The promulgation of this Regulation is implementation of Vietnam' to provisions of the CBD and *Cartagena Protocol on Biosafety* to the CBD that World Conservation Congress, Amman, 4–11 October 2000, IUCN also "mindful of the obligations undertaken by the Parties to the CBD to ensure the conservation and sustainable use of biological diversity and welcoming the adoption of the *Cartagena Protocol on Biosafety* to the CBD and calling for its early ratification and implementation.".

The Regulation stipulates State management of biosafety in scientific research, technology development and experiment, production, business, use, import, export, keeping, transport, risk control, granting certifcate of biosafety to GMOs, products, commodities orginated from GMOs to protect human health, environment and biodiversity. Following this regulation, each above activity should meet specific requirements to implement. For scientific researches to

GMOs, they should have sufficient conditions of materials, equipments, human, register with MOST. For experiment to GMOs, it should satisfy conditions to register activities, complete dossier, procedures, process. For production, business to GMO, it should have certificate of biosafety and in the allowed list, the goods must have label with notice ”*product used technoloy of genetic modification”* for the customer’s choice. For import, export, keeping, transport, the first condition is risk control and then compliance procedures of the State provisions. This regulation also provides measures to assess risks and and manage risk with forms of information supplying and report of risk assessment. This regulation also indicates certain Ministries, which are responsible for GMOs related to their management scope, are MARD, MOF, Ministry of health, Ministry of Industry, Provincial people committees.

The LEP also have provisions to regulate biosafety ’ Organizations and individuals engaged in production, business and service activities relating to GMOs and their products, must comply with the law on biological diversity, food hygiene and safety and varieties of crops and animals and the other provisions of the relevant law. Organizations and individuals shall be only permitted to perform research, experiment, production, trade in, use, importation, exportation, storage and transportation of GMOs their products that are included in the list established by the law, and must fully comply with all conditions and procedures required according to the provisions of the law’ (Article 87). This provision is a good suggestion that GMOs control should be a content of draft of Law on Biological Diversity (LB). In addition, LBD should be consistent with LEP to ensure the unity of the law.

2.1.2.5. For provisions on conservation of rare and precious wild plants and animals

The GRC and species conservation cannot be seperated, in fact, GRC is determined at level of species. And following the Regulation of management and conservation of plant, animal and microorganism GRs, GRs also include full living organism, so protection of wild animals, plants means GRs protections.

This issue is regulated by LFPD 2004 and its by-law document of guiding and implementation such as Regulation of Forest Management issued to gether with Decision 186/2006/QD-TTg of PM (replaced Regulation of management of Special use forest, protective forests, production forests issued to gether with Decision 08/2001/QD-TTg) and anually process and norms of forest exploitation of MARD.

Precious and rare forest plants and animals must be protected following a mechanism of strict protection provided by Decree 32/2006/ND-CP dated March 30, 2006 on the management of Endangered, precious and rare forest plants and animals. This Decree replaces the Council of Ministers' Decree No. 18/HDBT of January 17, 1992, promulgating the list of precious and rare forest plants and animals and the regime of management and protection thereof, and the Government's Decree No. 48/2002/ND-CP of April 22, 2002, amending and supplementing the list of precious and rare forest plants and animals and the regime of management and protection thereof, promulgated together with the Council of Ministers' No. 18/HDBT of January 17, 1992. This decree divides them in to 2 groups to regulate. Group 1, which consists of those strictly banned from exploitation and use for commercial purposes, Group II,

which consists of those restricted from exploitation or use for commercial purposes. Each group has regulation of management strictly and effectively.

Besides, like other Mekong riparian States Vietnam is facing with the situation of precious and rare wild plants and animals are over exploited for trade, increasing illegal and/or unsustainable trade of wild species. As The World Conservation Congress at its 2nd Session in Amman, Jordan, 4–11 October 2000 recognized that the increasing unsustainable trade of wildlife species occurring among and from the Mekong riparian States is threatening the conservation of species. Some legal instruments were issued to regulate include Direction 130-TTg dated 27, March, 1993 on improving management and protection of precious and rare animals, plants; Direction 359/Ttg dated May, 29, 1996 on urgent measures to precious, rare wild fauna, flora; Decree No.11/2002/ND-CP of January 22, 2002, on management of export, import and transit of wild fauna and flora species; Circular 123/2003 dated 14/11/2003 of MARD guiding Decree No.11/2002/ND-CP of January 22, 2002, on management of export, import and transit of wild fauna and flora species. Those legal documents promulgated to implement Vietnam's obligation as a member of CITES convention.

Strengthening policy in this domain, in September, 27th 2004, PM approved the National Action Plan of improving of control wild plants, animals to 2010.

Responding to revise and update legal measures to implement CITES and encourage effective wildlife management as calls of World conservation congress and actual demands, in recent times, Decree No. 82/2006/ND-CP of August 10, 2006 on management of export, import, reimport, introduction from the sea, transit, breeding, rearing and artificial propagation of endangered species of precious and rare wild fauna and flora was issued to replace This Decree replaces the Government's Decree No.11/2002/ND-CP of January 22, 2002, on management of export, import and transit of wild fauna and flora species. This Decree's regulation scope includes clearly two parts: The specimens of wild fauna and flora species defined in Appendices I, II and III to the CITES Convention and The specimens of endangered species of precious and rare wild fauna and flora as provided for by Vietnamese law with specific conditions to each part. The Decrees also stipulates Responsibility, conditions to manage, Registering farms for the breeding, rearing and artificial propagation of endangered precious and rare fauna and flora species. The decree creates a firm legal base to manage and protect wild animals and species and prevent illegal trade of wild plants, animals in and cross Vietnam territory.

Accordingly, wild plants, animals GRs are protected in species level through species protection and ecosystem with main measures are instu following LFPD 2004, LOF, 2003 and above legal document. However, wild plants and animal GRs are not mentioned to protect in genetic level like plant varieties, livestock under OPV, 2004 and OLB 2004.

2.1.2.6. For provisions of the State management of fauna, flora GRC

Following Resolution 15/10 of IUCN considered that States have a duty of stewardship towards the conservation of genetic resources, in addition to improve to promulgate law and

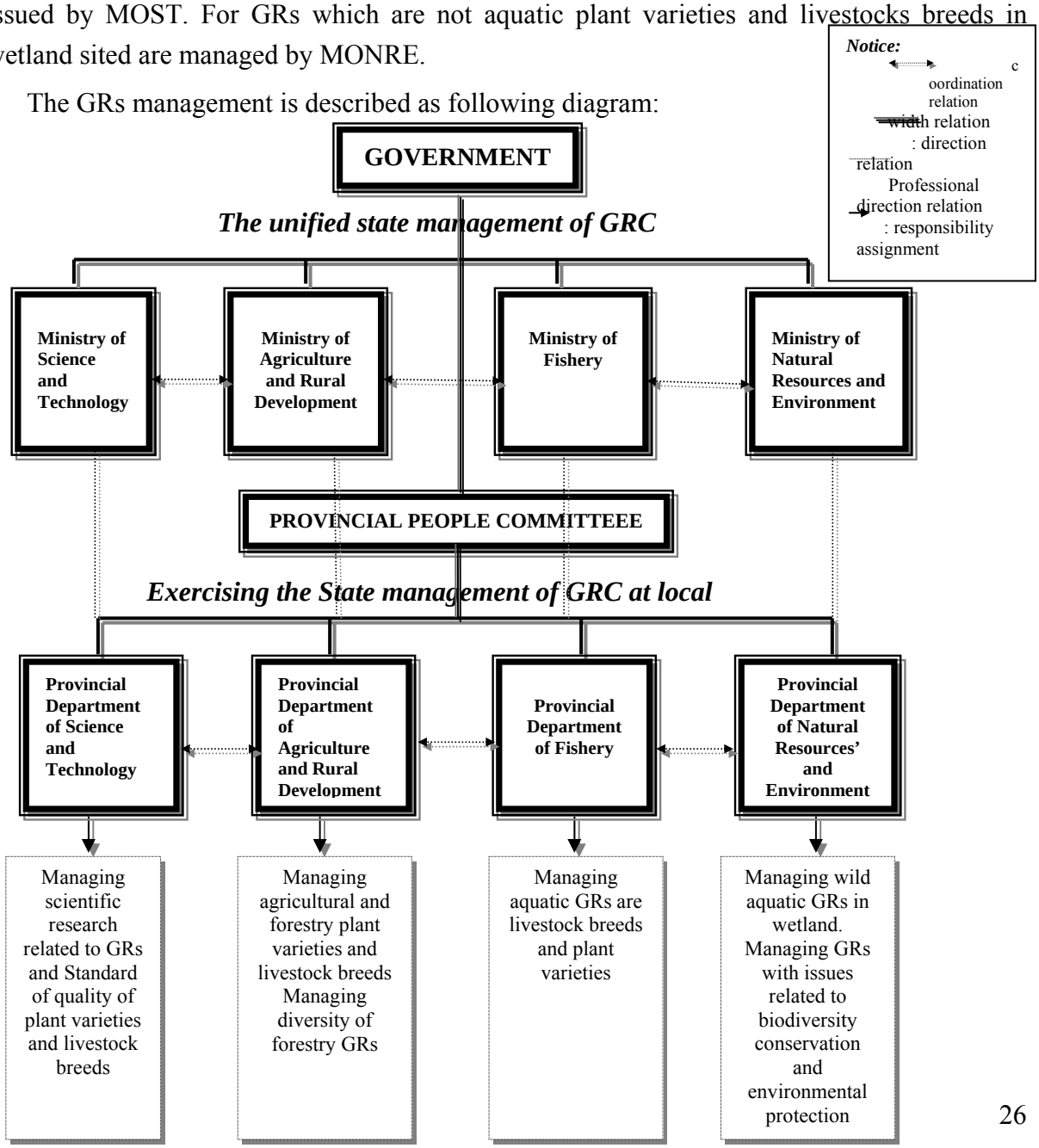
its enforcement, the State management also is improved with re-organization, restructure the State management machinery. The State management of GRC is provided by various legal documents with various States competent management agencies are responsible to manage GRs with various measures and application sanctions for violation of the State management of GRC provisions.

The State competent management agencies, ministries, which are responsible to GRC inclue:

Following Decision 2117/1997/QD-BKHCNMT, MOSTE was responsible to manage unity GRs nation wide. But, until November, 11th 2002, MOSTE was reorganized in to MOST and MONRE following Decree 91/2002/ND-CP providing function, responsibility, authority, organization structure of MONRE. So, the responsibility of GRS was regulated between two ministries. Following LFPD, 2004, OLB, OPV 2004, MARD is responsible to manage agricultural, forestry varieties and livestock breeds nationwide. MOF is responsible to manage aquatic breeds and varieties. The other ministries, agencies, People Commitee at all level are responsible to coordinated with MARD, MOF to mange

For issuing list of plant varieties, livestock breeds should be applied Vietnam Standard issued by MOST. For GRs which are not aquatic plant varieties and livestocks breeds in wetland sited are managed by MONRE.

The GRs management is described as following diagram:



In fact, it is quite difficult to delimit clearly the responsibility of Ministries in all cases. So, the most important thing is close coordination between these line Ministries and agencies.

Various sanctions also issued to support the State management of GRC. Administrative sanctions for violation to LGRC are stipulated basing on correlative law and ordinance such as: Decree 81/2006/ND-CP dated August, 10th 2006 on administrative sanctioning to violation in domain of environmental protection; Decree 70/2003/ND-CP dated June, 17th, 2003 on administrative sanctioning domain of aquatic resources; Decree 47/2005/ND-CP dated April, 8th 2005 on administrative sanctioning domain of livestock breeds; Decree 57/2005/ND-CP dated April, 27th 2005 on administrative sanctioning domain of plant varieties; Decree 139/2004/ND-CP dated June, 25th, 2004 on administrative sanctioning domain of forest protection and forest products management.

These legal documents prescribed objective aspects of violation actvities and each certain level has various handling level.

The restriction of legal promulgation was clarified as above analysis. In addition, restriction, constraints of legislation implementation and compliance are analyzed as the following. Because the compliance of law is very important and decisive to legal effect, although the legal promulgation is fulfilled well, its implementation and compliance to not well, the targets of it promulgation are not attained, the restrictions as the followings:

1- Organization structure with many focal points leads to overlapping, no unification to restrict implementation. For example, MOF is responsible to manage aquatic GRS and MONRE is responsible to manage wetland. There has not harmonization and unification between provisions of encouragement of aquatic GR development following Strategy of aquatic resources development of MOF and targets of conservation of MONRE. The management of MONRE is not absolute and consistent. This leads to the fact of destroying mangrove forest to shrimp breeding spread widely.

The unclear determination of focal point agency for State management for all kind of GRs and responsible agency to receive GRs ABS lead to loss of many precious Gars or not exploit and get benefit arising out from GRs utilization as inherent nation property while "Vietnam must purchase breeds and varieties from abroad expensively, especially forefather and grandparents breeds while traditional precious livestock breeds of Vietnam have being exploited without payment for copyright such as Mong Cao pig was advertised to sell on internet [38]

2- Awareness of GRs and self comply legislation of GRCs of the people and staffs is not high

3 - Implementation capacity of the State management agencies and specialization agencies of human resources, material bases are not enough to enable their responsibility effectively. for instance the case of the National institute of breeding, which has functions of manage, conserve and develop livestock GRs. facing with avian flu is happening significantly, conservation is difficult due to expenditure spent for rare and precious chicken breed each

year is only 15-20 million VND (about 900-1100USD) while species quantity need to be conserved is up to 60 species (chicken is 24 species) [14, 1]. In fact, many scientist stated "after restoring and getting out of danger, many precious GRs continued to fall back to be endangered, because, they are not developed by the farmer. Due to Vietnam, have not materials conditions to conserved genetic budget, most of livestock breed are not conserved following international standard, and ADN technology to determine GRs, lack of finance for development of Grs after getting out of danger

Part 3 - RECOMMENDATION

3.1. ORIENTATION TO IMPROVE LEGISLATION ON BIODIVERSITY CONSERVATON IN GENERAL AND LGRC IN PARTICULAR

Biodiversity conservation always is determined as one of basic targets and first ranked responsibilities of State and Party of environmental protection such as: Resolution 41-NQ/TW dated November, 15th 2004 of protection in period of forwarding industrialization and modernization of the country, the strategy of environmental protection to 2010 and orientating toward 202 approved by Decision 256/2003/QD-TTG of PM dated 02/12/2003, Agenda 21 approved by Decision 153/2004/QD-TTg dated 17/8/2004 and action program of the Government implementing Resolution 41-NQ-TW approved by Decision 34/2005/QD-TTg dated 22/2/2005. Orienting main contents of biodiversity and GRC include:

- "Organizing basic investigation early to assess comprehensively and concretely natural resources and biologically diversity of Vietnam.
- Strengthening forest protection and development
- Protecting wild animal species and endangered species
- Preventing invasion of alien species and GMOs cause adverse impacts to human and environment
- Protecting and preventing loss of rare and precious indigenous GRs
- Effective and sustainable use and exploitation of natural resources and combining with environmental protection in short and long term
- Developing, approving, and organizing to implement National Action Plan on biodiversity protection in the period of improving industrialization and modernization".

Most of above contents of conservation are proper to certain part of the World Conservation Strategy of IUCN that was awarded to "provided guidelines for sustainable development and that this has led to the formulation of many National Conservation Strategies incorporating the concept of sustainable development".

The priorities need to be carried out in this field includes:

1. *Improving policy and legislation relating biodiversity conservation,*
2. *Reviewing usually to adjust and supplement National Action Plan of biodiversity in order to the conformity of this Plan with socio-economic development strategy and plans.*
3. *Developing Action plan of Biodiversity conservation for each region,*
4. *Strengthening propaganda, training to raise awareness of the people of biodiversity conservation,*
5. *Reinforcing and broadening management of the system of PAs and decentralization of management. Promoting to set up system of natural museums from national level to local level to serve scientific research, knowledge dissemination, visiting, training studying, propaganda of history of natural development and biodiversity conservation.*

6. *Speeding up inventory of biodiversity, developing national database of fauna, flora resources, promulgation and dissemination Red Book of Vietnam of rare and precious species and breeds and varieties to protect strictly.*
7. *Training biodiversity conservation for staffs and forest management cadres and PAs, scientists and related actors.*
8. *Implementing scientific research and apply technology to use and exploit sustainable values of biodiversity, especially in the sectors of agriculture, forestry, aquaculture, and health. Encouraging research and application of indigenous knowledge in use and conserve biodiversity.*
9. *Developing and testing some projects of ecotourism.*
10. *Encouraging communities to set up and implement general regulation to protect biodiversity in localities.*
11. *Strengthening regional and international cooperation of biodiversity.*

In addition, there are specific plans that the National Strategy of Environmental protection to 2010, orientation toward 2020 impose specifically to biodiversity and GRC as the followings: "raising total area of natural PAs up to 1,5 times in comparison with one now, especially sea PAs and wetland" and "100% GMOs exported into Vietnam are checked".

3.2. DIRECTION AND GENERAL SOLUTIONS TO IMPROVE LEGISLATION ON GENETIC RESOURCES CONSERVATION

Vietnam Government is aware that "States have a duty of stewardship towards the conservation of genetic resources" like IUCN's 15th Session of the General Assembly of IUCN, Christchurch, New Zealand, 11-23 October 1981, Resolutions 15/10 on Genetic resources, considered. Basing on the need to improve LGRC in fact and roles, functions, responsibilities of the State, and general orientation of the Party and State, Direction to improve LGRC is determined as the followings:

The improvement of LGRC must satisfy general requirements to the legal system that are unity, comprehensiveness, consistency, clearness, concretization, feasibility. Besides, to attain real effectiveness, the improvement of legislation must be appropriate to specific characteristics of sectors of GRC.

Legal provisions of GRC must be proper to and consistent with legislation of biodiversity, and legislation of environmental protection, because, biodiversity's components and environment's components have interaction relationship to each other. If the provisions are scattered and not concentrated, only attach the importance with some traditional, endangered species, breeds, varieties but not protect whole habitat, emigrant species and environmental factors impacted to them such as land, water supply, pollution prevention and climate conditions, LGRC will scope with barriers in implementation

Improvement of LGRC must be proper to general orientation and views of socio-economic development, environmental protection, then promote socialization and ensure maximum benefit of the stakeholders, harmonization benefit of each level, sector, community,

individual, organization in GRC, so, in order to promote resources to get the most effectiveness to GRC.

Improvement of LGRC must ensure to follow the principle of national sovereignty, however, it is ensured to implement national responsibilities committed in international agreements.

Improvement of LGRC should be based on the need to regulate GRC by law and situation of existing law on GRC to propose solutions to improve LGRC in Vietnam.

General solutions for LGRC include:

i. Studying and propose statement of socio-economic activities related to GRC to improve legal provisions proper to reality and high feasibility.

ii. Assessing comprehensively state of LGRC then basing on these findings of provisions needs to be supplemented, amended or newly issued to satisfy requirements of strengthening GRC, ensure the unity of legal system of GRC.

iii. Acquiring typical national and international research, grasping thoroughly provisions of CBD, its Protocol and Guidelines, treaties that Vietnam signed to develop national legislation to issue legal instruments timely and fully.

iv. Implementing activities in order to improve the effect of law implementation in LGRC such as propaganda, raising awareness of law compliance and enforcement, capacity building of staffs, State competent agencies of GRC, improvement of material bases, equipment, technical and technology bases of GRC.

3.3. SPECIFIC SOLUTIONS FOR IMPROVEMENT OF LGRC

Basing on above analysis of legal provisions on GRC, determination restriction and reason of restriction, solutions are given below to overcome the restriction, improve to conserve GRs by legislation.

3.3.1. Development and improvement of legal provisions

Improvement national legislation on biodiversity conservation in general and GRC in particular is required by both CBD and resolutions of World Conservation Congresses of IUCN.

The below solutions to improve LGRC with comprehensiveness, unity, consistency, feasibility and high technical development of legislation.

3.3.1.1.Developing Law on Biodiversity

Resolution No 12/2002/QH11 on the program of development of Laws and Ordinances of the 11th National Assembly, LB is one of 61 law projects of this Program [21, 3]. The LB will be the most important legal base for GRC and unity of legal provisions of GRC to avoid situation of legal provisions scattered in many legal documents and low validity legal documents now.

With the active support of IUCN Vietnam, Department of Environment of MONRE is developing Draft of LB. It will include main following regulation contents: i) Monitoring on

biodiversity and natural conservation planning; ii) Establishment and management of PAs, iii) Conservation and sustainable use of species; iv) Access to genetic resources and benefit sharing; v)Biosafety; vi) international cooperation and implementation of international related biodiversity; vii) State management responsibilities.

One important point is that some above contents is regulated quite effectively by other laws and by-laws documents, some of which have just newly issued, so Draft of LB should be inherited appropriate reasonable contents of them to supplement and develop, for example establishment and management of PAs, biosafety with GMOs management. But some contents are quite new and now, they have no any concrete provisions such as alien invasion control; Access to genetic resources and benefit sharing, or there have provisions but not enough, for example: Monitoring on biodiversity and natural conservation planning; Conservation and sustainable use of species. Especially, provisions of State management responsibilities must have been changed under the LB with new State agency will be established and some functions, responsibilities will be arranged or passed from Ministry, agency to other Ministry, agency. This change and re-arrangement should be based on actual capacity of State management of Ministries, agencies, State machinery's organization, policy of decentralization of the Government, avoiding overlapping and power concentration. Some contents should refer to international agreements which Vietnam has ratification, acceptance or approval, accession.

Being consistent with above parts, in this part, the research will concentrate to recommend some contents are quite new and have no concrete legal provisions, that related directly to Gars such as wild genetic resources, ex-situ conservation, access to genetic resources and benefit sharing

Wild genetic resources conservation:

Following 16th Session of the General Assembly of IUCN, in Madrid, Spain, 5-14 November 1984, 16/24. Wild GR and endangered species habitat protection, "fully conscious that wild plant and animal species in all their genetic diversity constitute a vast and virtually untapped reservoir of innumerable, irreplaceable genetically controlled processes of immense value to mankind now and in the future", it is essential to regulate wild genetic resources conservation as become a content of LB. It may be organized as a chapter or a section of certain chapter. However, it should be discriminated between conservation of genetic level and conservation of species. The methods of GRs conservation and species conservation are different, while some cases there are more attention to conserve GRs than to conserve species or vice versa. In Vietnam, now, there are no direct and concrete legal provisions of wild GRs conservation, so it should be supplemented into LB in logical way.

Ex-situ conservation:

In Vietnam, it lacks concrete law's provisions of exsitu conservation. Therefore, The LB should have regulation of ex-situ conservation in detail and clearly. It will emphasize

importance of exsitu conservation, especially in GRs, concurrently the situation of issuing too many by-law document guiding implementation of the LB as the others law's development.

In fact, ex-situ conservation is considered as assistance methods to in situ conservation to recover and restore threatened species and reintroduce them back to their natural environment. Ex-situ is considered as "reserving" sources for in-situ. For ex-situ conservation, the most applied popular methods are to establish Genetic Bank, zoos, laboratory and modern preserving equipments.

Accordingly, there need to have clear provisions of management mechanism and activities, operation of genetic bank. There also need to develop the provisions of management of species, GR collection for aims of ex-situ conservation without causing harms to GR, species and related ecosystem.

Besides, it needs to broaden methods of ex-situ conservation such as encouragement mechanisms for individual, organization creating breeds, varieties, rearing rare and precious plant and animal to develop GRs and species. To implement this thing, some contents should be considered to apply:

i) Determining threaten species that need special recovery and restoring mechanism

ii) Determining organizations, individuals, who can be allowed to implement this work and granted certificate to implement this work, conditions to be granted certificate and protection and encouragement mechanism to facilitate this work.

iii) Mechanism of financial investment to ex-situ conservation that includes multiplication, rearing and development and policy of treatment.

iv) Determining conditions and ability of recovered and restored plants and animals when coming back to their natural living environment.

Regulation of GRs access and benefit sharing

Access to GRs is determined as an important part of GRC and biodiversity conservation according to Article 15 of the CBD and Bonn Guidelines. Only basing on fair and equitable ABS, GRs will be conserved effectively and sustainable. Therefore, GRs should be determined as subject of regulation of the law. By Clause 1, Article 15 of the CBD "recognizing the sovereign rights of States over their natural resources, the authority to determine access to GRs rests with the national governments and is subject to national legislation", the legal status and its ownership should be clarified to regulate effectively. Because, in Vietnam, there exists many kinds of GRs ownership: ownership belongs to the State (*ownership of the entire people*) or local community or individual according to Article 17, 1992 Constitution of Vietnam *"Land, forests and mountains, river and lakes, water resources, resources in earth's womb, interest from territorial waters, continental shelf, airspace […] are under ownership of the entire people"* . It is very important to determine which cases GRs ownership belongs to the State, which cases belongs to local community or individual. Clarification of the GRs ownership will surmount the complex and unclear

ownership that causes rights to GRs ownership are not implemented and protected effectively, GRs are lost or exploited unfairly, inequitably without management.

The Regulation of GRs ABS should be developed in accordance with Clause 7, Article 15 of the CBA "contracting Party shall take legislative, administrative and policy measures,…with the aim of sharing in a fair and equitable way the results of the research and development and the benefits arising from the commercial and other utilization of GRs with the Contracting party providing such resources. Such sharing shall be upon mutually agreed terms" and its principles should be based on Clause 3 and 4 of Article 15 "access, where granted, shall be on mutually agreed terms..." and Access to GRs shall be subject to prior informed consent…" Contents of the regulation should be accorded with Bonnes Guidelines but harmonized and adapted with actual conditions of Vietnam. It also should be accorded with provisions of ASEAN treaty of access to GRs and fair and equitable sharing benefit arising from GRs and biological resources utilization. It also should be referred the experiences of the countries that have Law regulated this field such as Philippines, South Africa, and Brazil…

Therefore, the regulation should consist fully of:

Provisions of necessary to decide access to GRs (*basic requirements of access*): environmental impact assessment, how GRs will use in the future after access…

Provisions of GRs utilization, collection, transfer, dispose, import, export: necessary license, certificate, controlling utilization, origin, system of keeping in quarantine…

Provisions of process and procedures of Access

Provisions of competent agencies of ABS: criteria to choose or establish competent agencies, rights and responsible, roles,

Provisions of detail principles of PIC and MAT,

Provisions of participation to negotiation, consultancy to provider and receiver, who supervise and implement agreed terms and conditions of ABS,

Provisions of (mechanism of) determination of benefit and measures to share,

Provisions of mechanism to share benefit between providers

Provisions of regular report of the persons who are using GRs, intellectual property rights and benefit sharing, including protection of rights and benefit of local population communities or individuals people who hold traditional knowledge of medicine plant, animal and health care, and indigenous GRs

Provisions of mechanism and procedures complain, petition in cases of refusal to GRs access

Provisions of responsibilities of the competent State management of GRs ABS and handling for violation, mechanism of compensation.

Accordingly, the competent agencies of granting license of access to GRs should be a the State agencies with professional consultancy of research institutions or some research

institutions with their commitments of contribution to the State budget a certain rate of attained benefit. The participant's local authorities should be commune authority's level. The procedures should be carried out quickly, conveniently basing on sound legal bases, avoiding it becomes barriers of cooperation and investment. The agreement of GRs ABS should have fully participation of related stakeholder of GRC, especially the owner of GRs, depending specific case they may be individuals, local unions, organizations, State authorities, enterprises… when access GRs, the user should prior inform methods, scope of exploitation, GR utilization mode and aims. When receiving application, the competent agencies should answer "accept or not "in defined time (may be 15-30 days). The GRs users must commit to exploit sustainable, have method to minimize negative impacts, restoring ecosystem. When GRs are in PAs, besides management boards of PAs, benefits should be shared to local communities living in or adjacent to PAs or in buffer zones.

Regarding to mechanisms of determination of benefit, as Bonne guidelines, there are many kind of benefit: monetary or non-monetary. For monetary, the CBD permits a link between a genetic resource and a claim on economic returns from commercial use of the genetic resource. Several factors influence the design of such mechanisms. One important factor is the transaction costs associated with the targeting of benefits. Thus, the design of benefit sharing arrangements should take into account the cost-benefit ratio involving the transaction costs associated with the mechanisms for targeting the benefits and the potential profits from the transaction. The cost-benefit ratio is very much likely to differ considerably between transactions geared for pharmaceuticals and those geared for agricultural products. In the case of pharmaceuticals, the potential profits from drug discovery are large, and this may only involve one source of genetic resources. In contrast, agricultural products, e.g. new plant varieties, typically do not generate large profits [15].

The benefit attained from GRs ABS will spend to natural resources management, scientific research aiming to biodiversity conservation and sustainable utilization. Benifitable subjects include not only the State agencies but also local communities, indigenous people, NGOs. Therefore, the mechanism of sharing should be flexible and chosen by the participants. For researches have purpose of purely scientific, benefits are less than commercial use ones. Forms of sharing should be includes: fees of GRs access, fees of getting sample, total money one time when GRs access, benefits are assessed and paid regularly following each period, benefit paid for long time, fees of granted certificate of commercialization of products, money contributes to conservation and sustainable development funds, salary of staffs, local people and GRs keepers, protectors, collectors, money of research budgets, coordination between locality and research units and GRs user to produce commercial products related GRs.

For non-monetary, it includes training, knowledge, technology transfer, research results share, coordination and development, preferring conditions, capacity building to management and research [4, 2].

3.3.1.2. Supplementing and amending related Laws

With the development and approval of LB, some related Laws also need a suitable supplementation and emendation, for example: LFPD, LOF, OPV, OLB…..to ensure the unity and comprehensiveness of a legal system. This will create a big progress in law of natural resources conservation but requite many time and efforts.

3.3.2. Solutions of improvement of LGRC's enforcement and implementation

In addition to the solutions of improvement of legislation, solutions to improve enforcement and compliance of LGRC are very important. Legislation only improved its enforcement when it is applied and complied in fact. Therefore, the following solutions are given to enhance enforcement of LGRC.

3.3.2.1. Enhancing awareness of GRC and LGRC's enforcement

Enhancing awareness of GRC and LGRC's enforcement for local communities and people is very important, because, they plays the most essential roles in GRC, especially ABS. the role of enhancing awareness is recognized by the Article 13 of the CBD and most of resolutions of World Conservation Congress of IUCN. When the people are aware the importance of GRC and benefit arising out from GRC, they are self -conscious to comply LGRC. Promoting the roles of local communities and indigenous people in GRs is very important. Therefore, propaganda and dissemination of knowledge is very necessary such as community education, training, propaganda through mass media, logo, notice board, leaf-left, hoarding, panel… in which, community education is social work, required to implement at large scope with suitable form. Practice indicated that the most appropriate kind is to combine program of propaganda and dissemination with education program of law, propaganda, and dissemination of population or natural disasters combat. In some locality, close coordination of community education between justice agencies, environmental management and forest rangers enhance advantages in the awareness of community. If this coordination is widen to social organizations such as women union, population, health organization, awareness of the community will be more effective.

3.3.2.2. Strengthening capacity of State management of GRC

Building capacity State management staffs has important meaning to GRC, including enhancing professional quality, awareness, profession responsibility, namely:

i) Enhancing basic training that usually has high quality and supplement human resources longer.

ii) Broadening skill training and re-training. In fact, it indicated that these traning forms contribute mostly to update new knowledge of GRs, GR management of the executing staffs, to reinforce professional skills, such as skill of identifying fauna, flora species, monitoring, controlling alien species, GMOs…

Enhancing capacity of State management staffs means enhancing competent State management agencies' capacity. However, enhancing competent State management agencies' capacity includes not only human resources but also organization and function, responsibility. There need a discrimination of functions and responsibility clearly, manifestly of the

competent State agencies, because, there are various agencies and ministries has responsibility to GRC. Therefore, it should be established coordination mechanism to implement their responsibility to avoid overlapping or omit. It needs to determine State management agency as focal point to GRC, especially GRs ABS.

3.3.2.3. Enhancing technical, material base of GRC

Inventory, supervision, statistics, genetic classification only is implemented well when equipped fully high technical equipments. Therefore, strengthening material, technical equipments of GRC is necessary conditions to implement this responsibility. It also is an important responsibility the CBD required as well as the State of Vietnam. In which, combining closely between exploitation and conservation, usage, actively investigatating, finding new breeds, varieties, developing system of conservation from central to locality, modernization conservation technology, especially developing national center of Genetic conservation where keeping and conservation all precious wild GRs and plant varieties, livestock breeds.

CONCLUSION

This research is firstly aim to contribute to improve LGRC and Law on biodiversity conservation in Vietnam in any way. It is implemented with ambition of covering all aspects related to LGRCs as well as many solutions to introduce more and more to readers. It provides an overall picture of LGRC for reader. However, it's also a weak points of this research, because, some contents are not in detail, and deeper, further analysis as expectation of the readers. Therefore, this research has more suggestion and reference to read related documents.

Before the situation of loss and degradation of many rare and precious GRs, appearance of alien invasion, GMOs, unfair and inequitable RGs ABS, and LGRC must be improved timely. In addition, now, in Vietnam, development of draft of Law on Biodiversity is hope and expectation of many conservationists, people, the State and the other related Stakeholders. It is also the best legal solution for LGRC. Because, many existing provisions of LGRC are lacked or not appropriate or restriction to GRC, they will be prescribed and supplemented under LB. developments of LB will lead to a big progress and changes in law area of natural resources conservation in Vietnam. Concurrently, supporting solutions are recommended to implement to GRCs. They should be implemented at the same time with LB development to achieve expected results in GRC.

APPENDICES

APPENDIX 1. INTERNATIONAL AGREEMENTS, WHICH HAVE PROVISIONS OF GRC, VIETNAM IS A THEIR PARTY

Name	Signing place and time, Contracting Parties (updated until January 26, 2007)	Date of Vietnam's accession	Main content
RAMSAR convention on wetland (The Convention on Wetlands of International Importance, especially as Waterfowl Habitat)	adopted by participating nations at a meeting in Ramsar, Iran on February 2, 1971 and came into force on December 21, 1975 amended by Paris Protocol in December 3 th, 1982 Contracting Parties: 169	November, 19th 1987	the conservation and wise utization of wetland of International Importance, especially as Waterfowl Habitat
Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES	adopted by participating nations at a meeting in Washington D.C, (US) in March 3th 1973 and came into force in July 1st 1975, Contracting Parties	January, 20th 994	Prohibiting trade of endangered species
Convention on biodiversity	adopted by 153 participating nations at a international Conference of environment and development in 5/6/1992 in Rio de Janeiro (Brazil)	November, 16th 1994	Biodiversity conservation and sustainable use its components and Fair and Equitable Sharing of the Benefits Arising out of GRs Utilization
ASEAN Frame Agreement on Access to Genetic Resources and biological Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization	Approved by 14th ASEAN working group on natural conservation and AL/VGNCB in May, 3th – 5th , 2004 in *Luangprabang*, Laos PDR	May, 8th 2004	Access to Genetic Resources and biological Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization

Sources:: http://www.cites.org/; http://www.ramsar.org/; http://www.biodiv.org/default.shtml;
National environment Agency, 2001 now it is VEPA – MONRE) and Internation Cooperation Department, Ministry of culture and information.

APPENDIX 2. LIST OF RELEVENT POLICIES AND LEGISLATION

Dated	*Issued by*	Content	note
7/7/1960	PM	Direction 134/ TTg prohibiting to hunt elephants,	
7/7/1962	PM	Decision 72/ TTg of on Cuc Phuong forest	
4/5/1963	The Ministerial Council	Decree No. 39/CP providing temporary regulations on hunting forest birds and animals	
1/17/1992	The Council of Ministers	Decree No. 18/HDBT on Listing Species of precious and rare Wild Plants and Animals and Regulating their Management and Protection	
12/22/1995	The Prime Minister	Decision No. 845-TTg on Ratifying the Plan of Action to protect the Bio-Diversity of Vietnam	
2/30/1997	Minister of science, technology and Environment	Decision No 2117/QDD-BKHCNMT issuing the regulation on management of conservation plant and animal genetic	
5/08/2002	Minister of Science, Technology and Environment	Decision No 26/2002/QD-BKHCNMT approving Program on improving biodiversity awareness for period 2001-2010	
3/6/2002	The Government	Decree 58/2002/ND-CP issuing Statute of plant protection and plant quarantine,	
12/02/2003	The Prime Minister	Decision 256/2003/QD-TTg on approving the National Strategy on environmental protection to 2010 and oriented to 2020	
6/17/2003	The Government	Decree No 70/2003/ND-CP providing sanction for administrative infringement in fishery	
9/23/2003	The Prime Minister	Decree No 109/2003/ND-CP on wetland conservation and development	
9/17/2003	The Prime Minister	Decision No 192/2003/QD-TTg on approving the Strategy on management of protected Areas system of Vietnam to 2010	
11/26/2003	National Assembly	Law on aquatic resources	Replaced the Ordinance on aquatic resources protection and development, 1989
4/5/2004	Minister of natural resources and environment	Decision 04/2004/QD-BTNMT approving the Plan action on wetland conservation and sustainable development for period 2004-2010	
4/20/2004	MARD	Decision 16/2004/QD-BNN regulating procedures and dossiers of plant quarantine	
7/16/2004	The Prime Minister	Decision No 131/2004/QDD-TTg Prime Minister on approving the Program of aquatic resources protection and development to 2010	
8/17/2004	The Prime Minister	Decision No 153/2004/QD-TTg issuing the Oriented Strategy on Sustainable development in Vietnam (Agenda 21of Vietnam)	
9/27/2004	Prime Minister	Decision 1021/QD-TTg approving the National Action Plan on improvement of control wildlife trade to 2010	
9/3/2004	National Assembly	Law on Forest Protection and Development.	1991 Law on Forest Protection and Development.
June, 25th, 2004	The Government	Decree 139/2004/ND-CP on administrative sanctioning domain of forest protection and forest products management	

Dated	*Issued by*	Content	note
24/3/2004	Standing committee of National Assembly	Ordinance on plant varieties	The decree 07/CP on management for plant varieties 2/5/1996 of The Government
24/3/2004	Standing committee of National Assembly	Ordinance on livestock breeds	The decree No 14/CP on management for livestock 3/19/996 of The Government
2005	Prime Minister	Decision 212/2005/QD-TTg issuing Regulation of biosafety management for GMOs and products, commodities originated from GMOs	
April, 8th 2005	The Government	Decree 47/2005/ND-CP on administrative sanctioning domain of livestock breeds	
April, 27th 2005	The Government	Decree 57/2005/ND-CP on administrative sanctioning domain of plant varieties	
8/10/2006	The Government	Decree No. 82/2006/ND-CP, on management of export, import, introduction from the sea, transit, breeding, rearing and arificial propagation of endangered species of precious and rare wild fauna and flora	Decree No 11/2002/ND-CP on management of import and export and transit wild life flora and fauna dated 1/22/2001 of The Government
3/30/2006	The Government	Decree **32**/2006/NĐ-CP managing endangered, rare and precious forest animals and plants	Council of Ministers' Decree No. 181HDBT of January 17, 1992, promulgating the list of precious and rare forest plants and animals and the regime of management and protection thereof, and the Government's Decree No. 48120021ND-CP of April 22, 2002, amending and supplementing the list of precious and rare forest plants and animals and the regime of management and protection thereof, promulgated together with the Council of Ministers' No. 181HDBT of January 17, 1992 .
August, 10th 2006	The Government	Decree 81/2006/ND-CP on administrative sanctioning to violation in domain of environmental protection	Decree No 121/2004/ND-CP providing the sanction for administrative infringement in environmental protection 5/12/2004
September, 22th , 2006	The Government	Decree 104/2006/ND-CP on regulating in detail and guiding implementation of some provisions of Law on intellectual property for rights to plant verieties	Decree 13/ 2001/ ND-CP dated 20/4/2001 on plant varieties protection.

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