BMZ Federal Ministry for Economic Cooperation and Development

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Land Use Planning

Concept, Tools and Applications

Published by: giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Table of Contents

List of Acronyms and Abbreviations

ABS	Access and Benefit Sharing
ADB	Asian Development Bank
AfDB	African Development Bank
CAP	Community Action Plan
CBD	Convention on Biological Diversity
CBO	Community-based Organization
CILSS	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (Permanent Interstates Committee for Drought Control in the Sahel)
CIMA	Centro de Conservación, Investigación y Manejo de Áreas Naturales, Peru (Centre for Conservation, Research and Management of Natural Protection Areas, Peru)
CLUP	Comprehensive Land Use Plan
DEM	Digital Evaluation Model
DRM	Disaster Risk Management
DSM	Department of Survey and Mapping at Ministry of Lands and Resettlement, Namibia
DTM	Digital Terrain Model
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GIS	Geographical Information System
GPS	Global Positioning System
GT	Gestion des Terroirs (fr., Land Use Planning)
HCV	High Conservation Value
HCVA	High Conservation Value Area

IDB	Inter-American Development Bank
IRLUP	Integrated Regional Land Use Plans, Namibia
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KfW	Kreditanstalt für Wiederaufbau (Bank for Reconstruction)
LUP	Land use planning
LUPA	Sub Division Land Use Planning and Allocation at Ministry of Lands and Resettlement, Namibia
LUPO	Land Use Planning and Resource Management Project in Oromia, Ethiopia
MDG	Millennium Development Goals
MLR	Ministry of Lands and Resettlement, Namibia
MRC	Mekong River Commission
MUF	Mapeo de Usos y Fortalezas (span., Strengths and Resource Use Map), Peru
NGO	Non Governmental Organization
NID	Namibia Institute for Democracy
NRPP	Natural Resource Policy Programme, Brazil
OECD	Organization for Economic Cooperation and Development
PAAF	Participatory Approaches in Agriculture and Forestry
PACT	Programme d'Appui aux Collectivités Territoriales, Mali (Program to Support Local Territorial Entities)
PES	Payment for Ecosystem Services
PLUP	Participatory Land Use Planning
PPG7	Programa Pilota para a Proteção das Florestas Tropicas do Brasil (Pilot Program for the Protection of Brazilian Rainforests, Ministry of the Environment, Brazil)
PRA	Participatory Rural Appraisal

PRONAMACHS	Programa Nacional de Manejo de Cuencas Hidrográficas y Conservación de Suelos (National Program for Watershed Management and Soil Conservation), Ministry of Agriculture, Peru
RRSPO	Roundtable for Sustainable Palm Oil
PVDP	Participatory Village Development Planning
REDD	Reducing Emissions from Deforestation and Forest Degradation
RyGRAC	Project for Reconstruction and Disaster Risk Management in Central America after Hurricane Stan
SEA	Strategic Environmental Assessment
SLA	State Land Administration
SMRP	Sustainable Management of Resources Project
SOP	Standard Operation Procedures
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environmental Program
UN-HABITAT	United Nations Human Settlements Programme
UN-REDD	United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation
USD	US Dollar
WB	World Bank

Preface

Land is a scarce resource increasingly affected by the competition of mutually exclusive uses. Fertile land in rural areas becomes scarcer due to population growth, pollution, erosion and desertification, effects of climate change, urbanization etc. On the remaining land, local, national and international users with different socioeconomic status and power compete to achieve food security, economic growth, energy supply, nature conservation and other objectives. Land use planning can help to find a balance among these competing and sometimes contradictory uses.

Since the 1990s land use planning is an important topic in the context of German development cooperation in rural development. On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)* GmbH has contributed significantly to the exchange of know-how and the development of concepts and tools. Experiences of a high number of partner countries have been evaluated systematically and integrated in the concept development resulting in the land use planning guiding principles published in 1995. Land use planning was understood and still is as a social process that aims at a sustainable land use and balance of interests in rural areas.

Not only the underlying conditions but also technologies, especially in the fields of remote sensing and geographical information systems (GIS), have changed significantly since the 1990s. Both changes had an impact on the methodologies applied in land use planning. These technological and methodological developments as well as new development challenges such as climate change and increasing competition on land and the subsequent new fields of application for land use planning made a general review of the existing land use planning guideline necessary. During the past decade some concept developments have already taken place such as land use planning for disaster risk reduction or land use planning in the

*The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH was formed on January 1, 2011. It brings together the long-standing expertise of DED, GTZ and InWEnT. For further information go to www.giz.de.

context of decentralization. They are now integrated in the present publication.

The present manual has been prepared by an interdisciplinary group of experts with land use planning experiences in Africa, Asia, Europe and Latin America. Many of them had already been involved in the preparation of the first guide, others have newly joined the land use planning discussion coming from new fields where land use planning nowadays is applied.

The guide is based on a previous publication from 1995 and enriched with many recent examples of land use planning in a much broader context than in the past. It also includes technologies that have not been available at that time or only in a limited way. Based on a preparatory study in 2008, an experts meeting in 2009 defined targets, contents and structure of the publication. More than 50 experts contributed to the preparation of the present manual.

Parallel to the process at GIZ, land use planning has also been discussed by UN organizations, specifically by FAO and UNEP. 'In the 1990s, land use planning was also treated extensively in science and research. These concept developments and findings have been carefully considered while preparing the present manual.

The guide has been prepared for local as well as international, senior and junior professionals involved in rural development in developing countries who are interested in learning more about land use planning and integrating relevant concepts of land use planning in their development work. Unlike the first publication, the present one does not only focus on methods, strategies and tools but also includes a wide range of applications for land use planning with concrete examples.

Eschborn, 2011

Albert Engel
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and Food

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Land Policy and Land
Management

Land use planning in San Marcos, Guatemala

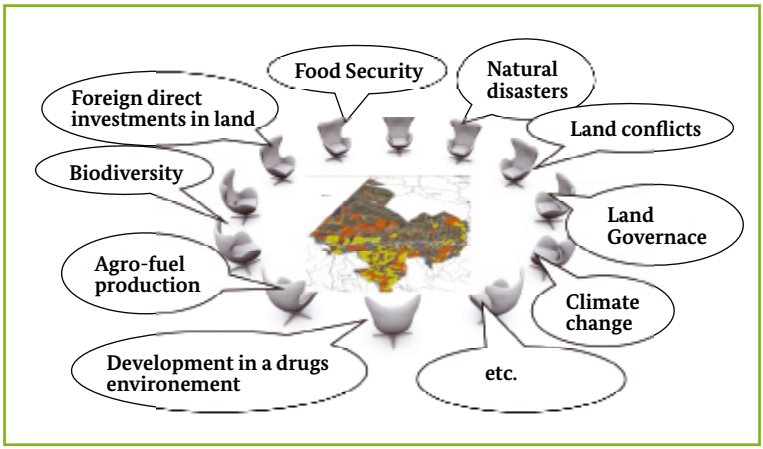
1 Introduction

Introduced in development cooperation in the 1980s in the context of natural resource management, land use planning developed into a standard tool for rural development addressing many of today's challenges in rural areas.

1.1 Land Use Planning – A Response to Current Constraints and Challenges of Development

Achieving food security, mitigating and adapting to climate change, protecting biodiversity while at the same time initiating economic growth, protecting people from natural disasters, preventing and settling land conflicts or initiating development in a drugs environment are just a few of the many challenges rural areas in developing countries are currently facing. Land use planning is one of the tools that can help to meet them as it focuses on negotiating future land and resource uses by all relevant stakeholders.

All human activities need a place to be realized. While the demand for land increases, supply is fixed. Land, therefore, becomes increasingly scarce. The result is an increase in the number of land conflicts and the level of violence of these conflicts. If at an early stage, a consensus on the land use can be negotiated by all conflicting parties and be approved by the responsible official institution making it legally binding, conflicts can be avoided.



Today, persistent population growth, climate change, erosion and desertification as well as urbanization increase the pressure on fertile land and other natural resources. At the same time, competition for limited available agricultural areas increases due to growing demand on national

and international markets for food, fodder, raw material and biomass for industrial and energy use. The extreme increase of land sales and land leases in developing countries illustrates that the global competition for scarce land resources has gained a new dimension. State actors and private investors from developed countries and newly industrialized countries capture huge agricultural areas – generally with access to ample water – in developing countries through purchase or long-term leases to grow food, agro-fuel or other cash crops for export. In general, quick benefits from large investments in industries, mining, agro-industries etc. for the sake of increasing GDPs create pressure to rural land uses with less economic contributions leading to an often irreversible conversion of traditional land uses. In addition, agricultural funds investing in agricultural lands have become a current trend product in financial markets, thus participating in the rising value of land, which was already valuable due to its growing scarcity. The scarce resource land increasingly becomes a venture. Accordingly, there is a high demand for concepts and tools that help find a balance among the interests of all stakeholders. Land use planning has proven to be such an approach.

Examples of contrasting land uses leading to competition and conflict

- Agricultural use of land versus industrial, commercial and residential use
- Environmental protection versus agricultural production
- Mining versus other land uses
- Cultivation of agro-fuel plants versus food production
- Production of raw materials for industrial production and thereby economic development (e.g. rubber plantations as a prerequisite for automobile industry) versus protection of nature and ecological sustainability (e.g. prevention of deforestation and thereby mitigating emissions – REDD)
- Intensification of cash-crop agriculture for export versus subsistence agriculture and extensive land use to ensure food security (often opposing formal land rights defined by the state and informal locally legitimized traditional land rights frequently including access to water, forests and other resources)

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- Extension of settlement areas, farms and infrastructure in risk areas versus disasters prevention (new constructions often increase risks, e.g. by blocking flood areas)
- Competition between long-established settlers and new migrants who had to leave their home areas due to wars, climate change or natural disasters

The present global developments, especially the increasing number of conflicts over land and the necessary adaptation of land use to climate change but also increasing income and power gaps modify the role of land use planning and increase its significance. It is no longer just a tool of few village developers. Land use planning has become a central prerequisite for any (spatial) development that aims at social, ecological and economic sustainability. To meet this challenge, land use planning has had to extend its contents and adapt its methods. First experiences are now available and are documented in the following chapters.


Ont signé :

DESIGNATION	SIGNATURE
Pour le village de : Sagala Le Chef de village Mr	
Pour le village de : Tolma Le Chef de village Mr	
Pour le village de : N'tomono Le Chef de village Mr	
Pour le village de : Chocoum Le Chef de village Mr	
Pour le village de : Tountouroubala Le Chef de village Mr	
Pour le village de : Gawantou Le Chef de village Mr	
Pour le village de : Dioumé Le Chef de village Mr	
Pour le village de : N'Godji tourela Le Chef de village Mr	
Pour le village de : N'Godjoore Le Chef de village Mr	
Pour le village de : Ouérdé Le Chef de village Mr	

Pour la Commune :

Le Maire

Pour la Préfecture :

Le Préfet

Fait à Sagala, le 28 Avril 2005

A legally binding local agreement on the access to and use of land signed by the village chiefs, the mayor and the governor, Mali (see A6);

Source: Betke/Fischer (2009)

Land use planning presents a development approach that contributes to the prevention of land use conflicts, the adaptation of land uses to physical and ecological conditions, the lasting protection of land as a natural resource, the lasting productive use of land and a balanced use that fulfils all social, ecological and economic requirements. "Land use planning creates the preconditions required to achieve a type of land use that is environmentally sustainable, socially just and desirable and economically sound. It thereby activates social processes of decision making and consensus building concerning the utilization and protection of private, communal or public areas" (GTZ 1995: 7). At the core of land use planning is the joint balancing of competing land uses by all stakeholders (users and those affected from the (changes in) land uses) and the joint identification of those uses for which the highest consensus can be achieved – ideally for the purpose of sustainability. The use of adequate, locally adapted information systems providing information on, for instance, land availability, existing land rights and land uses can create transparency at national and decentralized levels. This transparency is an important base for all further planning and responsible decision-making on the use of land.

The potential contribution of land use planning to avoid "land grabbing" and to mitigate its consequences

In the current discussion, "land grabbing" refers to foreign direct investments by states and private investors from developed countries and newly industrialized countries in developing countries who secure land – often in connection with water or other resources – through long-term leases or purchases. While these investments can bring employment, infrastructure and modern technologies, they can also contribute to landlessness, local food insecurity, environmental damages, rural-urban migration etc. The term "land grabbing" is explicitly used for those cases where the local population is losing access to land. Hence, by far not all foreign direct investments are referred to as "land grabbing". A key problem of "land grabbing" is the absence of local participation in the identification of areas for foreign direct investments as well as the lacking recognition of local land rights by the national governments who are selling or leasing the land which formally is referred to as state land.

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Legally binding local land use plans that have been prepared in a participatory manner as well as officially recognized local agreements on the use of land can increase the chances of the local population of being safe from "land grabbing", especially when these plans and agreements also address the issue of tenure security as now done in Laos and Cambodia (see 3.11 and A7). Land use planning can also be used as a platform to solve land conflicts that result from large scale land acquisition. In this case, local administrative bodies need to invite the foreign investor as well as the responsible representatives of their government to negotiate land use compromises in the respective area. Technical cooperation could play a role as mediator and/or provide support to the local community.

Land use planning in Laos now includes the identification of state, communal and private/ individual land in the village area and their systematic registration; in this way it helps to prevent "land grabbing" (see A7)

1.2 Land Use Planning – A Contribution to Achieving International Development Goals

International development goals defined within international processes provide a useful frame for land use planning. The most relevant development goals for land use planning today are the Millennium Development Goals (MDG), the international conventions on climate protection, biodiversity and combating desertification as well as international agreements such as the Agenda 21 or the declaration on forests.

Agenda 21 resulting from the United Nations Conference on Environment and Development (UNCED) in 1992 in Rio de Janeiro was the first international document highlighting the importance of land use planning for sustainable development. Although the Rio Declaration wasn't legally binding, Agenda 21 has been adopted by many countries and adapted to their specific contexts – often at national, regional and local level. Agenda 21 processes have given an important impulse to land use planning as they focus on participatory planning and action at local level to achieve sustainable development.

Based on Agenda 21, the legally binding conventions on climate protection, biodiversity and combating desertification have been developed. While the convention on combating desertification explicitly mentions land management as a key instrument to achieving its objectives, land use planning also has the potential to contribute to the objectives of the other two conventions. Land use planning can contribute to the mitigation of climate change by identifying areas for forest protection or afforestation as well as to adaptation to climate change by identifying areas at risk or new suitable areas for agricultural production (see 3.8). Land use planning can also contribute to the protection of biodiversity, e.g. through zoning of protected areas (see 3.4).

Conflicting land uses: animal husbandry and agriculture in Mali

The Millennium Development Goals consist of eight goals to be achieved by 2015. Land use planning can contribute to at least three of them, namely:

Goal 1: Eradicate extreme poverty and hunger
Land use planning can contribute to eradicating hunger by ensuring that sufficient land is reserved for food production (see 3.6).

Goal 3: Promote gender equality and empower women
Participatory land use planning offers good opportunities for involving women in planning and decision-making, empowering them to take over responsibilities in the community and demonstrating that this is an effective contribution to sustainable development and peace.

Goal 7: Ensure environmental sustainability
Land use planning is the perfect instrument to balance among different land uses ensuring the protection and rehabilitation of environmental resources (see 3.3–3.5).

1.3 Land Use and Land Ownership – Two Interdependent Factors Highly Relevant for Development

Land has different **functions** that can change over time. Different people may prefer different functions and consider the role of land differently. The basic functions of land can be summarized as follows (FAO/UNEP 1999 complemented):

- Land is a storehouse of minerals and raw materials for human use;
- Land is an object of agricultural and industrial use on which food, fibre, fuel and other biotic materials can be produced and fabrics and commercial centres be constructed (production factor);
- Land provides space for settlements, social and technical infrastructure and recreation;
- Land is a buffer or filter for chemical pollutants and a source and a sink for greenhouse gases;
- Land provides surface and ground water;
- Land provides habitats for plants, animals and micro-organisms;
- Land is a basis for livelihood and security (a place to stay);

- Land is homeland for families/households/clans and a base of social identity;
- Land is a place of ancestry and has a spiritual/religious significance;
- Land is a storage of evidence from the historical or pre-historical record (fossils, evidence of past climate, archaeological remains, etc.);
- Land is seen as a prerequisite to realize individual freedom;
- Land is object of investment and speculation;
- Land is an object to be taxed;
- Land is a basis of power and dependency.

These different functions that can also overlap need to be considered when defining **land uses**. However, some functions eliminate each other while others require other functions. If land is used to extract minerals or raw materials, biological habitats are generally destroyed. If land is used for agricultural, industrial or commercial use, additional land is needed for road infrastructure etc.

Conflicts easily arise due to different interests and individual priorities regarding the functions for which land is used. In the Sahel, pastoralists and farmers often have competing interests over land. In South Africa, mining often interferes with other land uses. In Asia, the rapid growth of cities affects surrounding agricultural areas. In the Amazon region, new and growing farms and settlement areas destroy the rain forests and in many developing countries, large scale often export oriented commercial farming drives away subsistence agriculture. It is not unusual that different sector plans are also in contradiction to each other.

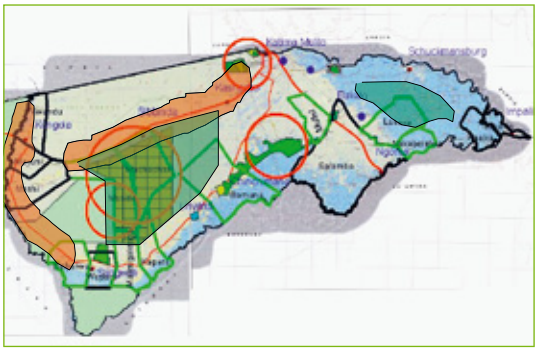
Participatory land use planning can be used to mediate between different interest groups and to help identifying compromises.

Competing land uses in Namibia

	CrF	LF	GM	T	CF	M
Crop farming (CrF)	---		↓			
Livestock farming (LF)		---				
Game management (GM)	→		---			
Tourism (T)				---		
Community forestry (CF)					---	
Mining (M)						---

low middle high

Source: Schwedes/Werner 2010, modified



Overlapping and contradictory sector plans in Namibia

Land use goes hand in hand with **land ownership**. Different functions and uses of land can imply different owners and/or users. A change in land use can, therefore, result in the displacement of current users. This is the case when a huge area is zoned as commercial farm land. Previously used and often owned by the local population, the land is now leased to strangers (national or foreign investors).

The juxtaposition of different land tenure systems is another reason why land use and land ownership are closely linked. Due to legal pluralism and the poor recognition of local land rights, different individuals or groups can claim ownership or use rights over the same piece of land. Accordingly, **investigation of property needs to be a central part of situation analysis, discussion and decision-making of future uses.**

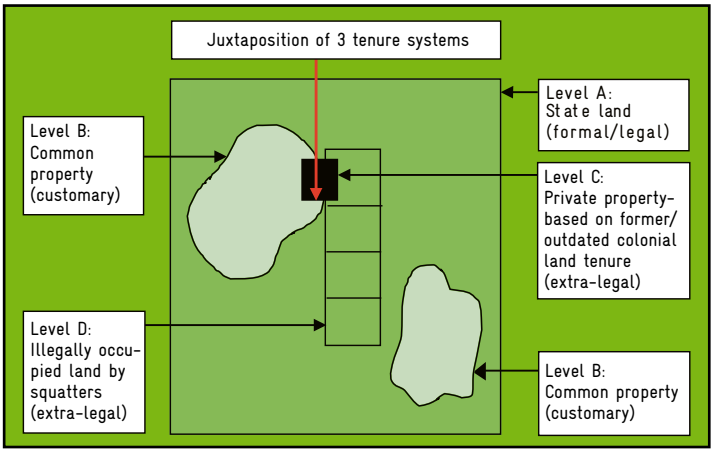
Existing forms of ownership (property regimes):

- **State property:** The property rights are held by some authority in the public sector but can partly be transferred to individuals (e.g. by leaseholds or concessions);
- **Private property:** The property rights are held by an individual or legal body but can partly be restricted by the state;
- **Communal property:** The property rights are held by the community. Members can use the commons independently based on strict rules and procedures. Non-members are excluded;
- **Open Access:** Property rights are not assigned. Access is unregulated. Today, open access does not exist anymore. But there is a lot of state land that is treated as open access due to the absence of rules or their lacking application.

Although most people clearly distinguish between three types of ownership (**property regimes**) – private, public (national, regional or municipal property) and common or collective property – ownership nevertheless often is not clearly defined. This is due to sometimes overlapping or contradicting land tenure systems. **Land tenure** refers to the jurisdiction or rather regulatory frame (customary, feudal, socialist etc.) that defines which property regimes exist in that given system and who is holding which property. Problems arise when two or more systems coexist (**legal pluralism**). This is e.g. the case when a market economy-based statutory

land tenure system, which is defined by national laws, does not recognize customary rules regulating access and use of land while local people prefer to continue applying their own tenure system and ignore the formal one. In this case, the state may consider the land to be state land and allocate it in form of a lease or concession to a private investor while the local community considers the same land to be their community forest which all villagers use to collect fire wood, medical plants, non-timber products etc. – all necessary for their survival. The customary land tenure system is considered to be informal, simply because it does not reflect the statutory law. Being informal, however, doesn't make it illegitimate. On the contrary, customary and other informal land tenure systems often dispose of higher legitimacy than the formal system. This is, however, about to change due to increasing misuse of authority by customary chiefs. Traditionally and according to customary rules responsible for the (free) allocation of land (rights) to group members only, many of them now consider themselves full owners of the land with the right to sell it to strangers. For women and poor farmers, the customary land tenure systems become increasingly unreliable. This applies especially in those areas where land values are high and/or increase such as in fertile regions and peri-urban areas.

Legal pluralism – the case of peri-urban Dakkar, Senegal



Source: Wehrmann 1999

Other so-called **informal land tenure systems** apart from customary land tenure are religious, neo-customary and extra-legal land tenure systems (Wehrmann 2008). Initially established to safeguard access to land by all members of an exclusive and subsistent peasant society, featuring religious or spiritual character, customary land tenure is based on the idea of common property. Current formal or statutory land tenure systems, however, focus primarily on state and/or private property. Neo-customary land tenure systems are newly introduced land delivery systems that copy some of the characteristics of customary systems or disguise as quasi customary. Land tenure systems are called extra-legal when they are legitimated within the group but are neither based on statutory nor on customary law. The transition from extra-legal to criminal land distribution practices is fluid and solely dependent on legitimacy. Whenever informal land tenure systems coexist with formal ones, land conflicts can easily arise. This has to be taken into consideration when entering into land use planning.

In remote rural areas, land is sometimes considered to have unrestricted access and can, therefore, be used by anyone for free. Most often this land is only de facto **open access**. In reality, it generally belongs to the state. The state or rather its institutions, however, lack the capacity to regulate access to this land. Local people may not be aware that the state considers itself owner and neither regards it as common property of the local community or open access. A prerequisite for sustainable land use planning is, therefore, the clarification of the responsibility for natural resource management between the state and the local community. If the state is and wants to remain responsible for state land management or state forests, it has to fulfil its duties in the form of sustainable regulation, transparent inventory and registration etc. If the state does not have the capacities and won't be able to acquire them in due time or to eliminate corruption, the management of natural resources might – at least partially – be decentralized to local communities managing them together. Experience has proven repeatedly that collective ownership and management of natural resources contributes significantly to their sustainable use.

Land/Resource tenure issues relevant for land use planning:

- Existing private, public and common land rights, their boundaries and overlaps (useful instruments are state land inventories, maps showing the location and boundaries of all concessions; land registries, systematic registration etc.);
- Existing private, public and common rights over other natural resources such as water, minerals, forests etc;
- Local people's land/resource rights (often based on indigenous land tenure, customary land tenure, religious land tenure or other informal land tenure arrangements);
- Existing secondary rights such as right of way, access to water ponds or woods;
- Administrative boundaries;
- Clarification on the responsibility for natural resources management between the state and local communities.

Considering the above, it is very important to analyze formal and informal land tenure arrangements when discussing and defining land uses. Especially because **the defined use of land may pre-determine who will use the land** and will, therefore, have an impact on peoples' access to land. It is not in the interest of a sustainable land use planning to deprive somebody of the legitimated right to access his or her land and/or to legitimate somebody else (e.g. a public institution or private investor) to use land to which other stakeholders (e.g. small farmers, ethnic minorities, slash and burn agriculturists) have previous rights. Transparent land use planning with downright participation in decision-making can be a key to achieving tenure security for all stakeholders, including marginalized groups.

Apart from land tenure, **tenure of other natural resources** also needs to be considered in land use planning. **Water rights** play an important role in land use planning as the availability of water determines possible land uses. Conversely, the determination of a certain land use may impact the quality and quantity of water or may restrict access to it. **Access of local population to forests** and forest products can also be affected by land use planning and unintentionally result in the deterioration of livelihoods.

Land/Resource tenure issues to be addressed during land use planning:

- Transparency on all formal and informal, primary and secondary land rights and their boundaries;
- Transparency on all formal and informal, primary and secondary rights over natural resources other than land;
- Analysis of the impact of foreseen land/resource uses on the current users and their access to these lands/resources and neighbouring areas;
- Preparation of regulations on the use and access to land and other natural resources;
- Demarcation of administrative boundaries;
- Fair and transparent procedures for land expropriation and adequate compensation (including simple tools for land valuation).

Tenure of land and other natural resources is increasingly addressed in land use planning. Sometimes land use planning is now accompanied by the formulation of rules on the use, management and access of land, water and other natural resources. In other cases, the entire process of land use planning is focused on who uses the land and other natural resources at what times and under which conditions. This is extremely important in case of **overlapping rights**, e.g. primary and secondary rights on the same piece of land (e.g. right of way). Local agreements are all about access to land (see 3.10).

Land use planning in Lao PDR facilitating foreign direct investments while respecting peasants' traditional land rights

In rural Laos, all land is officially considered to be state land. On this land, however, the local population generally holds non-registered traditional rights. Land registration and the issuing of formal titles is still very limited and mainly focussed on housing areas and paddy fields. In addition, demarcation of village or communal land is often unclear and not always officially acknowledged. This makes it difficult for the

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government to identify land for investment projects – mainly foreign direct investment in the agricultural and forestry sector – without running the risk of misappropriating land that is crucial for the local population to secure their livelihoods by agricultural practices, collection of non timber forest products or forest use. Hence, large-scale land acquisitions and leases were about to become a major problem which the government tackled by different means.

Clear village demarcation, zoning and registration of individual and communal land now facilitate the allocation of land for investment and help to avoid conflicts over land. As a result only state land is conceded to investors in areas where the local population has expressed their consent to the establishment of plantations. This is done by a new form of land use planning that includes the clarification of land ownership. According to recent legislation, land use planning and zoning are even a precondition for land registration and titling in rural areas of Laos. Each village area is classified into various land use zones by the villagers themselves with assistance by technicians. The proposed tenure system of the various land use zones is then distinguished into individual, collective/communal or state land.

In addition, village boundary demarcation forms an integral part of land use planning at village level. This process is mediated by government officials together with representatives of neighbouring villages. Possible disputes over land among neighbouring villages are thereby settled. As a result, the overall extent of village land is officially acknowledged and hence won't be allocated to investors in the future without consent of the respective population.

Individual villagers can now become partners for investors through leasing arrangements and as contract farmers. These cooperations can provide additional income in rural areas, provided clear and mutually beneficial contractual agreements are concluded and adhered to.

(Ministry of Agriculture and Forestry/National Land Management Authority 2009, Rock 2004a/2004b, Seidel 2007, Wehrmann 2009, Wehrmann/Souphida/Sithipanhya 2007)

Although land tenure receives more attention today than in the past, there still is the necessity to integrate land ownership issues more into land use planning. This involves a clear distinction between state, common and private property and the provision of tenure security for all stakeholders. This may involve land registration and titling or any other approach resulting in tenure security. "Security of tenure is the certainty that a person's rights to land will be recognized by others and protected in cases of specific challenges" (FAO 2002). The security can derive from different formal as well as informal sources and take on many different forms such as titles, leases, tenancy contracts, occupancy permits, customary rights, land tax declarations, political statements or the provision of public services (UN-HABITAT 2004).

Security of tenure generally requires some kind of land administration. In most countries, however, land administration one-dimensionally focuses on land registration and titling. The problem is that capacity is often weak and the administrative systems prone to corruption. Therefore, **good governance** receives increasing attention in regard to land issues. Principles such as transparency, equity, civic engagement, accountability, effectiveness, efficiency and sustainability are increasingly applied to land administration, state land management, land policy formulation etc. Land use planning, as well, can be very much improved by the application of these principles.

1.4 Summary

At the core of land use planning is the joint balancing of competing land uses by all stakeholders and the joint identification of those uses for which the highest consensus can be achieved – ideally for the purpose of sustainability. This makes land use planning a central prerequisite for any (spatial) development that aims at social, ecological and economic sustainability. Land use planning can contribute to achieving important development goals such as food security, mitigating and adapting to climate change, protecting biodiversity, initiating economic growth, protecting people from natural disasters or initiating development in a drugs environment. Land use is closely related to land ownership as the defined use of land may pre-determine who will use the land. On the other hand, the property regime (private, public or common property) may also have an influence

on possible land uses. Hence, the tenure of land and other natural resources, such as water, forests and minerals is increasingly addressed in land use planning. Sometimes land use planning is now accompanied by the formulation of rules on land use and management including regulations on access to land, water and other natural resources.

1.5 Further Reading

Land Use and Land Ownership

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Land use planning in Bolivia

2 What is Land Use Planning?

Development and Definitions

"There are two approaches to land use planning that are known to exist. The first and widely applied approach is the conventional or [expert-driven] approach. It is also referred to as the blueprint or institutional approach. [...] The planning process pursues the classical procedure of systematic, technical surveys on the basis of which plans are devised centrally by Government institutions and worked out in detail by professional staff to meet goals that are also decided centrally. It is a rigid, top-down and expert-led approach. People, the very users and managers of land, are never consulted concerning their opinion. They are only considered in a brief socio-economic survey by questionnaires, that does not play a great role in the process. This lack of consultation has led to the exclusion of local people and their knowledge, to production of plans that are not appropriate to local circumstances and plans that have hardly been implemented.

Recognition of the weaknesses of the conventional top-down approach has led to the development of participatory land use planning as an alternative approach. Participatory land use planning is a people-centred, bottom-up approach that recognizes the differences that exist from place to place with respect to socio-cultural, economic, technological and environmental conditions. Its methods can be adapted to suit particular circumstances."

(Land Use Planning and Resources Management Project in Oromia, Ethiopia 2003)

2.1 Definition and Objective

In 1995, based on the experience of more than 100 projects of German Technical Cooperation, the working group on integrated land use planning within GTZ formulated a definition as well as on objective of land use planning that both still apply today.

Definition:
"Land use planning in the context of development cooperation is an iterative process based on the dialogue amongst all stakeholders aiming to define sustainable land uses in rural areas. It also implies the initiation and monitoring of measures to realize the agreed land uses" (GTZ 1995: 5).

Objective:
"Land use planning creates the preconditions required to achieve a type of land use that is environmentally sustainable, socially just and desirable and economically sound. It thereby activates social processes of decision making and consensus building concerning the utilization and protection of private, communal or public areas" (GTZ 1995: 7).

The following definition by FAO and UNEP that has been published in 1999 shows today's almost consensus among international organizations in respect to land use planning.

"Land use planning is a systematic and iterative procedure carried out in order to create an enabling environment for sustainable development of land resources which meets people's needs and demands. It assesses the physical, socio-economic, institutional and legal potentials and constraints with respect to an optimal and sustainable use of land resources, and empowers people to make decisions about how to allocate those resources" (FAO/UNEP 1999: 14).

The difference lies in more focus on participation by GTZ on the one hand and more emphasis on systematic assessments by FAO and UNEP on the other hand.

2.2 Principles

Based on the definition and the objective presented above, land use planning should be based on the following principles (GTZ 1995, LUPO 2003a, NID/MLR 2009):

1. **Land use planning aims at sustainability balancing social, economic and environmental needs;**
2. **Land use planning results in a legally binding land use plan** and/or legally binding land use rules. Formal recognition of the land use plan or land use rules is crucial for its implementation. Otherwise, key players such as sector ministries or private investors do not respect them;
3. **Land use planning is integrated into state institutions having the official mandate for inter-sector planning**. This can be realized in different ways. The planning can be initiated and facilitated by a local administrative body. The planning can also be done by local or traditional chiefs and later formalized through the signing by a regional or national officer. In the later case, these higher level officers need, however, be involved from an early stage on;
4. **Land use planning is a dialogue**. A central part of any land use planning is the initialization of a communication process that allows all stakeholders to express their interests and enables them to agree on future land uses that respect all positions in a fair and adequate way;
5. **Land use planning is an all inclusive process**. This requires that all stakeholder groups are represented: local direct and indirect users, public authorities, private investors, NGOs and CBOs. Depending on the level on which land use planning is done, stakeholders' participation can be direct or indirect;
6. **Land use planning is based on stakeholder differentiation and gender sensitivity**. To identify all relevant stakeholders, a gender differentiated analysis of all actors should be done in advance;
7. **Land use planning promotes civic engagement**. The population should actively participate in the land use planning. The results of planning and the implementation of measures can only be sustainable if plans are made with and by the people, not behind or even against them. Planning is, therefore, not just a matter for experts, but should be carried out together with those affected by it;
8. **Land use planning is realistic and oriented to local conditions**. Not only has the content of a land use planning to be adapted to local

conditions. The methods too have to fit the technical, economic and organizational capacities of the local population as well as administration;

9. **Land use planning is based on a "light" methodology** avoiding unnecessary data collection resulting in "data graveyards";
10. **Land use planning in terms of methodology and content differs** e.g. in scale, specificity, form of participation (direct vs. indirect), and technology at village, municipal and regional level;
11. **Land use planning considers and valorises local knowledge**. Rural societies or groups often possess a complex autochthonous knowledge of their natural environment. They can contribute valuable information and should, therefore, be mobilized during the land use planning;
12. **Land use planning takes into account traditional strategies for solving problems and conflicts**. Traditional rural societies have their own way of approaching problems and settling conflicts concerning land use. In the process of land use planning, such mechanisms have to be recognized, understood and taken into account;
13. **Land use planning follows the idea of subsidiarity**, i.e. all functions from planning to decision-making, implementation and monitoring are assigned to the lowest appropriate level of government in order to be responsive to the needs of citizens and to ensure effective control from below;
14. **Land use planning integrates bottom-up aspects with top-down aspects ("vertical integration")**. Land use planning needs to combine local needs and interests with provisions made by higher levels. This can only be achieved in a sustainable way if stakeholders from all levels participate in the process and directly talk and listen (!) to each other;
15. **Land use planning is based on inter-disciplinary cooperation and requires sector coordination ("horizontal integration")**. The diverse functions and (potential) uses of land make it necessary to apply an interdisciplinary approach involving all sectors that have a stake in that area. This generally requires a longer support in institution building and improving cooperation between different sector ministries/agencies;
16. **Land use planning is a process leading to an improvement in the capacity of stakeholders**. The participatory methods used in all steps of land use planning promote the technical and organizational capabilities of all participants, thereby improving their capacity to plan and act. In the medium term, this leads to an improvement in the capac-

ity of local groups or administrative entities (such as municipalities, districts and provinces) for self-determination;

17. **Land use planning requires transparency**. If there is no transparency on decisions about future land uses, risks are high that some people will be deprived of their rights and/or that future land use will not be sustainable;
18. **Land use planning is future-oriented ("visionary")**. Land use planning is not only about mapping the current land uses or land covers. Land use planning determines how the land will be used in the future. This may differ more or less from today's utilization of the land;
19. **Land use planning is an iterative process**. Land use planning is more than the preparation of a planning document; it is an iterative process. Iteration is both the principle and the method. New developments and findings are specifically observed and incorporated into the planning process. It may lead to the revision of decisions and the repetition of steps already taken;
20. **Land use planning is implementation oriented**. Land use planning has to consider how the negotiated decisions and the solutions identified are to be implemented. It does not end with the land use plan. The implementation of limited measures right at the beginning of the process or parallel to it plays an important role in establishing villagers' confidence in the planning process;
21. **Land use planning is linked to financial planning**. This is crucial for implementation. Land use planning needs to be aware of the designated uses of sector budgets as well as of the financial planning cycles of the relevant sector ministries (including their deadlines). At the same time, land use planning should influence the composition and intended purposes of budgets and funds;
22. **Land use planning relates to spaces and places ("spatial orientation")**. In most countries many forms of planning and quite a number of plans exist. What most of them are lacking is the relation to space. Many development plans, for instance, state what has to be developed (mainly in terms of infrastructure) but don't indicate where. Land use planning puts the focus on spatial relations and differences. The spatial orientation of planning ensures the optimum distribution of investments and the most adequate use of any place and avoids (land use) conflicts.

2.3 Types of Land Use Planning

Land use planning is flexible and adaptive in the sense that its methods can be modified to suit particular circumstances. This means that there is no blueprint approach that defines the steps, procedures and tools applied. Land use planning should rather be designed according to the needs, demands, capacities as well as the rules and institutional structures in place and follow the principles presented above. Land use planning can, therefore, take different forms. It can, for instance, result in a very detailed land use plan, in a local agreement on land use rights (local convention) or a simple sketch documenting some spatial features of a local development plan. There are situations where including at least some spatial aspects into the development planning approach represents a major step ahead. The main forms of land use planning are presented in the following.

Integrated Participatory Land Use Planning:
Integrated participatory land use planning generally aims to introduce or improve a complete spatial planning approach at local level. In cooperation with existing institutions the whole approach from preparation to evaluation is designed, tested, institutionalized and exercised in a number of pilot villages (see 4.3 on the planning elements and tools and A3 for an example).

Integrating Spatial Planning into Existing Development Planning:
There are situations in which local institutions do not have the capacity to introduce a complex land use planning. In that case, an alternative is to simply include some spatial aspects into their development planning activities. If so far local representatives have only prepared a "shopping list" for their government and donors, they could now map where they actually want these developments (mainly infrastructure) to happen. If this is done in a participatory way and involves a discussion on the already existing infrastructure, their distribution and conditions, this already represents a significant improvement in the planning process. An example is the recently introduced spatial planning into communal development planning in Mali.

Integration of spatial planning into local development planning in Mali

The Programme d'Appui aux Collectivités Territoriales (PACT)[1] in Mali supports rural municipalities in the decentralization process qualifying local representatives and civil society to take over new functions. The program helps selected municipalities to set up a transparent and participatory local socio-economic development planning system according to the national requirements. So far, spatial aspects had been left out in development planning in Mali. Recently, PACT started to introduce the spatial dimension into local socio-economic development planning. Several thematic maps of the municipality are prepared indicating the location of technical and social infrastructure as a result of an assessment in the municipality. Based on these maps, one very simple municipal map is prepared showing all villages symbolized by a simple cross and accompanied by symbols representing the existing infrastructure. In those municipalities for which satellite images are available, the map is derived from them and exists in digital form. In other cases it is prepared by hand in form of a sketch map. This map is now used in the planning process during the discussions on necessary investments. The map facilitates the discussion and makes it easier for the decision-makers to identify what is needed and where it is needed. Necessary investments can be better prioritized.

For the public, it also increases the transparency of the distribution of planned infrastructure among villages and constitutes a base for a more balanced development that avoids all investments being targeted to the main village only.

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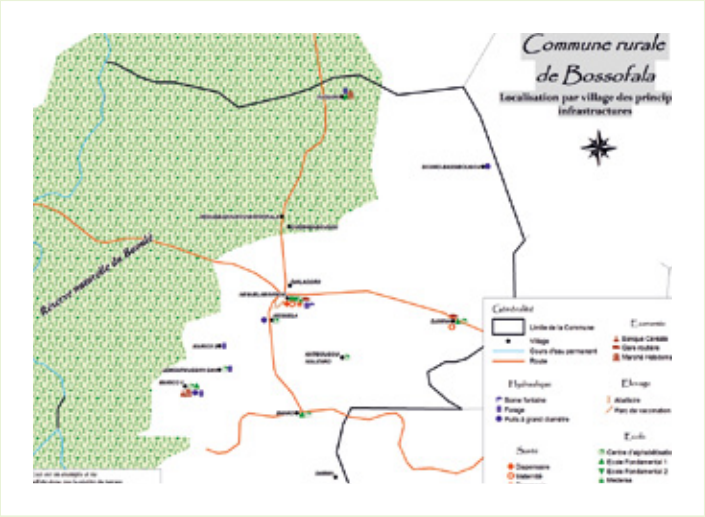
1 PACT is implemented by GTZ on behalf of BMZ.



Commune rurale de Bossofala

Local Agreements:
Local agreements (or local conventions) on the utilization and protection of natural resources which regulate use and access are important tools for the decentralized management of natural resources. They have been promoted in West Africa since the 1990s. They encompass all kinds of formal or informal regulations between all resource users. They can be applicable to the inter-village or communal level as well as to wider spatial management units. Responsibility for the use of common pool resources is assigned to a group. The government takes a hands-off approach, no longer influencing matters directly. It retains a supervisory role, however, ensuring that the user associations comply with certain basic conditions in order to be viable. In addition, it enables groups to carry out their functions, especially regarding technical matters and the enforcement of legal claims such as sanctions for violations of standards.

Local agreements have the following advantages:

- In terms of organizational and political change: through the decentralization of resource management;
- In terms of economic impact: through income diversification and the emergence of new sectors related to sustainable exploitation of natural resources;
- In terms of social cohesion: through the development of consensual solutions;
- In terms of conservation: through the conciliation between exploitation and conservation of natural resources.

The success and viability of local agreements is based on their internal legitimacy, the level of participation, the equitability of solutions, the legality of regulations, the level of institutionalization, the ecological sustainability and the economic profit for local populations.

Building-up a signboard for transhumance, Mali

Local agreements in Mauritania

Objective: The organized population in Guidimakha and Hodh el Gharbi regions implements local agreements for sustainable natural resource management.

Approach/methodology: Following a consultation process with all users, leading to the establishment of local agreements (development of key management rules related to supervision and fee collection), so called user associations are formally vested with the management mandate. This transfer is facilitated by national forestry and pastoral legislation.

Outcome and impact: The Mauritanian government has transferred the natural resource management to 24 groups, who are empowered to manage 6,315 km² in the Guidimakha and 4,201 km² in the Hodh El Gharbi regions. Most of them cover the costs of the supervisory from their receipts (user fees and penalties) and three non-timber forest products of particular importance for women were developed using special arrangements (arabic gum, barnacles, baobab).

The vegetation cover index has developed positively in managed zones.

2.4 Land Use Planning in Development Cooperation

Within the context of development cooperation, land use planning is usually connected to the principles of development cooperation. This may be illustrated through the **principles** of the current **aid effectiveness** agenda.

Ownership in the context of land use planning refers to the fact that except from the level of individual farms, territorial planning is always a sovereign task of the state. It has to follow rules and regulations of the state on its different administrative levels. But on the other hand it has to involve the different stakeholders in the territory (rural population, private enterprises, NGO etc.). Land use planning is not just a task of experts on behalf of government but fruits of negotiation between the different interested parts.

Alignment in the context of land use planning means that donors will not produce land use plans on their own but always align to the national planning systems.

Harmonization in the context of land use planning applies to the fact that different land uses and plans supported by different donors need to be reconciled and harmonized in land use planning.

Managing for results in the context of land use planning signifies that plans should always be oriented towards implementation. It is of no use to produce planning documents that will not be applied afterwards. Managing for results also means to consider short-term and long-term benefits of land use planning. Finally, results based management implies participatory decision-making by all relevant stakeholders and joint monitoring of the results of land use plans.

Mutual accountability in the context of land use planning finally refers to the predictability and transparency of different contributions to the planning and implementation process. Plans need to be public, discussed and evaluated in public.

In addition to the five principles of the aid effectiveness agenda, **capacity development** needs to be stressed in this context as it represents a core issue of German development cooperation. Successful land use planning

depends on the capacity for it within the country. Developing this capacity is a core task of development cooperation.

In the context of development cooperation, we should start from the premise that those who are applying land use planning have different concepts of development, its constraints and challenges. Generally, this aspect is not to be discussed in work with land use planning. But there should be a common understanding of the objectives that are supposed to be achieved through land use planning. It is worthwhile to observe how greatly the values that the stakeholders connect with these objectives differ, as well as the ideas of the political, social and economic systems in which it is expected these objectives will be achieved.

Land use planning in China

After the introduction of the "household responsibility system" that gave – in principle – the freedom to every farmer to choose the crops to grow on his contracted land, the danger of uncontrolled land use emerged. Therefore, it became necessary to set up an integrated (framework) land use planning system. Consequently, in 1987, the State Land Administration (SLA) was founded. Since then, SLA has had the task to develop land use planning maps for each province. Within this procedure, SLA but also other relevant line agencies and the provincial governments propose the percentage of land use for agriculture, forest, transport, fruit trees, water services, residential uses, grassland and industry for each province to the State Council. These quotas are transferred to the Provincial Bureaus of Land Management. These bureaus then order the prefecture and/or county bureaus to develop a land use map (status quo) and a land use plan (foreseen future use). These maps are usually drawn in a scale of 1: 10,000. In wealthier regions in eastern and southern China this is done with the help of Geographical Information Systems (GIS). The land use plans should be updated every three to five years. Though SLA fulfils the task of overall framework planning, the planning is often contradicted by planning of line ministries such as forestry, agriculture and the poverty alleviation bureaus who also do their own local land use planning.

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In the 1990s, international organizations introduced participatory land use planning methods to the relevant bodies, sometimes combined with the use of GIS. Today, participatory land use planning is an integral part of every international project and program in the field of natural resource management in PR China, for example for the large scale KfW-funded afforestation projects. Often, at least part of the participatory planning packages has been taken over by government institutions realizing that this can be more efficient for the implementation of their programs. Where there is no international cooperation, public participation, however, remains an exception. Even where international cooperation takes place, those who implement programs at local level might not want transparency. Others do appreciate the introduction of participatory land use planning stating "they now know the meaning of democracy" (GTZ 2004; see 4.4 PLUP in China).

As an instrument, land use planning in itself is not bound to determined values. Thus, to achieve sustainable land use, the planning should be based on values such as justice, sustainability in its ecological, economic, social and political dimension and protection of the commons (natural resources, traditional culture etc.). Land use planning may contribute to justice through the improvement of land use practices of the poor, marginalized and excluded peasants. It may contribute to sustainability through the reconciliation of exploitive and protective land use objectives. It may contribute to the protection of the particular through the definition of territories for natural conservation or indigenous land rights etc. Pursuing the different values is not always free of conflict. It may help social justice to settle poor families in an unexplored forest land, but it may not be sustainable and cause conflicts with the existing indigenous population. In some cases that reflection may lead to the conclusion that other tasks are more important than starting with land use planning straight away.

Land use planning is just an instrument. It is the people who make their development. Land use planning may help them by:

- putting the focus on spatial relations and differences (Land);
- referring to the interaction between the natural environment and human cultural action in its economic, social and political dimensions, the consequences of human action and the rights of different stakeholders to carry out different forms of action (Use);
- starting from a concept of systematic and coordinated action (Planning).

The example below on land use planning in China underlines the importance of the application of the above mentioned principles of aid effectiveness to land use planning: ownership, alignment, harmonization, managing for results and mutual accountability. It also highlights the different importance that is attributed to specific values resulting in different attitudes towards key principles such as participation and transparency.

2.5 Land Use Planning in the Course of Time

In general, the history of land use planning in developing countries follows a three-step process. The time span in which each of these phases dominates differs from country to country. The phases are not strictly separated. Generally, land use planning of the first phase type coexists with land use planning of the second phase type, and so on. Some countries also skip a phase. The separation of land use planning history into phases is, therefore, rather a model that helps to understand how things developed. It does not reflect a universal process that can be found in the same way in every place.

First Phase: Top-down Scientific Land Use Planning by Experts
This type of land use planning fits into a top down approach of planning. Experts elaborate the plans. The approach is very scientific. Several planning steps are identified that need to be carried out one after the other. The final product is a written document of several hundred pages, accompanied by very detailed maps whose content from the moment of impression frequently becomes outdated. The elaboration of such land use plans generally takes several years. Most of the time is used for investiga-

tion and data validation. Meanwhile, recommendations for action often remain very general and less elaborate. In many cases, operational plans are not included. There is no or very little debate and coordination with other stakeholders. Plans of sector ministries generally are not considered and no exchange or joint planning workshop takes place. There is also no connection to financial planning. Most of these plans soon disappear in bookshelves. Their practical use later (today) is mainly that of allowing time-line analysis of land use changes in specific areas, because the maps indicate how land was used 20 or 30 years ago.

Second Phase: Participatory Land Use Planning

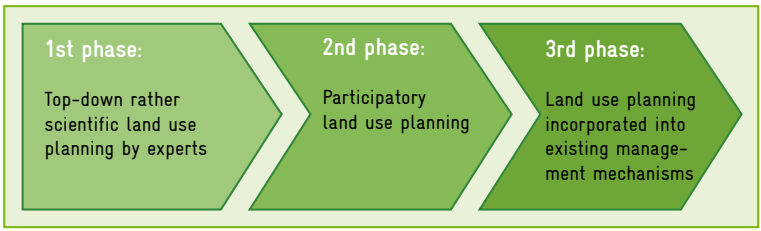
In the beginning, participatory land use planning is often limited to specialized exercises in selected villages and communities. It is generally connected with short-term testing and validation of innovative land use practices. Because of lacking coordination among stakeholders and lacking participation of the local population in the previous phase, emphasis is now put on coordination between stakeholders and the introduction and further development of participatory tools, first of all Participatory Rural Appraisal (PRA). The integration of local administration, line ministries' local dependencies, NGOs etc. becomes common practice. Locally, often very good practical results can be achieved, but there is a limitation to isolated implementation. There is no massive repetition of the same experiences and local land use plans are rarely integrated into higher level land use planning. This sometimes improves after the introduction of modern remote sensing tools and Geographic Information Systems (GIS).

Third Phase: Incorporation of Land Use Issues in Existing Management Mechanisms

If participatory processes are carried out, this is done from the very beginning with a clear repetition and scaling up strategy. If sophisticated "expert" plans are prepared at higher levels, they include local experiences and good stakeholder coordination and public debate. Connection to financing mechanisms has been established, including payment for environmental services and incorporation of small peasant farmers in value chains. The more land use planning is integrated into existing management structures, the better land use is generally regulated by laws. In a final step (4th phase?), most land uses are regulated by laws which limit the room for planning interventions. Thus is the current case in many de veloped countries.

The third phase may still be an ideal, but the development of land use planning clearly is headed in this direction, being closer in some countries than in others (see 2.6).

Land use planning in the course of time



Changes in the land use planning approach in Brazil

Phase 1	**1980s Land use planning at national level**	
	1981	Introduction of environmental zoning as part of the national environmental policy.
	1988	Environmental and economic macro zoning gets introduced as a tool for land use planning on federal level.
	1990	Environmental and economic macro zoning is formalized by decree no 99.193/90.
	1991	Introduction of the Program for (Macro) Zoning the Amazon.
Phase 2	**1995 Extension to the local level and introduction of participation**	
	1995	Beginning of the Natural Resource Policy Program, a subprogram of the Pilot Program for the Protection of Brazilian Rainforests (PPG7). In the course of time land use planning is expanded to state and local level and participation becomes an integrative element. Different types of land use planning are now conducted at different levels: • Federal level: Ecological and economic macro zoning of land use; • State and local level (municipality): Local participatory zoning and planning of land use; • Farm level: Land use planning and environmental control of rural properties.
Phase 3	**2002 Integration of land use issues in existing management mechanisms**	
	2002	Decree no. 4297 defines environmental and economic macro zoning as an instrument of the national plan on the environment.
	2004/ 2005	Maps of the Amazon states which show the results of environmental and economic zoning are available.
	ongoing	Zoning for different functions such as agricultural zoning for climate adaptation.

2.6 Regional Particularities

Land use planning has to respond to fairly varying conditions in different regions. Some key features are addressed in the following, being far from a complete situation analysis of each region. The focus is on major differences and particularities.

Land Use Planning in South East Asia:

Over the past two decades, South East Asian countries have seen fast economic growth. However, the increased standard of living is partially overshadowed by serious environmental degradation. Pressure on land, especially in the most valuable rice producing flood plains, is rising due to the expansion of housing areas, low-density industrial parks, plantations or road construction. At the same time, upstream watershed areas have been deforested and many rural hinterland areas are falling behind in terms of development compared to more prosperous coastal zones. This accelerates rural-urban migration. The need for a more systematic and institutionalized planning of land utilization at various levels of government is now widely accepted and institutional frameworks for administrative approaches of regulatory land use planning have been established in many countries.

Countries with different political systems and historical experiences have gone through tremendous administrative changes. Highly centralized administrative systems have seen the devolution of regulatory and administrative functions from the national to the regional and local government level including the mandate and responsibility for local land use planning and land management. Land use planning approaches had been initiated by NGOs and donors in many countries of South East Asia in the 1980s and 1990s. Among other actors, GTZ has played a leading role in this process. Initially, land use planning had limited area coverage and was mainly conducted in the context of watershed management projects.

In the Mekong region early approaches to land use planning had many similarities among the riparian countries, but with time developments took different directions. These differences are mainly due to varying degrees of administrative decentralisation, institutional responsibilities and differing overall objectives for land use planning. In Cambodia and

Laos, land use planning has been formalised and has become an integral part of the overall planning system. In Cambodia, Commune Land Use Plans are part of the decentralised development planning system and are meanwhile elaborated by Commune Councils in all parts of the country. In Laos, land use planning has a long history. In the early 1990s the Lao Government started a nationwide 'Land Use Planning/Land Allocation' campaign. Even though results are questionable, land use planning is well-known and accepted and reached widespread coverage in rural areas. Recently, the approach has been further developed and participatory land use planning at village and village cluster level is now a standard procedure in land management. In Thailand land use planning started in the 1980s with a focus on watershed management and opium reduction. Since then it has been expanded to many mountainous areas, particularly in the North-West of the country, but has never become an institutionalised and regulatory procedure. Elements of LUP have been introduced in the more recent river basin plans. Vietnam started elaboration and regular updating of land use master plans for all districts and provinces as part of the national development planning approach. In the context of local watershed management and community forestry, more participatory approaches were introduced at commune level in the 1990s. At present, local LUP is widely conducted in forested and mountainous areas, while the master plans still take little account of this.

The Local Government Code of the Philippines has given the municipalities (districts) unprecedented responsibilities and options in local government, planning and revenue generation. The municipalities have to establish so called CLUPs (Comprehensive Land Use Plans) for their territory, which demarcate special land use zones for forestry, environmental protection, agricultural production and urban settlement expansion. Sector development plans for forestry, water and sanitation or land reform have to be harmonized and integrated with the general comprehensive land use plan. Whereas previously modern technical land use planning tools such as digital mapping, land use inventories based on aerial and satellite imagery and GPS ground surveys predominantly were associated with special projects and foreign donor funding, many local government administrations now have started to build up their own institutional GIS and mapping units and either produce and maintain their own digital planning documents or use the services of GIS service companies. A major obstacle for the use of digital land use planning tools often is the lack of higher resolution digital base data.

Despite the existing institutional framework and usually a wide array of administrative and legal tools many statutory land use plans have failed to influence and direct land use patterns in the intended direction. Usually the problems are weak implementation and enforcement.

The main challenges of land use planning in the region are:

- Fostering the political will to develop a comprehensive land use planning system;
- Allowing and encouraging public participation in the LUP process;
- Integrating participatory LUP approaches into higher level development master plans;
- Creating standardised, institutionalised and regulatory LUP approaches in order to achieve widespread implementation;
- Overcoming weak implementation and enforcement by e.g. quality improvement of statutory land use plans including a better and wider participation of local stakeholders in the generation, monitoring and evaluation of plans;
- Achieving effective trans-boundary cooperation on large scale land use and environmental issues to protect the environment, prevent disasters and achieve a sustainable use of natural resources.

Land Use Planning in Western Africa:

In the late 1980's, a very unique and region-specific concept of land use planning emerged in francophone Western Africa: The Gestion des Terroirs (GT) approach. The concept's success was helped by the fact that it was initially promoted by the strong commitment of the nine member states of CILSS (Permanent Interstates Committee for Drought Control in the Sahel). All members of the regional network had experienced the devastating effects of successive cycles of droughts from the late 60s to the 80s. It was also widely recognized that state administrations and "classical" rural development projects had failed to produce significant results to fight against desertification and to improve the natural resource base of the population.

Promotion the GT approach was an attempt to transfer the management of natural resources from the hands of government agencies to local people in order to strengthen the rural communities' capacity to cope with the effects of ecological crises. The GT concept focused on natural re-

source management and land use planning at village or community level, interrelating three key elements: (1) technical: soil and water conservation, forest and grassland protection etc.; (2) Socio-economic/organizational: peoples' participation, establishment of local land management bodies; (3) Legal/institutional: definition and enforcement of rules regulating access and use of land, e.g. via "local agreements".

In the 90s, the World Bank, UNDP, bilateral donors and NGOs regarded the concept as one of the most promising project types for poverty reduction and supported GT with substantial funding. German Technical Cooperation (GTZ on behalf of BMZ) became one of the major players in the field, contributing substantially to the methodological progress and geographical dissemination of the approach. In the late 90s, land management committees in thousands of West African villages had elaborated their land management plans and started implementation. However, the overall spatial impact of the GT approach remained rather limited. High start-up costs, the slow pace of participatory procedures (without producing immediate benefits for the population) as well as the limited implementation capacities of the communities made it impossible to achieve the goal of an overall improvement of the state of natural resources in the foreseeable future. In addition, GT projects tended to operate in an institutional vacuum outside the state, ignoring the necessity to be formally incorporated in the administrative structure of the country. Neither the village as an administrative unit nor the village land management committees as executive organs had a legal status, thus lacking the institutional legitimacy needed to fulfil their mission. Due to all these shortcomings, the international GT community came to realize that the village level was not the suitable scale for intervention.

At present, the problems of scale as well as the institutional shortcomings are likely to be overcome in the course of the decentralization processes ongoing within most francophone West African countries. The Rural municipalities are becoming local administrative bodies. In all countries, municipal development planning is a compulsory exercise, serving as a prerequisite for receiving access to infrastructure subventions. This allows integrating land use planning as a task of local governments. At the same time the enlarged territory and new functions attributed to the municipalities offer opportunities to scale up some of the good practices and les-

sons learnt during the "village level" phase of GT as well as to make good use of the human resource capital accumulated during that period.

Due to the lack of technical and financial capacities and the (still) limited discretionary powers of the young West African municipalities, the objectives of land use planning are becoming less ambitious and more realistic. The former holistic GT approach on village level, covering the whole space and evaluating all potential uses, is replaced by an approach focusing on articulated priorities of relevant user groups and selected problems or land use conflicts in sore need of a solution. In this context, "local agreements" are at present one of the most popular yet most adapted form of land use planning for West African municipalities (see 2.5 and 3.10). However, all actors concerned recognize that local agreements will have more of a transitional value, serving to bridge the existing legal vacuum. What all West African countries still lack is the real "transfer of competencies and financial resources" to the newly elected local bodies, i.e. the downright devolution of key powers and functions such as land administration and natural resource management. Another major challenge is the juxtaposition of statutory and customary land tenure systems that causes multiple allocations of lands and promotes increases in large-scale land acquisitions and leases (see 1.1, 2.4 and next section on Southern Africa).

Land Use Planning in Southern Africa:

Southern Africa is marked by landlessness and limited access to land indicating social inequalities based on the history of land dispossession during the colonial era and the unequal distribution of land that followed. Land is, therefore, a key source of political mobilization and tension.

Land is subject to a complex mix of jurisdictions with customary systems of communal tenure and statutory forms of private ownership in most countries of the region. This dualistic tenure system divides the agricultural sector in large freehold commercial farms under private ownership and traditional common property on communal lands used for traditional agro-pastoralism, small scale and subsistence farming. The control and importance of traditional authorities and tribal leaders is significant in the region and should be considered during land-related dialogues in southern Africa.

Southern Africa is considered as one of the regions with the highest potential for agro-fuel production in the world. This attracts foreign investors, who are attempting to access large land holdings, which is creating conflicts mainly in communal areas. To avoid mismanagement, land use planning is required to regulate agro-fuel and other large scale plant production.

Land degradation is a major concern in the region with communal lands as pressure spots. Degradation is observed mainly as overgrazing and deforestation, leading to soil erosion, desertification and bush encroachment. The shrinking of protected areas in the region is critical, leading to habitat fragmentation and biodiversity loss. Especially the fragmentation of habitats causes increasing human-wildlife conflicts with migrating animals. Common approaches to conservation are community based natural resource management and transboundary planning and conservation which are also relevant for cross-border transfers of water.

Mining is another important issue in Southern Africa that creates a need for land use planning. The region has extensive mineral resources and a large part of the region's exports are in minerals. The economic importance of mining makes it a priority land use. Other land uses are secondary. This results in land use conflicts. Farmers have to be resettled, others find their lands contaminated. In addition, mining requires huge infrastructure such as roads and harbours which often effect major rural areas. Land use planning could help to reduce land use conflicts through an increase in transparency on (future) mining areas and contaminated zones on the one hand and through the articulation of local peoples' interest on the other.

Severe gaps in human and institutional capacities of the still "young" governments present a major challenge to land management and land use planning. The consequences are inadequate national land policies, slow or unfinished or unsuccessful land reform processes, institutional overlapping, gaps and deficient or missing land use planning systems and strategies.

Land Use Planning in Latin America:

Latin America is characterized by a highly unequal distribution of land (and wealth in general), resulting in huge properties on the one hand and very small farms and landlessness on the other. Big private land owners have a high degree of liberty when it comes to how they use their land. In countries such as Chile, land use planning cannot specify the use of land that is under private ownership but is restricted to public lands, which only constitute a small part of the country's overall surface.

Latin America is equipped with ample primary products and raw materials. Given the vast often depopulated rural areas, today many of them are treated as open access areas as regulations regarding the exploitation of natural resources either do not exist or are not sufficiently implemented. This is often linked to violent conflicts over these resources. Due to the remoteness of many regions and the violence prevailing there, drug production often determines lives and livelihoods.

Central America and the Pacific Coast of South America are threatened by all kinds of natural disasters. However, so far disaster risk prevention and preparedness is hardly incorporated into formal spatial planning.

Concerning the political and institutional setting, most Latin American countries still struggle with implementing participatory procedures, although the governance situation has improved significantly in the last several decades due to widespread and encompassing decentralization. The integration of land use planning into state institutions is now the rule rather than the exception.

Therefore, major challenges for land use planning are:

- Bringing together big landowners (of farms, mines, forests) and small farmers (settlers, indigenous etc.);
- Operating in a context of "freebootery" and heavy economic interests in natural resources and raw materials;
- Acting in conflict and post-conflict areas, using land use planning to agree on new forms of coexistence;
- Operating in a drugs environment and identifying options for alternative development through participatory land use planning;
- Integrating disaster risk prevention into land use planning.

2.7 Summary

Land use planning in the context of development cooperation is defined as an iterative process based on the dialogue among all stakeholders. It aims at defining sustainable land uses in rural areas. It also implies the initiation and monitoring of measures to realize the agreed land uses (GTZ 1995: 5).

Land use planning has developed from a rather top-down planning by experts outside the existing institutions towards a participatory planning which is integrated into national institutions and is increasingly linked to financial planning. Regional differences are, however, quite significant. Depending on the conditions, land use planning can be more or less complex, ranging from the simple inclusion of spatial aspects into local development planning to comprehensive spatial planning approaches at different levels.

Over the years, the following principles have been identified as crucial for any land use planning:

- Legal bindingness;
- Institutional anchorage;
- Vertical and horizontal integration;
- Subsidiarity;
- Iteration;
- Simplicity;
- Transparency;
- Adaptation to national, regional and local conditions;
- Recognition of local knowledge;
- Inclusiveness;
- Participation;
- Dialogue;
- Spatial orientation;
- Inter-linkage with financial planning;
- Orientation towards implementation;
- Aiming at sustainability and capacity development.

2.8 Further Reading

Land Use Planning Guidelines

FAO (1993): Guidelines for Land-Use Planning. FAO Development Series 1. Rome.
FAO/UNEP (1999): The Future of Our Land. Facing the Challenge. Guidelines for Integrated Planning for Sustainable Management of Land Resources. Rome.
GTZ (1999): Land Use Planning. Methods, Strategies and Tools. Eschborn.
GTZ (1995): Landnutzungsplanung. Strategien, Instrumente, Methoden. Eschborn.
GTZ/MRC Sustainable Management of Resources Project (SMRP) (2001): Manual on Participatory Land Use Planning (PLUP) in Cambodia [Compiled by Florian Rock]. Phnom Penh.
Kingdom of Cambodia (2009): Implementation Manual on Commune Land Use Planning. Phnom Penh.
Land Use Planning and Resources Management Project in Oromia, Ethiopia (LUPO) (2003a): Guidelines for Participatory Land Use Planning (PLUP). Addis Ababa.
Ministry of Agriculture and Forestry and National Land Management Authority, Laos (2010): Manual for Participatory Agriculture and Forest Land Use Planning at Village and Village Cluster Level. Vientiane.
Ministry of Lands and Resettlement (Namibia), GTZ, GOPA and AMBERO (2010): Manual for participatory land use planning facilitators. Windhoek.
Namibia Institute for Democracy (NID) and Ministry of Lands and Resettlement (MLR) (2009): Understanding of Land Use Planning and its Relevance in Namibia. Namibia Land Management Series Number 1. Windhoek.

Local Agreements

Alinon, K. and Kalinganire, A. (2008): Effectiveness of bylaws in the management of natural resources: The West African experience. CAPRi Working Paper No. 93. International Food Policy Research Institute. Washington, DC. http://dx.doi.org/10.2499/CAPRiWP93.

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Kirsch-Jung, K.-P. and Sulser, M. (1999): Nutzungskonflikte und Lösungsstrategien für nachhaltige Ressourcenbewirtschaftung im Sahel. In: GTZ/Institut für Ethnologie der Freien Universität Berlin: Settling of land conflicts by mediation. Workshop documentation, Berlin, 15.–17.2.1999 [CD-rom]. Eschborn.
Programme d'Appui aux Collectivités Territoriales (GTZ-PACT), Deutscher Entwicklungsdienst (ded), Ministère de l'Administration Territoriale et des Collectivités Locales, Mali (w/o year): Comment mieux gérer nos ressources naturelles ? La Convention Locale – Guide méthodologique. Bamako. www.pact-mali.org/Downloads/guide_CL.pdf.

Land use planning in Mali

3 Land Use Planning To What End?

Fields of Application

"Expanding human requirements and economic activities are placing ever increasing pressures on land resources, creating competition and conflicts and resulting in suboptimal use of both land and land resources. If, in the future, human requirements are to be met in a sustainable manner, it is now essential to resolve these conflicts and move towards more effective and efficient use of land and its natural resources. Integrated physical and land-use planning and management is an eminently practical way to achieve this. By examining all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development."

(Agenda 21, chap. 10, Rio 1992)

"In its first report, the Member State shall outline whether it intends to indicate geographical locations suitable for exploitation of energy from renewable sources in land-use planning and for the establishment of district heating and cooling."

(Renewable Energies Directive of the European Parliament and of the Council, 2009)

3.1 Overview on Application Range – New Developments

In former times, mainly food was cultivated. For this purpose, as much surface as possible was cleared and cultivated. Later fodder and renewable raw materials were added and additional cultivation areas started to become scarce. Today, agricultural production is even more complex and complicated:

1. In addition to food and cash crops, fodder and raw material, biomass is now grown for industrial and energy use;
2. Restrictions on the development of new agriculturally used areas with the objective to protect the natural and cultural environment have been introduced and more are to come;
3. Accordingly, environmental assessments are becoming an integral part of formal land development balancing economic and ecological impacts.

Terms such as "responsible cultivation areas", "responsible biomass production" and "sustainable bio energy production" are currently appearing. This change in agricultural development philosophy has been triggered by serious and negative social and environmental impacts of recent large-scale agro-fuel feedstock plantations. Partly introduced and subsidized to reduce greenhouse gas emissions when compared to fossil fuels, they resulted in increasing emissions from deforestation as well as negative impacts on peoples' livelihoods and cultural identity. It is now unambiguously clear that some areas are so important that they should be considered as "no-go", i.e. that their conversion to agricultural use would never outweigh the overall negative impacts.

Possible criteria for "No-Go" areas:

Areas may be considered "No-Go" areas for one or more of the following reasons:

- Loss of biodiversity values considered critically important or highly significant;
- Negative impact on livelihoods or cultural values and identity;
- High levels of stored carbon;
- Damage to critical ecosystem services (other than carbon storage), such as water flows.

Source: Mc Cormick et al. 2009

Land use planning and ecosystems services

Ecosystem services are the benefits mankind receives from a multitude of resources and processes that are supplied by natural ecosystems. The UN Millennium Ecosystem Assessment (2004) grouped ecosystem services into four categories: provisioning, such as the production of food, water, pharmaceuticals and energy; regulating, such as the control of climate and disease or the purification of air and water; supporting, such as nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

Ecosystem services are limited and threatened. Consequently, they are increasingly associated with economic value based, for instance, on avoided costs, replacement costs or factor income, i.e. an enhancement of incomes due to ecosystem services.

Land use planning can destroy or conserve ecosystem services. It is, therefore, important that land use planners are aware of potential ecosystem services to balance their protection with the benefits from alternative uses. The economic value, which is increasingly attributed to environmental services, can be helpful for decision-making.

Land use planning can also explicitly be used to preserve or improve ecosystem services. This can, for instance, be done by identifying areas of intensive food crop production that could step-by-step be converted into agro-forestry systems. These systems can restore many of the watershed functions normally attributed to forests and at the same time generate more livelihood options than natural forests could.

Amazon rain forest, Brazil, providing diverse ecosystem services

Ecosystem service of river Niger

Not only does agricultural production need to respect environmental regulations. Mining, often marked by heavy negative ecological and social impacts, needs to heed them as well. In practice, mining in developing countries hardly ever respects environmental and social sustainability. Also, companies are rarely responsible for the regeneration of the area once mining has stopped. The consequent identification of high conservation value areas and delimitation of no-go areas as an integral part of local, regional and national land use planning could significantly improve the situation – at least in a context of good governance.

Land use planning and the High Conservation Value (HCV) concept

"A high conservation value (HCV) is a biological, ecological, social or cultural value which is considered to be of outstanding significance or critical importance at national, regional or global scale" (Proforest 2003). As the concept is based on specific functions of a given area and not on its properties, it is globally applicable and at the same time flexible enough to be adapted to local conditions. Six different values have been identified:

HCV 1 Areas containing significant concentrations of biodiversity values at global, regional or national level;

HCV 2 Globally, regionally or nationally significant large areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;

HCV 3 Areas that are in or contain rare, threatened or endangered ecosystem;.

HCV 4 Areas that provide basic ecosystem services in critical situations;

HCV 5 Areas fundamental to meeting basic needs of local communities;

HCV 6 Areas critical to local communities' traditional cultural identity.

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The HCV concept includes the assessment of valuable areas as well as their responsible management and monitoring. Different certification systems such as the Forest Stewardship Council (FSC) and the Roundtable for Sustainable Palm Oil (RSPO) took the HCV concept up. Some countries such as China, Rumania and Bulgaria have already included the HCV concept into their national forest policies. Forest management is now done in accordance with the HCV concept. The concept is also proposed for sustainable agro-fuels certification. Companies such as BP agro-fuels do already apply it. There are potential synergies between the private sector approach of certification systems using the HCV concept and public land use planning activities. Both approaches rely on the collection and provision of similar data. Systematic exchange of information could save considerable efforts and costs.

Hence, the identification of suitable locations for any type of cultivation or mining increasingly requires a thorough knowledge of the land's conservation value, its carbon stock, its potential for carbon sequestration, its biodiversity, its potential for environmental services other than carbon storage and its contribution to cultural identity etc. The production of biomass, for instance, should – according to the EU Renewable Energies Directive – contribute to a reduction in greenhouse gas emissions and the preservation of biodiversity. Accordingly, areas with a high conservation value as well as areas with a high carbon stock are excluded from conversion into agro-fuel production areas. On the other hand, degraded lands are now identified as possibly suitable areas for sustainable bio energy production. Preservation of biodiversity, of high conservation value areas, and of ecosystem services, avoiding emissions from carbon stocks and reducing emissions from deforestation and degradation are becoming important objectives of land development.

Land use planning could be done explicitly to identify suitable areas for a responsible development of land safeguarding areas with HCVs. This could include the mapping of HCV areas as no-go areas and the identification of appropriate areas for potential development. The methodology should include among others the analysis of satellite images as well as consultations with relevant institutions and local people. The decision on HCV areas as well as potential development areas should be taken by local

authorities in consultation with representatives of the national government and the local population.

It is also necessary to include already delimitated HCV areas into land use planning to ensure that they are respected. Otherwise, it may happen that governments lease land to private investors which has already been identified as HCV area.

In addition to ecological constraints, there are increasingly cultural constraints on land development. High conservation value 6, for instance, is about areas critical to local communities' traditional cultural identity. Governments and regions also discovered the potential of cultural sites or inheritance (especially if registered as UNESCO world cultural inheritance) for tourism and, therefore, as a source of income. However, the protection of cultural sites can be in direct opposition of local communities' basic needs which also qualify as high conservation value. In such situations, participatory land use planning that brings farmers and representatives from the tourism industry and local, regional and or national government together in order to identify land use compromises is one of the best if not the only way of avoiding land use conflicts. In other situations, tourism destroys nature and thereby not only ecosystem services or other high conservation values but its very basis for economic sustainability. Here, land use planning can moderate between environmental and economic interests involving private investors, environmental government and non-government agencies as well as local representatives.

Food production to satisfy basic needs versus protection of cultural sites, Syria

Environmental degradation due to mining – a challenge for land use planning: Zink mine Rosh Pina in Namibia

Land use planning and Reducing Emissions from Deforestation and Forest Degradation (REDD)

REDD – Reducing Emissions from Deforestation and Forest Degradation in Developing Countries – is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. The future REDD mechanism, as currently foreseen, will allow for performance-based compensation of non-deforestation and non-degradation (refunding opportunity costs) on the basis of measured emission reductions.

Similar to ecosystem services and high conservation values, land use planners need to be aware of the REDD initiative. Developing countries that want to qualify for funds need to prepare baseline studies and monitor the changes of forest covers. Land use planning could do both: enhance the delimitation and protection of forests and benefit from special activities that are currently implemented to assist developing countries to get ready for participation in a future REDD mechanism. The United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD), an initiative by FAO, UNDP and UNEP, for instances, supports Democratic Republic of Congo, Tanzania, Zambia, Indonesia, Papua New Guinea, Vietnam, Bolivia, Panama and Paraguay (UN-REDD Program Secretariat) preparing for successful participation in the future REDD mechanism.

Rain forest in the Philippines

Land use planning and adaptation to climate change, an example from Peru

The district of Morropón, Northern Perú, is threatened by heavy rainfall and drought linked to the climate phenomenon El Niño. That is why in the land use planning initiated in 2005 disaster risk was considered a cross-cutting issue, addressing e.g. the hazards and vulnerabilities related to agricultural products. In a participative process, the potential and limitations of the land have been identified and a land use plan 2006–2016 established. Based on the plan, which has been published as regulation, priority measures are implemented and monitored, always considering and aiming for disaster risk reduction. One important project was to substitute the traditionally applied water-intensive rice cultivation, affected severely by the 2005 drought, by a less water-consuming and thus more adequate product. With local government investments and capacity building support coming from local and national organizations as well as development agencies (GTZ on behalf of BMZ), the cultivation of Caupí bean was first tested and then disseminated. About 400 farmers today cultivate Caupí, contributing to the intended changes in land use to reduce vulnerability to drought, improve food security and reach economic development. This example illustrates the close link between land use planning, disaster risk management and adaptation to climate change.

Finally, land development in our days needs to consider climate change. Accordingly, land use planning has to analyse current flood and drought risks as well as climate variations and future trends to identify the appropriate use of land and – concerning agriculture – those plants, trees and crops that are resistant to or better adapted to climate change.

Modern land use planning needs to consider all these new objectives, concepts and programs and broaden its assessment and data collection to provide an adequate base for decision-making on future land uses. Participatory land use planning can, therefore, at the same time contribute to territorial development, protection of biodiversity, food security, disaster risk reduction, mitigation of climate change and eventually to the prevention of land use conflicts and the improvement of governance. Land use planning can also be used to just raise awareness of one or more of these objectives.

As land use planning is all about the participatory definition of future land uses, it can be usefully applied whenever:

- negotiation is required between short- and medium-term economic objectives and long-term ecological and partly also economic objectives;
- land use conflicts or conflicts over the access to land and resources are to be avoided or settled;
- natural resources and biodiversity are to be protected and rehabilitated;
- unexplored land use potential has to be identified and evaluated;
- existing land use has to be optimized or adapted to current natural hazards and changing climatic conditions;
- environmental awareness needs to be created among people as well as the authorities;
- sector plans or national development plans have to be harmonized with the interests of different stakeholder groups as well as with the environmental potential;
- new settlement areas are to be planned and divided into plots.

Many current development goals and challenges require one or several of these tasks. Any (rural) development has to avoid land use conflicts. Adaptation to and mitigation of climate change requires changes in land use. Food security depends on the optimization of land and resource uses.

In this chapter, different development objectives are presented to which land use planning can contribute. A brief description of the topic is followed by a detailed description on how land use planning could be applied in this context. At the end, a short example is given. Further reading on each of the fields of application can be found at the end of this chapter.

Tourism destroying nature and landscapes, Montenegro

3.2 Land Use Planning: a Tool for Territorial Development

Territorial Development – Definition:

Territorial development means the improvement of livelihoods in a territory defined by political, administrative, natural or cultural delimitation going beyond the traditional rural-urban boundaries/dichotomy by linking activities of different policy areas using existing structures of government, private sector and civil society on local, regional and national levels and fostering the participation of the population in the development process.

Key Issues:

In the past decades, the concept of rural development and its importance in development cooperation changed several times. Territorial development draws on experiences made and presents a conceptual framework for enhancing economic growth with social inclusion and environmental sustainability. Territorial development is an inclusive, systemic and multisector approach that focuses on the spatial dimension of development. Its focus is as much on a given territory as it is on the interaction between territories. The concept is based on the perception that neither the market nor state institutions alone can achieve sustainable development. Territorial development is, therefore, based on the negotiation and cooperation of state institutions, private companies and civil society. State institutions are asked to come back and restart, taking over responsibilities and playing an important role – although different to its past one. Territorial development mainly consists of facilitation and process management. It also includes participatory planning.

Contribution of Land Use Planning to Territorial Development:

Participatory planning processes play an important role in territorial development. Land use planning is one of the tools used to negotiate the interests of different user groups in a defined territory. For example, the interest of farmers, herdsmen, mining companies and the population of villages and small towns have to be satisfied in a given territory, yet respecting recreation areas and protection areas for nature and biodiversity. Land use planning, involving the different users and interest groups actively, may help to achieve a compromise that allows for sustainable development of the territory considering the interests of all existing user groups.

Methodological Approach:

Territorial development requires an area-wide land use planning that combines local village level land use planning based on direct participation with municipal and regional land use planning at bigger scales and indirect participation. Horizontal and vertical cooperation are as important as the integration of land use planning into those state institutions that are officially mandated to coordinate the process and authorized to make the final land use plan a legally binding document.

Benefit/Outcome/Impact:

Land use planning contributes to avoiding land use conflicts and to achieving land use compromises that allow a sustainable development of a given territory.

Reflections/Lessons Learned/Critical Assessment:

In practice, land use planning can only be successful if a consensus or a strong compromise on the development objectives can be agreed upon. The pathway to achieve these objectives by the different interest groups from local, regional and national levels must also be decided together. This requires that the interests of vulnerable groups like herders or craftsmen are respected in the same way as the interests of strong economic groups like mining companies. This means that the land use planning processes must receive strong backing from the political leadership and skilful moderation.

Relevant complementing Measures and Tools:

Land use planning is a valuable tool for achieving sustainable territorial development in rural areas, as long as rational methods are the basis for development decisions. However, reality shows that the power of capital or personal connections to decision-makers can overturn all rational and participative planning efforts if democratic control is weak. Therefore, strengthening democracy, not only as the act of voting but of participation of the population in decision-making and control of the implementation of these decisions are basic to making territorial development – as well as land use planning – successful.

Challenges for Technical Cooperation:

The sectoral division of institutions (e.g. sector ministries, services) represents a major challenge for territorial development, as the spatial approach requires the involvement and cooperation of a whole range of institutions active in rural regions.

Recommendations for Technical Cooperation:

Land use planning is a powerful tool for territorial development. Technical cooperation should always make sure that this tool is used for a sustainable and balanced development. The objectives of this development have to be agreed upon by the stakeholders. Technical cooperation should not try to transfer traditional ideas and values of western culture as benchmark for developing countries but concentrate on human rights and sustainability aspects in the planning process. Even then, technical cooperation has to reflect how normative its influence should or could be.

Example: Territorial Development in Peru

An example for successful land use planning on farm and communal levels, which later was extended to the regional level and contributed to territorial development, can be found in Cajamarca, Peru. In the early nineties, technicians from the National Program for Watershed Management and Soil Conservation (PRONAMACHS) and advisors from the German consulting agency GOPA began to introduce participatory land use planning in different communities. The aim was to foster the region's indigenous communities and to contribute to sustainable development. The land use planning was targeted at micro-watersheds, going right down to the individual farm level. Soil properties, exposure, irrigation possibilities, tree cover and the landslide and flooding risks were considered in a number of planning sessions, which included all households in the village. Areas for protection, for individual and communal use as well as the most appropriate uses of individual farmland and communal pastures were defined and fixed on maps. As the population was fully involved in the process and received services to improve agriculture and start-ups for other economic activities, the planning was respected by and large, making the process an example that was replicated in the entire district and in others as well.
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This planning was done under the premises of integrated rural development but is valid in the context of territorial development, as it links up regional and local authorities with the population in a systematic way, aiming for the sustainable development of a delimitated territory.

3.3 Land Use Planning: a Tool for Sustainable Natural Resource Management

Sustainable Natural Resource Management – Definition:

Sustainable Natural Resource Management is the integrated management of natural resources recognizing the values of both their conservation and their productive use and striving to achieve sustainability in all kinds of resource use.

Key Issues:

Natural resource management involves the investigation on how resources are used, what affects them and how they can be best used, protected and preserved. It also aims to improve the way people and organizations interact with natural resources to ensure their long-term availability.

Environmental conservation, erosion control, combating desertification, watershed management, management of protected areas, buffer zone management, protection of biodiversity, sustainable forestry, agro-forestry etc. are all either part of natural resource management or closely related to it. New tasks have recently been added to natural resource management such as the identification, analysis and classification of high conservation values and the delimitation of high conservation areas or the protection of ecosystem services (see 3.1).

Natural resource management aiming to contribute to sustainable development is facing a number of challenges such as uncertainties in land tenure, lacking law enforcement, land use conflicts, changing economic value of natural resources, agricultural expansion etc.

Contribution of LUP to Natural Resource Management:

Land use planning is a key element of an effective natural resource management. It helps to define adequate uses which balance ecological, economic and social objectives, thereby preventing land use conflicts as well as social conflicts. It can also help to clarify tenure issues and – if integrated into the institutional set-up – to improve law enforcement. Land use planning represents an important decision-making tool for natural resource management.

Methodological Approach:

Land use planning for natural resource management requires the full set of elements such as collection of information (spatial and attributive data), analysis of data, prognosis and development of scenarios, planning of future land uses, political decision-making, transformation of the plans and programs into law or normative regulations, implementation, and control that have to be applied on different levels and scales (national, regional, local). Participation is integrated on all levels.

During the situation analysis, those areas can be identified that either are degraded and need regeneration or are ecologically sensitive (e.g. rain forests) or valuable (e.g. high conservation value areas, areas offering important ecosystem services or those being important in terms of biodiversity) and should be protected from destruction or conversion into other uses.

The identification of "no-go areas" is recommended in situations of high commercial pressure. These are areas with high levels of stored carbon, areas where conservation of biodiversity is considered critically important or highly significant, areas where any change of the current land use would have a negative impact on livelihoods and cultural values or damage critical environmental services such as water flows (McCormick et al. 2009; see 3.1). These "no-go areas" should be identified, demarked and protected from any kind of production (agriculture, agribusiness, production of agro-fuel, rubber and other raw materials etc.).

Another example is the participatory identification, demarcation and protection of indigenous lands or areas that preserve ecosystem services by the traditional use of natural resources.

Finally, also those areas which local people use in order to sustain their livelihoods need to be planned for, especially pastures, forests and other common pool resources, but also private farmlands.

Benefit/Outcome/Impact:

- Generation and availability of technical information (maps etc.);
- Introduction of innovative monitoring and control technologies;
- Increase in the effectiveness regarding the creation (identification, demarcation) of protected areas (natural and indigenous);
- Increase in the effectiveness of command and control measures;
- Prevention of land use conflicts and social conflicts.

Reflections/Lessons Learned/Critical Assessment:

- Participation is crucial on all levels and scales as it prevents conflicts and increases acceptance;
- The processes on national and local level are complementary.

Example: Natural Resource Management in Brazil

In Brazil, in order to control deforestation in the Amazon region, the national Natural Resource Policy Programme (NRPP) was launched in 1995. A central part of this program was the implementation of land management strategies to control deforestation. Based on the NRPP, a land use planning strategy was developed that involved the following three different levels of action and their respective instruments:

- Federal level: Ecological and economic macro zoning of land use;
- State and local level (Municipality): Local participatory zoning and planning of land use;
- Farm level: Land use planning and environmental control of rural properties.

The three levels are interlinked. Macro zoning at the national level defines the strategies and rules according to which local planning is done. At the same time, macro zoning gets influenced by local decisions and negotiations formulated during the local participatory zoning. In an ideal case, the cadastre and licensing of rural properties represents the last step in the process, controlling if the zoning is respected at local

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level, because a parcel can only be registered if its use corresponds to the targets of the ecological and economic zoning and the environmental regulations.

The following results have been achieved:

- reduced deforestation;
- long-term conflict prevention;
- decentralization of the environmental administration;
- democratization of environmental administration at the local level through the participation of target groups in planning and implementation processes.

Relevant complementing Measures and Tools:

The sustainable use of natural resources strongly depends on the future development of the productive sector and markets for natural resources. Therefore, the integration during the planning process of public programs and projects that promote organic agriculture, agro-forestry etc. as well as payments for ecosystem services (PES) are important.

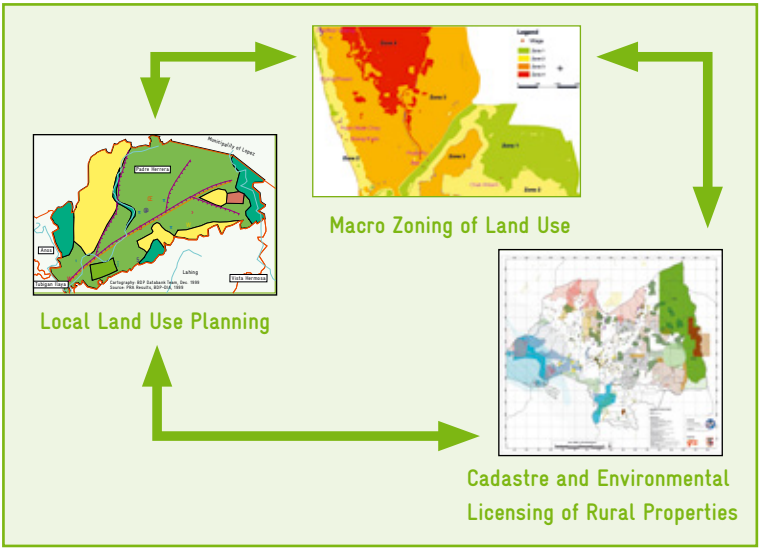
Challenges for Technical Cooperation:

➔ Integrating many institutions with very different organizational cultures and diverse capacities;
➔ Creating/introducing interdisciplinary cooperation;
➔ Increasing consistency between national, regional and local policies.

Recommendations for Technical Cooperation:

Experience has shown that the overexploitation of natural resources such as deforestation could only be stopped by an integrated approach using different strategies, which are systematically linked to each other and to natural resource governance. One crucial element for success is the establishment of land tenure security. This implies the necessity for cooperation between the national, regional and municipal governments and the definition of exactly what incentives should guide the use of natural resources.

The road to success: Linking land use planning at different levels with land registration and environmental licensing



3.4 Land Use Planning: a Tool for the Protection of Biodiversity

Biodiversity – Definition:

Biodiversity is the variability among living organisms. The term includes both natural and agricultural biological diversity.

Key Issues:

Agricultural biodiversity serves to promote food security in general, especially among the rural poor. It is indispensable for future adaptation to climate change. Overall, biodiversity makes significant contributions to income generation in rural areas and is the natural resource basis for diverse industrial production. The protection, sustainable use and equitable benefit sharing of biological diversity are subject to international regulation through the Convention on Biological Diversity (CBD) and the

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Contribution of Land Use Planning to the Protection of Biodiversity:

The sustainable use and protection of biological diversity is an integral component of successful land use planning. The guiding principle here is to catalogue biodiversity together with the local population and thus to perceive it more clearly and appreciate its importance. In successive steps, conflicts of interest are to be brought to light and fairly resolved, resulting in greater social acceptance. At the same time, partners are to be mobilised who can play a role in using biodiversity and thereby improve value creation (e.g. the private sector). Another element is to document traditional wisdom as a prerequisite for 'access and benefit sharing' (ABS) regulations and to prevent restrictions on use (e.g. through patenting). Protecting biodiversity does not mean concentration on individual species, but rather forming ecosystems and contributing to their stability or resilience. This requires a spatially oriented approach such as that offered by land use planning. For instance, ecosystems can be interconnected in networks which can help to avoid a genetic impoverishment.

Methodological Approach:

Observing the principles described above requires a dialogue process consisting of the following steps that can be integrated into a land use planning:

1 Collection and analysis of data concerning:
- ➔ the natural area, including the existing biodiversity (status, endangerment, local and supraregional significance, current use, potential use);
- ➔ user groups (gender specific) and their various interests in the region;
- ➔ factors (global, national and local levels) influencing the biodiversity existing in the area.

2 Negotiation and agreement concerning:
- ➔ a common vision for the sustainable development of the region which takes social and individual interests into account while promoting biodiversity;

- ➔ lines of strategic development for the area, management plans and an agreement on concrete activities;
- ➔ monitoring mechanisms (social, national and community level);
- ➔ incentive mechanisms (subsidies, compensatory payment, benefit sharing – monetary and non-monetary – as provided for in the CBD and ITPGFRA) to promote sustainable use in implementing activities.

3 Implementation and monitoring of the impact on society, households and biodiversity.

Benefit/Outcome/Impact:

Using land use planning as a tool to protect biodiversity also helps to identify the existing biodiversity as it allows creating a broad consensus on the sustainable use of natural resources leading to the protection of biodiversity.

Reflections/Lessons Learned/Critical Assessment:

1. The ecosystem approach is frequently neglected in land use planning and its implementation. Instead, attention is centred on individual species. This happens particularly when there is a concurrent effort to generate income by increasing the marketing of individual species;
2 The impact of this approach on biodiversity (e.g. less biodiversity) is seldom recorded;
3 The agricultural biological diversity that is so important for the well-being of the poor and for the adaptation to climate change is often neglected in the process of planning and assessing natural areas.

Relevant complementary Measures and Tools:

- ➔ Awareness creation at various levels through photo exhibition, articles in newspapers, video clips/films for the general public, cooperation with primary and secondary schools;
- ➔ Capacity building in cooperation with the relevant sectors (education, research, environment, agriculture, trade etc.).

Example: Reconciling biodiversity conservation and livelihood needs in Kakamega, Kenya

For six years, the Biodiversity Monitoring Transect Analysis (BIOTA) research project analysed the complex relations between the Kakamega Rainforest and its surrounding communities in Western Kenya. Participatory land use planning was utilised to shed light upon the utilisation of the forest and the land on its fringe. In Kakamega, however, the greatest merit of participatory land use planning was the fact that it created a platform for discussion between rather opposite partners: local forest-adjacent communities and officers from the government institutions which manage the forest. While the communities, and especially the poorer households, heavily depend on forest products and services for their livelihood, the forest officers control whether community members illegally extract forest products and order them to pay fines for disobeying the forest laws. Both sides, community members and foresters, affirmed that they welcomed the opportunity to gain a deeper understanding of the motives and constraints of the other party to act as they do. In addition, the participatory land use planning workshops resulted in the formulation of community project proposals which reconciled biodiversity conservation and livelihood needs. Such projects were e.g. zero grazing combined with biogas. This was intended to keep cattle next to the homestead instead of allowing them to graze freely in the forest and to replace firewood and charcoal by gas as an energy source. Another project was bee-keeping which can provide a quick income while favouring plant pollination and forest protection.

Bee keeping in Kakamega Rainforest, Kenya

Challenges for Technical Cooperation:

- ➔ Existing poverty often leads to short-term extractive land use. Confidence building and incentives are required to arouse interest in sustainable use.

Recommendations for Technical Cooperation:

- ➔ Biodiversity should be taken into systematic consideration in land use planning using the ecosystem approach; it is not sufficient to focus on individual species;
- ➔ Sufficient time and resources must be provided for designing and implementing land use planning.

3.5 Land Use Planning: a Tool for National Park and Buffer Zone Management

National Park and Buffer Zone Management – Description and Key Issues:

National Park and Buffer Zone Management need to consider many different purposes which have to be fulfilled and conflicts which need to be prevented. Research, tourism and the preservation of unique ecosystems and wildlife have to be achieved in the core area. The buffer zone is subject to lower protection, as it needs to cope with the demands of local subsistence farmers for forest products. Both national park and buffer zone management require long- and medium-term planning when residents are involved. It includes resource use and management plans as well as educational issues to sensitize and coach people as well as to improve their livelihood.

Example: National Park and Buffer Zone Management in Vietnam

Resource use planning in the GTZ project "Management of Tam Dao National Park and Buffer Zones" is an integrated approach for information collection, problem analysis, and planning in order to harmonize interests for socio-economic development and conservation efforts in protected areas and buffer zones.

Resource use planning is implemented through local government agencies and with participation of local people. It complies with laws and regulations of the government and is done in collaboration with the concerned agencies.

The planning is carried out as a bottom-up approach by national park authorities, local government agencies and the population with support of GTZ on behalf of BMZ. The planning process takes place in a participatory way on the commune level, allowing stakeholders to contribute and exchange knowledge, experience and ideas to develop resource use plans. The results are included in official government plans such as the Socio-Economic Development Plan.

In summary, the approach contributes to the harmonization of interests of different stakeholders in sustainable resource use and management as well as to a better balance of socio-economic development and conservation goals. At the same time, awareness on environmental protection and biodiversity conservation is increased considerably.

Contribution of Land Use Planning to National Park and Buffer Zone Management:

Participatory resource use planning is a core element in national park and buffer zone management. Resource use planning includes more aspects than land use planning as it can, for instance, include access to and the use of water or non-timber forest products. Resource use planning provides the basis for national park and buffer zone management as it defines where what kinds of use are allowed and which ones are forbidden.

Methodological Approach:

The resource use planning process needs to be undertaken in a participatory way through the integration of local people, allowing stakeholders to contribute knowledge, share experiences and exchange ideas to develop and implement resource use plans and to settle conflicts of interests. The results need to be implemented into national park policies and legally binding land/resource use plans as well as management plans and programs to ensure their implementation. The final plan indicating which uses are allowed and which ones are forbidden in each zone of the national park and in the buffer zone, respectively, needs to be made publicly available in various ways reaching the local community and all other stakeholders. Violations need to be sanctioned.

Benefit/Outcome/Impact:

Through participatory land use planning and broader resource use planning for national parks and buffer zones, fair and sustainable land use can be achieved, conflicts can be negotiated, livelihoods can be improved and conservation highly enhanced.

Reflections/Lessons Learned/Critical Assessment:

To be successful, resource use plans need to be done either by or in close cooperation with the responsible public authorities and have to be legally binding as otherwise they are not respected by all stakeholders and their implementation cannot be enforced.

Relevant complementing Measures and Tools:

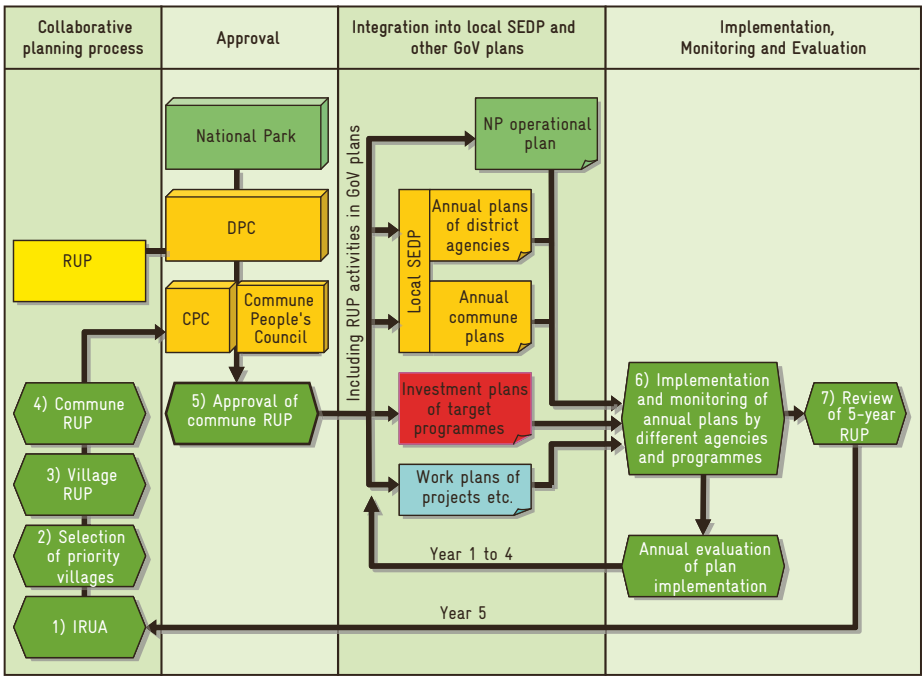
Essential complementing measures are the provision of widespread information and capacity development – considering both genders (see 4.4). This can be achieved by:

- ➔ Integrating local government representatives, NGOs and media corporations to address numerous people – men and women – to inform them about plans, objectives, achievements and obstacles;
- ➔ Training of local male and female farmers and residents by well educated forestry and agricultural extension services applying adult

education methods to involve them at an early stage into new income alternatives generated by sustainable management of natural resources and conservation aspects.

Those actions increase attention and raise knowledge on how to conserve nature and gain alternative income possibilities. To support this, access to financial means (e.g. revolving funds) has to be provided.

Resource use plan for the Tam Dao National Park, Vietnam



Abbreviations:
CPC = Community People's Committee
DPC = District People's Committee
GOV = Government
IRUA = Initial Resource Use Assessment
NP = National Park
RUP = Resource Use Planning
SEDP = Socio-Economic Development Plan

Challenges for Technical Cooperation:

- Involvement of decision-makers and stakeholders;
- Mutual confidence;
- Cooperation and willingness for changes.

Recommendations for Technical Cooperation:

- Establish itself as a neutral broker of interest;
- Actively involve all participants concerned;
- Invest sufficient resources into capacity development;
- Transfer experiences to regional and national level.

3.6 Land Use Planning: a Tool for Food Security

Food Security – Definition:

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (World Food Summit, 1996).

Key Issues:

Food Security encompasses the following four dimensions:

- Availability of food;
- Access to food;
- Safe and healthy utilisation of food;
- Stability of food availability, access and utilisation.

Contribution of Land Use Planning to Food Security:

Land use planning can contribute to improving the availability of food within a defined region at local or national level in a number of ways:

- Through land use planning, areas for food production can be defined, zoned and protected from being converted into construction land;

- Through the integration of rules regulating access to land and/or improving tenure security, food production can be improved as farmers will invest in long-term measures to improve the soil or start more expensive cultivations that provide higher yields in the long-run;
- Land use planning in combination with market analysis and infrastructure planning can improve access to food.

Methodological Approach:

During the situation analysis, areas with comparative advantages for an intensification of agricultural production need to be identified (e.g. potential irrigation areas, areas with higher soil fertility, and areas with better access to infrastructure, agricultural services and other inputs). In addition, all areas need to be identified that are prone to erosion or natural disasters, and necessary measures to protect these and other lands from erosion and disasters need to be defined. Also all areas need to be identified that are threatened by misuse, overuse or contamination, and measures to rehabilitate them need to be defined. Further, the protection of biodiversity can be promoted and supported (see 3.4) and scenarios on the future development of climatic conditions can be made and discussed to assess which crops need to be replaced by more heat/storm/hail/rain resistant crops or in which areas agriculture is no longer feasible and can be switched to livestock keeping or other extensive uses (see 3.8). In addition, during the situation analysis, traditional knowledge on agricultural products and production methods as well as on livestock keeping and non-timber products can be mobilised and enhanced.

During the zoning of future uses, sufficient land and water areas need to be reserved for agriculture, livestock production, community forestry, fishery, home gardens etc. and effectively protected from conversion into construction land or private concessions.

During the planning phase, stakeholders need to define land use regulations for common resources and their sustainable use.

Benefit/Outcome/Impact:

Land use planning can mainly contribute to the first two dimensions of food security: availability and access to food. In many regions, the recogni-

tion and promotion of subsistence farming as well as the promotion and support of agricultural production for the local markets during land use planning can also contribute to food security.

Reflections/Lessons Learned/Critical Assessment:

Small farmers – who actually have the highest potential for increasing agricultural productivity and food production as recent studies have shown during the food-crisis 2007–2008 – often need additional support to produce for (local) markets such as advice on food conservation, processing and marketing (introduction or improvement of gender sensitive agricultural extension services), improvement of transport infrastructure, access to seeds and/or credits (introduction of micro credit systems or revolving funds) etc.

Relevant complementing Measures and Tools:

- Institutionalizing advice on food conservation, processing and marketing (introduction or improvement of gender-sensitive agricultural extension services);
- Initiating improvement of transport infrastructure;
- Facilitating access to seeds and/or credits (introduction of micro credit systems or revolving funds) etc.

Challenges for Technical Cooperation:

A major risk for many small farmers is the insecurity of their tenure arrangements. Although most farmers have legitimized rights often based on customary or religious tenure systems, these are frequently not recognized by the state that considers these lands to be state land. In view of the currently increasing commercial pressure on land, tenure security becomes an even more crucial condition for achieving food security. In this respect, small farmers' secured access to land – especially for women (who are the main food producers in most developing countries, producing 90% of the food in Sub Saharan African countries) – is crucial to ensure food security.

Example: Increasing Food Security in Burkina Faso

Since the late 1980s, participatory land use planning is used as one of several tools in Sub-Saharan African countries to preserve soil from erosion, to rehabilitate natural resources and to support negotiation among different user groups so that the necessary conditions to increase food production are provided. In the 1990s, the project Land Management and Resources Conservation (PATECORE)[2] in Burkina Faso succeeded in developing a village land-use program in which measures to increase production had been combined with conservation-oriented resource management which built upon traditional forms of land use and the farmers' own knowledge. Today, the project to combat poverty in Tillabéri and Tahoua (LUCOP) in Niger follows a similar approach.

It supports participatory land use planning and facilitates negotiations between different land user groups so they can agree on the use of forests and pastures with the objective to achieve an increase in male and female farmers' and pastoralists' capacity as well as an increase in yields.

2 PATECORE was implemented by GTZ on behalf of BMZ.

Recommendations for Technical Cooperation:

Land use planning as a tool for achieving food security should go hand in hand with measures for tenure security for both male and female small farmers.

Private investors should get involved in participatory land use planning so that the local population can discuss future land uses together with them as well as the authorities. The priority within this planning process is the satisfaction of the local population's basic needs, including food security.

3.7 Land Use Planning: a Tool for Disaster Risk Management

Disaster Risk Management – Definition:

Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards such as storms, earthquakes, floods, droughts or landslides through a variety of activities and preventive measures, mitigation and preparedness.

Key Issues:

Disaster risk management strategies and initiatives are based on a participative risk assessment which considers current hazard and vulnerability patterns as well as trends such as climate change or land degradation and aims at making people and communities more resilient. Disaster risk management lays emphasis on capacity building at all levels: local, regional and national.

Contribution of Land Use Planning to Disaster Risk Management:

In rural regions in particular, natural disasters have a detrimental impact on development efforts, frequently claiming lives and destroying the results of years of work and investment.

Land use planning is a very important instrument in disaster risk management. By determining land uses, it affects both the vulnerability of the local population and infrastructure as well as potential hazards, and can accordingly be used to minimize disaster risk. The goal of land use planning for disaster risk management is to achieve a utilization of land and natural resources which is adapted to local conditions and needs and takes into account disaster risks.

Methodological Approach:

Disaster risk management should be integrated in all phases of land use planning, from its preparation and base-line assessment through decision-making, implementation and monitoring. In addition to the existing risks, future trends provoked by climate change must be considered in order to achieve more sustainability.

Disaster risk management and land use planning can be combined at any moment during planning or implementation. For this purpose, the following tools need to be included into land use planning:

- Risk assessment (on the basis of hazard and vulnerability analysis) should be integrated in the base-line assessment for land use planning;
- Risk mapping should be part of zoning and other methods of scenario building;
- Disaster risk management measures should be integrated in the land use plan, e.g. introduction of sustainable agriculture to avoid soil degradation;
- Local regulations to enforce land use criteria and decisions should explicitly mention relevant disaster risk management strategies and criteria;
- Disaster risk management indicators should be integrated in the established monitoring and evaluation mechanisms;
- Disaster risk management should be considered in the involvement of relevant actors and organizational mechanisms (e.g. participation of population at risk and disaster risk management actors at the local, regional and national level).

See also the disaster risk management checklist for land use planners in chap. 4.5.2.

Benefit/Outcome/Impact:

Land use planning can significantly contribute to preventing new hazards, such as landslides and flooding, which are frequently caused by inappropriate land use. Land use planning can also reduce the vulnerability of people and infrastructure by identifying safe locations for settlements and constructions and by defining and applying adequate building standards during plan implementation. Thus, considering disaster risks in land use planning can save human lives and material as well as reduce economic losses. It contributes to sustainable development and poverty reduction.

Relevant complementing Measures and Tools:

The contribution of land use planning to disaster risk management refers primarily to risk prevention and mitigation. Land use planning cannot, however, rule out all types of risks. Relevant complementing measures are, therefore, the introduction of early warning systems and the institutionalization of disaster preparedness.

The introduction of early warning systems includes the technical development, the identification of the responsible institutions, the determination of warning chains, and the definition of Standard Operation Procedures (SOP) etc. Disaster preparedness encompasses a broad range of activities aimed at awareness raising and capacity building. Examples are the inclusion of disaster preparedness in school curricula or the realization of drills.

Example: Land Use Zoning based on Flood Probability Mapping, Cambodia

The Regional Flood Management and Mitigation Centre of the Mekong River Commission with the support of GTZ on behalf of BMZ and GFA Consulting Group developed an approach for flood probability-based land use planning. In a first step, flood probability maps (also called flood hazard maps) are prepared using satellite images, statistical data and data collected on the ground. In a second step, land use zoning is conducted, derived from maximum depth and duration of potential flooding. In the example below, four different zones with different flood depths and durations have been identified resulting in four zones with varying recommended land uses.

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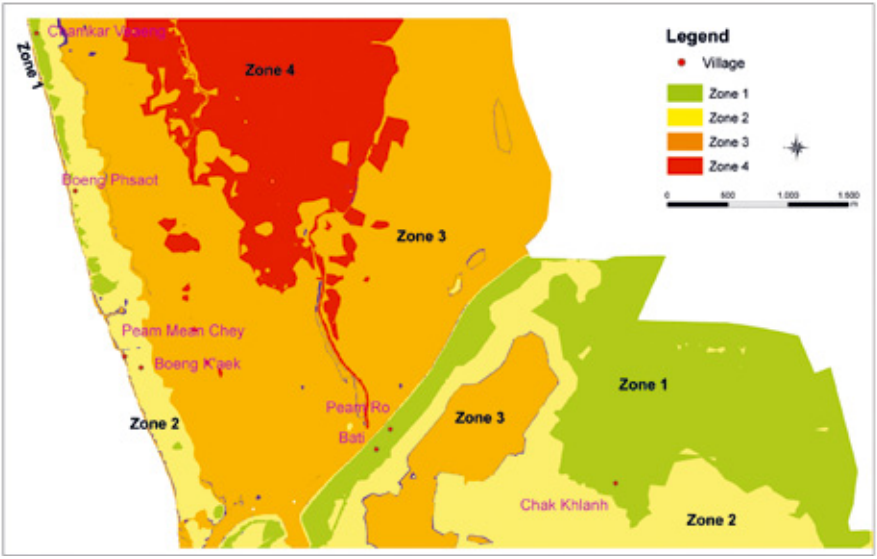
ZONING DERIVED FROM MAXIMUM DEPTH AND DURATION OF FLOODING INFORMATION



Criteria used for analyzing

Zone 1:
- Probability of MDF and DFL is 20%
- Flood depth is less than 1 meter
- Flood duration is less than 60 days

Zone 2:
- Probability of MDF and DFL is 20%
- Flood depth is less than 1-3 meter
- Flood duration is in between 60-130 days

Zone 3:
- Probability of MDF and DFL is 20%
- Flood depth is less than 3-5 meter
- Flood duration is in between 131-210 days

Zone 4:
- Probability of MDF and DFL is 20%
- Flood depth is more than 5 meter
- Flood duration is more than 211 days

Land Use Management Policy

For Zone 1:
It can be allowed to be used for:
- Big buildings
- Big factories
- Residential areas
- Agricultural activities

For Zone 2:
It can be allowed to be used for:
- Agricultural activities like: rice plantation, bean plantation, corn plantation, etc.
- Inundated forests

For Zone 3:
Activities to be allowed:
- Agricultural activities
- Fishing activities
- Eco-tourism
- Irrigation system or road development in this area needs to have prior approval from all relevant institutions. Activities not to be allowed:
- Clearing of inundated forests
- Development activities like fill up of land for constructing buildings, factories, etc.

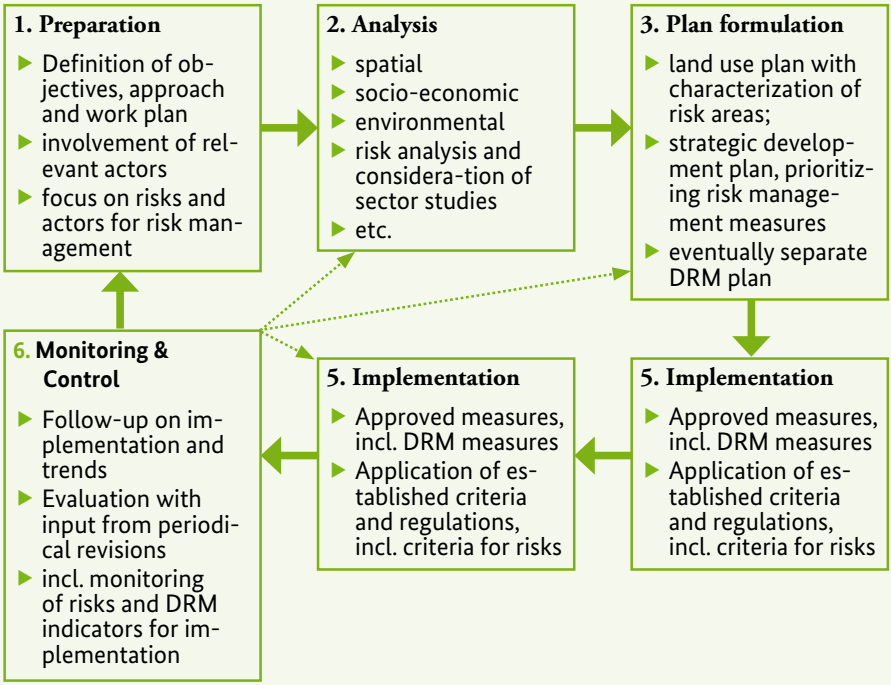
For Zone 4:
In Zone 4 very limited activities can be allowed like:
- Fishing activities
- Pumping water for irrigation purposes
- Eco-tourism

Flood probability based land use zoning

Source: Falke 2010

Example: Strengthening National Disaster Risk Management Systems (PRO-GRC), Mozambique

After the devastating flood disaster in the south and centre of Mozambique in 2000, the government started to take disaster risk management into account and among other things introduced disaster prevention into land use planning. Key tools are the participatory risk mapping and the mapping of "safe havens". The latter enables the identification of safer grounds for possible building sites or fields. In addition, the risk of drought is being reduced by capacity building processes in order to introduce adjusted agricultural production methods, erosion protection, water reservoirs and an effective irrigation system. Another important prevention measure is the resettlement of families affected by floods on higher ground in cyclone resistant buildings further away from the river.



Source: Bollin 2009

Challenges for Technical Cooperation:

In order to contribute to disaster risk management, land use planning must consider the existing hazards and the consequences of land use patterns for disaster risk. However, the awareness of this necessity and the knowledge on disaster risk and risk reduction often does not exist yet even in highly vulnerable regions. It is, therefore, an important challenge for technical cooperation to identify who can help to integrate disaster risk management in land use planning and how it should be done.

Recommendations for Technical Cooperation:

Through disaster risk management lives can be saved and damage and loss can be prevented, which makes it vital for sustainable and stable development. In high-risk countries and regions, disaster risk management should thus be integrated into land use planning. In order to identify the hazards and vulnerabilities at the local level, land use planning in these regions should be based on detailed risk analysis and maps, including risk mapping. In addition and as a means of achieving the integration of disaster risk management into land use planning, a disaster risk management checklist could be elaborated and integrated into the national land use planning guidelines to help identifying an adequate manner for considering disaster risk and disaster risk management in land use planning within the national context.

3.8 Land Use Planning: a Tool for Adaptation to and Mitigation of Climate Change

Adaptation to and Mitigation of Climate Change – Definitions and Concepts:

The human response to global climate change and climate variability can be characterized in two ways: adaptation and mitigation.

Adaptation:
Adaptation involves developing ways to avoid negative impact on people, their livelihoods, economic activities and places by reducing their vulnerability to climate impacts. Adaptation is about doing things differently because of climate change. Examples of adaptation include chang-

ing building codes, for instance, to make constructions more resistant against hurricanes, building infrastructure to protect communities against increased flooding, relocating buildings to higher ground and making changes in land use such as switching to more drought-resistant crops, or substituting intensive with extensive agriculture.

Mitigation:
Mitigation involves attempts to slow the process of global climate change by lowering the level of greenhouse gases in the atmosphere. Examples include mechanisms such as reducing emissions from deforestation and forest degradation or planting trees that absorb carbon dioxide from the air and store it in the soil or in their trunks and roots. Global efforts for mitigation are prerequisites for sustainable development.

Key Issues:

In many developing countries, in particular in increasingly water scarce areas and coastal areas, pressure on land will increase through climate change. Both, mitigation of and adaptation to climate change are crucial for vulnerable communities to ensure their livelihoods. The ability of communities to adapt to and to mitigate climate change is determined by their level of development, their access to resources and their scientific and technical capacity. Thus, it is often the poorest that are the most vulnerable.

Contribution of Land Use Planning to Adaptation to and Mitigation of Climate Change:

a) LUP for Adaptation:
Adaptation consists of assessing vulnerabilities and impacts related to climate change, identifying and prioritizing adaptation options, often from a cross-sectoral perspective, and governing the implementation of adaptation. Impacts and adaptation needs are very different from location to location; therefore, land use planning has an important role to play in adaptation to climate change.

Methodological Approach:
Based on the analysis of observed and projected climate data, vulnerability mapping can be included in the analytical phase of land use planning.

Once vulnerable zones are identified, alternative uses and adaptation options can be discussed jointly and agreed upon by all stakeholders – with support from experts such as engineers and specialists from biology, forestry and agriculture.

Benefit/Outcome/Impact:
By considering climate change, land use planning can be made resilient and contribute to adapting to climate change. It enables site-specific adaptation e.g. by adjusting the assessment of guiding parameters like land suitability for different purposes.

Reflections/Lessons Learned/Critical Assessment:
Climate change adaptation requires enhancing skills of land use planning experts and involving relevant actors in the process. Oftentimes, overarching national or regional policies and strategies for adaptation have been developed which either provide the mandate for or can be supported by climate-sensible land use planning.

b) LUP for Mitigation:
Land use planning can be used to reduce deforestation and forest degradation by limiting agricultural expansion, conversion of forests to pasturelands, infrastructure development, destructive logging, fires etc. Land use planning can also be used to identify areas for carbon sequestration (as an environmental service for which farmers could receive a payment), e.g. through afforestation or for the introduction of agroforestry. An example is the transformation of coffee monocultures into coffee agroforestry plantations in which the carbon in biomass and litter can be multiplied by 2.5 through the plantation/cultivation of shade trees. Another way of land use planning to contribute to mitigation of climate change is the identification of suitable sites for wind mill parks or for the production of solar energy.

Methodological Approach:
Integrating mitigation into land use planning or applying land use planning to mitigate climate change may not require the introduction of new tools. It requires awareness of the potentials of land use planning. During land use planning, areas of current deforestation or forest degradation can be identified, different future scenarios discussed and more sustainable uses defined, decided upon and passed on. Land use planning can also

serve to monitor the realization of decided land use changes. Alternatively, areas for afforestation or the production of "clean energy" could be identified. Therefore, the discussion of possibilities of mitigating climate change in any part of the world could or should be included in any land use planning activity.

Benefit/Outcome/Impact:
Apart from environmental improvements, municipalities and individual land users can benefit from payments for environmental services – depending on national laws.

Reflections/Lessons Learned/Critical Assessment:
Land use planning could be used much more to get the topic of climate change on the agenda and to provide tools for participatory planning and decision-making concerning measures to mitigate climate change.

Relevant complementing Measures and Tools:

- Analysis of observed and projected climate data drawing on climate databases (e.g. World Bank Climate Portal);
- Impact assessments;
- Cost-benefit analysis;
- Climate proofing tools to systematically assess climate impacts on project or policy objectives in the planning and implementation phase.

Challenges for Technical Cooperation:

Technical cooperation has long-standing experience in supporting land use planning with concrete tools and moderating the overall process. Awareness and skills concerning the use of tools for adaptation and mitigation in land use planning will need to be build up among land use planning practitioners.

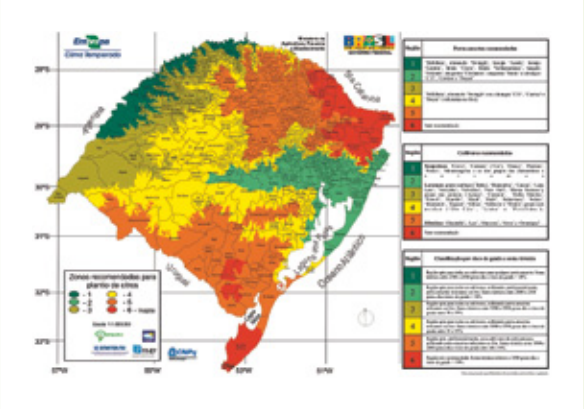
Recommendations for Technical Cooperation:

Technical cooperation could support the coordination of and the communication between the different actors who are involved in adaptation and mitigation to raise awareness on the usefulness of land use planning in this context.

Example: Land Use Planning for Adaptation and Mitigation in Brazil

Adaptation in Brazil: In 1996, the Ministry of Agriculture and Rural Development, in cooperation with scientific institutions, launched a program called "agricultural zoning for climatic risk". Its main objective is to define areas and periods with lower climatic risks for the cultivation of different crops. The main stakeholders involved in the process were public institutions supporting agricultural production at state and municipal level (such as Ministry of Agriculture, State Enterprise for Technical Assistance and Rural Development (EMATER), National Institute of Meteorology etc.), associations of farmers and rural credit banks. The results of agricultural zoning have a strong influence on future land use as they guide agricultural credit and rural insurance. For a detailed example on land use planning as a tool to adapt to climate change see annex A5 presenting a case from Tonga. See also 3.1 for an example from Peru.

Mitigation in Brazil: In the Brazil Amazon, land management strategies are implemented to combat deforestation and at the same time reduce emissions from deforestation and degradation. In this regard, two deforestation scenarios have been developed as part of land use planning activities (ecological and economic macro zoning): a business-as-usual scenario and a governance scenario. While the first scenario would result in only 56% of the original forest area remaining in 2050, the governance scenario would secure 73% of the original forest cover.



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Adaptation: Agricultural zoning for climatic risk

Source: Ministério da Agricultura, Pecuária e Abastecimento

Apart from its important influence on the scientific discourse on the development of the Amazon area, the following impacts have been achieved by the preparation of the two scenarios: Programs on forest protection and rural development use them as decision support and orientation for planning of new infrastructure (e.g. road construction). The Scenarios are also used as baseline for REDD projects.

Mitigation: Reducing emissions from deforestation and forest degradation through land use planning

3.9 Land Use Planning: a Tool for Development in a Drugs Environment

Development in a Drugs Environment – Definition:

The production of coca and opium poppy, processing and to some extent transport and trafficking of drugs take place in an environment that has development deficits and is often characterized by war and violence. Development in a drugs environment refers to the use of development measures in order to mitigate the negative consequences of drugs such as health problems, poverty and violence to both individuals and society.

Key Issues:

In the past, small farmers in most of the areas that produce illicit drug crops have been regularly left out of development programs in spite of their harsh living conditions. Contrary to popular belief, there are close links between problems related to illegal drugs and development problems. The population's living environment presents the typical indicators of deprivation: poverty, inadequate social infrastructure, (political) isolation, insecurity and exposure to conflict. Existing social structures have often been destroyed or could never be established due to in-migration and displacements during a (post-) conflict situation. State governance is very weak or non-existent; the government is often only known in form of law enforcement and drug eradication measures. Hence, since 1990, German and EU development policy have been giving greater priority to the problem, using development measures in order to mitigate the negative consequences of drugs on both individuals and society. In recent years, useful approaches for long-term sustainable alternatives to the cultivation of drug crops such as coca, opium poppy and cannabis have been shown to work. Effective approaches to drug misuse prevention and treatment have been developed.

Contribution of LUP to Development in a Drugs Environment:

Land use planning, done in a participatory way, can contribute to identifying and promoting alternatives to the cultivation of drug crops and set the basis for a social (re)construction process in a living environment very often marked by insecurity, instability and an institutional vacuum.

Methodological Approach:

If land rights can be secured, land use planning is an ideal tool to jointly define development goals and measures in order to create alternative legal income sources and thus reducing dependency on drug crop production and illegal actors. The prior situational analysis provides necessary biophysical, socioeconomic, demographic and administrative information to define which area can be used to generate what sort of alternative livelihood, such as agricultural production, forestry, fishery, tourism, industries etc. During land use planning, stakeholders can also discuss what infrastructure such as roads is needed to ensure accessibility to markets for

their new products. Land use planning can also identify risk zones where floods, landslides, seismic or volcanic eruptions may occur as well as ecologically sensitive zones and protected areas which shouldn't be used for alternative production.

Benefit/Outcome/Impact:

The focus of such a land use planning is to point out alternative sources of income to the farmers currently producing illicit drug crops, stimulating community building and re-integrating them into a formal system. Participatory land use planning can help to build trust, and develop mid- and long-term investment perspectives.

Reflections/Lessons Learned/Critical Assessment:

Participation of drug crop producing farmers is a crucial factor for success. Land use planning will have to go hand in hand with the legalization/securing of land rights (titles), the provision of at least basic security for the population and the joint definition of support measures such as access to technical advice, credit and markets (see below).

Relevant complementing Measures and Tools:

- Formalization/legalization of small farmers' land rights;
- Re-establishment of functioning state institutions and good governance in the (former) drug producing area;
- Improvement of rural infrastructure (primarily road construction, sometimes improvement of irrigation systems);
- Provision of technical advice on agricultural production and marketing;
- Establishment of a rural credit system;
- Provision of information on markets for alternative products;
- Strengthening farmers' associations, participation in political processes.

Challenges for Technical Cooperation:

- Land use planning in regions of (former) drug crop production needs the political will of the state to take concerted action for rural development in the region and recognize its population as citizens with the

right to take decisions. People who live in the drugs environment need to recuperate minimum trust in state institutions;

- Land rights need to be secured;
- Because of the frequent presence of violent actors in the region, security measures for the population (e.g. by creating police stations) have to be undertaken.

Example: Integrated Plan for Alternative Development, Tocache-Uchiza (Peru)

In the late 1980s, early 1990s, Tocache province was one of the biggest connected coca production areas in the world. Drug mafia and guerrilla cooperated to force the population to follow their rules. After the drug mafia had moved to Columbia and the guerrilla movement had been stopped to a large extent in the mid 1990s, the drug production collapsed. Instability, insecurity as well as social and economic disintegration still continued. In this setting, starting in 2002, the project aimed to strengthen social cohesion, legalize and secure the incomes of small farmers and to reduce their dependency from coca production. Until 2007, the majority of the farmers had received an economic and social perspective to overcome past political and criminal violence. The project successfully supported the development of productive (agricultural) income generation outside coca production in an integrated way.

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Coca production, Peru

This was achieved through six components:

- Formalizing land rights and introducing land use planning;
- Improving infrastructure;
- Ameliorating rural financial services;
- Establishing a market information service;
- Providing technical advice on agricultural production;
- Strengthening local governments and farmers' associations.

The provincial land use plan has been developed in a systematic, participative and concerted way together with (former) coca farmers, civil society, political entities, economists and technicians. It lists numerous agricultural and forest products that can be cultivated and points out where the best locations for their cultivation are. It takes into consideration demographic and migration patterns and offers information on where tourism or industrial production may provide alternative incomes. Finally, it refers to the necessary infrastructure development and community building measures.

Recommendations for Technical Cooperation:

➔ Conduct a sound situational and conflict analysis including questions of civil security;
➔ Agree on minimum governance standards with local and national partners and make them a prerequisite for cooperation (negotiation process). Joint regular monitoring should be used to continuously improve the governance situation.

Example: Reducing land use conflicts through local agreements

In Burkina Faso in the intervention area of the Programme Sahel Burkinabé (PSB), land conflicts could be reduced from 259 in 1996 to 49 in 2002 by the introduction of local agreements. At Kishi Beiga, an area frequented by a multitude of different social groups and known for its dispute potential, before the adaptation of a local agreement on natural resource management, there were on average 60 land use conflicts per year, especially between farmers and pastoralists. Due to the implementation of preventive measures included in the agreement, the number of conflicts was reduced to 10 per year – a reduction of 83%. The remaining conflicts can now be solved locally by an alternative dispute resolution mechanism introduced in all of Burkina Faso (Banzhaf/Kirsch-Jung 2005).

Règlement intérieur de la zone de Beiga dans le cadre de la gestion des ressources naturelles

Chapitre I: Organisation et Fonctionnement

Article 1: Il est mis en place un organe de coordination ...

Article 6: Toute activité à entreprendre dans le cadre de la gestion des ressources naturelles sera discutée en réunion avec toutes les structures et en Assemblée Générale avec la population avant son exécution.

Internal rules for natural resource management in Beiga area

Source: GTZ 2003

3.10 Land Use Planning: a Tool for Conflict Prevention and Resolution

Conflict Prevention and Resolution - Definition:

Conflict resolution addresses the causes of conflict and seeks to build new and lasting relationships between hostile groups. Conflict prevention aims at preventing the outbreak of (violent) conflict (Fisher et al. 2000).

Key Issues:

Quite often, social and socio-economic conflicts as well as social instability result from conflicts over access to land and/or to other natural resources. Nationalization of traditional land under common property regimes, possible multiple and/or new usages, illicit practices during privatization, illegal or irresponsible allocation of public land (e.g. to foreign companies), multiple sales of private land, increased land scarcity due to environmental degradation or climate change as well as mass migration and (returning) refugees can lead to land conflicts that are often disguised as ethnic or political conflict. There are a number of ways to prevent and resolve such conflicts.

Typical ways of (land) conflict resolution are facilitation, moderation, consultation, conciliation, mediation, arbitration and adjudication by judiciary, special land courts, land administration, political institutions, party systems, customary and religious institutions as well as civil society and private sector mediators. In case of land conflicts, conflict resolution often needs to be accompanied by land administration and management tools, such as land use planning.

Contribution of LUP to Conflict Prevention and Resolution:

Land use planning is the key instrument in reconciling competing interests in land between individuals as well as groups, between different villages and distinct users as well as between traditional rights' holders and state authorities or private companies etc. A participatory comprehensive land use planning which anticipates and guides future land use while respecting existing uses represents an effective tool for preventing and solving land conflicts.

Methodological Approaches:

Land conflicts can be prevented if all relevant stakeholders are involved in a joint land use planning. In the case of existing conflicts, discussions about current and future land uses and the joint definition of land use rules can help to reduce or even stop land use conflicts. This can be done through the preparation of land use maps and plans as well as by local agreements, both consisting of or being accompanied by land use regulations. The latter are very popular in Sub-Saharan Africa where they are frequently used to solve conflicts among farmers and pastoralists as well as among local and foreign users of common resources.

Benefit/Outcome/Impact:

Experience shows that land and other resource conflicts can be significantly reduced by local agreements which establish transparency of land use, strengthen consensual approaches within the community, boost a sense of responsibility, introduce penalties and rely on social control (see also 2.5).

Reflections/Lessons Learned/Critical Assessment:

There are limits to the effectiveness of local agreements. Even when signed by a representative of the state, it has happened that part of the land in question has been leased by a high ranking politician to a foreign investor. This shows that in certain countries, the power asymmetry can make such agreements null and void at any time.

Relevant complementing Measures and Tools:

- Advice on the improvement of conflict resolution bodies and mechanisms with the objective to establish a broad range of options, including alternative dispute resolution within a clear hierarchy of institutions that are free from corruption;
- Increase transparency of existing land conflicts, get media involved, and create awareness in society on the extent and forms of land conflicts in their country.

Challenges for Technical Cooperation:

A major challenge for technical cooperation is to convince all conflict parties, including the powerful stakeholders (especially in case of asymmetric conflicts), that joining the land use planning process can help to prevent or solve land conflicts.

Recommendations for Technical Cooperation:

Make governance an integral part of all projects dealing with land issues.

3.11 Land Use Planning: a Tool for Responsible Land Governance

Responsible Land Governance – Definition:

Land governance concerns the rules, processes and structures through which decisions are made about access to land and its use, the manner in which the decisions are implemented and enforced as well as the way that conflicting interests in land are managed. Land governance encompasses statutory, customary, religious, neo-customary and extra legal actors, rules and processes governing access to and use of land. Weak land governance gives rise to state capture (e.g. illegal allocation of public land), large-scale land acquisitions and leases (often ignoring local people's rights over land) and administrative corruption (e.g. illegal allocation of building permits due to bribery). Correspondingly, responsible land governance means that decision-making over access to and use of land as well as its enforcement and the reconciliation of conflicting interests is done in a fair and transparent way, allowing everybody to equitably participate and to receive an adequate share while at the same time an economically, socially and environmentally sustainable land development is guaranteed (FAO/UN-HABITAT 2009).

Key Issues:

Responsible land governance is characterized by the following principles: equity, accountability, transparency, effectiveness, rule of law, legal security, civic engagement, subsidiarity, security, and sustainability.

Contribution of Land Use Planning to Responsible Land Governance:

Effective, transparent and participatory land use planning contributes to responsible land governance in different ways:

1. Broad participation allows for the inclusion of society's current and future needs into decision-making over the use of land;
2. Transparent land use planning reduces opportunities for rent-seeking (state capture and administrative corruption) and it thereby limits the risk for the rural poor to be de facto expropriated and to become landless;
3. Land use planning is a key instrument for reconciling competing interests in land and thereby preventing land use conflicts;
4. Land use planning can help to identify local peoples' use and possession rights over land and prepare for their formal recognition (legalization);
5. Land use planning can help to avoid that state concessions overlap with local peoples' farmlands, pastures, community forests etc.

Benefit/Outcome/Impact:

Land use planning which is conducted jointly by all relevant stakeholders and which is supported by experts is an ideal tool to ensure that decision-making over the use of land (and at least partially over access to land) as well as its enforcement and the reconciliation of conflicting interests is done in a fair and transparent way. This allows everybody to equitably participate and to receive an adequate share while at the same time guaranteeing an economically, socially and environmentally sustainable land development is guaranteed.

Reflections/Lessons Learned/Critical Assessment:

The introduction of participation respectively participatory land use planning may depend on those who actually benefit from its absence. Land use planning as an instrument of or contribution to good land governance can therefore only be successfully introduced in a given country if the political will for transparency, accountability, equity, fairness… with other words for good governance exist among those in power.

Relevant complementing Measures and Tools:

- ➔ Policy advice on how to fight state capture and administrative corruption in the land sector, implementation of corresponding measures and establishment of respective monitoring systems;
- ➔ Policy advice on how to turn (foreign) direct investments in land into a benefit for the entire society including the local population;
- ➔ Inclusive land policy formulation processes.

Challenges for Technical Cooperation:

The main challenge lies in the implementation of land use plans which were developed in a participatory way. In a number of countries, the incorporation of land use plans into existing institutions and management mechanisms also still remains a challenge. Both – institutionalization and implementation – require a much more holistic approach to land use planning, including capacity development of those institutions responsible for planning and implementation of land use plans and accompanying measures.

Recommendations for Technical Cooperation:

Make (land) governance an integral part of all projects dealing with land use planning.

Transparency and participation contribute to responsible land governance: public display during land registration procedure in Cambodia

Example: Responsible Land Governance, Cambodia

In view of the difficulties being faced by other villages due to a loss of land to forest concession areas and private agribusiness, leaders from Kro Lah village (Kreung minority) in Cambodia decided to map user areas with participation from local authorities. Their rationale was that the recognition from the local authorities would provide better protection than legal title. The land use planning process would enable them to continue to use some areas communally and allocate other areas for individual use. Staff from the Department of Land Registration in conjunction with the Land Management Project (GTZ on behalf of BMZ) provided technical expertise in producing a participatory land use map of the village user areas. For each of the 12 micro-zones identified and mapped, internal regulations on use and management were developed by a village working group, with technical assistance provided where needed. The process of formulating regulations included regular reviews by all village members. Examples of the regulations are:

- Sale of land (even small parcels) must be endorsed with the consensus of at least 80% of the voting members of the village;
- Access and rights of use are allocated by the community to individuals or families who are members of the village;
- Old growth forest areas and spirit forests are protected from further encroachment;
- Significant areas have been set aside for joint investment in cash crop production. The community welcomes any investors who are interested in developing this land. An agreement would be required, defining the period of cooperation and provisions for sharing of responsibilities and benefits between investment company and the local community.

All communities with user areas adjacent to Kro Lah village sent representatives to join the process at all crucial steps. In turn, Kro Lah representatives attended meetings in all of the neighbouring villages in order to ensure understanding of the process and to resolve any outstanding disagreements about the extent of user areas between the neighbouring communities. After all negotiations were completed, elders and leaders from the neighbouring villages placed their thumbprints on the land use map to signify their support. Since recognition by the authorities is a crucial factor in ensuring land/resource security, relevant authorities and line departments were involved in the process at all steps (GTZ-MRC-SMRP 2001).

3.12 Summary

Increasing scarcity of land requires land use planning for diverse purposes, all aiming to optimize land and resource uses and to avoid land use conflicts, erosion and destruction as well as other consequential problems such as famines, epidemics and war. Long- and short-term goals, ecological, social, economic and cultural objectives need to be balanced. Land use planning can be applied to support sustainable development within given areas (territorial development) or specifically to ensure the protection of ecosystem services, biodiversity and high conservation values (natural resource management, national park management, buffer zone management). It can also help to mitigate climate change or adapt to it, to prevent disasters or to be prepared for them, to ensure food security, to develop areas in post-conflict situations or in drugs environments or specifically to reduce land conflicts and to improve land governance.

The examples show that no matter for what purpose land use planning is applied, the most crucial factors are awareness raising, public participation, capacity building, institutionalization, formal approval and a legally binding status.

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Development of a land use plan in Cambodia

4 How to Do Land Use Planning?

"The core element of a land-use planning process is a number of working steps and procedures. In this document the steps have been listed in a certain sequence. Neither the sequence, nor the number of steps and their elements should be regarded as a compulsory guideline. [...] The steps and procedures suggested here are based on the present experience in the country and the region. Nevertheless, the user of this manual will need to evaluate carefully which steps are necessary for his particular situation and which modifications he needs to make to what is suggested here."

(from the Manual on "Participatory Land Use Planning in Cambodia", 2001)

"Ideally, a local-level land use plan with its projects and regulations is reflected in a national land use plan, for instance through a national land use classification or respective policies and laws. Thus a complementary flow of information and regulations from the local "bottom-level" to the national "top-level", and vice versa, is required in meaningful planning. In this, the local levels express their needs, challenges and visions in the land use plan and the national level considers these through overall policy making. In this set-up, land use planning becomes a democratic mouthpiece of civil society."

(from the Manual "Understanding of Land Use Planning and its Relevance in Namibia", 2009)

4.1 Planning as an Iterative Process

It is still a widespread understanding in many countries and organizations that planning must be carried out in clearly defined steps which are separate from each other and which must be followed in a strict order. Experience has shown that such a linear planning process takes too much time and often results in outdated plans the moment they are approved. The alternative approach is an iterative process. Planning in form of iteration has proved to be successful in a vast number of technical cooperation projects.

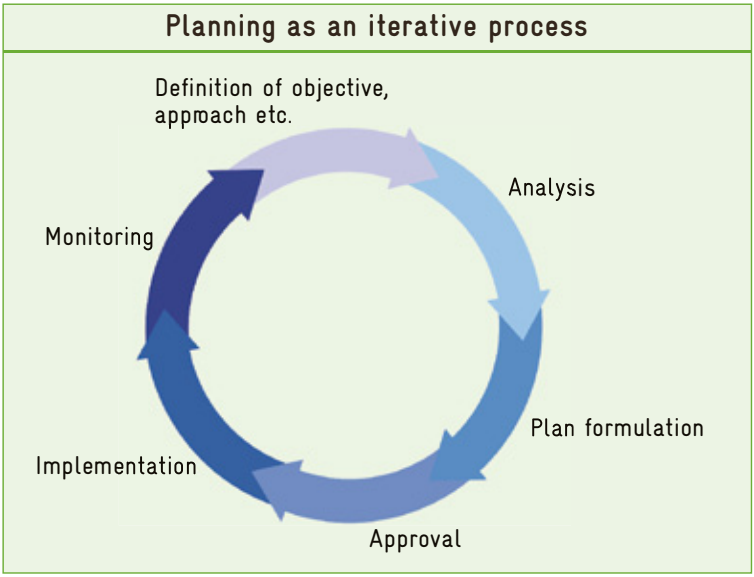
Iteration means the act of repeating a process usually with the aim of approaching a desired goal or target or result. Each repetition of the process is also called iteration, and the results of one such iteration are used as the starting point for the next iteration. With each iteration, the planning and the plan(s) become more detailed and better adapted to the circumstances. Planning and plan are always up-to-date. Within such a continuous planning cycle different elements of the planning process (such as data collection, analysis, negotiation) can be carried out simultaneously.

Iterative planning is based on a continuous learning process. It requires the readiness of all those involved to keep asking and learning. Each activity and each interaction between those involved in the planning process provides new information and experience. This improves the understanding of the situation and increases the knowledge about the measures carried out. In case the measures do not result in the intended outcomes and impacts, iterative planning makes it possible to react swiftly and to make the necessary changes or adjustments.

Land use planning is not a straight step-by-step procedure, but is iterative and cyclical. Such a process allows learning from experience and quick adaptation to changing circumstances. Approved objectives need to be constantly rechecked and changed when they are no longer appropriate. However, applying iterative planning does not mean that there is no need for a time frame within which certain activities must be concluded. For instance, if just before the approval of the final land use plan it is discovered that key actors have not been considered for participation, there are two alternatives for action: a) The participants may decide to finalize the plan first and adapt it later in a further planning process, then including

all stakeholders; b) The planning process is stopped and restarted from the beginning – this time considering all key actors. Apart from annoying former participants, this also causes a considerable delay in finalizing the plan implementation. Advantages and disadvantages of both alternatives have to be taken into consideration. It is important to deal openly with such conflict situations. This requires that all participants develop an understanding for the tension arising between meeting the directives and the necessity of a flexible adaptation.

Planning seen as an iterative process makes it easier to react to undesirable developments and to learn from mistakes before they have disastrous consequences. However, this only applies when mistakes are recognized and people react to and learn from them. Iteration leads step-by-step through processes of recognition and learning to solving problems on a broad social basis. It leads to solutions and agreements accepted by all participants. These are processes that via diversions and resistance lead to changes, which in turn are the prerequisites for sustainable development.



4.2 Existing Conditions and Necessary Preconditions

In most developing countries the practice of coordinated and systematic planning and action is not very common. Especially in remote rural areas many decisions are made on an ad-hoc basis and the administration attends to the whole set of individual needs and demands one by one – the transport of a sick person, complaint about the local teacher, need to carry a dead body to the cemetery or partial loss of the harvest because of bad weather. Planning, implementation and evaluation is done only on exception and is often induced by outsiders. These exercises generally are limited to particular groups or organizations and rarely include the coordination of different stakeholders (municipality, representatives of national ministries, peasant groups etc.). Even less frequent is the incorporation of spatial aspects in planning. Furthermore, planning and budgeting are generally disconnected. Some plans are only produced in order to fulfil certain obligations prescribed by law, for instance in order to increase the municipal budget through transmissions from the national treasury. Afterwards, the planning documents are put aside without making use of its indicative value.

This reality contrasts with the ideal of a complex national planning system that:

- defines different planning levels (municipal, regional, national);
- relates sector plans (roads, health infrastructure etc.) with territorial plans;
- combines long-term and short-term objectives;
- converts visions in strategic plans that are again split up into operational work plans;
- includes social and spatial specifications and links planning and budgeting.

In such a planning system, land use planning would form part of the planning methods applied.

In this context two questions are crucial:

1. Which levels of planning quality can realistically be introduced in the routines of rural organizations and stakeholders?
2. What minimum level of sophistication in planning systems is necessary for a good public administration?

In practice, two ways can be found to deal with the lack of spatial planning:

1. Very rudimentary planning systems are established in a first step, leaving aside most of the more complicated topics such as questions of territory and land use;
2. In certain locations (for instance in the neighbourhood of protected areas) specialized land use plans are elaborated but disconnected from the general planning system.

Both solutions suffer severe defects. In the first case, essential questions of land degradation, living conditions in remote locations etc. are not sufficiently or not at all considered. In the second case, the land use plan remains a rare occurrence out of context. Both situations do not lead to desirable results.

Thus the main question is not how to establish land use planning as a specialized planning method but how to introduce spatial and land use aspects in the rudimentary management and planning systems in place. Thus it appears less adequate to speak about land use planning but rather of governance and management capacities that include elements that give indications on how to deal with different places according to their specific qualities and problems.

However, this pragmatic approach may easily enter in conflict with the interests and expectations of certain stakeholders. For instance, experts who use Geographic Information Systems and follow strictly the technical recommendations of planning handbooks that give very strict instructions for making a land use plan.

Key Questions:

1. Which are the functioning management practices in place?
2. Which improvements in these management practices can be relatively easily introduced?
3. How can the understanding of decision-makers and important stake holders on spatial and land use questions be improved?
4. Who needs to and who can apply which instruments and introduce them to his/her routines?
5. How can punctual specialized exercises of land use plan be incorporated into a routinely planning and management system?
6. Which are the essential elements of land use planning for promoting a more land use oriented way of thinking in the existing management practices?

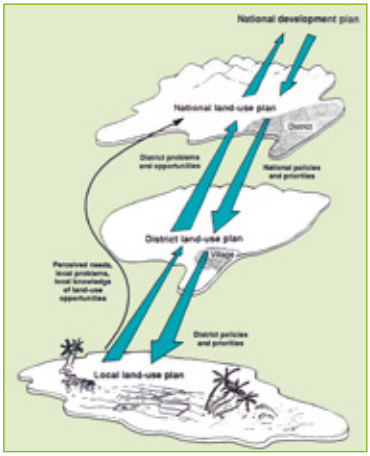
Namibia currently introduces participatory land use planning. The table below summarizes the current conditions and the targets to be achieved. Details on how to achieve the ideal situation are presented in annex A 1.

Integrated Land Use Planning in Namibia: Status and Targets

Present Situation	Ideal Situation
A legal framework for planning does not exist; existing laws and policies have serious gaps and overlapping.	A LUP policy lays down the responsibilities for steering LUP and defines LUP as a binding instrument.
Lack of guidance on how to do LUP.	National LUP guidelines that give clear directions on the LUP process.
Top-down approaches for planning and decision-making are still believed appropriate by central decision-makers.	The decentralization policy is implemented and includes the transfer of the responsibility for LUP to local levels.
Poor management skills.	Relevant institutions are provided with qualified staff.
Budgets are not linked to LUP.	The decentralization includes the transfer of financial resources for LUP implementation.
Only selected stakeholders are involved.	Participatory planning tools are developed, tested and documented in the LUP guidelines.
Lack of coordination to harmonize and document the vast amount of available data.	A “data clearing house” defines data standards and data sharing regulations.
Coordination with other sectors either does not exist or is deficient.	LUP integrates all sector plans, and all sector institutions seek approval from the LUP authority.
Existing regional land use plans have severe shortcomings, are not considered for implementation, nor are they in line with other plans.	Regional land use plans are used as a binding instrument to allocate and manage land use.

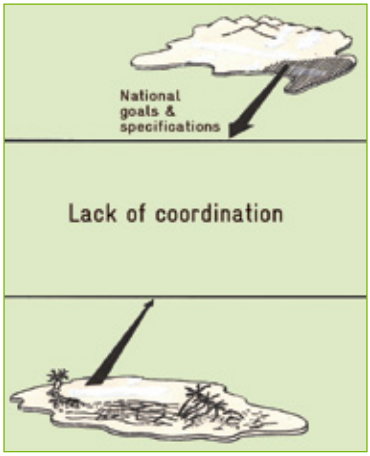
The situation in Namibia is the rule rather than the exception. In most countries, there is a gap between the existing conditions and necessary preconditions for land use planning. Very frequently there is a lack of co-operation not only between different sectors but also within one sector at different levels. Ideal and reality are presented below.

National planning systems:
the target ...



Source: FAO 1993

... and the common status quo



Source: Wehrmann 1997

Experience has shown that some **preconditions** have to be given to conduct participatory land use planning activities successfully in a country or region. These are:

- Freedom of assembly, opinion and expression;
- Existing need and demand for land use planning;
- Political will to define land uses in a transparent and participatory way;
- Willingness of all stakeholders to discuss together the optimum sustainable use of land and other resources, including high-ranking politicians, public authorities and private investors;
- Legal security and rule of law to ensure that all parties stick to the land use plan;
- Integration of land use planning into official institutions and structures resulting in legally binding land use plans.

If these preconditions are not yet all in place, there needs to be at least a clear government commitment for land use planning. Hence transparency, dialogue, cooperation and participation are key issues for any institution or project aiming to introduce land use planning in a setting where the above-mentioned preconditions are weak. Outsiders can often provide a platform for those participatory mechanisms and processes until attitudes change and transparency, accountability, dialogue, cooperation, participation etc. become natural. After all, this is also a question of capacity that can be trained.

Other conditions are helpful but not necessary. They can also be achieved during the intervention with respect to land use planning in a given country. These are:

- Obligation by law for all administrative levels to do land use planning and to cooperate and link their planning activities and plans;
- A land use planning policy laying down the responsibilities for steering land use planning and defining land use plans as binding instruments;
- Public budgets linked to land use planning outcomes as an incentive for planning and to ensure the implementation of plans;
- Clear rules on fair compensation in case of land use limitations for individuals, groups or companies;
- Decentralization (devolution) of decision-making on land and resource uses (based on the principle of subsidiarity);
- Data availability and data sharing among different institutions;
- Existence of at least basic logistic conditions.

4.3 Planning Elements and Useful Tools

Land use planning consists of the following elements: preparation, information/data collection, data analysis, plan formulation, negotiation and decision-making, implementation, monitoring and evaluation, and plan updating. The elements can overlap each other or be done concurrently. For that reason we speak of elements and not of steps which may be associated with a linear process. Many of the tools applied also reflect the philosophy of a parallel approach, as they contribute to different elements,

e.g. most PRA methods contribute to data collection, data analysis and decision-making; GIS supports analysis as well as decision-making and monitoring.

The cross-sectional character and the different – ecological, economic, technical and socio-cultural – dimensions of land use suggest an interdisciplinary approach. If – as in certain newly industrialized countries – adequate capacities exist, this interdisciplinary approach can be achieved through the cooperation of different sector services and planning agencies. However, in many countries these conditions are not given. In these cases, many projects for practical purposes and without reservation borrow methods from different fields and adapt them to their specific planning context. Thus, tools are applied from regional and landscape planning, ecology, agricultural sciences, economy, business administration, sociology and social anthropology. The result is a mix of methods including classical, scientific-technical and participatory planning tools. For inventory, appraisal or decision-finding people rely on advanced technologies like remote sensing or GIS as much as on tried and trusted tools such as transact walks, three-dimensional models made from clay or plaster or "resources maps" made from the remains of harvest, branches, stones and other locally available materials. Particularly PRA-methods now belong to the indispensable set of tools. The use of highly enlarged aerial photographs and satellite images as well as handmade three-dimensional models play a dominant role in the communication about problems and potentials of a given area and at the same time train stakeholders to think and plan in abstract ways. In addition, participatory methods help creating a transparent planning process in which all stakeholders can participate. They also help to level the knowledge hierarchy between technical services and population through the appreciation and valorisation of the land users' knowledge. The joint learning fosters all stakeholders' joint ownership of the planning process.

Elements of land use planning (LUP)

Preparation	**Gathering information**	
▶ Talks with relevant institutions and actors ▶ Village/municipal assemblies ▶ Clarification of the demand for LUP ▶ Clarification of the objective of LUP ▶ Determination of the planning area ▶ Assessment of the necessary preconditions for planning and implementation ▶ Sensitization on the planning objectives	▶ Clarification of the legal provisions ▶ Collection of information on existing plans and programs ▶ Identification and mapping of current land use, land use challenges and land use visions ▶ Clarification of needs, interests, positions, priorities, problems, and conflicts ▶ Stakeholder analysis ▶ Inventories: socio-econ., ecological, admin. etc.	
▶ Assessment of institutional capacities	▶ Strengthening of existing and/or creation of new institutional structures ▶ Capacity development ▶ Improving cooperation and coordination	

Source: Betke 2003 (modified)

	Analysis	**Plan formulation, negotiation, decision-making**	**Implementation, monitoring, plan updating**
	▸ Land suitability analysis ▸ Strength-weaknesses-analysis ▸ Alignment of local needs and interests with overlapping objectives ▸ Prioritization of land use options	▸ Drafting land use plan (documents and maps) ▸ Public presentation and discussion ▸ Negotiation ▸ Conflict management ▸ Voting ▸ Decision on the land use plan	▸ Implementation: annual work plans defining measures, responsibilities, contributions, time frames, rules etc. ▸ Assistance to and monitoring and control of planning and implementation ▸ Plan updating: corrections, modifications, adjustments and up-dates

Selected tools for land use planning within technical cooperation

Data collection and analysis	Institutional capacity development	Decision-finding and plan formulation	
▸ Soil, vegetation, landscape, ecological etc. assessments ▸ Interpretation of aerial photographs and satellite images ▸ Land surveying (GPS) ▸ Cartography and GIS ▸ Land suitability assessment ▸ Social, socio-econ., socio-cult. assess-ments: action research, problem analysis, actor analysis ▸ Project planning tools	▸ Institutional analysis, strengthening/ creation of institutional structures, Committees etc. [Preference for support of existing institutions] ▸ Training in form of seminars and on the job training	▸ Planning workshops at different levels ▸ Project planning tools ▸ PRA-methods: municipal assemblies, ranking ▸ Negotiation and conflict-management: round tables, arbitration, mediation ▸ Maps, 3-D-modells, and GIS	
PRA-methods: village assemblies, transacts, local soil classification, seasonal calendar, aerial photo interpretation, 3-D-models, resource map, group discussions, semi-structured interviews, planning-for-real, social mapping, Venn diagrams, ranking etc.			

Source: Betke 2003 (modified)

	Implementation	Monitoring and evaluation
	▶ Implementation of pilot measures concurrent to the planning process ▶ Accompanying measures ▶ Compensation and measures for compensation ▶ Economic incentives: Contracts, agreements (defining responsibilities, contributions, time frames, rules), local agreements, formal approval of plans and agreements to make them legally binding	▶ Impact and process monitoring ▶ Eco-monitoring ▶ Remote sensing and GIS ▶ Social impact analysis: self evaluation, participatory impact analysis ▶ Continuing process back-stopping

4.3.1 Preparation

From the perspective of technical cooperation, preparation for land use planning includes the following activities:

- **Clarification of need and/or demand for land use planning;**
- **Clarification of legal provisions:** Before entering into land use planning, the legal frame for it needs to be assessed. Which provisions do exist? Which institutions are responsible or need to be included according to law? What are the provisions on the procedure, actors, finance etc.?
- **Land use related problem analysis:** The basis for determining the need for land use planning is a participatory problem analysis. In a well moderated workshop key stakeholders jointly discuss major land use related challenges as well as potentials. The guiding question should be: Do we need rules to guide the use of land? Economic, socio-economic and ecological aspects should be discussed equally. The application of new concepts such as the HCV-concept or the eco-system services approach may influence the discussion.

Integrating the HCV-concept into land use planning preparation

Preparation of land use planning requires an analysis of land use related problems and needs within a given area. Based on this participatory analysis of the initial situation, general objectives of land use planning can be identified. These define the topics and concepts that need to be discussed with key stakeholders to provide a common understanding. If sustainable land use, the protection of biodiversity, of ecosystem services or of specific natural resources are among the objectives, the HCV concept (see 3.1) could be introduced as a suitable approach/tool within a stakeholder workshop. Such an awareness-raising workshop should build an understanding of the concept of HCV, explain the role of the HCV concept within land use planning and introduce the principles and steps of an HCV assessment. This assessment can be integrated in the overall situation analysis that will be done as part of the land use planning process (see 4.3.2). Depending on the defined objectives of land use planning, the awareness-raising workshop can also address related topics such as disaster risk analysis and management or the UN-REDD initiative.

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Definition of objective(s) of land use planning: Based on the needs and problem analysis, clear objectives of land use planning need to be defined. These objectives should reflect people's perceptions and priorities as well as overarching (regional, national or global) goals. A distinction should be made between short-, medium-term and long-term objectives.

In accordance with the chosen objectives, all **stakeholders should be sensitized** to their importance. Topics could include sustainable use of natural resources, ecosystem services or high conservation value areas and disaster risk management as well as economic development and improvement of infrastructure and services. It is important to create an understanding of each other's priorities in order to achieve ownership of the common objectives.

Entering into a dialogue with the participants: the dialogue with stakeholders requires profound knowledge and empathy. In discussions with the groups of land users affected, it cannot be assumed that already in the beginning of the dialogue, aspects such as ecology or landscape rehabilitation will be seen as a priorities. Experience has shown that it is not opportune to discuss primarily environmental aspects. The destruction of land resources is often not perceived as important but rather life-threatening problems rank foremost. Small farmers in Uttar Pradesh/India are not going to change their cultivation practices only to protect the Ganges delta at Bengal from silting up further, even though this would be highly recommendable from a superior point of view. The aim, therefore, is to find initial points from which effective economic advantages can be expected in the shortest possible time, thus providing the land users with effective incentives to protect the delta. In order to achieve this, it is necessary to understand how the land users perceive the world around them.

Assessment of the institutional capacities: to be successful, land use planning needs to be integrated into the institutions responsible for it. Therefore, a thorough analysis of the existing institutional capacities needs to be done to identify a) the right institution(s) with an official mandate for land use planning and b) the need for capacity development. Based on this assessment a capacity development concept can be developed, including

vocational training, on-the-job training etc. that will then be implemented concurrently with the land use planning process.

The following questions need to be addressed in the institutional analysis:

- Which institution will take the lead?
- Which other institutions need to get involved?
- What are their capacities?
- What is their staff's experience and qualifications in the different fields required – from facilitation at local level up to mapping with GIS?
- What kind of preparation would these people need to fulfil their new tasks and where can they get appropriate training?
- Where can they get additional information, appropriate services and technical support?
- What materials and basic equipment are needed?

Determining the planning area: an adequate unit in which land use planning is carried out can be a watershed area, a community territory, an administrative unit or some other geographical unit. The decision must be made together with the population, local institutions and government if necessary. Various criteria will play a role: solidarity and dissociation of the local population, their action space, the administrative territorial boundaries and the focus of the government's strategy. Sometimes the boundaries of a planning area will change during the course of implementation. Once the planning area is agreed upon, the next step often covers the identification of pilot zones or "pilot villages". Nevertheless, land use planning must recognize all problems, potentials and alternatives for land use in the entire planning unit. It cannot be concerned selectively with partial areas, which are particularly intact or degraded. The whole area used by the stakeholders has to be planned for. However, implementation activities will not have to cover the areas to the same extent, at least for the beginning.

List of Criteria for area selection:

- conflicts over natural resource use (e.g. villages located in or near forest concession areas or fishing lots, use conflicts between neighbouring communities);
- high number of land conflicts, cases of land grabbing, illegal appropriation of land or natural resources;
- high pressure on local resources and environmental degradation (e.g. villages with a large population and a small village area, villages with a high seasonal influx of external resource users);
- high number of recent transformations in land use or numerous changes of ownership of land (e.g. in areas with increased cash crop production);
- conflicts over administrative boundaries;
- presence of large infrastructure and land development projects (e.g. near irrigation schemes, large plantations etc.);
- resettlement areas.

Source: GTZ/MRC Sustainable Management of Resources Project (SMRP) 2001

4.3.2 Data Collection and Analysis

This section deals with the following aspects:

➔ Type of data needed;
➔ Data sources;
➔ Methods for data collection;
➔ Methods for data analysis;
➔ Methods for data presentation.

Information and Data Needed:

Although the specific information and data needed for land use planning depends on the characteristics of the planning area as well as on the planning objectives, certain topics should always be addressed. As a golden rule, the amount of data collected should be kept as small as possible. Hence, it is important to first define the planning objectives and identify the data needed before starting data collection. Otherwise, too much time,

effort and money will be spent for the collection of data, which in the end will not be used.

The **key questions** for any land use planning process are:

- What are the past and present land uses?
- Who is using what piece of land for what purpose? (What user groups exist? What are their rights over the land they use? etc.);
- How satisfied are the land users as well as other stakeholders with the current land use scheme?
- What's the overall land tenure situation (existing types of land rights)?
- What problems or obstacles do land users and other stakeholders face in respect to access to and use of land?
- What land use and/or land ownership conflicts do exist?
- Which additional land use potentials do exist?
- What is foreseen in existing sector plans for the same area?
- What are local people's needs and interests? How can they be satisfied?
- How can local land use needs and overarching land use objectives be harmonized?
- Which infrastructure is relevant for the existing/future land uses?
- What are the natural and socio-economic resources available/relevant for current and future land uses?

Information and data can be categorized in the following way:

- Population, demographic trends, migration;
- Actors and institutions;
- Land and other resources, including information on biodiversity, conservation values, ecosystem services etc;
- Environment, e.g. availability of water, climate trends, natural hazards;
- Past, present and future land use;
- Production and trends;
- Infrastructure;
- Social services;
- Topographic references;
- Administrative boundaries.

The most relevant issue is that any information/data needs to be linked to a location. Land use planning always comes back to the question of who is using what piece of land for what purpose and what – if not the current one – would be the best use (and user) of this land to achieve the agreed planning objective.

Data Sources:

Data sources can be formal or informal, written or oral. They include:

- National directives and plans;
- Regional directives and plans;
- Sector policies, concepts, programs, plans and budgets;
- Programs and concepts of technical services;
- Studies and research documents;
- Statistics;
- Reports by public authorities, NGOs, donors and projects on ongoing activities in the planning area;
- Information on public budgets and other financial sources;
- Official maps;
- Remote sensing data (aerial photographs and satellite images);
- Internet, e.g. Google earth;
- GPS data;
- Local knowledge such as classifications, know-how, rules, practices, expressions derived from experience etc;
- Interviews with key stakeholders;
- Group discussions with land users;
- Observations.

GPS field surveys in Vietnam and Namibia

Type of data and analysis for HCV assessment

Information and data needed	Analysis
▸ Existing and historic land use patterns and policies ▸ Tenure rights ▸ Existing and potential conservation values in the area (type and location of the values) ▸ Threats to the HCVs ▸ Willingness to protect the HCVs	▸ Assessment of conservation values (e.g. habitat area needed to maintain the values, factors to be monitored) ▸ Compatibility of land uses with conservation priorities ▸ Land managers' capacity to maintain or enhance conservation values

Methods for Data Collection:

- ➔ Stakeholder (actor) analysis;
- ➔ Interpretation of aerial photographs;
- ➔ (Computerized) analysis of satellite images;
- ➔ Desk research (assessment of laws, by-laws, plans, programs, reports, studies etc.);
- ➔ Inventories: e.g. socio-economic, ecological;
- ➔ Surveys based on questionnaires;
- ➔ Interviews;
- ➔ Group discussions;
- ➔ Action research;
- ➔ Participatory Rural Appraisal;
- ➔ Topographic surveys;
- ➔ Analysis of existing maps (e.g. road maps, cadastral maps, maps from the facility cadastre);
- ➔ Project planning tools.

Generally, local land users – no matter how poor they might be or how limited their formal education is – do have a perfect understanding of their immediate environment – having lived and worked there a lifetime and benefited from their forefathers' experience and wisdom. Hence, the knowledge of local land users is an important potential source for land use planning. However, it is not easy to collect and document this local knowl-

edge. In addition to a lack of a common terminology, especially concerning the environment, a major problem is the different interpretation of the ecological context by the experts (educated abroad) and the local population. The evaluation of a forest by the population based on its use contrasts with a scientific and ecological evaluation in which conservation (soil erosion, biodiversity) has the priority. In addition, indigenous or traditional classification may include religious and cultural aspects ("holy trees or secret forests"). A good way to avoid external consultants building a one-sided picture when interpreting and analyzing the situation is the application of participatory methods of data collection and planning. These methods make it possible for outsiders to get to know and to understand seemingly irrational decisions on land use by getting familiar with the background as well as cultural values and norms (for further details on participatory methods see below).

Methods for Data Analysis:

Modern spatial planning tools such as GIS (Geographic Information Systems), GPS (Global Positioning System) and remote sensing are used more frequently by planning authorities to monitor land cover changes (e.g. deforestation), establish normative land use plans and – still to a lesser extent – model alternative land use option scenarios. In addition, GIS plays an increasingly important role in natural hazard mapping (flood control, geological risk zones) and preventive natural disaster mitigation.

However, no matter how technically advanced a spatial planning tool is, its usefulness primarily depends on the spatial and statistical data available, the conformance of data and tool with the planning objective and the personal and political will of key stakeholders to address constraints and problems. If this is not given, the value of maps and information whether in an analogue or digital form will remain insignificant.

Maps, aerial photos, satellite images and GPS are key tools for any land use planning. They can be used individually or in combination. The problem of maps in developing countries is that they are often outdated, their scale too big or information too general. Generally, it is also easier for local population to work with aerial photographs or satellite images than with maps which are often too abstract, making it difficult for non-experts to read them. For a long time, the use of aerial photographs was the most

common tool offering the best cost-benefit ratio. The resolution is very high (in the past much higher than the resolution of satellite images), and photographs can be produced for the area needed. Recently, satellite images dropped in price and are now becoming easily available. They increasingly replace aerial photographs. However, the availability of satellite images is also depending on the cloud coverage of the area of interest. Especially for countries in the inner tropics, the humid climate can limit the timely acquisition of good quality satellite images.

Advantages of using maps and images in participatory land use planning

Quite frequently one will encounter the opinion that "technical mapping", i.e. computer supported mapping using remote sensing and/or GPS, is inappropriate for participatory land use planning because it is too complicated and too expensive. There is no doubt that "manual (PRA style) village mapping" is an indispensable tool for participatory land use planning. It can and should, however, be combined with technical mapping for the following reasons:

- Technical maps provide an accurate and to scale picture of sizes and interrelations of different land use categories. This is important, for example, in boundary areas where claims of villages or communes may overlap. With manual village mapping, the magnitude of such overlaps quite often remains unclear, which makes it difficult to find solutions that are accepted by all parties;
- Technical mapping eliminates ambiguities and uncertainties (e.g. as to the exact size and location of plots of land) and provides a clear reference for registration. Hence, technical maps enjoy much better recognition by the authorities than manual village maps. This is an important issue when land use planning is used to prepare maps that register existing and propose long-term future user rights, which need approval and signature by the authorities;
- Manual village mapping and technical mapping are not mutually exclusive. It may, for example, be highly beneficial to use technical maps, such as enlarged aerial photos or 3-dimensional terrain maps, as base materials on which manual village maps can be drawn;

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- Every industrialized country has land administration and cadastral systems, which are based on technical mapping. The issue of technical mapping in developing countries and especially in countries in transition will have to be addressed sooner or later in most cases. Omitting technical mapping now means that it will have to be done later. This implies that at least parts of the land use planning will have to be repeated. This in turn means that due to a duplication of certain parts, the total costs of the process will be higher than if proper technical mapping was done in the first place. However, technical mapping does not mean that it always has to be done 100% digitally. In areas with hardly any electricity, land use planning can also be done manually based on base maps digitally derived from aerial photographs or satellite images;
- Finally, technical maps may contribute to creating awareness about land use problems in ways that manual maps may not be able to achieve as their exact extent can be shown, e.g. of deforestation. In a number of cases, such maps were instrumental in obtaining endorsement for the establishment of a land use planning process by relevant authorities.

Source: GTZ/MRC – SMRP 2001; Annex 9 by C. Feldkötter (modified)

The advantage of maps is that they can be used directly as a basis for further planning. To be used as a base map for GIS, maps usually need to be digitized. They are generally already geo-referenced, i.e. they fit into a coordinate system. Aerial photographs and satellite images, by contrast, need to be geo-referenced. Geo-referencing is the process by which the image is fitted to a coordinate system. This requires the survey of at least certain key points that can be used as a reference. Today, coordinates are generally determined with the help of GPS (Global Positioning System) receivers. The workload for surveying depends on the accuracy needed. A land use map generally needs less accuracy than a cadastral map.

Aerial photographs and satellite images can be used as base maps. Features can be derived from them manually or by computer. Although automatic recognition of lines (e.g. roads) is technically possible, most elements are manually digitized (e.g. parcel boundaries). The effort in terms of time and money for automatic recognition is still high and, therefore, only recommended for situations in which accuracy needs to be very high.

Scale and accuracy of a map are closely linked. In general, maps with bigger scales (1: 100.000) are less accurate. This also holds true for GIS data sets, which are normally derived from maps or images at given scales. Even though GIS software allows the user to zoom in closely on a data set or print it at very large scales, such zooms or prints are not any more accurate than the maps or images they have been derived from.

Land use zoning, i.e. the delimitation of homogenous zones in regard to their characteristics (topography, soil, vegetation, land cover, forest classification, ecological system etc.) or functions (current land use, land use potential, agricultural potential, conservation values, ecosystem services etc.), should be part of any land use analysis. The categories for zoning should be derived from the key problems, major challenges and/or main potentials of the planning area or – if already identified – from the planning objective(s).

Land use zoning can be based on topographic maps at small scale, on aerial photographs and satellite images. Land use zoning can be done manually or digitally. Digital maps are more expensive, but may look more professional. The information content is the same. Manual land use zoning has the advantage that it can be done collectively (**participatory zoning**) by the local stakeholders such as inhabitants, technicians from local technical services, representatives of local NGOs etc. This does not only generate additional information but also facilitates the discussion about current land uses, short-, middle- and long-term consequences as well as more sustainable alternative uses. The zoning is generally accompanied by a matrix in which the principal characteristics of each zone are indicated. Often land use zoning is first done manually in participatory planning workshops and later transferred into digital maps. This can then be used for further analysis as well as for upscaling, as different digital local maps can easily be combined and serve as a basis for higher level planning. Digital zoning can be done with simple mapping programs or more complex GIS. The latter only add additional value if additional information/data is attached to the land uses (e.g. from the above-mentioned matrix as well as from additional, mainly technical sources) which can then be stored in the GIS database and interlinked. The correlations can bring new insights, e.g. areas can be shown that are below a certain altitude and within a certain distance to the sea. These areas would be risk areas in case of tsunami. Such a modelling, however, requires the integration of a digital terrain model in the GIS.

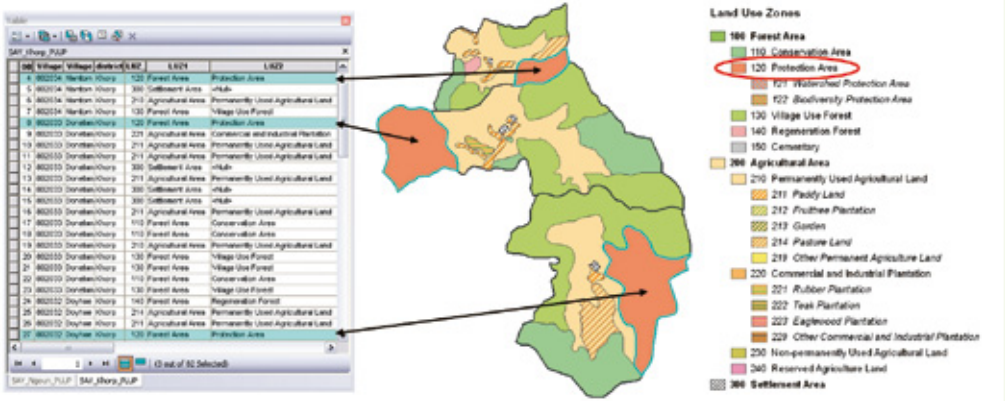
Digital Terrain Model (DTM) or digital elevation model (DEM) is a digital representation of ground surface topography or terrain. Digital terrain models introduce the third dimension to mapping and planning. Up to now, this information is rare in developing countries although it is crucial for elementary tasks such as flood management, watershed management, road and dam construction in mountainous areas etc. DTMs are commonly built using remote sensing techniques, but they may also be built from land surveying. Points on all three axes are geo-referenced. This allows exact horizontal and vertical measurement and planning. DTMs are used in geographic information systems, and are the most common basis for digitally produced relief maps.

Participatory 3-dimensional models which are usually derived from topographic maps are the analogue version of DTM. Participatory 3-D models integrate people's knowledge and conventional spatial information (like contour lines) to produce stand-alone scaled relief models that have proved to be user-friendly and relatively accurate data storage and analysis devices, and an excellent media for easing communication between local stakeholders and external agencies. The method has been conceived to support collaborative initiatives aimed at increasing public participation in problem analysis and decision-making. It offers the opportunity to produce relatively precise geo-referenced and scaled qualitative and quantitative data, adding substantial value and communication power to local knowledge. Participatory 3-D models have been successfully used for land use planning in mountainous regions to discuss improvement of land use, reduction of erosion, deforestation and forest degradation, watershed management, improvement of village infrastructure, demarcation of village boundaries and access to land and other natural resources.

Geographical Information Systems (GIS) have been used in land use planning for almost thirty years. A GIS is a computer-based system to enter, store, visualize and analyse geographical and statistical data. It has the unique capacity to merge spatial information from different sources, synthesize new spatial data sets and present the outcome of spatial analysis in various forms such as maps, graphs or 3-D illustrations. Hence, it is an efficient instrument to analyse land capabilities, model different land use options and produce standardized or custom made land use maps.

In developing countries we often distinguish between a project GIS set up for a specific, usually short term purpose, by a foreign aid project and the much more complicated and demanding installation of a GIS by a public sector institution. While computer hard- and software still play an important role, the more critical organisational and managerial issues to be considered for an "institutional" GIS are the choice of suitable geographic and statistical data, the operation and analysis expertise of GIS operators and users, the organizational and institutional integration of a GIS unit within the existing administrative set-up and the access and information delivery to various user groups to facilitate and improve the process of spatial decision-making.

GIS combines non-spatial data with spatial information (by W. Künzel)



Key elements for a successful GIS installation and operation include:

- A thorough user needs assessment including all major stakeholders;
- Realistic assessment of the spatial and statistical data requirements for the intended outputs and selection of appropriate data generation options. For local level planning, satellite imagery may be an increasingly interesting option but it has to be assessed carefully against the dependence on external expert inputs;

- Clarifying institutional issues of staff secondment and selection, their "spatial" training and background, options of inner-organizational career paths to lessen the risk of a high staff "brain drain" etc;
- Establishing a realistic time and budget frame;
- Developing a communication and information sharing strategy in order to generate and sustain users' interest in the outputs and services of the GIS. This is an ongoing "marketing" effort which is often alien to a traditional public service organization. Data is often viewed as a commodity and is hoarded;
- The installation of GIS in developing countries used to be mostly donor designed and implemented by consultants. It has to be ensured that local authorities receive more control over project design and implementation.

In the past **cost-benefit considerations** often did not play an important part when deciding if to introduce a GIS. Partially this can be explained by the lack of cost consciousness in public administrations, especially when the GIS initially was funded externally. Costs and benefits of a GIS should, however, always be thoroughly examined in the initial planning stage when alternative options and solutions of spatial data generation, management and analysis suitable to the mandate and needs of an organization are being discussed. This may require benchmarking the working steps, procedures and related costs of the existing manual map production. An incremental process of technology introduction and adaptation starting with a comparatively "low cost and low tech" approach on a pilot basis to generate sufficient experience and confidence in the new technology is always advisable.

A key to a successful GIS application remains the availability of detailed spatial data. While considerable advances and falling prices in GPS survey and remote-sensing technology have reduced the problem of obtaining geo-referenced base data, the generation of a digital database with sufficient resolution and detail on the local and district planning level remains a cumbersome and time consuming effort. The importance of national spatial data infrastructure which coordinates efforts to produce and update digital base map data is more and more recognized in developing countries and should be supported by foreign donors.

In the past, many GIS projects could not reach their objectives due to:

- Underestimation of data generation workload;
- Lack of background qualification of available staff requiring expensive training;
- Unclear data ownership and data sharing policies and procedures;
- Insufficient clarification of essential and non-essential end-user requirements.

These mistakes can be avoided by:

- better explanation to major stakeholders of what can be expected from a GIS and what not;
- sound estimates of how much time and effort GIS operations do require;
- more structured training and upgrading of knowledge;
- formalizing exchange of metadata;
- better coordination among institutions that generate data;
- clearer definitions and more transparency of data ownership;
- more open data distribution policies;
- explicit commitments from the donor side that if the generation of GIS data is funded, the products are expected to be used publicly.

Strengths and weaknesses of GIS:

Maps have a crucial communication and analysis function in land use planning. Compared to classical mapping methods, a GIS has important inherent **advantages** once a digital stock of spatial data has been generated and incorporated into the system:

- The digital storage and management of geographic and statistical data reduces risk of data loss and need of office storage space;
- By comparison, low comparative costs of producing and especially updating land use maps;
- The easy overlay of different data layers based on different data sources enable users to analyze how physical, social, and economic factors interact;
- A quick and flexible composition of thematic maps and generation of tailor made maps and presentation documents;
- Can be linked to relational databases;
- Many inbuilt statistical data analysis functions;
- Spatial analysis through modelling and scenarios;

- Attractive options to present land use data in form of thematic maps, graphs, 3-D-diagrams or animated fly-over simulations;
- Increasing options of creating access and generating user feedback through web-based services;
- Digital spatial data can be shared in a network environment and used for different planning and local government functions. This works best in a decentralized local government set-up;
- GIS and GPS technology can be combined successfully with participatory mapping techniques in "bottom-up" village land use planning steps. This will enhance and facilitate the "upscaling" of communal level participatory land use planning results by merging and harmonizing adjacent village plans into higher district level land use plans (see below).

Lao villagers benefiting from remote sensing technology during a land use planning activity

Risks: Certain risks and disadvantages when using GIS in land use planning have become less important, partially due to technical advances in hardware and software development. Other important issues still remain to consider when decisions about the use and the expected role and functions of a GIS have to be made:

- The cost of hard- and software has fallen considerably, but maintenance of hardware and computer peripherals such as printers and other output devices remain a problem in many countries;
- A crucial issue of any GIS operation is the availability of suitable spatial and statistical data. Many GIS operations fail to realistically estimate cost and time requirements for data generation. Often too much time is spent on data input while the delivery of outputs and visible results is neglected;
- GIS software used to be highly complicated and difficult to be fully mastered. It still is, although less demanding and more intuitive GIS systems now exist and make the technology more accessible to a wider group of users;
- Trained local GIS specialists are in high demand and are difficult to keep within the payment structure of public service institutions;
- However, successful GIS operation needs intensive and systematic training and periodic retraining not limited to purely operational exercises. Professional training courses are expensive and may be difficult to sustain in the long run when the original funding support of an organization by a donor project has ended;
- A modern and sophisticated technology like GIS may lead to an uncritical fascination without critical assessment of data sources and quality. GIS can become an office toy for few. There is also the immanent danger that preoccupation with a new GIS will lead to a neglect of classical but still essential field survey or participatory consultative PRA instruments in land use planning;
- During the initial GIS project stage often unrealistic expectations regarding the delivery of outputs are created leading to disappointment and disillusion among key users and stakeholders of a GIS system;
- A GIS unit positioned at the wrong place within an organization can lead to its under-utilization or may create inner-organizational rivalry on “ownership” and “control” over the system;
- The combination of participatory approaches with a GIS still remains costly in terms of time and funds and needs external inputs.

Participatory Methods for Data Collection and Analysis: Action research and Participatory Rural Appraisal (PRA):

Action research is a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems. Action research can also be undertaken by larger organizations or institutions, assisted or guided by professional researchers, with the aim of improving their strategies, practices, and knowledge of the environments within which they practice. As designers and stakeholders, researchers work with others to propose a new course of action to help their community improve its work practices. For land use planning this means that experts, researchers or scientists such as agricultural specialists, soil scientist, biologists etc. do their (technical) assessments in cooperation with the local community adapting their (research) questions and objectives to local people's knowledge, needs, and interests and conducting the research together with local representatives to facilitate mutual learning. This way, situation analysis is less influenced by outsiders, but based on a balanced perspective of insiders and outsiders.

Participatory Rural Appraisal (PRA) is a way of enabling local people to analyze their living conditions, to share the outcomes and to plan their activities. It is a "handing over the stick to the insider" (Robert Chambers 1994) in methods and action. The outsider's role is that of a catalyst, a facilitator or a conveyor of processes within a community that is prepared to alter their situation (Schönhuth/Kieveitz 1994). PRA in land use planning aims to incorporate in the planning the knowledge and opinions of local people. The techniques can be divided into four categories:

- Group dynamics, e.g. learning contracts, role reversals, feedback sessions;
- Sampling, e.g. transect walks, wealth ranking, social mapping;
- Interviewing, e.g. focus group discussions, semi-structured interviews, triangulation;
- Visualization, e.g. Venn diagrams, matrix scoring, timelines.

To ensure that illiterate people are not excluded from participation, these techniques avoid writing wherever possible, relying instead on the tools of oral communication like pictures, symbols, objects and group memory.

PRA-tools and their contribution to land use planning

PRA – tool	Brief description	
For different types of analysis		
Participatory observation	Project staff takes part in the daily life of the local people (leisure and work), absorbing as many impressions as possible (from watching and listening) and asking for clarification.	
Semi-structured interviews	An interview guideline with some open questions helps to start a thematic conversation that develops according to the answers given by the respondent. May be used for interviews with local leaders or elder people.	
Sketches, role plays, fables, dances etc.	Representatives of the local people act out (singing, dancing, narrating) events, visions, conflicts, etc., which appear important to them. Acting and singing etc. reveals many important issues from the sub-conscious.	
SWOT	People relate past Strengths and Weaknesses with present and future Opportunities and Threats. Thereby, important fields of life and work are analysed and assessed by the stakeholders (e.g. women's groups, user groups) with a view to experience gained in the past.	
Trend analysis	A trend analysis matrix or timeline helps to analyze and discuss changes of various parameters over times. Villagers should propose parameters or topics. Examples: availability of water, soil quality, disasters, harvests, land cover, population size and composition, poverty, social tension and conflicts.	
Vision mapping/ Dream mapping	The participatory mapping of an ideal future.	

	Contribution to LUP
	Overview on people's priorities and worries; their ways of using and valuing natural resources and the rationales guiding their actions. Eventually information on competition for resources.
	More detailed background information on selected topics.
	General insight into the lives and feelings of people. The approach can also be used to explicitly focus on a certain topic, e.g. disasters.
	On the basis of self-evaluation possible activities for the future are devised.
	Information on ecological, social and economic changes of the past decades. The discussion of these changes, their causes and consequences helps all participants to understand and agree how different trends are interlinked and what the key problems are.
	Visions and dreams highlight current shortcomings and people's priorities for future development.

PRA – tool	Brief description	
Analysis of past and present use of land and other natural resources		
Transect walks	Project staff walks (perhaps several times at different times of the day or of the year) through a certain area with representatives of the local people. They ask about what they have seen and discuss this and record it in the form of a map or a land profile.	
Interpretation and zoning of aerial photographs	Aerial photos of the region/village familiar to the stakeholders are evaluated in groups, if possible referring to traditional land classification and the terminology used by the local people. Photos from various seasons can help people to remember more details.	
Mapping	Groups of local people produce sketch maps focussing on: ▶ past and present land uses; ▶ preferred land uses (visions); ▶ ecological/landscape zones; ▶ biodiversity, ecosystem services, or conservation values; ▶ risk areas; ▶ etc. The maps can be mental maps or they can be prepared on base maps derived from aerial photos or satellite images. They can be drawn or prepared with natural materials (“resource maps”).	
Modelling	Modelling is an alternative for mapping.	

	Contribution to LUP
	Input for different inventories and assessments. Basis for resource maps. Key information on the following questions: ▶ What potential natural resources exist and where? ▶ What is the importance of natural resources for the people? ▶ How do they perceive the resources and how do they use them? ▶ Did the status change over time? ▶ Who has access to the resource?
	Key information on the following questions: ▶ What natural resources exist? ▶ How are they perceived by the local people? ▶ Who has access to them? ▶ Has there been any change in the resource status?
	Maps provide core information for any land use planning. Information is similar but generally more detailed than those derived from the interpretation and zoning of aerial photographs. Mapping often follows interpretation and zoning as a further, more detailed step.
	Information on watershed issues,

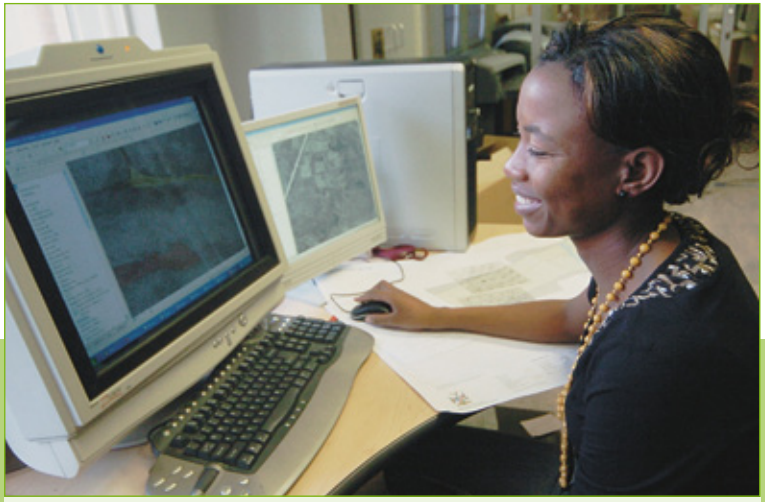
PRA – tool	Brief description	
Socio-economic analysis		
Social and socio-economic mapping	Groups of local people produce mental maps focussing on: social and technical infrastructure; ▶ high and low income areas; ▶ distribution of formal and informal employment; ▶ child-headed households; ▶ etc.	
Socio-cultural analysis		
Socio-cultural mapping	Groups of local people produce mental maps focussing on: ▶ distribution of ethnic groups; ▶ mobility of land/resource users.	
Institutional analysis		
Venn diagram	Institutions and their interactions are drawn separately by groups of men and women, farmers and pastoralists, people working in the informal and formal sector, old and young etc. and are then compared. More important than the drawing is the discussion initiated by it.	
For decision-making and management		
Ranking, rating, scoring	Sequences, preferences or aversions are determined and displayed in the form of a matrix or scale.	
Calendars	Calendars can focus on different aspects such as resource availability, resource use, activities, workload etc.	

Sources: descriptions based on Schönhut/Kievelitz 1994 and GTZ-RMSH 2000

	Contribution to LUP
	Information on the availability and distribution of infrastructure and equipment. Information on the distribution of socio-economic groups.
	Information on possible (land) conflicts.
	Information on all kinds of groups and institutions active in the planning area and on the cooperation and coordination of their activities.
	Ranking exercises help to prioritize goals and actions.
	Apart from their contribution to social and ecological analysis, calendars can help to identify the optimum time for plan implementation as well as the responsible persons or groups for different tasks.

Men and women often use, manage and are affected differently by their land resources. This is due to their socially-determined roles and responsibilities. PRA can help exploring the links between gender and land use, enabling the preparation of land use plans that correspond to the needs and interests of both genders. To this end, PRA tools should be combined with gender tools and applied separately with men and women. Time and location need to fit the gender specific working schedules and spheres of action.

Participatory Planning and GIS: How does it fit Together?
Participatory manual village mapping and planning on the one hand and technical mapping by experts on the other do not exclude but complement each other. PRA-methods and the use of GPS and GIS can easily be combined in one approach, allowing for the joint benefits of broad stakeholder participation and modern technology offering spatial accuracy and modelling options.



GIS expert in Namibia

Approach/Steps:

- Situation analysis at village level by a trained multidisciplinary team and the local stakeholders applying selected PRA methods such as transect walks and participatory mapping where land use patterns are identified and changes in land use and soil quality are discussed. Aerial photographs, orthophotos or high-resolution satellite images can be used as a base. If unavailable, a GPS survey can be carried out to identify the coordinates of key structures. The information from PRA can be complemented by information from field surveys;
- Processing of the sketch map into an official scale map. This can be done by a) preparation of a digital land use map within a GIS based on PRA, field surveys and GPS surveys or b) transfer of the manual land use map to orthophotos, satellite images or base maps which have been derived from them. The result is a digital land use map;
- Preparation of a digital land potential map within GIS based on the land use map, further topographic and soil information as well as additional information from statistics etc.;
- Discussion of the land potential map and/or different development scenarios prepared with the use of GIS with all local, public and private stakeholders;
- Participatory elaboration of a land use plan (and land use regulations). First manually, later transferred into GIS;
- Approval of the land use plan by the local community and decision-makers.

Benefits:

- Inclusion of local stakeholders' perspectives and demands;
- Inclusion of additional data, standards and provisions;
- Accurate, realistic and scaled picture of sizes and interrelations of different land uses;
- Possibility to prepare projections and development scenarios based on local stakeholders' knowledge and demands and a comprehensive set of additional data;
- Professional look and, therefore, better recognition by the authorities;
- Durable and easily transportable maps recognized by all parties;
- Aggregated information at local level for higher level planning;
- Possibility for regular updating of land use data.

Combining GIS and PRA-examples:

A) Land Use Planning and Natural Resource Management Project in Oromia Region, Ethiopia (LUPO): focus on the general approach

The management of land and natural resources as well as securing land ownership plays a crucial role for the rural population's income in Oromia. Through the process of participatory land use planning (PLUP), communities achieve a consensus on sustainable management of their natural resources.

As one of the first steps of PLUP, a PRA is carried out in every kebele (village). A trained multidisciplinary team analyses the situation on hand with the local beneficiary groups and stakeholders. A series of methods are applied to acquire and analyze information: participatory surveillance, transect walk through the kebele, ranking and scoring as well as cropping calendars. Finally, the PRA survey leads to a number of group discussions, where the target groups identify and prioritize the problems, activities and areas of intervention. As a result, a participatory village map is created during the discussion. The information collected during the PRA and field surveys form the basis of local knowledge of a village.

GIS-based technology is used in LUPO's approach to identify and prioritize areas of interest (e.g. area closures, soil and water conservation areas, afforestation, etc.). After a PRA transect, where land use patterns have been identified in a selected kebele, a GPS survey is carried out to develop a land use map (due to unavailability of orthophotos). The survey comprises land cover/land use information as well as a semi-quantitative assessment of land degradation. Additionally, this information is enhanced by information from soil surveys, topographic information, and statistics that leads to a map on land capability and limiting factors. Based on this, a land potential map is developed by LUPO and discussed with the community and stakeholders. Finally, a participatory land use plan is elaborated and approved by the community and decision makers. The implementation of the planned activities is monitored after one year with a gender-specific impact assessment.

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B) Thai-German Highland Development Program: focus on technical aspects

Hand-drawn land use maps were prepared in the beneficiary villages that had produced three-dimensional topographic models for land use planning. They were then captured with a hand digitizer for further processing with GIS software Arc Info and converted into maps using the map-drawing program Arc View 3. Contour lines were obtained from the Remote Sensing Centre of Chiang Mai University (CMU). The roads and streams, as well as the Tambon boundaries for Huai Poo Ling were obtained from the Survey section of the Northern Narcotics Control Office (NNCO) in digital form and overlaid with the remaining data. The different land categories were then colour-coded using the same colours as on village maps. Maps were displayed using the Universal Transverse Mercator (UTM) coordinates with grid points in steps of 1 km^2. Then the village registration data was obtained from the Department of Local Administration (DOLA) in Mae Hong Son in order to visualize what happens to borders if new villages get registered. Once the maps had been printed, they were taken back to villages for modifications or corrections, and later distributed to them in plasticized A1 size. The data and GIS software were then transferred to the Survey Section of the Northern Narcotics Control Office as well as to the International Centre for Research in Agroforestry (ICRAF) in Chiang Mai.

C) Bondoc Development Program, Philippines: The digital sketch method

On Bondoc Peninsula, a participatory land use planning approach has been implemented that starts with PRA and “social mapping” at village level and results in digital land use maps for municipalities. Social mapping includes the participatory preparation of a resource map (status quo) and a vision map. Both are drawn from memory by the villagers. The coordinates of key features are then measured by GPS. On the base of satellite images and/or GPS coordinates, a digital orientation map is then prepared to feature the administrative boundaries and the key structures for which the coordinates have been measured.

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Then resource and vision map are each manually transferred into an orientation map. The results are so-called sketch maps. In a final step, these sketch maps are digitized. The manual maps have been converted into geo-referenced digital maps. Now, additional information from other sources than PRA such as sector maps, statistics and government plans can be added. GIS can easily combine the final village land use maps in the form of mosaic into one municipal land use map. This municipal plan then needs to be verified with participatory tools as well.

Risks:

- Technical maps and plans tend to pretend a higher accuracy than manual maps. This is only true if additional data from GPS surveys, topographic maps, orthophotos or satellite images have been included. Maps and plans produced by GIS are never more accurate than the data, maps and images they are based on. Therefore, transparency and documentation on the data used (inclusion of meta data) is required;
- Due to being easily replicated and distributed, GIS, digital maps and plans turn local knowledge into public knowledge and take it out of local control. It can easily be used to locate resources or extract more taxes. Therefore, the introduction of computerized technologies needs high governance standards which ensure the recognition of local people's (customary, informal) land rights as well as their involvement in decision-making concerning the use of the land within their community's boundaries.

Lessons Learned:

- Public administration and local communities often lack skills, financial and technical means for the (regular) update of the digital land use plan;
- The computerized maps and plans should use the same symbols and colours that have been used for the manual map to allow for the recognition of the maps and plans. Otherwise, ownership of participants will decrease;
- Availability and topicality of maps, aerial photos and satellite images may vary from one village to another. The approach should, therefore, be flexible enough to allow for different methods within a country/region.

Specific Assessments such as Land Suitability Assessment, Social, Socio-economic or Socio-cultural Assessments:
During the land use planning process, e.g. after the first participatory analysis of the current land use situation and the discussion of possible future land uses, it may become evident that additional data is needed to provide the necessary base for decision. If these data are not available at any sector department, they need to be provided by specialized professionals. It may therefore be necessary for the lead agency to outsource the completion of a specific assessment. These assessments can focus on diverse issues, e.g. land suitability, tenure issues, social, socio-economic or socio-cultural issues.

In general, two sorts of assessments need to be distinguished: those that focus on the current situation providing data on the status quo and those that focus on possible impacts of the planned land uses. Which type of assessment might be needed depends on the situation and the planned land uses.

Social, socio-cultural and ecological impact assessments should always be considered when major land use changes are foreseen. Impact assessments include the processes of analysing, monitoring and managing the intended and unintended consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any change processes invoked by those interventions.

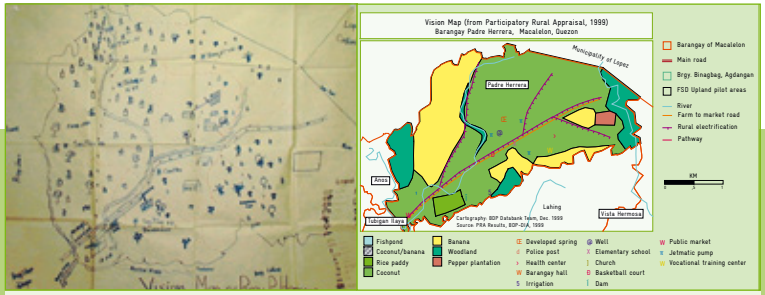
Methods for Data Presentation:

At the end of data collection and analysis, all stakeholders have to reach an agreement on their findings. Representatives of the local community or communities, representatives from different public sectors, politicians, representatives from civil society, planning officers and other (technical) experts involved need to agree on one final outcome of the situation analysis. Therefore, the results of the data analysis have to be presented in a way that is understandable to everyone. This can be achieved by visualization. Maps depicting landscape units, visualizing risk areas, pointing out high conservation value areas or simply presenting present or potential future land uses are an important basis for the discussion. This includes not only those maps produced by GIS specialists or cartographers, but also the maps prepared by the local stakeholders themselves. It is important

that the participants see their contributions in the presentation. Other forms of visualization are tables, diagrams, pictures or photographs. These must also be presented in a form adapted to the stakeholders' world. The guiding principle for the presentation is that the "how" is just as important as the "what". The success of the presentation depends on how strong stakeholders identify themselves with the discussion. If they are motivated to reflect and collaborate, the presentation makes decision-making and common agreements possible. At the end of the presentation, there should be a common understanding of the major features of current and future land uses in the given territory. At this point, no final land use plan needs to be ready. The focus is on the agreement of the current situation. However, there is fluent passage to plan formulation. In some situations, visions, objectives and strategies may already be discussed at this point. In other situations this will require more preparatory work and an additional workshop.

4.3.3 Plan Formulation

Data collection and analysis go hand in hand with plan formulation. While discussing current problems, people generally end up realizing which land uses need to be changed. While discussing potentials, ideas might develop of how to valorise them. Hence, desired future land uses are identified. Accordingly, there rarely is a clear cut between situation analysis and planning. No matter how simultaneous or consecutive analysis and planning are done, in the end there needs to be a "plan". In correspondence with the broad definition of land use planning that underlies this manual and the different forms of land use planning presented in chapter 2.3, the output of the planning process does not necessarily needs to be a plan but can



Vision maps, Philippines

also be a local agreement. Hence, there might be "land use plans" without a map. Although the visualization which area may be used for which purpose is always desirable, it is not a must. Important is that access to land and use of land are regulated, that this is approved by the responsible institution and that action can be taken against violations. Therefore, a land use plan or land use agreement should contain the following elements:

- Clearly defined objectives of the measures to be implemented;
- Clear rules concerning land uses and eventually access to land;
- Very brief description and analysis of the initial situation pointing out problems, challenges and potentials;
- Initial and running costs of the intervention as well as financial plan, incl. budgets and contributions by beneficiaries;
- Benefits of the intervention;
- Division of tasks and responsibilities of institutions and individuals;
- Timetable for implementation;
- Overall responsibility for plan implementation;
- Clearly defined area within which the plan/agreement is valid;
- Mechanisms of sanction in case any agreements are not fulfilled;
- Agreed compensation for restrictions on land use.

During the formulation of the plan or agreement, it has to be respected that the plan or the agreement is the result of a negotiation process. Hence, it must be ensured that the content of the plan as well as its form reflect the collaboration process between technicians, experts, officers and the local population. Therefore, it is more important that the plan/agreement reflects the positions of all stakeholders and that all of them identify with it than respecting high technical or scientific standards. Every plan and every agreement is unique.

There are, however, some limitations to the formulation of local plans and agreements. When defining the rules and/or measures, targets and restrictions from relevant plans and directives, superior decision-making levels must be taken into consideration (see 4.5.1).

During plan formulation, it also needs to be ensured that existing sector plans are respected. In addition, it needs to be ascertained that environmental concepts such as the conservation of ecosystem services (HCV 4 areas) or protection of biodiversity (HCV 1 areas) are included. A final

check can be done by conducting a strategic environmental assessment (SEA). This procedure was originally introduced by the EU for its member states. It serves to ensure that no relevant environmental issues have been left out. At the same time, SEA assesses potential impacts on the environment resulting from the implementation of land use plans (see 4.5.2).

Before the final decision is made on a land use plan a checking should be made using the following criteria:

- Who are the beneficiaries?
- Which immediate constraints or basic needs of the target group are to be tackled?
- Which assumptions or general conditions must be fulfilled before implementation?
- Which constraints could hamper the purpose?
- Who will be responsible for the management in the future (use/care/operation/maintenance)?
- What contributions are expected from the beneficiaries for (a) establishment (construction, installation, planting etc) and (b) maintenance?
- Is the plan in line with other plans in the region?
- How does the target group need to be qualified to secure the sustainable use (maintenance) of the project?
- Which future and running costs can be expected?
- Who will bear these costs?
- Which group(s) will be disadvantaged due to the project?
- What is the share of women in participation?
- Does any local knowledge of land management and land use already exist?
- What is the priority as far as the target population is concerned?
- What is the technological level? Can this be justified or maintained in the local context?
- What organizational status of the stakeholder groups is necessary in order to make the best use of the project?
- Who is responsible for the further management and who will record the quality?
- Who is intended to be the contact partner for the target group in case of potential corrections or modifications?
- What is the expected cost-benefit-ratio that should be achieved?
- How will the refinancing or timely renewal/repair be organized?

The final form of the land use plan depends on the context. A local agreement generally consists of a document only. This can be accompanied by a map but it does not have to. Local agreements between farmers and herders in Sub-Saharan Africa can for instance contain maps showing animal roads (see A 6). A more classic land use plan always consists of maps and an explanatory text. The later generally includes tables, graphs etc. for illustration. The cartographical part can consist of several maps and plans:

1. Base map;
2. Land units/zones;
3. Map on environmental damage;
4. Map on present land use;
5. Map on agreed favoured land use based on land units;
6. Land use plan (proposed land use).

Land use planning workshop to improve watershed management, Bolivia

Maps 2 to 5 are to be accompanied by explanatory tables. The land use plan (map 6) requires an accompanying note, which goes beyond table form. It includes a detailed description of the intended land use and gives alternative options that should remain within the framework of the agreements depicted in map 5, as long as investments (e.g. terracing slopes) could not allow a change. This must be documented. Within the intended land use option, the nature and extent of the intended changes, as well as the costs involved, must be listed in the accompanying document. These changes arise from the differences between map 4 "present land use" and map 6 "land use plan" and the resulting technical and/or organizational interventions as well as from the related expense for labour and other financial needs. These changes are listed for all partial areas. The costs are added to give the total amount required to implement the land use plan for a certain village or area. Other aspects included in the document are human resources, equipment and material needed for implementation and monitoring.

How the final land use plan is to be presented depends on various questions:

- To whom will the plan be presented (to an authority, a ministry, a neighbouring village, a financing institution)?
- What is the purpose of the presentation (financial means for the implementation, political influence/conviction, legal amendments, motivation for others as a pilot case, further education)?
- Who will present the plan (representatives of the target group, a local female politician, the mayor, a technician)?
- How will the plan be presented (verbally, with visual tools or in writing)?

It is well possible that different presentations have to be prepared for different audiences. When giving feedback to the community to discuss and agree on the outcomes of the planning, maps and other documents presented should resemble those prepared together with them. When presenting the results to high-level decision-makers it is important that they look professional and respond to minimum standards of cartography. The content, however, has to be the same.

4.3.4 Negotiation and Decision-making

Negotiating and decision-making are continuous processes throughout the entire process of land use planning. It starts with the cooperation with the relevant agencies, key land users and beneficiary groups. Additional groups have to be involved when deemed relevant. In the beginning it has to be negotiated and decided who takes the lead, who is legally responsible, which stakeholders have to be involved etc. Later planning objectives and planning areas need to be defined collectively. Even later, specific future land uses and activities have to be agreed upon as well as budgets, responsibilities, time frames etc. Planning should always be the result of a negotiating process in which different stakeholders participate.

Negotiating processes do not always take place at the same time with all stakeholders. They are arranged between the beneficiary groups and the authorities, between NGOs and the local elite etc. Usually, no decisions are made during these preliminary negotiations, but stakes and interests get clarified. Subjects are discussed and debated, and possible measures are proposed for the plan. Generally, all governmental and non-governmental institutions as well as representatives of the private sector that are affected by the problem or the solution have to be included.

Procedure for negotiating a land use plan

Decisions on what has to be included in a preliminary land use plan are taken in a forum in which all those who will participate in the planning process are present. First, a draft plan is prepared with the direct stakeholders using the land in the planning area, and negotiating takes place amongst them. This initial plan is discussed as first suggestion with the local institutions and can be modified if necessary. After this, discussions take place with the local political elite and the private sector that will be affected (credit institutes, marketing structures, the processing industry, etc.). Only when the financial support has been clarified, can the relevant government agency approve the draft. Depending on the local situation, the character of those processes can vary.

The Binding Nature of Decisions in Land Use Plans:

The implementation of a land use plan does neither happen on its own, nor is it done voluntarily by all stakeholders involved. Therefore, considerations and agreements on the implementation strategy have to be part of the plan. There should be a binding relationship for everybody. Hence, the mechanisms needed to create a binding plan should be clarified and agreed upon at the earliest stage of the planning process.

In addition, a legal framework must exist for dealing with infringements of the rules. This serves both to support and protect those adhering to the contract as well as to sanction those violating the contract. At village level there are ways and means to take action against people who infringe on internal village regulations. The regulations involve social pressure, but can also mean imposing penalties. In order to avoid any irregularities or even excesses when enforcing internal village regulations, government authorities often have the right of approval or the right for checks.

Authorities can also infringe on land use rules in the planning area. For such cases mechanisms should be clarified and agreed upon. An example often quoted is the practice of granting tree-felling concessions to external companies although the rights to use the community forest were exclusively given to local land users, and no provision was given to external companies. This problem can only be solved in cooperation with the forestry authority concerned, which should be in any case involved in the preparation of the land use plan. However, the more advanced the decentralisation and the more rights and power the community authorities have, the stronger the negotiating and/or planning position is of the land users in such processes.

Decision-making and Conflict Management:

Since land users are often competing for land resources, conflicts can jeopardize the success of planning. It is also possible that land use planning creates conflicts or makes them visible, e. g. when poor peasants demand access to land owned by big landowners, when women demand more rights of use from the head of the family, young people from the elders, or tenants from their landlords. Furthermore, even if it is not the objective of land use planning to change the ruling land tenure, this topic

can become the central topic of problem analysis within the framework of participatory planning. If participation is taken seriously, contents are not fixed, and burning issues cannot be ignored. This can trigger conflicts.

Institutions, authorities or boards responsible for land use planning therefore have to deal with conflict management. Many different ways to settle conflicts due to competition over land resources are possible. They include direct negotiation with the different parties, moderating negotiation between the parties, mediation etc. The planning authority should clearly define its role as a neutral mediator aware of the consequences. If it appears as "the attorney of the poor and disadvantaged", it is possible that it will not be accepted as a neutral party by the influential, large landowners, or the other way around. These influential groups must also be integrated in the process of land use planning. A dialogue must be initiated with them and maintained in order to achieve a sustainable planning success. Therefore, solutions must be found which will provide advantages for all groups of participants, the better off and the disadvantaged.

At the same time, an important function of the planning authority is to empower disadvantaged groups. This can be achieved by explicitly inviting landless people or women to attend meetings. By using participatory

Legally binding land use plan of the village Chomgaeo, Laos, prepared jointly by village population and district staff, approved by district authority

methods, it is ensured that their interests are heard and discussed. If a planning officer decides to actively contribute to the settlement of a conflict, depending on the situation, he or she takes on the role of initiator (initiating discussions, round table meetings or bringing in a mediator) or of mediator (mediating between the parties involved in the conflict). In difficult cases it might, however, be better to engage a professional mediator. In order to develop a strategy for settling the conflict, precise knowledge of its history is required, differing viewpoints of the parties must be recognised and the rules of the game have to be fixed. How did the parties deal with the conflict previously? Does the law of power or of majority apply? Is there an arbitrator, a local authority, which deals with land use conflicts? What would happen if the participants were not willing to reach a conflict settlement through negotiation? Does the planning authority have the authority to determine a land use against the interests of major stakeholders? Is it realistic to believe that such a decision will be implemented? Are respective mechanisms for sanction in place?

It will become clear from previous cooperation between stakeholder groups and supporting agencies which groups and institutions will be involved in the negotiation and planning process. In any case, the following parties should be included:

- those who are directly or indirectly affected;
- those who are responsible;
- those who are competent;
- those who can support or motivate, and;
- those who will impede the process if they are not included.

During the negotiation process, the interests of all participants will be analysed jointly and in detail. From this, the interdependency of interest will emerge and it will become clear who has common interests as well as who has competing interests and what possibilities there are for cooperation. It is already an important outcome that all participants can present and defend their interests. Direct discussions create more understanding and make the process of agreement easier.

It may make sense to temporarily negotiate with the parties involved in the conflict separately as long as they agree to this and transparency is ensured. In difficult cases of conflict, which might paralyse the land use planning process, it may be helpful to just find one common thread to

start with. Any remaining fields of conflict will be kept open and clarified in subsequent negotiations. Conflicts are dynamic, and positions and alliances might change.

Generally, the different conflict parties bring along a certain predefined way of conflict solving. This may imply the input of a third party or not. The ideas about the third party's role and influence may differ among the conflicting parties. Accordingly, in a first step the role of the third party needs to be defined and agreed upon. Today, there is strong tendency to promote neutral moderators or mediators as third party that is not supposed to decide on the conflict but that guides the discussion in a way that the two or more parties are able to agree on a solution defined jointly by themselves. The third party is not supposed to represent any interests and must be accepted by all conflict parties. Moderators make sure that the discussion is fair and enable the participating groups to find solutions which are acceptable to everyone. These should be formulated as a feasible result and documented (in writing).This will also enable outsiders to reconstruct the negotiation process. In certain cultural environments, the third party may have more arbitrational power. Alternative dispute resolution (i.e. out of court dispute resolution) in many rural areas in Africa follows the rules of customary conflict resolution which is a combination of arbitration and mediation. It is more important that the type of conflict resolution is accepted by all parties than to follow a global trend such as mediation.

Negotiations are difficult if participants are informed unevenly or insufficiently. It is important that the flow of information and transparency is guaranteed. This can be supported by media relations (e.g. local radio transmissions), publishing of minutes of meetings, informative meetings, blackboards, etc. Informative visits in communities, which have similar problems or have already found solutions, can be helpful, too. Theatre plays or role-plays can reduce tension or lay conflicts open and have proved to be effective in many projects.

4.3.5 Implementation

Although it is evident, it needs to be highlighted that planning without implementation is a waste of time, money and human resources. This implies that local and eventually regional capacities need to be (made) available for the area-wide implementation of the land use plan. If there are

no sufficient capacities in place, projects introducing land use planning should give priority to capacity development (see 4.7.3 and 4.8).

The effective implementation of a land use plan is the task of the intervening governmental and nongovernmental organizations in the planning area. Lead agencies for implementation are mostly state authorities or regional development bodies. The following basic principle applies: integrated planning and sector-wise implementation. It has to be acknowledged that there generally is a strong interdependence between the volume of investment, the sources of finance, the implementing institutions and the form of participation. Still, there are certain rules for successful implementation that should be respected in any case:

It is important for the implementation that the measures have a **binding character**. This requires the active participation/involvement of the responsible institution and the strict application of the legal frame. Hence, the implementation should be organized in such a way that the authorities concerned can participate in the measures according to their sector orientation.

Combining short-, medium- and long-term measures: Usually, individual measures aimed at short-term economic yield are initially in the interest of the stakeholders. However, while planning the implementation, measures with short-, medium- and long-term effects must be combined. So, in the first few years implementing only the most attractive measures with profitable short-term character should be avoided as this may lead to ecologically significant interventions being left behind, and these after all often represent the "ideological engine" of land use planning. Many of these measures will only be carried out if and when the necessary motivation is created through dialogue and long-term partnership.

Decentralized implementation: Independent from the level on which planning and negotiation took place, the implementation of the plan always has to be organized decentrally via local structures. If needed, support can be given externally. This means, however, that organizations and institutions should be established, reinforced or coordinated at local level, in order to guarantee the plan implementation. However, decentralization is not always and everywhere useful. This applies particularly to legal initiatives.

Participatory implementation: It would be optimal that those organizations, institutions and beneficiary group representatives who have planned locally also implement the measures together with other stakeholders. The ideas of individuals (household, large family) should, after being crosschecked with the local overall concept, be considered, in order to take into account "hidden" agendas in the fields of land tenure, traditional land use regulations, etc.

Implementation by sectors: Implementation should be organized sector wise. The responsible authorities are entrusted with the responsibility for implementation according to their sector orientation. The responsible overall planning authority remains responsible for the coordination of all activities and should facilitate the cooperation between different sectors where and when necessary.

Implementation in form of "feasible" packages: Adapting the plans according to the willingness and potential of the target group generally means breaking down technical interventions into "feasible" packages. These have a fixed time frame and concern annual and bi-annual imple-

Implementing erosion control measures resulting from land use planning in Guatemala (see A2)

mentation plans. Therefore, there is no single "implementation plan", but a series of successive partial implementation plans which together contain all of the intended interventions.

Consideration for time constraints of the target groups: Special labour peaks during sowing and harvesting times must be taken into consideration. In addition, cultural and religious festivals and other special events will occupy the attention of stakeholders temporarily. During those times, the implementation of measures will only have second priority for people and might therefore be postponed.

Concerted action: Some measures will only be effective if accompanied by certain other measures. Implementation planning needs to consider the interdependencies of individual measures. To make sure that all actors needed for the implementation are present, implementation plans need to be done by all actors affected. Measures that need to be or should be implemented first should also be planned for first.

Local controlling mechanisms are an important tool for ensuring the decentralized, participatory and concerted implementation of the planned measures. These mechanisms have to be developed at the beginning of implementation. The development of such a controlling mechanism and related tests requires time. Examples of such mechanisms are obligation books or overview tables, which specify the activities, participants, time etc. necessary to carry out a measure. Displaying these in public ensures transparency.

Voluntary action is a basic principle in land use planning and hence also in implementation. However, those people identified as responsible for implementation during the planning process and who accepted this responsibility have a certain obligation.

A **minimum legal framework** is necessary for controlling as well as ensuring incentives and compensations. The legal frame should be kept as simple and transparent as possible. Any existing legal framework should be used and taken into consideration during the implementation of the land use plan. This makes it often easier to achieve a consensus and to support it.

4.3.6 Monitoring and Updating

There is a lot of literature and guidelines on monitoring available. Therefore, in the following only those aspects are addressed that are specific for land use planning.

What does it mean to monitor land use planning? First, it is necessary to monitor impact as well as process. Second, as a consequence, monitoring already needs to be done during the planning phase. Third, results from monitoring need to be directly integrated into the ongoing planning process. Thereby, the process (e.g. participation, administrative procedures) can be constantly improved and the outcome (the plan) can be adjusted continuously. Hence, the bases for monitoring land use planning are the process and the plan. Whereas the monitoring of the implementation of a plan does not seem easy but at least feasible, the monitoring of a process is challenging.

Monitoring of plan implementation needs to focus on the degree of implementation, the expected and unexpected impacts and solutions to deal with negative impacts. Hence, for each measure, activity or project an indicator needs to be defined during the planning. To keep things simple and feasible, these indicators should be easy to collect. Responsibility for monitoring should be split, ensuring that all measures are monitored by the responsible public institution in cooperation with civil society and/or land users.

Monitoring of the planning process requires an ongoing observation of the commitment and interaction of all stakeholders. It is worth identifying one neutral person who will take care of this. Based on the observations, individual actors could be addressed individually to either motivate them to participate, to qualify them to express their interests, to provide explanations on the process or related information etc. Such an ongoing process monitoring could also serve as an early warning system, identifying conflicts or obstacles in cooperation. These could then be addressed in a context-adapted manner, i.e. by individual talks, conciliation, mediation etc. by the observing person, a local authority or leader or a specialized mediator. People should also be encouraged to address the neutral/observing person actively whenever deemed necessary.

As process monitoring needs to focus on the actors and their interactions, targeted interviews with stakeholders and protocols of meetings are very useful tools. Interviews can focus on the stakeholders' satisfaction of the planning process, the implementation and the results. Protocols serve to record who has been present at which meetings, who has been talking how much, what type of language (incl. body language) has been used etc.

In conclusion, a monitoring system for land use planning must provide answers to the following questions:

- What physical degree of implementation has been reached?
- What positive ecological, social and economic impacts could be achieved? What remains to be done?
- What (unexpected) negative impacts and problems occurred and how can they be solved?
- How much qualification and capacity building of stakeholders (institutions as well as beneficiaries) could already be achieved?
- Are all stakeholders actively involved in the process and do they have equal chances to express and to push their ideas? Who is missing and why?
- What is the degree of institutionalization and sustainability of land use planning?

Over time, planning objectives will be achieved, new challenges will arise, general conditions and individual interests will change and lessons will have been learned from experience that could help to adjust the plan. Hence, an update of the plan is necessary.

When to do an update?
Iterative planning implies continuous updating of land use plans. However, progressively updating the plan requires a considerable input of time and attendance by all actors participating in the planning and implementation process. Endless meetings quickly stress out participants, farmer groups in particular, and lead to discouragement. In addition, the (updated or modified) land use plan should receive all the "official" approvals, a process which generally cannot be repeated continuously as it requires a lot of time. Also, in the opinion of the participating local users a plan that is changed frequently is often not of good quality. Rather it is considered a patchwork, which leads to a loss of credibility among key stakeholders.

Planning in a village is somewhat different from continuous planning in a team of technicians or managers. It is therefore recommended that the land use plan should only be updated after a certain period of time but within fixed limits, i.e. every 3 to 4 years. In the meantime, it has to be verified whether changes in land use are being made in accordance with the development objectives agreed upon during the land use planning. If there are cases of "destabilizing" land use being introduced without permission, they are to be treated as an "infringement". An appropriate mechanism of licensing and supervision must be established and a regular check made to ensure that it is functioning accordingly. An appropriate structure should be promoted.

Not all parts of a land use plan need to be updated within the same time period. If the overall land use plan consists of different plans with different degrees of detail, obligations and time, some of them might need to be updated less often than others. The general strategy and very general zoning need less frequent updates than a parcel-based land use plan.

How to do an update?
The information from the monitoring constitutes an important basis for updating land use plans. Changes in the general conditions also need to be considered. These include first of all new or modified laws as well as (inter-)national, regional and local policies, sector strategies, regulations etc. It also encompasses changes in the natural environment (e.g. climate change and higher risks of droughts, desertification, disasters etc.), in demography (e.g. out-migration due to rural-urban migration or in-migration due to arriving refugees etc.) and in socio-economic conditions (e.g. decrease in income due to a deterioration of prices for raw materials, incl. food). This data needs to be collected in a targeted manner. Persons responsible for plan updating should identify a limited list of factors or aspects closely related to their specific land use planning objectives that they will have to consider for plan updating.

Who should do the update?
The updating of a land use plan needs to be as inclusive as the original planning process. Otherwise, there is a risk that through the updating of the plan the interests of marginalized groups may get lost. The initiative should come from the institution responsible for land use planning. This can be a state authority such as a planning authority as well as an elected

body such as the municipal council. Civil society may play a role in claiming transparency and inclusiveness.

4.3.7 Examples for Land Use Planning Procedures

In the following, two examples of land use planning procedures are given: one from Cambodia and one from Ethiopia.

Approval of a land use plan in Cambodia (GTZ Cambodia)

Participatory land use planning in Oromia, Ethiopia

"Participatory land use planning (PLUP) is a step-wise approach. Broadly speaking, it involves sequentially arranged steps of preparation, planning, implementation, monitoring and evaluation. The LUPO PLUP process has eleven steps, which, if they were generalized, could fall into these broad categories:

1. Project area selection;
2. Creation and training of PLUP facilitation team;
3. Preparing for field work;
4. PLUP in the community (situation analysis; preparation of a Community Action Plan (CAP));
5. Establishment of PLUP Committees;
6. Technical Survey;
7. Implementation of CAP;
8. Negotiation of Participatory Land Use Plans;
9. Production of Consensus Map;
10. Implementation of the final Participatory Land Use Plan;
11. Plan adaptation or Replanning.

These steps are logically sequenced and sometimes overlapping."

Source: GTZ-LUPO 2003a

Land use planning procedure in Cambodia: steps and results

Planning step	Expected result
Getting started	A trained and well-prepared LUP facilitation team of 3–5 people is available to start participatory land use planning (PLUP) activities in selected planning areas.
Preparation of field work	Local authorities, local leaders and the villagers are informed about the PLUP process to start in their area and know the responsible LUP team members.
Situation analysis in the community	Villagers and the LUP team have jointly analyzed the present situation and come to a good understanding concerning land use and land conflicts in the planning area. A present land use map has been prepared.
Preliminary identification and screening of options	Villagers have taken a decision on the best options for future land use in the planning area and these options are documented.
Creation of a management committee	A management committee for the planning area has been established by free and fair elections.
Preparation of future land use plan, village regulations, and detailed management plan	A land use plan, draft village regulations and possibly some detailed management plans for communal areas have been elaborated.
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Planning step	Expected result
Submission of the land use plan, the regulations and the management plans for official endorsement and approval	The land use plan, village regulations and possibly some detailed management plans for communal areas are officially endorsed and accepted by all parties.
Link to extension services on improved land management and cadastral services for land allocation programs	The relevant provincial extension and cadastral services are informed about the results of the LUP exercise and land use and tenure changes are given the necessary support.
Monitoring and evaluation	Implementation and enforcement of above mentioned plans and regulations are monitored, impacts are assessed and plans and regulations are adapted were necessary.

4.4 Participation of Different Stakeholders

Conventional (top-down) planning approaches have had very little success due to a lack of dialogue and coordination. Hence, participation has been identified as key factor for a successful land use planning. It covers communication and cooperation of all actors involved. Participation is an interactive and cooperative process of analysing, planning and decision-making in which all relevant stakeholders including disadvantaged groups take part. It allows all participants to formulate their interests and objectives in a dialogue, which leads to decisions and activities in harmony with each other, whereby the objectives and interests of all stakeholders are taken into account as far as possible. The aim is that these groups increase their competence in planning and implementation, their self-responsibility and autonomy in decision-making, as well as their organizational capacities.

This form of planning emphasizes the joint learning by and with the local population. It requires their capacity and willingness to take part in the dialogue. The contribution by the population to decisions made during

conception, planning and implementation must be respected as being of equal value. Above all, one has to be careful with technical proposals made too quickly. An attitude has to be adopted, which allows to understand the problem-solving strategies, capacities and the potentials of the local population. Only with this basic attitude can a dialogue be initiated.

During the last two decades, a lot of progress has been made in terms of participation. However, the old expert driven (top-down) approach resulting in one-way communication still persists here and there. There are not only certain partner institutions that still cling to it, some advisors, too, still need to go through the learning process and change their thinking and self-understanding. Passive and functional participation as well as participation by consultation only or for material incentives is not what is needed. Instead, there is a need for interactive participation and support to self-mobilization (empowerment), all driven by good governance.

Typology of participation

Type	Characteristics
Passive participation	People participate by being told what is going to happen or what has already happened. It involves unilateral announcements by an administration or project without listening to people's responses.
Participation by consultation	People participate by answering questions. External agents define problems and information-gathering processes, thus controlling analysis. The information being shared belongs only to external professionals.
Participation for material incentives	People participate by providing resources, e.g. labour in return for food, cash or other material incentives.
Functional participation	Participation seen by external agencies as a means to achieve project goals. People may participate by forming groups to meet predetermined objectives related to the project, but tend to be dependent on external initiators.
Interactive participation	People participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is seen as a right, not just as a means to achieve project goals. The process involves interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. People take control over local decisions and determine how available resources are used.
Self-mobilization	People participate by taking initiatives to change systems independent of external institutions. They develop contracts with external institutions for resources and technical advice they need, but retain control over how resources are used.

Source: Pretty et al. 1995 (modified)

Who should participate? Simply everybody who is affected. This includes young and old people, women and men, representatives of all social, professional, ethnic etc. groups, elected representatives of the local/municipal/district council, of NGOs and technical services etc. A thorough stakeholder analysis is necessary to identify less visible groups. In the past, pastoralists and ethnic minorities have often been overlooked. Today, few people are aware of the increasing number of AIDS-related teenage-headed households.

Why do women need special attention?

Both men and women play critical roles in agriculture and the use and management of natural resources. Due to the socio-cultural set-up, women in developing countries usually find it more difficult than men to gain access to valuable resources such as land, credit, agricultural inputs, technology, extension, training and services that would enhance their production capacity. Also, their knowledge and experience is often neglected when it comes to planning and decision on development processes. But women's full potential in agriculture must be realized if the Millennium Development Goal No.1 – to halve the number of hungry people in the world by 2015 – is to be achieved.

Difficulties to overcome:

- Women (farmers) are frequently underestimated and overlooked in development strategies and actions (gender-blindness persists);
- Exclusive land rights impede women from accessing land/natural resources;
- Large workload of women does not allow them to participate in community planning;
- Low education and language barriers hinder women to understand and speak other dialects or the (official) language of their country;
- Little or no information reaches the women on land use planning processes and on the importance of representing their own interests themselves;
- Cultural attitudes may not accept the presence and participation of women in the public sphere and their involvement in decision-making processes.

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Approach/Methods/Tools:

- Awareness creation on gender issues;
- Policy advice;
- Mainstreaming gender into development strategies and actions;
- Gender training as part of capacity development for individuals/ organisations;
- Participatory planning methods, applied with men and women – separately if necessary. Time and location need to fit their gender specific working schedules and spheres of action.

Lessons learned:

It has been experienced many times that women provide valuable contributions to the planning and management of land and other natural resources if above mentioned participatory methods are applied in a differentiated way. This means addressing women as well as men according to their availability and working attitudes, considering their capacities of expression and allowing them to freely develop their points of view, to participate in decision-making and to take over responsibilities in communal actions.

Gender balanced participatory land use planning in Ethiopia

Strengthening of a gender-balanced participatory land use planning was one of the focuses of the GTZ project "Land Use Planning and Natural Resource Management in Oromia Region" (GTZ-LUPO on behalf of BMZ) in Ethiopia. The project setup incorporated the principles of gender mainstreaming. Staff acquisition procedures had been adapted to promote a gender balance of male and female staff members. When this was not possible, female consultants and interns made up for it. Female and male project staff as well as counterpart staff had been trained on the integration of gender issues into all activities. Participatory land use planning and participatory rural appraisal (PRA) activities were carried out actively involving the male and female population. In addition, participatory land use planning and PRA were enriched

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by tools from the Gender Analysis Framework in order to know about access to and control over resources, activities and work load of all household members and the participation of women in decision making on different levels. The frame conditions (e.g. time and location of activities, flow of information within the community) had been considered in order to avoid disadvantages for the male or female target groups. In a number of surveys, men and women had been interviewed separately; where gender disaggregated information was desired. Generally, gender disaggregated data was used to analyse the existing situation in the districts and communities.

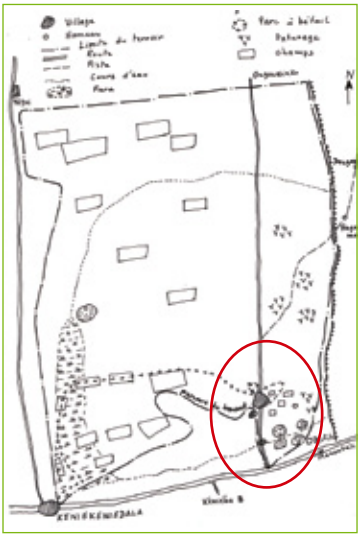
The gender-balanced participatory land use planning was achieved by a 7-step approach:

1. Analysis of the situation;
2. Creating awareness on gender issues within the given context;
3. Identification of gender-specific differences on all policy and society levels with male and female groups;
4. Identification of feasible measures which consider and alleviate gender inequalities;
5. Discussion on possible impacts of these measures with sensitized experts;
6. Implementation of feasible measures;
7. Monitoring of the impact of these measures and adaptation on demand.

Women do now participate actively in the process of participatory land use planning in Oromia. They are involved in public and family decision-making. Activities initiated by the project are continued through traditional women's groups. A higher number of women than before participate in economic activity. Many women are respected and accepted as farmers. In conclusion, women's economic activity has increased and is now highly accepted and contributes to the wealth and income of the family (GTZ-LUPO, w/o year).

Transacts prepared separately by men and women in Diokeli, Mali

Men's transact



Women's transact

Area covered by the women's transact who focus on land use problems related to their vegetable gardens and rice fields as well as on access to water

The following improvements can be expected by the active participation of the population and/or of individual stakeholder groups:

1. Quality of Planning:

- The plan is more realistic in terms of what can be achieved by the population;
- Modern technical know-how, indigenous knowledge and specific local knowledge are linked;
- Starting point are the perspectives of the different local groups and their initiatives to analyze problems, to plan, to make decisions and to implement;
- By applying the principle of cooperation in land use planning, competing or poorly coordinating sectors and levels converge.

2. Development of Institutional Capacities:

- All those concerned participate in community planning and decision-making within the framework of the organizational development of communities. Simultaneously, participation gives the representatives of local groups an insight into the institutional "rules of the game". They learn how to better represent their own interests or the village interests to others. In addition, local groups become more capable of demanding rights and actions from the government;
- Sharing of social responsibility in utilization and conservation of natural resources at a local level based on the principle of subsidiarity is introduced step by step. This releases the government from administrative, social and economic transfer actions;
- Structures are developed for comprehensive, self-determined community and village long-term development, which is a solid basis for decentralisation measures.

3. Further Important Aspects are:

- A learning process for all participants takes place due to the heterogeneous composition of the groups participating in land use planning;
- All participants are better informed;
- The local population is more willing to accept and can better identify with the activities;

Women in Guatemala preparing a risk map

Chinese women refining the present land use maps

- An improved relationship between population and administration leads to more binding agreements and sustainability in planning;
- The fact that the participating groups involved are encouraged to represent their interests, to express themselves, their organization and self-determination, and in their coordination and planning processes, leads to an increased capacity for negotiating planning objectives.

Involving government authorities in participatory planning processes: Forms of participation and action are often only developed in the cooperation process itself. Organisations and institutions can also keep a transitory nature and be adapted and amended. Interest groups which have formed in order to achieve a clearly defined goal, e.g. to introduce and test a new land use system, often fall apart after achieving the goal. When another occasion arises, the participants can form a new group of a different composition. Of particular significance is the relationship of new participatory institutions to the government administration, since the sustainability of the participatory planning approach depends on it. The question of whether the participatory process is suited to being incorporated in the local administration structures or whether there is a danger of forming so called "parallel administrations" should be examined in the initial stages.

The joint learning process simultaneously promotes the qualification of the communities and the government authorities or technical services at district level. Often, for the first time the technical services have the opportunity to act without the narrow sector boundaries of their ministries. Due to the inter-sector character of land use planning, the services are able to develop creativity in the sense of integrated resource management.

Participatory land use planning in China

The project "Participatory Approaches in Agriculture and Forestry" (PAAF)[3] aimed to improve afforestation results through – among others – participatory land use planning.

Actors involved:

- Villagers (farmers and village officials, men and women);
- Government Officials (county and township offices, Forestry Department, Agricultural Department, others).

Approach (selected key measures):

- Introduction of participatory approaches such as participatory land use mapping. Officials started going to villages and talking to the farmers. The farmers' perspective, including their vision of the future land use, became one layer in the official GIS;
- Strengthening institutional capacities: introduction of a well-structured planning approach as well as modern technologies (such as GIS);
- Capacity building, training and information on forestry, conservation etc. for farmers.

Outcome and impacts:

- Ecological impacts: higher ownership feelings of the village population regarding afforestation activities leading to a better survival rate of seedlings, increased vegetation coverage, diversified land use, reduced soil erosion, contribution to mitigation of climate change;
- Economic impacts: increased income through tree crops, diversified income sources, increased risk diversification and thereby reduced risk of income failure, reduced poverty;
- Social impacts: increased democratization at village level (e.g. farmers becoming more vocal to express their opinion), increased empowerment of women (e.g. women starting non-agricultural income generating activities), increased transparency in village government processes, strengthened civil society.

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3 PAFF was implemented by GTZ on behalf of BMZ.

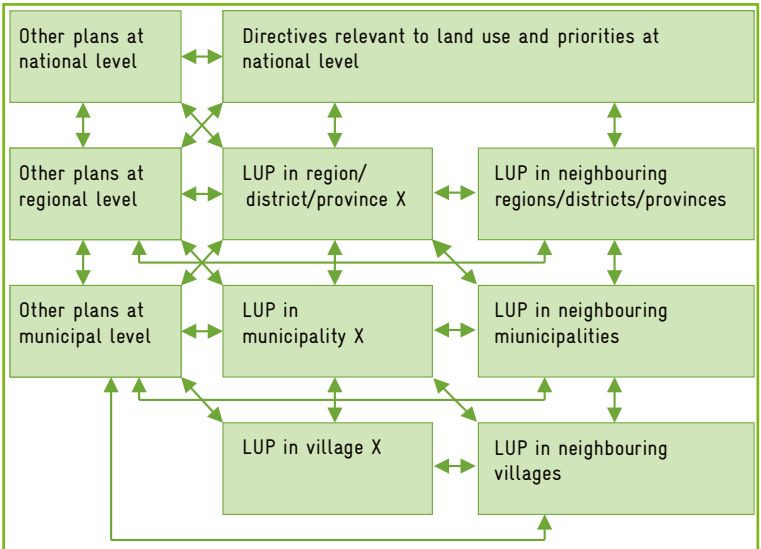
Main risk and lessons learnt:

- Those who implement forestry programs at local level might not want transparency;
- The counterpart agency (Forestry Department) has no mandate for comprehensive village development and participatory land use planning. Therefore, the project changed its approach into promoting participatory approaches in afforestation and supported the integration of participatory approaches into large-scale Chinese afforestation programs (GTZ 2004, Zheng 2007).

4.5 Integration of LUP in the Overall Planning System

Links between different land use plans as well as between land use and other plans are necessary both horizontally and vertically. The vertical and horizontal links between plans are more effective if there are various contacts between the different planning bodies. The flow of information should run in two directions. The figure on page 153 illustrates the way in which the flow of information should run between village, district and national levels. The concept on which this model is based is called the "counterflow principle". Reality, however, quite often looks very different (see chap. 4.2 on reality and vision for Namibia's planning system). A strong and sole focus on hierarchical structures frequently hampers the free exchange of information between different administrative levels.

Vertical and horizontal links in land use planning (idealized figure)



Source: GTZ 1995 (modified)

The central questions related to the vertical links are:

- In what way can strategic directives from superior planning be adapted to local conditions and peculiarities?
- To what extent do decisions made at a lower level require the approval from the next higher instance?
- To what extent are decisions made at a lower level considered at higher level?
- How can decisions made at lower levels be protected against third party interests?

Important criteria of horizontal planning are:

- Clear allocation of responsibilities;
- Mechanisms for obligatory cooperation and coordination;
- Mechanisms for settling conflicts between sector agencies, where one is often more influential than the other;

➔ Binding nature of already existing plans and their impact on further planning activities.

4.5.1 Land Use Planning at Different Levels

Governments are split up into administrative levels, commonly municipal, regional (often called district or province) and national levels, on the basis of their roles and responsibilities. While municipal authorities might for instance have authority over building regulations, the national level is responsible for the national transport network. These responsibilities can be separate or complementary and depend on the degree of decentralization in place. Accordingly, the different administrative levels have to deal with different kinds of issues, challenges and problems. The national level approaches issues from a "macro-perspective", considering the development of the entire country; regional levels have "meso-perspectives", with focus on regional issues; and municipal levels have "micro-perspectives", focusing mainly on the development of the villages or communities within their municipality. Land use planning is also done at sub-municipal level in villages and neighbourhoods. As these are generally no administrative levels, land use plans at this level need approval from the lowest administrative level (e.g. municipality) to be legally binding.

Even though the respective levels deal with problems of differing nature and magnitude, decision-makers at a given level must at all times bear demands, decisions, directives etc. in mind that apply to other levels. In other words, the national level must consider local (i.e. municipal and village)

Participatory land use planning in China

Participatory land use planning in China

needs and constraints when formulating policies and regulations; and on the other hand, the local and regional levels are bound by such policies and regulations established by national government.

Nowadays, land use planning is used at all planning levels. The hierarchy of planning levels depends on existing planning systems, the size of the area, etc. The table on page 155 provides information on the tasks of land use planning, taking a four-stage model as a basis, including the usual three administrative levels (national, regional and municipal) plus the sub-municipal level of villages or neighbourhoods that normally are no independent territorial entities but are part of the administrative unit of a municipality. Hence, they do not have their own administrative structures. But they do have own decision-making authorities (village councils).

LUP tasks and institutions in charge at different planning levels

Planning level	LUP tasks	Institution in charge
National level	▶ Definition of the national planning system, incl. definition of duties, rights and responsibility at all planning levels ▶ Policies on land use planning, resource use, conservation, infrastructure, construction etc. ▶ Normative directives ▶ National programs ▶ Planning of national infrastructure (highways, railways, airports etc.)	▶ Relevant ministries and technical authorities ▶ Inter-ministerial committees
Regional level	▶ Translating national and regional guidelines (national spatial planning, regional and sectoral planning) into strategies ▶ Formulating basic directives of LUP for lower levels	▶ Sector agencies ▶ Political and administrative inter-sector committees
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Planning level	LUP tasks	Institution in charge
Regional level	▶ Identifying areas of regional interest (e.g. risk areas, protected areas, green corridors, animal roads, areas for regional infrastructure) ▶ Coordination of activities relevant to LUP ▶ Considering and transmitting the need for action articulated at lower levels ▶ Establishment of technical services	▶ Advisory council representing public sector, private sector and civil society ▶ Technical services
Municipal level	▶ Coordination between and cooperation of all relevant sectors ▶ Plan approval ▶ Situation analysis and land use planning defining zones/areas for different purposes ▶ Defining rules on access and use ▶ Establishing monitoring systems and monitoring implementation of and compliance with the land use plan ▶ Establishment of mechanisms of sanctions and their application ▶ Establishment of mechanisms for transmitting the needs of village and municipal level to higher levels ▶ Implementation of land use plan	▶ Municipal council ▶ Unit/committee for spatial planning and development planning ▶ Technical services from regional level
Village level	▶ Situation analysis and land use planning defining zones/areas for different purposes ▶ Defining rules on access and use ▶ Establishing monitoring systems and monitoring implementation of and in compliance with the land use plan ▶ Establishment of mechanisms of sanctions and their application ▶ Implementation of land use plan	▶ Village council ▶ Planning committee ▶ Technical services from regional level ▶ Municipal representative

Source: GTZ 1995 (modified)

National Level:

Land use planning at higher planning levels focuses mainly on strategic aspects. General laws and regulations on implementation are passed, development objectives are set and budgets are assigned to the projects. Participation is ensured via representative structures.

Regional Level:

Land use planning at the regional level has a kind of "linking function" between national strategic planning and implementation at local level. One of its major tasks is to provide information for subordinate and superior planning levels. A well-prepared and realistic presentation of the present land use situation in the region including a simple preview of potential future developments is indispensable. It makes the planning processes more transparent and thereby improves the opportunities of disadvantaged groups – who generally lack sufficient access to information – to interfere.

At regional level, it is impossible to achieve direct participation by all individuals. Interest groups, therefore, need to have recognized organizations or structures to represent their interests. Special attention should be given to "weaker" groups in order to promote their integration.

With respect to planning implementation at the local level, regional planning has the following tasks:

- to provide information on national development objectives and guidelines;
- to identify land use objectives of regional interest (e.g. ensuring urban water supply, ensuring wild animal migration corridors);
- to coordinate and balance the objectives of all municipal land use plans within the region to ensure efficient and sustainable land use (e.g. the total amount of commercial areas defined by all municipalities might be much above the mid-term need; land use plans within the same watershed might be mutually exclusive);
- to mediate in conflicts between stakeholders;
- to determine the need for technical training and consultation of the population, authorities and organizations at the local level and to provide appropriate proposals;

- to identify and promote disadvantaged groups (e.g. pastoralists) which are not sufficiently integrated into local planning;
- to derive simple criteria by means of which the needs of regional interests and of disadvantaged groups can be brought as aims into local discussion processes.

Plans at regional or district level are not absolutely clear-cut as far as the delimitation of the areas is concerned. They give an orientation without excessively restricting the opportunities for local action. The plans present what future development concerning land use is socially desirable and how disadvantaged groups in particular can be involved. Boundaries of land units are usually expressed by straight lines or are slightly curved. In reality, those boundaries do not match the inherent complexity of the different ecosystems. At the local level, the planning areas including boundaries in which the activities will take place have to be clarified in cooperation with a competent regional authority.

If needed, the regional directive can also contain a simple list of criteria only, for example, statements such as "on slopes of over 10 degrees incline, arable land use is only permitted in agreement with the district authority upon submission of their proposed protective measures" or "each village land use plan should provide information on who has participated in preparing the plan".

Municipal level:

At municipal level, all planning activities are targeted towards their practical implementation. Hence, measures need to be specific and institutions capable of implementing them. Accordingly, planning at this level is very detailed, and it is possible for all participants to directly take part in the decision-making process – at least through public hearing. There are many interfaces between land use planning at municipal level and other municipal or superior planning activities.

National and regional objectives constitute important general conditions for the preparation of the planning process at municipal level. Therefore, the availability of local staff and budgets is often determined at superior planning levels. If people at municipal level are sufficiently well organized,

they will try to ensure that the necessary financial means are made available to support their land use planning activities effectively.

While collecting and analyzing data and information, institutions and organizations that are active in the field of planning are analyzed. In addition, existing plans and specific development goals are reviewed. Relevant information will then be respected during the planning process so that objectives of existing sector planning (agriculture, forestry, nature conservation, tourism) are reflected in the municipal land use plan(s). Any nature conservation areas, state forests, country roads, etc. lying within the village boundaries are indicated on the map.

In the planning and negotiating process, conflicts between local land use objectives and other local interests as well as conflicts with superior planning objectives are identified. Representatives of interest groups that may be affected by local planning decisions are involved in the discussion process. Solutions acceptable to all participants are looked for. In this way, agreements can be sought between neighbouring villages concerning an adjoining area of protected woodland, or water conservation areas can be successfully established respecting also the interests of the urban drinking water supply.

To implement the plan, applications for the financing of the activities have to be considered, if necessary. The planning framework is made public and will need a legal back-up by the municipal administration or council or by

Men and women doing problem analysis for village development planning separately (India)

superior authorities – depending on the system in place. This is intended to ensure that the prioritization of municipal level land use planning, i.e. priority for intensive arable farming or extensive pastureland, is taken sufficiently into account in new planning processes, such as the extension of a protected area or the designation of new settlement areas.

Example: Scaling up village land use planning in India

In the mountainous areas in the South-East of the state of Gujarat in India, where different indigenous tribal communities like Konkana, Bhil, Warli and Kolcha depend on rain-fed agriculture for their food production and face severe food security problems, Participatory Land Use Planning was developed into Participatory Village Development Planning (PVDP). KfW provides support to a local NGO conducting an integrated rural development project. PVDP helped not only to identify the needs and priorities of the men and women in the villages, but also to elaborate village action plans which contain the different actors involved in the planned activities, the support the villagers need and the time frame and location for their projects. The twelve village action plans elaborated by the local population were then processed into two cluster (sub-district) development plans by the officers of the local NGO. The officers ranked the planned activities according to the priorities of the population, elaborated a detailed work schedule, formulated indicators, set milestones and calculated the budget needed. As a result, PVDP increased the planning capability and inspired team spirit and commitment within the local NGO, gave the officers a detailed guideline for their tasks, integrated local politicians and other organisations needed for the completion of the work and enhanced self help spirit and capacity among the villagers.

Village level:

Land use planning at village level corresponds very much to land use planning at municipal level. Planning activities need to be within the frame of superior directives. They are targeted towards practical implementation. Hence, land use planning at village level is very detailed and specific. Other than at municipal level, still more direct participation is possible. It is generally at this level where PRA-tools are applied. Traditional and often non-codified forms of agreement on land use become significant.

The results of all village land use plans within one municipality make up the municipal land use plan. Hence, it is necessary at municipal level to verify if the objectives of all village plans are compatible. It is generally also at municipal or even regional level where technical experts ensure that village plans obey to superior directives and fit into superior plans.

As villages generally are no independent territorial entities, village land use plans can only be legally binding once they are approved by a higher level. In some countries village land use plans and local agreements between villages can be approved at municipal level. In other countries this is only possible at regional level with the involvement of the responsible line ministry.

Possible Public Bodies charged with Planning Tasks:

In general, state authorities should be suitable planning agencies for land use planning. Given the demands of harmonizing and ensuring plans, people's organizations and non-governmental organizations (NGOs) alone are often too weak to take on the duties of a planning agency. They also lack the official mandate. They are not democratically elected bodies and hence they do not represent all groups of society. The responsibility for carrying out land use planning should, therefore, lie in the hands of the state authorities.

The authorities responsible can be regional and municipal administrative bodies as long as they have specialized technical know-how and the necessary financial resources and are not used as political instruments for parties. If this is the case, or if the allocation of land use planning to these bodies is not desirable for other reasons, there is the possibility of placing land use planning within sector agencies (Bureau of Agriculture, Nature Conservation Agency etc.). These will then receive the mandate on the condition that they take care of the necessary coordination with other authorities to a sufficient degree and that they take into consideration aspects that lie outside their sector responsibility.

If there are no regional or national land use planning structures or no clear planning directives, or if other superior planning is restricted to individual sectors (road building, energy etc.), land use planning at the local level will remain without the necessary recognition or legal back-up. This makes it difficult to solve supra-local problems, and sufficient personnel

and financial resources are not provided. There is a lack of transparency in the coordination with existing sector plans. In addition, representatives of powerful groups are often not prepared either to participate in negotiation processes at local level or to recognize the results. Conversely, the regional and national land use plans will have no impact if there is no planning at the local level in which their directives can be integrated. Technical cooperation has developed three different approaches to support partners for dealing with such situations:

1. The introduction of land use planning at local level by the responsible local institution is supported. Positive experiences in pilot villages are spread to other areas (horizontal dissemination) and in the rudimentary superior planning structures (vertical dissemination);
2. The existing land use planning institutions at regional and national levels are supported to reach the local level. Partners' capacities are developed to establish two-way communication in planning between local, regional and national level combining bottom-up and top-down approaches. Before implementing land use plans in selected municipalities, feasibility checks of the existing plans involving local stakeholders are done at the local level to ensure that local needs and interests are respected. Experiences are evaluated and form the basis for a new orientation in regional or national land use planning;
3. The two above-mentioned approaches complement each other.

4.5.2 Land Use Planning and Environmental Assessments

The section above already dealt with the integration of sector plans into land use planning at different levels. This following section focuses explicitly on environmental assessments and planning activities. Examples for environmental assessments are High Conservation Value assessments, disaster risk analysis and Strategic Environmental Assessment (SEA). These require similar data as those used for land use planning. They also concern at least partially the same stakeholders who are also involved in land use planning. Hence, a lot of synergy effects exist that are often not sufficiently exploited. On the contrary, a lot of duplication of tasks takes place.

As the legal frame on land use planning as well as on the environmental assessments varies from country to country, there is no universally valid approach on how to deal with them in terms of a step-wise approach. However, there are some general rules that should be applied:

1. The parallel or repeated collection of the same or similar data should be avoided. Instead already existing results from other assessments should be considered and/or missing data needed for different assessments collected all at once;
2. The separate discussion of similar or related subjects with the same target groups (local population) should be avoided. Instead the issues should be discussed together in the broader context. This requires the presence of different experts/facilitators familiar with the different assessments and planning procedures;
3. Different assessments – generally initiated by different responsible line ministries – need to be well coordinated. This requires close and on-going cooperation between the different responsible bodies and clear rules concerning the coordination of planning and assessment activities. As a general rule administrative as well as methodological efforts should be minimized to save time and money.

In this manual, not all environmental assessments can be considered. Therefore, two assessments are selected to illustrate how such environmental assessments can be either included into land use planning (the example of disaster risk analysis) or be combined with it to achieve a maximum of synergy effects (the example of SEA).

The two assessments have also been chosen because they are quite different in nature. Disaster risk assessment is part of the typical or classical environmental assessments that aim to identify certain areas that are characterized by specific ecological or environmental features. In the case of disaster risk management these are risk areas, safe areas etc. A similar assessment is the HCV assessment that aims to identify areas worth protecting their biodiversity or their ecological services. These types of environmental assessments can more or less easily be included into land use planning as they can be considered to be part of a comprehensive sustainable land use planning.

Strategic Environmental Assessment is a different type of assessment. The objective here is to improve the overall environmental effects of proposed patterns of spatial development, hence among others of land use plans. Accordingly, SEA can be considered as a monitoring-tool evaluating the (potential) positive and negative impacts of land use plans on the environment respectively on sustainable development. Therefore, SEA applied to land use plans provides an important opportunity to integrate sustainable development approaches within the decision-making process.

Disaster Risk Assessment:

Disaster risk analysis requires a lot of data such as disaster history, risk areas, safe havens, emergency roads etc. that can be collected during data collection for land use planning. The necessary analyses such as hazard analysis, vulnerability analysis or risk mapping can be combined with the data analysis done for land use planning. Risk mapping, for instance, can be done in a participatory way together with the local population during a normal land use planning workshop.

The following table provides a checklist for land use planners that may help them to easily identify which disaster risk management activities can be included in which phase of the land use planning procedure.

Disaster risk management checklist for land use planning

The following questions are supposed to help land use planners to consider disaster risk and risk management options in an adequate manner. The checklist is organized according to the six steps of a planning process. In case the list is consulted during an already ongoing process, all questions related to previous steps of the planning process should be considered as well.

For LUP preparation:

- ☐ Are there natural hazards such as floods, drought, earthquakes, volcanic eruption, landslides or storms that have already caused human losses or relevant economic damages in the region? How is the probability for them to occur in the future taking into account climate change, migration, and erosion trends etc.?
- ☐ If there is a relevant disaster risk: Who can provide (more) concrete information at the local/regional/national level and who has the capacities (or could acquire them) to take care of the DRM inclusion into the planned LUP process?
- ☐ Is there public awareness of the existing or future risks, especially among decision-makers, technical staff and the exposed population? Is there a necessity to raise awareness first (during preparation or diagnostics)?
- ☐ Depending on the type of hazards: Who are the relevant DRM actors to be involved in the LUP process and how shall they be involved?

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For the baseline analysis/diagnostics:

- ☐ How can the risk analysis considering hazards and vulnerabilities best be integrated in the general baseline analysis? Is the selected methodology technically and financially in line with the general LUP analysis procedures?
- ☐ Are risk related questions considered in relevant sector investigations (e.g. agriculture, public infrastructure, housing, water management etc.)?Are the sector experts trained or helped to answer the questions in an adequate manner?
- ☐ Depending on the hazard type: What is the current level of scientific and popular knowledge and participation in regard to the specific risk and risk management? What level of knowledge and participation is needed for a separate risk mapping and analysis? Which level is foreseen? Is the risk analysis used for awareness-raising of the population at risk? Are future trends caused by climate change, migration etc. considered?

For the formulation of the land use plan:

- ☐ Is the disaster risk of such a relevance to be mentioned in the land use vision and policies, and is it adequately included (e.g. human security or economic/ecological sustainability)?
- ☐ Are the actors, who are involved in the formulation, prepared to identify the most adequate risk reducing measures or should further specialists be consulted?
- ☐ Are adequate risk management measures or projects identified in the LUP to prevent disasters and/or prepare effective response? Have financing options been discussed and chosen?
- ☐ Have risk criteria for land use (e.g. zoning) been identified?
- ☐ Have indicators for the monitoring of disaster risk been identified?

For the adoption and publication of the land use plan:

- ☐ Are the adopting entities aware of the relevance and consequences DRM criteria and special projects have?
- ☐ Does the publication strategy imply the explication of the relevance and consequences of DRM criteria and measures? Do the relevant actors (population at risk, private sector etc.) understand and accept the approach (ownership)?

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For the implementation of the plan:

- ☐ Are the risk related norms (e.g. for construction or agriculture) established and enforced?
- ☐ Are the identified specific measures concretised and implemented?
- ☐ Is the responsible technical staff trained to assure the needed quality?

For the monitoring process:

- ☐ Does the monitoring system include indicators or mechanisms to measure the implementation and quality of the approved projects and the application of the risk related norms and criteria (management and impact monitoring)?
- ☐ Are the relevant actors for DRM (especially the population at risk) involved in the monitoring process?
- ☐ Does the monitoring system permit to detect important changes in risk patterns (hazards or vulnerability factors) and if necessary adapt the risk analysis and prioritised measures (monitoring of changes)?

Source: based on Bollin 2009

Strategic Environmental Assessments (SEA):

Recently some developing countries such as Namibia as well as EU accession states have been confronted with the challenge of applying Strategic Environmental Assessments either generally to policies, plans or programmes or specifically to spatial development plans or land use programs. For this reason, some considerations are presented below.

What is Strategic Environmental Assessment?
SEA refers to a range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the interlinkages with economic and social considerations. SEA can be described as a set of approaches which use a variety of tools, rather than a single, fixed and prescriptive approach. A good SEA is adapted and tailor-made to the context in which it is applied. This can be thought of as a continuum of increasing integration: at one end of the continuum, the principle aim is to integrate environmental, alongside economic and social concerns, into strategic decision-making; at the other

end, the emphasis is on the full integration of the environmental, social and economic factors into a holistic sustainability assessment (OECD 2006).

The specific term Strategic Environmental Assessment (SEA) originally related to European Union policy. There it is a legally enforced assessment procedure since 2001 required by Directive 2001/42/EC, known as the SAE Directive. One consequence among others is that since 2004 land use plans in EU member states require environmental assessments. More recently, in 2006 the Organisation for Economic Cooperation and Development (OECD) discovered SEA for their purposes. The justification is as follows:

"Development assistance is increasingly being provided through strategic-level interventions, aimed to make aid more effective. To ensure environmental considerations are taken into account in this new aid context, established environmental assessment tools at the project level need to be complemented by approaches fully adapted to policies, plans and programmes. Strategic Environmental Assessment (SEA) meets this need. SEA is applied at the very earliest stages of decision making both to help formulate policies, plans and programmes and to assess their potential development effectiveness and sustainability. This distinguishes SEA from more traditional environmental assessment tools, such as Environmental Impact Assessment, which have a proven track record in addressing the environmental threats and opportunities of specific projects but are less easily applied to policies, plans and programmes. SEA is not a substitute for, but complements, Environmental Impact Assessment and other assessment approaches and tools" (OECD 2006).

SEA and LUP – how do they fit Together?

OECD (2006) clearly suggests applying SEA to spatial development plans and programs. According to them "SEA can anticipate and improve the overall environmental effects of proposed patterns of spatial development, and of multiple individual projects". More specifically it is stated that "applied to spatial plans or programmes [SEA] provides an important opportunity to integrate sustainable development approaches within the decision-making process. It encourages multi-stakeholder consultation and ensures that the environmental consequences of plans and programmes are identified and assessed during preparation and before their adoption. Integration of the environmental dimension at all stages (ex

ante, interim and ex post) of evaluating and implementing a programme/plan enables the competent authorities to carry out changes and improvements throughout the life of the programme/plan, as appropriate".

Strategic Environmental Assessment consists of four stages:

1. Establishing the context for the SEA;
2. Implementing SEA – the actual assessment;
3. Informing and influencing decision-making;
4. Monitoring and evaluation.

These four stages could easily be applied to land use planning without significant additional workload.

Stage 1: Establishing the Context for the SEA

The spatial scope of a SEA is defined by the area covered by the land use plan. The stakeholders are all those that have been identified as relevant actors from public and private sectors as well as from civil society for the land use planning procedure. The objective of the SEA is to identify and assess the potential environmental consequences of the land use plan and to propose alternatives to critical measures and/or measures to avoid, mitigate or compensate negative effects that have been identified.

Stage 2: Implementing SEA

The actual assessment – in the narrow sense – should include the following aspects:

- Identification of those environmental laws and plans which are relevant for the land use plan in question;
- Incorporation of these directives into the land use plan;
- Inventory of the present environmental situation: these data should be available from the land use planning activities;
- Projection on the environmental trend in case of plan implementation and non-implementation: this forecast should be presented to the people involved in the land use planning to discuss plan adjustments and/or measures to avoid, mitigate or compensate negative impacts on the environment;
- Identification of land use alternatives to avoid or mitigate negative impacts on the environment – together with all stakeholders as part of the land use planning activities;

- Identification of measures to avoid, mitigate or compensate negative impacts on the environment – together with all stakeholders as part of the land use planning activities;
- Identification of measures to control the environmental impacts of the land use plan during and after its implementation. These measures should become an integrated part of the overall impact monitoring of the land use plan.

Stage 3: Informing and Influencing Decision-making

The results from the assessment (stage 2) should directly and continuously enter the land use planning process in form of information, recommendation and dialogue as demonstrated above. All findings should be available to all stakeholders and discussed with all of them. If they are constantly fed into the land use planning process, this should be automatically the case. To ensure a good integration of the SEA into the ongoing planning activities, at least one person from the body or board responsible for the specific land use planning should also be involved in the SEA.

Stage 4: Monitoring and Evaluation

The following OECD key questions for spatial development plans and programs which have been slightly modified and adapted to land use planning can be used to monitor if environmental issues have been sufficiently taken into consideration in the land use planning.

Key questions to monitor SEA application to land use plans

Generic questions as well as decisions/activities:

- Have the land use plan objectives been linked with other international, national and regional policy aims?
- Have international and national environmental standards been considered and incorporated into the planning?
- Have all zones of special environmental interest and protected status within the impacted area been identified?

Linkages/impacts:

- What are the priority environmental problems in the area in question? Is there a danger these problems could be exacerbated by the proposed land use plan(s)?
- Has the spatial and temporal scope of the SEA been adequately defined? Have any relevant cumulative issues been taken into account?
- Are the proposed developments likely to be vulnerable to the impacts of climate change? Is the necessary scientific basis to assess this matter available and sufficient?
- Has there been sufficient effort to identify environmental improvement opportunities within the planning?
- Have relevant mitigation measures been adequately incorporated into the land use plan?

Institutional/implementation:

- Is the role of relevant environmental authorities in land use planning well understood? Are there any capacitybuilding needs?
- Are there adequate mechanisms for the results of the SEA to be reflected in the decision-making process and strategy development – e.g. monitoring arrangements, management and institutional issues?
- What is the legal and administrative framework within which land use planning and environmental policies are coordinated? Is it adequate?

Source: OECD 2006: 90 (modified)

4.6 Financial Aspects

A land use plan is not a purpose in itself, but an instrument for achieving useful and sustainable land use; it is not an objective but a tool to achieve an objective. No land use planning should therefore be started without a thorough consideration and discussion of the available financial means and sources for its implementation. Appropriate decisions should be taken on the basis of the available or potential financial framework. Without this security, even a well-established plan will soon run into financial bottlenecks, and it will not be possible to implement the measures foreseen in the plan. So the key issue is to link planning with budgeting – or even better budgeting with planning.

Although some bigger investments might need financial support from external agencies (see table in chap. 4.7.2), the implementation planning should mainly be based on own financial means. External subsidies, grants and credits should only be considered if there is a real chance of receiving them. Otherwise planning can remain very utopian, and implementation will soon result in disappointment and frustration.

4.6.1 Linking Budgeting with Planning

In most countries recent decentralization resulted in the creation of local territorial entities and bodies, many of them not only receiving some budget from the national level but also having the right to collect own revenues, e. g. through land taxation or other local taxes. In addition to municipal budgets, sector ministries generally also have a budget for activities and/or investments at the local level. Hence, when considering own (local, regional and national) resources for land use planning and the implementation of land use plans, two options are generally available: budgets from the different line ministries and communal budgets. In both cases, it is important to know and to understand the budgeting system in detail. Otherwise it can happen that a land use plan is approved just after the annual deadline for budget applications has passed. As a consequence, no budget will be available in the following year for plan implementation. Alternatively, there will be a budget but not for the measures planned. There then might be a risk in either doing the wrong thing or in giving back the money to the national level and risking receiving less the next year.

When dealing with **budgets from sector ministries**, the following aspects need to be considered:

- When are the deadlines of different sector ministries to apply for budgets for the following period? (When will that period start? How long will it last?);
- When will the budgets be available?
- Which categories/accounts (such as personnel, equipment, investments etc.) exist, how detailed are they (e.g. is there a category on agriculture, on seeds or on seeds for pineapples?) and what is the key for their distribution?
- How independent and flexible are local officers of sector ministries to adapt to local needs/demands?

When dealing with **municipal budgets**, similar aspects need to be considered:

- When will the municipal council decide on the budget for the next period? (When will that period start? How long will it last?);
- When will the budget be available?
- How much money can be expected – that levied by the municipality as well as that transferred from the national budget?
- Concerning the money transferred from the national budget, is there any appropriation?
- What percentage of the budget is needed, foreseen or bound to running costs and how much is available for investments?

Many municipalities now conduct – at least for part of their budgets – a participatory budgeting. Local citizens are invited to propose projects and to vote on them. Depending on the country, these projects are later implemented and evaluated by local citizens or they are implemented by the private sector and monitored by the public or civil society. Albanian municipalities, for example, recently introduced participatory budgeting for investment planning. In the region of Cuenca in Ecuador, the municipality of Nabón went a step further: They split the budget in two: one for running costs and another for investments. The latter one was then divided into one part for general investments at municipal and inter-municipal level while the other part was split, based on the number of inhabitants, poverty etc. – into territorial budgets for each village. In each village, the

villagers can then decide independently how to use that budget. The basis for village budgeting was developed in cooperation with researchers from a university. This territorial budgeting is a perfect tool for the implementation of land use plans and should – wherever possible – be linked to or integrated at an early stage of land use planning.

4.6.2 External Funds

Although sub-national territorial entities can in theory apply directly for external funds from donors and regional banks, not too much expectation should be created in this regard. Most rural municipalities are too small in terms of their budgets and resources to fulfil the requirements of international moneylenders. The majority of them will not be considered to be creditworthy. Hence, the better alternative would probably be to benefit from budget support, basket funding and national funds to which donors contribute. This would also be in line with the aid-effectiveness agenda (declarations from Paris and Accra). This, however, requires a lot of capacity by local, regional and national administrations to handle these budgets. Hence, increasing capacity and ensuring transparency and accountability could be useful complementary measures to a technical cooperation project that is involved in supporting the introduction of land use planning.

Major local investments that can neither be financed by local, regional or national resources nor by foreign resources delivered in the form of basket funding will then have to be directly financed externally. Applications will have to be submitted by the national governments. Local stakeholders need to be realistic about their chances. And they need to lobby for their concerns and find partners for advocacy.

4.7 Institutional Responsibility and Capacity

The success of land use planning depends on the capacities of all actors, particularly of the lead agency responsible for land use planning and those institutions and groups taking over the responsibilities for implementing the plan. The establishment of those capacities is often more complicated than expected.

The responsibilities for planning, implementation, financial and administrative handling can be concentrated in one organization (e.g. the planning agency if in place) or split amongst two or three different organizations. As a general rule, the integration into existing public institutions having the official mandate for land use planning – no matter how weak they may be – should always have priority over the creation of new separate structures. The latter should only be considered in exceptional situations and as a temporary solution.

4.7.1 Institutional Responsibility and Capacity for Land Use Planning

Decentralized land use planning in countries in which decentralization has already been realized finds structures in place with established responsibilities (mandates). The capacity of those structures might differ a lot between different institutions, countries and regions. In other countries, however, decentralization – if at all foreseen – has only been partly achieved. Thus, there are no established mandates to be found, and in order to carry out participatory land use planning in a useful and lasting way, these mandates should be established at the beginning of the process.

With the mandates clarified, many relevant institutions are still far from being functional. Many planning agencies as any other public agencies suffer from certain deficiencies such as lack of coordination, insufficiently qualified staff, frequent staff changes, imbalance between assignments accepted and available capacities and orientation towards execution rather than planning. In addition, the hierarchical structures often contribute to paralyzing the initiatives of the technical personnel (see 4.2). Hence, capacity development and institutional development are key for the introduction of land use planning in most developing countries (see 4.7.3).

Planning agencies must meet the following minimum requirements to ensure long-term sustainability of land use planning:

- qualified personnel and equipment;
- motivated and technically competent extension personnel;
- long-term financial security.

Capacity development and land use planning can go hand in hand. Individuals can learn and procedures can be developed in parallel by actually conducting a participatory land use planning and organizing its implementation. For this purpose, training on the job can be combined with in-class training. This provides the necessary theoretical and practical background the personnel need to continue land use planning, to update and implement plans. The joint preparation of a land use planning manual is another way to set up capacities (see 4.7.2, last paragraph).

4.7.2 Institutional Responsibility and Capacity for Implementation

The plan should be implemented by already existing institutions. The responsibility for implementation of specific measures depends on the sector concerned as well as on the size of the measure (financial volume) and the financial sources involved (see table below). If the implementation is linked to extensive financial means, there is a considerable organizational and administrative process involved. This additional task cannot be accomplished as a sideline by one of the participating organizations. The organization in charge of the completion of investments must make additional capacities available. Training and further education might be necessary in order to improve the capacity and motivation of the implementing organization.

In an ideal scenario, an existing municipal or regional body takes on the leading function in plan implementation, sets up appropriate coordination mechanisms (steering committee, regional development council), delegates the implementation of specific measures (through contracting etc.) and monitors implementation (e.g. supervises the conclusion of contracts with private companies or individuals). If there is no suitable institution already in place, one of the participating organizations must take on these assignments. Usually, this has to be a public authority. If this is not likely, a new organization has to be created which is, however, temporary in nature. Nevertheless, it should have the necessary organizational, material, financial and personnel capacities. Irrespective of which option is finally selected, all participants must together establish the following:

- functions;
- responsibilities;
- planning systems;
- coordination systems;
- monitoring/control systems;
- tools and mechanisms of sanction.

The mandate to carry out minor (pilot) measures can in some cases be transferred to civil society (self-help groups, cooperatives, farmers' organizations or local NGOs). It is also possible that private sector companies or individual consultants take over this part. With increasing investments and technical complexity, it makes sense to contract specialized private companies. Governments or private implementation organizations will then concentrate on the supervision and monitoring of the process. The technical and administrative requirements of the responsible organizations carrying out individual measures of the land use plan vary. This makes it necessary to use appropriate tools to examine the qualifications of individual organizations and to ensure the most efficient cooperation possible. These instruments are applied by the lead agency.

The interdependencies and recommendations for financial and institutional processing of planning and implementation are summarized in the table below. It shows how broad the range is with respect to implementing organizations, mechanisms of implementation, financial sources and institutional requirements. Each individual case requires functioning mechanisms of coordination and checking. Most of these mechanisms as well as the responsible institutions cannot be expected to be in place but need to be developed or at least strengthened during the planning and implementation process. One approach to do so that has been proven to be successful in Laos and Cambodia is the joint development of a land use planning manual. Prepared by all stakeholders under the guidance of international experts, the process helps clarifying open questions, improves mutual understanding and trust and creates the necessary forms of cooperation. Such a process requires some time – generally one to two years.

Overview on major aspects of financing and organizing budget implementation

Object of financing	Minor activities	Medium activities	Large-scale investments
Sources of financing	▶ Sector ministries ▶ Development funds ▶ NGOs ▶ Technical cooperation projects/ programs	▶ Sector ministries ▶ Development funds ▶ NGOs ▶ Regional/ sector investment programs	▶ Externally financed (WB, IDB, ADB, AfDB, etc.)
Organizing implementation	▶ Govt. services ▶ NGO ▶ Private sector ▶ Advisors/ companies ▶ Self-help groups ▶ Cooperatives	▶ Govt. services ▶ NGO ▶ Private sector ▶ Local territorial entities/ bodies	▶ Sectorial/ regional program ▶ Sector ministries ▶ Local territorial entities/ bodies
Institutional prerequisites	▶ Low technical, administrative and organizational prerequisites required ▶ Good access to the target groups	▶ Specific technical, organizational and administrative knowledge and experience required	▶ High-grade of technical specialization ▶ Application of social techniques in planning and implementation ▶ Evidence of appropriate experience

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Object of financing	Minor activities	Medium activities	Large-scale investments
Form of tender implementation	▶ Implementation with personal responsibility ▶ Contracting	▶ Contracting of specialized companies in the private sector	▶ International tendering ▶ Contracting of specialized private companies ▶ Sophisticated super vision techniques

Source: GTZ 1995

4.7.3 Capacity Development

As a basic rule, existing legally (and democratically) legitimate institutions must not be undermined no matter how weak they may be but need to be strengthened. It follows that land use planning can only be done by or together with institutions in place which generally require capacity development. Capacity development for successful land use planning implies improvements in a vast number of institutions as well as increased knowledge, new skills and changes in attitudes in an even bigger number of individuals. This can be quite difficult given the jungle of competences. All institutions involved in land use planning need to define actors, roles, functions, competences and mechanisms for cooperation and coordination. Besides, it is important to clarify the specific need for capacity development.

Strategy:
All institutions involved in land use planning need to agree on a joint strategy for land use planning. This implies the identification of each institution's role and contributions.

Cooperation:
All institutions involved in land use planning need to agree on cooperation mechanisms. Through this discussion/negotiation they will further specify their roles and identify their individual functions and tasks. Once

institutions are clear about their role and function, they can easily identify the qualifications their staff needs to fulfil these role and functions.

Management Structure:
All institutions involved in land use planning need to agree on a management structure. This implies the identification or creation of a steering council as well as the definition of forms of communication, negotiation, decision-making etc. Again, the identification of these mechanisms also shows the need for training.

Process Design:
All institutions involved in land use planning need to agree on the processes necessary for land use planning. Which new processes have to be introduced? How should they be designed? How can institutions learn from experience? How can a constant learning process be achieved?

Learning and Innovation:
All institutions involved in land use planning should ask themselves if they have sufficient competence for strategy development, cooperation, management, application of relevant land use planning tools, adaptation and introduction of (new) tools and processes when necessary. This self-assessment should be feasible after the other four factors have been discussed together with the other institutions.

This joint process of defining roles, functions, mechanisms etc. needs professional external support. Apart from being familiar with land use planning, the facilitator needs to be a good mediator as conflicts might arise between different institutions. The facilitator should have the capacity to bring people – and institutions – together, even after decades of mutual blockages.

Once the need for capacity development has been defined for and by each institution involved, specific trainings need to be provided. Some of these trainings are generally offered by specialized institutions or individual trainers/consultants in the country (e.g. management training, PRA courses, GIS courses etc.). Others need to be imported (e.g. trainings on combining PRA with GIS). And still others need to be tailor-made. This includes trainings on the specific national planning system and its legal and institutional frame.

Experience shows that the combination of on the job training and in-class training is the most successful. Any training, in-class training included, needs to address the specific working situation of the trainees. All knowledge and skills that are taught need to be discussed within the national/local context. In this regard, role plays and practical exercises adapted to the national/local context are crucial. Any training should blend into a backstopping situation in which former trainers become coaches. The establishment of networks of former fellow trainees for exchange and joint learning has also been proven to be very successful.

Developing the capacity of individuals as well as institutions is the base for any land use planning in developing countries.

4.8 The Role of International Cooperation Projects in Land Use Planning

The role of German International Cooperation projects in land use planning is primarily defined by GTZ's concept of sustainable development. German International Cooperation projects support their partner institutions to fulfil their roles and functions. These projects are process-oriented as well as value-oriented. In the context of land use planning this means the following:

- The sustainable development concept provides a normative framework for autonomous parties to negotiate and settle differences concerning economic, social and ecological interests over the use of land in a spirit of partnership;
- German International Cooperation projects support this negotiation process (i.e. as part of land use planning activities) and search for workable compromises;
- One of the core competencies of German International Cooperation projects is capacity development, i.e. raising the performance capability of people and their organizations, so that International Cooperation partners can speak for themselves in negotiating sustainable land uses;
- German International Cooperation projects provide technical, organization and policy advice in regard to land use planning. This advice goes hand in hand with above mentioned capacity development. The objective is to jointly identify with partner institutions locally and

nationally adapted concepts of land use planning and to enable all relevant partners to fulfil their roles and functions within this planning concept/system.

In compliance with the principle of help towards self-help, the responsibility for land use planning remains with the partner. Accordingly, land use planning projects neither do the land use planning by themselves nor engage experts to do so. Their role is the one of a facilitator. Their aim is to empower the responsible institutions to conduct or coordinate land use planning by themselves. Apart from capacity development and policy advice the tasks of a project also include supporting processes of social reflection and learning. Within a certain limit, International Cooperation projects can also finance necessary technical equipment given that its maintenance can be secured by the partner.

Although public institutions (including those at local level such as municipalities) are the main partners for German projects, they are not the only partners who may receive support to increase their competences in land use planning. Private sector (e.g. farmers' associations) and civil society (e.g. local environmental NGOs) may also benefit from capacity development measures.

Due to the value-orientation of German International Cooperation, land use planning projects may assist underprivileged groups. The most sustainable way to do so is to reach agreements with the responsible planning authority that land use planning is done in a participatory way involving all relevant stakeholders and applying tools that allow people with all different educational backgrounds to get involved and heard.

As for the planning, the responsibility for implementation and its monitoring lies with the responsible institution(s) and not with the project. The role of the project again focuses on capacity development. In regard to implementation this includes the following two aspects:

- Management advice/support: Broad impacts can only be achieved by an efficient implementation management. Thus, management advice plays an important role. International Cooperation projects can support the development of implementation strategies, financing concepts

and process controlling systems. Projects can also initiate periodic self-evaluations by the institutions involved in implementation;
- Creating know-how and skills: The implementation of an individual measure requires know-how and skills of different groups at various levels: the target group, the technical extension service and the decision-makers at regional and national level. In addition to advice on the implementation management, practice-oriented training and further education measures, which are adapted to the needs and capacities of the participants, are also typical project supported activities.

Finally, the contribution of International Cooperation projects can also include financial support for testing measures and – within certain limits – implement selected small measures identified in the land use plan. International Cooperation projects can, however, not carry out implementation on a wider scale.

4.9 Summary

Key for any land use planning is:

- its integration into an overall two-way planning system that links land use planning vertically and horizontally to other planning processes;
- its linkage to budget planning;
- the iterative character that allows constant adaptation and avoids the one-time establishment of a plan destined to be outdated;
- broad participation ensuring that all stakeholders' needs and interests are respected and balanced against the common good;
- the application of tools for preparation, analysis, plan formulation, decision-making and monitoring that are adapted to local conditions – being sophisticated enough to bring good results and simple and cheap enough to be used by local actors in the long run;
- the integration into existing legitimate public institutions having the official mandate for land use planning;
- comprehensive capacity development for these institutions;
- a plan created jointly by all institutions involved and to be be implement separately by sectors, however, coordinated by a lead agency.

4.10 Further Reading

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Land use planning in Vietnam

5 Conclusion and Outlook

“Land use planning touches all of us and helps us to have the kind of community we want”.
(Ontario’s Citizens’ Guide to Land Use Planning, 2009)

Land is a scarce resource increasingly affected by the competition of mutually exclusive uses. Fertile land in rural areas becomes scarcer due to population growth, pollution, erosion and desertification, effects of climate change, urbanization etc. On the remaining land, local, national and international users compete to achieve food security, economic growth, energy supply, nature conversation and other objectives. Land use planning can help to find a balance among these competing and sometimes contradictory uses. If at an early stage consensus on the land use can be negotiated by all conflicting parties and be approved by the responsible official institution making it legally binding, conflicts can be avoided and do not hamper development.

At the core of land use planning is the joint balancing of competing land uses by all stakeholders (users and those being affected by the (changes in) land uses) and the joint determination of land uses for which the highest consensus can be achieved – ideally for the purpose of sustainability. In other words, land use planning activates the social processes of decision-making and consensus building concerning the utilization and protection of private, communal or public areas. At least in the context of development cooperation, land use planning is considered to be a participatory iterative process including continuous cycles of analysis, planning, decision-making, implementation and monitoring.

The specific form of land use planning as well as the actors involved differ from country to country and can even be different within a country. Land use planning can simply mean introducing a spatial dimension and a more land use oriented way of thinking into existing planning systems (e.g. village, municipal or regional development planning). Land use planning can also occur in the form of local agreements on the access to and (temporary) use of certain areas – often common properties. Finally, land use planning can mean the introduction of an entire planning procedure. In all cases, it needs to be integrated into existing institutions, linked to budgeting and result in its implementation. It generally requires comprehensive capacity development.

Although over the last decades land use planning has been developed from a "toy" used exclusively by land use planners mostly outside the formal system to a development approach that is used in a wide range of technical cooperation projects and is increasingly integrated into formal institutions, it is still facing a number of challenges:

1. **Binding force of land use plans and effective mechanisms of sanction**: Land use plans need to be legally binding and there need to be effective mechanisms of sanctions to "make a difference". Otherwise there always remains the risk that powerful groups or individuals will not respect the plan, making the whole plan ineffective and the whole planning procedure a waste of time and resources. The binding nature can derive from different actions, e.g. a signature by a prefect or a decision by the municipal council. Important is that the procedure is defined and thereby legalized through a national law or by-law. Once the plan is approved, its implementation needs to be continuously monitored and violations need to be sanctioned;

2. **Data availability and inter-institutional cooperation**: The availability of complete area wide up-to-date data is still not given in many countries. Apart from suboptimal data collection systems, this is often due to the current inter-institutional relations that are marked more by mistrust and competition than by cooperation and coordination. Although land use planning depends on data availability, it can also become a tool to create and/or share data. During land use planning, institutions can actually build up confidence, identify common objectives and start some partial cooperation, e.g. in form of data exchange or joint use of data within one (Geographical) Information System;

3. **Cost-benefit ratio**: For each case a balance needs to be found/identified as early as possible between technical and scientific sophistication on the one hand and local institutional, financial, technical and human capacity on the other. The sophistication of methods and tools applied depends also on the objective(s) of the land use planning. However, as a general rule, the approach should be kept as simple as possible to achieve the defined objective;

4. **Linking budgeting to planning**: Key to any implementation – apart from well thought out implementation plans or work plans and their constant monitoring – is the availability of sufficient funds. Still too often land use planning is introduced by outsiders and not linked to local, regional and national budgets and their respective budgeting. If land use planning is supposed to last and to be continued by local actors, this needs to be changed;

5. **Tenure security**: Local land users' rights need to be secured. Otherwise, land use planning can easily result in their exclusion or eviction. Hence, if local land users' rights are not secure, they need to be secured during the land use planning process. There is extensive knowledge and experience today on how this can be achieved. The crucial issue is to always be aware of it and to anticipate the effects of land use planning on current land use rights and their holders. Land use planning can also be explicitly used to improve tenure security for local users of land and other natural resources;

6. **Responsible governance of land tenure and land use**: Land use planning implies power. If participation, transparency and accountability are unsufficient, it can easily be manipulated by those in power. What is needed is the political will and broad support within the (land) administration for responsible governance of land tenure and land use. This also includes transparent and accountable state land management, respecting and recognizing local people's rights, needs and interests. State land that is already legitimately used by the local population should not be sold or leased to (foreign) investors;

7. **Awareness of land use planning as a multi-purpose tool**: The potential of land use planning to contribute to diverse development objectives and to solve major development challenges needs to be made more public. As shown in this publication, land use planning is already applied in a number of fields. The results are promising. They now need to be replicated.

Community Consultation in Cambodia

Annex

Annex: Case Studies

Namibia	Status and Targets of Land Use Planning
Guatemala and El Salvador	Land Use Planning for Reconstruction and Disaster Risk Management
Peru	Land Use Planning for National Park Management
Bolivia	Land Use Planning for Watershed Management, Disaster Risk Management and Food Security
Tonga	Land Use Planning for Adaptation to Climate Change
Mali	Land Use Planning for Land Use Conflict Resolution
Lao PDR	Land Use Planning for Tenure Security
Cambodia	Land Use Planning for Land Redistribution

A 1 Land Use Planning in Namibia: Status and Targets

Namibia has reached its independence in 1990, so it is still a relatively young country. Unlike most government institutions, the Ministry of Lands and Resettlement (MLR) was newly created after independence in order to address land issues. Considering the pre-independence history of the country with its apartheid government, the elimination of imbalanced land distribution between black and white and rich and poor through land reform is of course a major concern. However, the MLR also has the mandate to manage all land resources through Integrated Land Use Planning. This task is being neglected because of the Ministry's strong concentration on the redistribution of land. As a result, the management of land resources is far from being ideal, leading to conflicting land use allocations. Severe capacity gaps, insufficient understanding of overarching land management and the role of land use planning in this context has resulted in rather uncontrolled land use patterns in the country. Land use planning in general is understood as a tool to "guide" decision-makers but not as a binding instrument; this reflects the strong top-down hierarchy in the government. The main issues that hinder meaningful land use planning in Namibia are summarized below and compared with the ideal situation and a strategy to reach this situation.

a) Existing structures and land use planning framework:

A legal framework for planning is not being established and existing laws and policies have serious gaps or overlap. The National Land Policy (1998) mandates the MLR to steer Regional Land Use Planning. Within the central structure, it is the Sub Division Land Use Planning and Allocation (LUPA) that is assigned with this task while local level LUP is supposed to be done by Land Use and Environmental Boards. LUPA is a tiny section at the bottom of the Ministry structure and there are no Land Use and Environmental Boards. Responsibilities, authorizations and interdependencies between different kinds of plans are not regulated. LUP is carried out haphazardly as a "stand alone project" without integration with other sectors. LUP is not used as an instrument to regulate and manage land resources. Conflicting land use allocations are the consequence.

Ideal situation: A National Land Use Planning Policy defines the function of Land Use Planning within the context of a national planning framework. The LUP policy lays down the responsibilities for steering Land Use Planning and defines a Land Use Plan as a binding instrument. Ideally, the MLR will coordinate LUP across sectors through a separate Department for Land Use Planning.

Rural landscape in Namibia: irrigation area along Orange River

How to reach this situation? A model case for Integrated Land Use Planning is bringing out the relevant policy gaps. The Steering Committee for the land use planning process is composed of high ranking representatives from different sector ministries (among others) with the task to communicate and channel policy gaps in a policy formulation process. A new structure of the Division LUPA is developed and proposed to the Ministry.

b) Capacity and resources:

The institutional capacity is at a low level because of the insufficient status of land use planning. This is already reflected in the structure. Long-term training and human capacity building for integrated land use planning and land management have been provided by different organizations but lack human resource management practices for the utilization of trained personnel. On the central level, financial resources are allocated for land use planning and equipment is provided, but both are poorly managed and difficult to access. Local level institutions lack human resources, financial resources and equipment. Generally, capacities for land use planning are hampered by poor management skills rather than lack of resources.

Ideal situation: In line with the revised structure for land use planning, the relevant institutions are provided with qualified staff in sufficient number and a human resource management strategy is implemented. Terms of reference are clearly defined for each staff member and clear mandates and responsibilities are given to the different institutions involved in LUP.

How to reach this situation? A project on "modelling land use planning" includes a capacity building component for the steering and coordination of Integrated Land Use Planning. Individual roles are assigned to the staff of the relevant institution. Guidance and training-on-the-job of assigned staff aim at strengthening the capacity to coordinate the land use planning process. Further capacity gaps are identified and covered through external training. Resource needs and project planning are included in the capacity building component.

c) Process guidance:

There is a lack of awareness and a lack of guiding principles on how to carry out LUP in Namibia. This refers to the private sector as well as to the public sector. Thus, each NGO, consultant or other institution is carrying out land use planning in different ways with different objectives. This results in a patchwork of incomparable land use plans.

Ideal situation: Land Use Planning Guidelines for Namibia should give clear direction for the process of LUP. The responsible authority will approve the LUP Guidelines.

How to reach this situation? In a first stage, a strategy and appropriate instruments for land use planning are developed and tested during the formulation of a land use plan for a first pilot region. The entire planning process is documented in detail for the subsequent formulation of guidelines for LUP. In the second stage, the LUP process will be replicated in a second pilot region and revised if required. The third stage includes the finalization of Land Use Planning Guidelines and their approval.

d) Decentralization:

Although a decentralization policy is in place (1996), its implementation is weak and the responsibility of planning and managing land resources is not decentralized properly. Instead, top-down approaches for planning and decision-making are still considered appropriate by central decision-makers. Budgets are not linked to land use planning, which makes them difficult to implement.

Ideal situation: The decentralization policy is implemented and includes the transfer of decision-making powers and responsibility for land use planning and its implementation to the local level. It also considers the transfer of financial resources for plan implementation.

How to reach this situation? The implementation of the decentralization policy is supported by various donor agencies. For the specific case of land use planning, it is envisaged to identify an existing government institution that could be tasked to coordinate local level land use planning. This would be the Regional Councils, which are decentralized, composed of technical staff from the various sector ministries and tasked with the for-

mulation of Regional Development Plans. The latter would also support the synchronization of land use planning and development planning. In addition, the Regional Councils will be provided with a (limited) budget to implement land use plans.

e) Participatory involvement and "bottom-up" approaches:

Civil society involvement and the integration of different planning levels are generally weak. Only "selected" stakeholders are involved in LUP and participatory instruments (e.g. "consultations") are not used seriously. "Bottom-up" planning approaches are not being implemented because of a shortage in local land use planning activities and the lacking integration in public sector planning.

Ideal situation: Participatory planning tools are developed, tested and documented in Land Use Planning Guidelines. Participatory planning facilitators are qualified to moderate participatory land use planning workshops.

How to reach this situation? The development of participatory planning tools is part of the development and testing of planning instruments (see above). An external consultant will support the development of participatory planning tools for the specific case of Integrated Land Use Planning in Namibia and will train a pool of facilitators for participatory planning. The trainers will be recruited for further land use planning projects.

f) Access and management of information relevant to planning:

Even though relevant data for planning exists, the data situation is chaotic (unorganized data, no data documentation etc.), regulated data sharing is not practiced and the understanding of the importance of information for LUP is limited. This makes it rather difficult to access reliable data for LUP. A key role for spatial data maintenance is given to the Department of Survey and Mapping (DSM) under the Ministry of Lands and Resettlement. However, the responsibility of the DSM to provide spatial data for decision-making and planning has not been taken up. As a consequence, institutions acquire their own data through other sources and apply their own standards, leading to the present chaotic situation. Thus, the core problem is a lack of coordination to harmonize and document the vast amount of available data, not the lack of data as such, as in many other developing countries.

Ideal situation: A "data clearing house" will define data standards and data sharing regulations. Monopolization will be avoided and relevant data is made available to the public.

How to reach this situation? A standardized structure of a GIS database for a pilot region is being developed and the respective database established. This "Regional LUP GIS" is thoroughly documented and will be replicated for all regions in the country. The documentation includes the structure of the GIS, required data and data sources.

g) Sector integration:

Sector approaches to planning are common. Coordination with other sectors is either non-existent or deficient. Overlapping or contradicting land use allocation is the consequence. Integrated Land Use Planning is not used to integrate sector approaches because of the neglect by the MLR. This results in newly created land use related conflicts.

Ideal situation: Land use planning integrates all sector plans and is in line with development plans. All sector institutions seek approval for their sector plans from the relevant institution responsible for land use planning.

Desertification and informal land development – consequences of the lacking land use planning

How to reach this situation? The Steering Committee for Land Use Planning involves representatives from all sectors. Before entering into participatory planning exercises, all sector plans, development plans and other relevant plans are identified and reviewed. Relevant projects derived from these plans are mapped and conflicts are clearly demarcated. If possible, the conflicts will be resolved through dialogues triggered in the Steering Committee. One core output of the land use plan will be a zoning map with related zoning regulations. Each land use zone is to be approved with a signature from the responsible sector ministry.

h) Existing plans:

"Integrated Regional Land Use Plans" (IRLUP) are available for eight of the 13 Regions in Namibia. However, these plans have severe shortcomings and are not considered for implementation nor are they in line with other plans. These IRLUPs were prepared because the National Development Plan designates the MLR for this accomplishment. Thus, the existence of the IRLUPs is hardly known and IRLUPs are formally approved for only two regions. Other land use plans are prepared under guidance of the Ministry of Environment and Tourism (MET), with the objective of conservation management in protected areas. Furthermore, some NGOs are carrying out local level land use planning without involving the public sector and without budget for implementation.

Ideal situation: Integrated Regional Land Use Plans are prepared for all 13 Regions through participatory "bottom-up" procedures. The IRLUPs are used as a binding instrument to allocate and manage land uses. They consider future scenarios and zoning regulations, are homogeneous, comparable and serve as basis for a National Land Use Plan. Plan implementation, update and monitoring will be coordinated by the MLR in cooperation with the relevant central and local institutions.

How to reach this situation? The project on "modelling land use planning" under the MLR aims at developing a new replicable strategy for land use planning in Namibia and the strengthening of capacities. For that purpose, two pilot regions are selected to test and implement appropriate planning tools, eliminate the shortcomings and present the land use planning process as a showcase. The "modelling project" is supported by GTZ on behalf of BMZ.

A 2 Land Use Planning in Guatemala and El Salvador: Successful Reconstruction and Disaster Risk Management

Initial situation:

Due to the extension of settlement and agricultural areas into risk areas as a consequence of a lack of access to suitable farmland, the rural poor in Guatemala and El Salvador are very vulnerable to frequent natural disasters such as thunderstorms, floods, landslides, earthquakes and volcanic eruptions. In 2005, Hurricane Stan killed more than 2000 people and destroyed the livelihoods of many more.

Methodological approach: participatory risk mapping and analysis

The project for reconstruction and disaster risk management in Central America after Hurricane Stan (RyGRAC) started in February 2007 with workshops at village level. Villagers, representatives from the municipal administrations as well as from national institutions and from RyGRAC[4] participated. During these village workshops – in total 34 – the existing natural risks and the vulnerability of the population were identified, examined, discussed and prioritized based on a risk analysis. The results have been marked on risk maps and documented.

In a second step of the village workshops, measures for risk reduction were identified based on these risk maps, e.g. terraces, tree and bamboo lines for slope stabilization. In the same workshop context, these often heavily discussed proposals were discussed and prioritized, their feasibility checked, and in a final step, the date for implementation and the participation and contribution of villagers, municipal administration and the project were defined and agreed upon bindingly.

The rapid implementation of tangible protective measures created the confidence necessary for efficient cooperation. This permitted the project team to give advice on planning and investment processes at the municipal level. The objective was to identify and map all risk areas in the entire municipal territory (about 200 km2). During an extended workshop with representatives of all villages, the already existing village risk maps were complemented with the information on risks of the villages not yet in-

4 RyGRAC was implemented by GTZ on behalf of BMZ.

cluded. For this purpose, villagers and municipal technicians identified and marked/mapped the risk areas (prone to floods, landslides or forest fire) as well as the infrastructure and production areas at risk on the base of aerial photographs in the scale of 1: 5.000–1: 25.000. This information on the sites at risk was then digitized, plotted again and is now at the municipal administration's disposal for their territorial planning as well as for the planning of infrastructure and protective measures on larger scales. This can prevent the construction of water supply infrastructure, roads, bridges etc. on locations at risk.

Concurrently, municipal administrations and the national planning authority SEGEPLAN (Guatemala) have been supported to develop disaster prevention oriented planning methods that include risk analysis and risk maps as an integrated part of the infrastructure planning at the municipal level. This enables checking the risk potential of existing and future infrastructure and production areas and identifying protective measures to reduce these risks.

Participatory risk mapping during a risk-analysis workshop at village level


Measures to stabilize slopes, and ...


... terraces and protective walls made from old tyres to protect farmland and roads

Relevant complementing measures and tools:

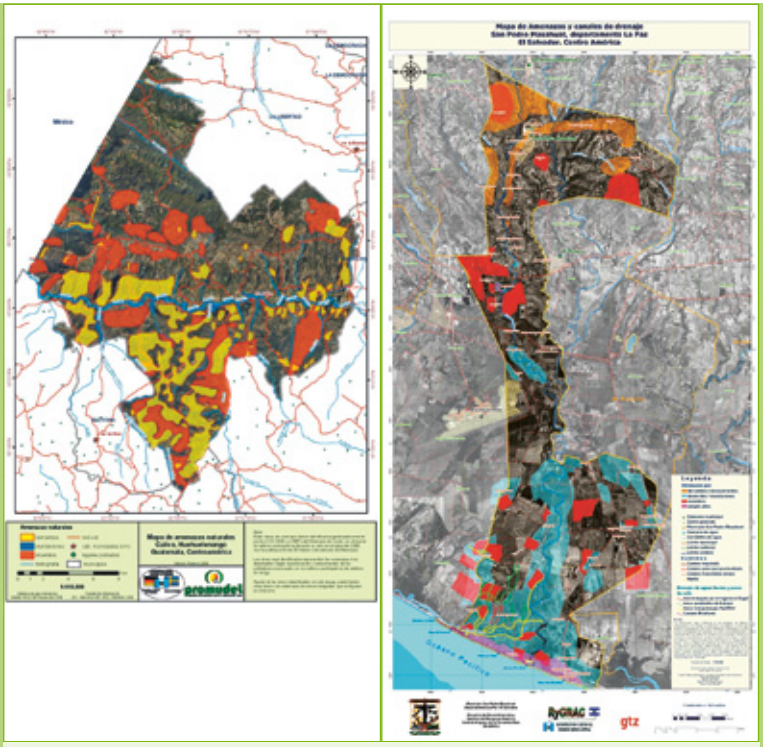
1. Preparation of contingency plans and respective training;
2. Implementation of early warning systems;
3. Drills;
4. Training and equipping of emergency committees;
5. Agricultural advice on the diversification of agricultural production to stabilize and diversify family incomes.

Impacts achieved:

1. Sustainable rehabilitation of the livelihoods of 1700 families;
2. Protection of about 4500 families from future floods and landslides through the realization of protective constructions along river banks and on hillsides;

3. More prevention oriented risk awareness among the population and responsible institutions;
4. Improved local capacities (planning instruments, trainings, organizational capacity, technical know-how etc.) for the protection from future disasters.

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	1 month per village 3–4 months at municipal level	1 month–1,5 year	1–2 years
Costs	USD 300 per village for maps, material, documentation, travel costs etc. USD 4.000 for risk map at municipal level plus costs for aerial photograph	Most measures generally cost between USD 200 (stabilization of slopes) and USD 1.000 (road fixing). Major constructions such as river bank reinforcement cost up to USD 50.000.	No costs
Human Resources	3 experts from project 2 municipal planning experts, representatives from village development councils and villagers	Small measures require one expert for 1–7 days and up to 20 villagers. More complex measures can require up to 135 working days of experts and support from municipality and project	



Participative risk maps at municipal level as base for land use planning

Reflections/Lessons learned/Critical assessment:

1. Without the presence of the project, the above-mentioned progress and impact would not have been possible;
2. The rapid implementation of tangible and effective measures based on participatory planning created confidence in the approach and motivated/mobilized the population and administration to increase their contributions allowing the project to decrease their input;
3. Due to political as well as weather conditions, a high level of flexibility in planning and implementation is necessary for success;

Bank reinforcement to protect settlements, agricultural and forestry areas from floods

4. Locally adapted, simple, cost efficient and effective methods and instruments create ownership and thereby sustainability;
5. There are no “Blueprint” solutions or models. Each measure has and needs to have its own history and reality. This requires a management of diversity.

A 3 Land Use Planning in Peru: Connecting People and Resources

Mapping Resource Uses and Community Strength to Ensure Sustainable Use of Resources within Conservation Areas

Initial situation/problem:

In the mountainous region of Peru, a national park was established in 2001 – the Parque Nacional Cordillera Azul covering 1.3 million hectares. As the area was not categorized and delimitated as protected area before, a lasting and strong relationship between the national park and the local people had to be established and trust had to be built. Furthermore, information was needed to design the management plan (called master plan in Peru). At that time, there was no planning process in place which defined how to use natural resources in a sustainable manner. In many cases, there was no sense of the value of biodiversity and the need to protect and conserve certain areas throughout the communities that live close to or in the park.

Objectives:

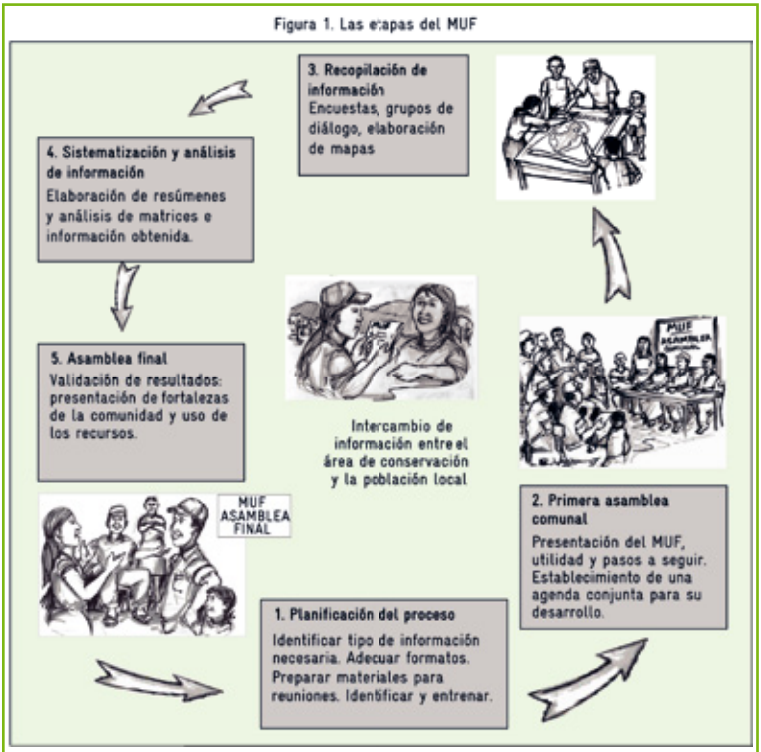
The goal was to identify a mechanism to ensure the sustainable use of resources within the conservation area Parque Nacional Cordillera Azul or, in other words, to prevent and avoid overuse and exploitation of natural resources and the consequent deterioration of biodiversity within the park. In more detail, the following objectives had to be achieved:

1. Exchanging information between all stakeholders;
2. Giving communities the opportunity to reflect on their daily reality and to discuss advantages and benefits of the conservation area;
3. Building a strong relationship, strengthening dialogue among all actors involved (local communities, local government, regional government, staff of national parks, etc.);
4. Creating positive attitudes towards conservation and protected areas;
5. Integrating this feedback and thereby socioeconomic, social and cultural characteristics into the master plan “Plan Maestro” and using it for the management plan of the area;
6. Managing the conservation area together with all stakeholders to conserve and protect the natural resources and at the same time to maintain customs and culture of the local population.

Methodological approach:

To achieve these objectives, a special kind of land use planning was developed focusing on the use of natural resources from the conservation area and on the socioeconomic, social and cultural strengths of the community[5]. The method is now known as mapping of resource use and community strengths (Mapeo de Usos y Fortalezas, MUF).

Main steps to map community strengths and resource use in Peru



Source: INRENA – CIMA – The Field Museum – PDRS/GTZ 2008

5 This process was supported by the GTZ Program for Sustainable Rural Development (PDRS) on behalf of BMZ.

The general concept of Strengths and Resource Use Mapping is to obtain information about socioeconomic and socio-cultural characteristics as well as the actual use of resources in the area, and thus get to know which potential challenges and obstacles could be faced regarding conservation and protection of the respective area. The concept focuses more on the strengths of the communities and less on the weaknesses to foster those strengths for an improved management and use of natural resources within the conservation area.

To ensure a participatory approach, all stakeholders and interest groups are involved in mapping the strengths of the communities and the resources they use. These include:

1. Local communities and population;
2. Facilitators (members of the communities selected by the same communities to gather all relevant information);
3. Supporters (from the team that is responsible for preparing the Strengths and Resource Use Maps; they support the facilitators in their methodology and systematize and analyze the information gathered);
4. Technical team of municipality or NGO or other responsible bodies (to ensure that the product is suitable for further technical proceedings or the "Plan Maestro").

The various actors and stakeholders involved have certain tasks and responsibilities assigned to them. A crucial part is the participation and engagement of the local population throughout the process but especially for gathering all the relevant information so that there is a valid basis for further decision-making. Every community assigns facilitators that will be trained by the relevant institution or organization responsible for the realization of the Strengths and Resource Use Maps. The local, regional and national government officials and technical teams have to ensure the political decisions and the formal requirements to realize the Strengths and Resource Use Mapping and implement the outcomes.

The process of mapping community strengths and resource uses consists of the following main steps (see figure on page 241):

1. Process Planning: identify what information needs to be gathered and which communities to be targeted and involved in the process (closest

to or inside the protected area), adapt format for information gathering if necessary, design a way to systematize information, prepare material for meetings, identify and train facilitators, etc.;
2. First general meeting: present the concept of Strengths and Resource Use Mapping (MUF), establish schedule/agenda;
3. Compilation of information: interviews, dialogue groups, elaborate maps, visits of the facilitators by the supporters;
4. Systematization and analysis of information (in situ);
5. Final meeting: validation of results, presentation of strengths of communities and use of resources.

After the collection of information, the team may go back with the final and integrated analysis (mostly maps) of the whole area or sector. This phase helps to build on the universal view of the area, in spite of their cultural diversity, especially when the protected area is large.

There are different methods that can be used by the facilitators to gather information, depending on the information requested and the resource persons addressed (e.g. meetings, structured interviews, and dialogue groups focusing on different topics).

Participatory planning work-shop to define the use of a municipal conservation area, Peru

This information will be structured and visualized using thematic maps for each relevant topic and then put all together in the end to get a comprehensive view of the situation. This structured information can then be used as a basis for the planning process. In the case of Parque Nacional Cordillera Azul, a database was produced to organize the results and maps were generated.

This methodology is a combination of tools for participatory appraisal that was first applied by The Field Museum of Chicago and then adapted by the conservation centre CIMA for a large rural area in the Peruvian Amazon mountain forests and lowlands, including park and buffer zones covering 35,000 km^2.

Complementing measures:

1. Basic and advanced training;
2. Income generating measures;
3. Start-up financing (via competition);
4. Organizational consulting.

Impacts achieved:

People inhabiting the park surroundings became aware of its existence and general rules, the "protection myth" was broken and people became engaged with the protection of the park. For instance, up to now, some of those trained as "facilitators" still call the park's office to announce threats. Several of them gained experience and have become local authorities, too.

Some communities have organized themselves to harvest the fauna in the buffer zone in a sustainable way. Others are now working on land use planning of their communities and individual plots.

After the first Strengths and Resource Use Mapping, the park zoning was implemented without conflicts with local people.

Illegal logging inside the park was controlled and the law reinforced using the information gathered with the help of Strengths and Resource Use Mapping (MUF).

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	2–3 months for designing the first time 2 months for gathering information 2–3 months for entering data, analysis and producing maps of synthesis		
Costs	Designing the methodology and manuals, and first sampling (52 communities): USD 40,000	Total cost of master plan, approx USD 200,000	USD 15–20,000
Human Resources	3 consultants for capacity building and tool design; 10 supporters, 52 facilitators (local)		About 12 supporters

Reflections/Lessons Learned/Critical assessment:

MUF analysis can be expensive, in terms of human resources for the analysis for small local areas. One way around this would be to train regional teams that could help municipalities with the GIS, databases and other capacities for the analysis.

Information gathered by MUF is not 100% accurate. Although rural people tend to communicate better among themselves, it was necessary to contrast with other sources to make sure the information reflected reality. The followers' team will be crucial at this point and during the sampling, as they can also improve the quality of the information gathered (through visits to the sites).

Smaller areas will require a minimum staff with the following skills:

1. Coaching local people on facilitation and techniques to gather information;
2. Managing technical issues and analyzing (database, GIS, mapping);
3. Easily synthesizing and communicating the results.

Further reading

INRENA – CIMA – The Field Museum – PDRS/GTZ (2008): Caja de Herramientas para la Gestión de Áreas de Conservación. www.renacal.org.pe/portal/node/100.

A 4 Land Use Planning in Bolivia: Combining Watershed Management, Disaster Risk Management and Food Security

Initial situation:

Increasing risk of droughts due to changing rainfall patterns puts at risk the livelihood and food security of families in the area of Norte de Potosi in Bolivia. Compared to previous years, the rainy season today starts later and is shorter which leads to water deficits during planting and harvest time. In addition, rainfall now is heavier than before, creating erosion and landslides and resulting in loss and degradation of agricultural soils.

Objective:

The objective was to reduce vulnerability to natural hazards by enhancing self-help capacity of local farming communities in order to protect production bases such as land, water and soils.

Methodological approach:

Land use planning was introduced at the municipal level to identify measures to reduce drought risks such as water reservoirs and micro irrigation systems and to discuss where they could be realized. Community, municipality and beneficiaries jointly planned, and implemented the measures supported by the development project and now continuously evaluate them. The process combined participatory methods such as PRA and communal planning tools with input from experts who for example did the technical design. During the land use planning, municipality and local population have also been trained in participatory risk analysis and rapid identification of measures.

Relevant complementing measures and tools:

Water harvesting, erosion control, improvement of agricultural practices, complementary irrigation practices and land conservation measures.

Impacts achieved:

1. Secured harvests;
2. Strengthened community organizations;
3. Improved food security;
4. Risk awareness of communities and municipalities to natural hazards;
5. Complementary irrigation.

Land use planning workshop in Bolivia

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	8 months	3 years	
Human Resources	1 international expert 5 technicians 2 administrators	1 international expert 5 technicians 2 administrators	

Reflections/Lessons learned/Critical assessment:

Real participatory planning at all steps of the project is essential to achieving sustainability of measures. Joint planning, implementation and evaluation by beneficiaries and the project-assisted municipality enhance appropriation of development measures by the target groups.

A 5 Land Use Planning in Tonga: Saving Coastal Areas – Adaptation to Climate Change

Initial situation:

The village of Kolovae, Tongatapu, sits less than 5 m above sea level, making it most vulnerable to inundation and flooding associated with climate change and sea level rise. The soils have a relatively low water-holding capacity and groundwater is affected by saltwater intrusion during droughts caused by El Nino Southern Oscillation (ENSO). As most households are subsistence farmers, food security is threatened by these vulnerabilities.

Objective:

The objective is to increase the resiliency of Kolovae households against the impacts of climate change and climate variability through participatory and integrated land use planning.

Methodological approach:

Besides adaptation technologies, integrated land use planning underpins the activities for Kolovae. The approach allows the integration of different sectors to address all relevant aspects including cross-cutting issues. The approach includes the following activities which are supported by GTZ on behalf of BMZ:

1. Participatory rural appraisal and a baseline survey of the area identifying the social and cultural needs as well as socio-economic and ecological demands of the community and social vulnerability;
2. Community appraisals and consultations supported by technical information which are presented wherever possible in form of simple diagrams, pictures and maps for easy understanding;
3. Climate projections which (due to a lack of historical data) are generated from both local knowledge and existing scientific data;
4. Technical surveys of the area to determine and confirm site vulnerabilities;
5. Climate impact analysis based on both technical information and local knowledge and socio-economic assessment;
6. Participatory mapping of climate impacts and integration into the overall land use plan;
7. Prioritization of adaptation options with the affected communities;
8. Integration of selected adaptation options into the overall land use plan;
9. Digitization and geo-rectification of the land use plan using satellite images and GPS data and integration of all relevant information from community, technical surveys, and scientific data into a GIS;
10. Consultation with all relevant stakeholders for endorsement;
11. Implementation of the land use plan by the local community, with close support from the interdisciplinary taskforce, starting at a pilot site.

Reflections/Lessons learned/Critical assessment:

It is important that the maps generated from remote sensing and GIS can easily be read and understood by locals. This can be achieved by the use of a clear and simple legend and by the overlay of abstract information such as precipitation in the form of transparencies/layers over maps that people can relate to.

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	12 months	18 months	2 months
Costs	50,000 USD	80,000 USD	20,000 USD
Human Resources	Interdisciplinary taskforce, community organization	Local community supported by interdisciplinary taskforce	Interdisciplinary taskforce, community organization

A 6 Land Use Planning in Mali: Young Municipalities Learn to Resolve Land Use Conflicts

Initial situation:

The majority of the rural population in Mali depends on land and other natural resources or more specifically on fertile soils, pastures, forests, water etc. These, however, are becoming scarce due to population increase and changing ecological conditions. As a result land use conflicts arise. Traditionally, land use rules were often limited to a particular group. The creation of rural municipalities (in the francophone context: communes rurales) in the late 1990s in the course of decentralization offers the chance to solve long-lasting land use conflicts through the implementation of communal and intercommunal land use rules.

Objective:

The objective is to solve and prevent land use conflicts at communal and inter-communal level through the cooperation of land users (generally through their representatives; see table below), municipal representatives, traditional chiefs, technical services of the line ministries and representatives of the national state (governors) under the lead and responsibility of the municipality.

Methodological approach:

At workshops with all stakeholders, local land use agreements are defined. During the workshops the following activities are done:

1. Situation analysis: Which resources exist? What are their potentials? What problems and conflicts exist? Where can traditional land use rules be applied? What traditional rules need to be redefined?
2. Mapping the current situation: For a better understanding and to prepare a common ground, the stakeholders document the answers to above questions on a map jointly;
3. Collection of approaches to solving ongoing and prevent future conflicts;
4. Preparation of an action plan;
5. Definition and discussion of land use rules;
6. Agreement on the local agreement by the municipal council and signing (generally in form of thumbprint) by the mayor and all village chiefs – in case of inter-municipal agreements by both/all mayors and all village chiefs (see picture on p. 13);
7. Review and approval of the agreement by the prefect (as representative of the central government) rendering it legally binding.

Once the land use rules have been defined and the agreement or convention is approved, current land use needs to be adapted. As most land use conflicts are between farmers and pastoralists, a major activity generally is the delimitation of the animal corridors. In Bellen, a poor rural commune in the agro-pastoral region around Ségou, animal corridors covering 450 km have been delimitated and marked – using GPS and erecting signs to indicate the corridors (see picture on p. 38).

The users of those agricultural fields that had to be converted into animal routes and grounds around water sources were compensated with new fields that had been cleared and made ready to till collectively. The compliance with the rules and the respect of the boundaries are monitored/controlled by the resource management or nature conservation committees, which generally consist of the local hunter association.

The exact dates of entry and exit for the pastoralists – often coming from Mauritania – are defined annually as this depends on the specific weather conditions that define seeding and harvest times.

Relevant complementing measures and tools:

Informing the public on the process and the final land use rules through village assemblies and the local radio station.

Impacts achieved:

In Bellen, the different land users now use the land without major conflicts. If conflicts arise, the municipality can solve them consensually without involvement of other public authorities or the court. The regulation of the use of timber through newly introduced licenses handed out by the municipality contributed to a substantial increase of municipal revenues as do the fees that are paid by pastoralists driving their cattle on the animal corridors through the area of the municipality. In conclusion, local land use agreements do not only settle and prevent land use conflicts; they can also strengthen the role of municipalities and contribute to democratization.

Municipal assembly

1st demarcated animal road network in Mali

Reflections/Lessons learned/Critical assessment:

Local agreements helped to overcome the centuries old conflicts among local farmers and nomad pastoralists. The new challenge now are foreign investors. Although local agreements are approved by a representative of the national government and are legally binding, there is already a land and agriculture related case in Mali, where land has been leased to a foreign investor, disregarding the consensus of local land users. The investor constructed his office directly on a transhumance corridor and blocked the corridor even more with irrigation channels. A solution to this problem is still to be found. It will probably involve the active participation of the investor in a new land use agreement under the directive of the municipal council(s) of the affected area.

Spreading news and information in rural Mali

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	3 months	3 months	12 months
Costs	154 €	1.356 €	1.614 €
Human Resources	▶ Village chiefs ▶ From each village one representative of the women, one of the young people, one of the stock farmers, one of the farmers and one of the hunters ▶ Local chamber of agriculture ▶ Stock farmers association ▶ Technical services ▶ Municipal council ▶ Consultant and adviser from PACT (municipal support programme)		▶ Natural Resource Management Committee (1hunter, 1 livestock farmer, 1 teenager, 1 woman and 1 farmer) ▶ Municipal Council

A 7 Land Use Planning in Lao PDR: Securing Tenure of Land

Initial situation:

The rural population of Lao PDR has very limited formalised land rights. Land titles have been issued only in urban and peri-urban areas. Cash crop production, commercial plantations and other investments in land are affecting traditional land rights of the rural population and especially of ethnic minorities. Without officially recognised land titles, farmers can lose access to valuable land resources for individual or communal use.

Objectives:

The objective of land use planning at village and village cluster level is to improve land and natural resource management and by zoning the land, prepare for surveying and issuing of land titles as a prerequisite to increased land tenure security in rural villages of Lao PDR.

Methodological approach:

Land use planning was introduced at village and village cluster level to clearly identify village land and village boundaries as well as to classify land use zones in a participatory approach. Based on the land use zones, an overall village land use agreement is signed by the district and village authorities. The final village land use plan and this agreement form the basis for systematic land registration of all state, communal and individual land in the village area. After surveying and registration, communal and individual titles are handed over to the villagers. According to a Decree by the Prime Minister, no land titles can be issued without a land use zoning and land use planning exercise beforehand.

Land use planning has been supported by various projects and donors, amongst others by GTZ on behalf of BMZ. Recently the overall approach has been reviewed and a new manual on participatory land use planning (PLUP) has been published. PLUP is now a national approach which is jointly conducted by officials from the Ministry of Agriculture and Forestry and the National Land Management Authority. Roles and responsibilities of each agency have been clearly defined and the link between PLUP and land registration is clearly described. Standard procedures have been set. However, the approach is kept flexible and offers adaptations for different situations.

Land use planning takes into account the following main principles:

- Participation of local population and all gender groups;
- Recognition of village rights;
- Land use by ethnic minorities must be respected.

The standard procedure consists of the following main stages:

Stage 1: Preparation for participatory land use planning;
Stage 2: Socio-economic, land and forest data collection;
Stage 3: Delineation of village and village cluster boundaries;
Stage 4: Village and village cluster forest and agriculture land use zoning;
Stage 5: Village and village cluster land management plans;
Stage 6: Land data record keeping and digital mapping;
Stage 7: Land registration and titling in rural villages;

Stage 8: Village and village cluster networks & networking;
Stage 9: Monitoring and evaluation.

Relevant complementing measures and tools:

1. Informing peasants about risks in leasing land and doing contract farming and providing them with standardized contracts for leasing and contract farming to enable them to negotiate fair arrangements;
2. Providing agricultural consultation for peasants on sustainable methods concerning cash crop production with special focus on the sustainable use of pesticides to avoid health hazards;
3. Combining village land use plans and district plans.

Impacts achieved:

Land use planning has been implemented in over 90 villages in Sayabouri Province. Up to now land certificates have been issued in 25 villages. In 2010, land titles will be issued in approximately 20 villages.

The new participatory approach of village land use planning in Hadtae

Efforts	Plan Preparation	Plan Implementation	Plan Update
Time	10–12 working days over a period of 2 months per village	Usually 5–10 years with reviews of the plan	Usually after 5 years
Costs	USD 400 per village	Approx. USD 500 per village for systematic land registration; other implementation activities vary and are partly co-financed by projects	Estimated at USD 100–150 per village
Human Resources	Trained district LUP team of 3–4 persons	Village committee; land registration by district land office	Village committee with support by district LUP team

Reflections/Lessons learned/Critical assessment:

PLUP is a proven process and well accepted by the local population. Limited staff resources at district level and difficult logistics in the remote rural areas of Laos still constitute a serious handicap. The issuing of land titles still needs to follow the PLUP work and is not yet fully tested at a larger scale.

A 8 Land Use Planning in Cambodia: Identifying State Land for Distribution to the Poor

Initial situation:

To counter food insecurity and promote smallholder agriculture, the Cambodian government, supported by GTZ on behalf of BMZ, is engaged in the pilot phase of a land distribution program, in which state land is provided to poor and landless or land poor families. After five years of continuous use of these so-called social concessions beneficiaries can become legal owners of the land. Hence state land will be transferred into private property. One of the major difficulties in the realization of the social land concession program is the identification of available and vacant land, which has productive potential. This has several interrelated reasons: First, comprehensive maps, legally binding land use planning and information on state land and its use are still missing. Second, non-transparent and inefficient allocation of state land and lack of coordination between government institutions lead to overlapping claims and conflicts between various state and non-state actors. There is strong competition for suitable land with economic land concessions to private investors on a leasehold basis. The results are numerous so-called "hot spots" – environmentally, economically, politically, socially or ethnically sensitive and/or vulnerable areas. Participatory mapping was used to provide information on vacant land and information on these hot spots. This provides a better basis for decision-making on the suitability of land proposed for social concessions.

Objectives:

The key objective was the identification of available land to support more equitable, sustainable and transparent land distribution processes. According to the multiple challenges, additional objectives have been:

- ➔ to improve coordination and information exchange between government institutions at all levels;
- ➔ to establish a knowledge base on hot spots at provincial level;
- ➔ to enable improved data management through GIS support at provincial/district level.

Methodological approach:

A participatory hot spots mapping project was initiated within the framework of a multi-stakeholder-dialogue approach. The main steps were:

1. Gathering existing data from experts;
2. Compiling and manipulating base data;
3. Presenting and sharing of data at a multi-stakeholder-dialogue workshop with important stakeholders and potential data providers;
4. Follow-up with provincial line departments and additional data collection; cross checking and verification of data;
5. Follow-up with national-level government agencies and NGOs for additional data collection, cross checking and verification of data;
6. Revising and digitizing data received;
7. Organizing and conducting final workshop for the presentation and discussion of the received information with all relevant stakeholders;
8. Updating information and preparing manual, maps and GIS data project.

Follow-up with provincial line departments and additional data collection in Kampong Thom Province, Cambodia

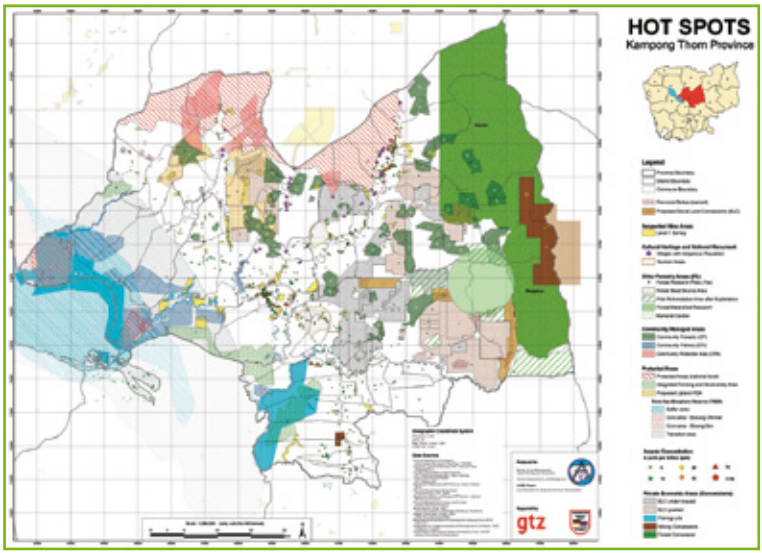
The workshops included authorities from all relevant and influential departments: Rural Development, Agriculture, Forestry Administration, Land Management, Defense (local Military Commander), Fishery Administration, Women's Affairs, Water, Planning, Environment, and Social Affairs (not in order of relevance); in addition the provincial deputy governor, district governors and elected commune council members. Meetings were also held with numerous NGOs on issues such as indigenous lands.

Step 4:
The main outputs of the process are five hot spot maps on specific topics and one overview map:

Hot Spot I: UXO and Landmine Contamination, Bombing, Accidents and Cleared Areas;
Hot Spot II: Hydro Map – Inundation, Potential Flood Areas and Arsenic Concentration;
Hot Spot III: Protected Areas and other Environmental Issues;
Hot Spot IV: Economic Issues, State Land Tenure and Community Man aged Areas;
Hot Spot V: Political, Social and Cultural Issues (national monuments and cultural heritage sites; percentages of indigenous populations in the villages).

All maps include administrative boundaries (with names of districts and communes) and centers (province, district, commune and village) as well as elevation, slope, geology, soil, land cover and topographic layers.

Overview map on hot spots in Kampong Thom Province, Cambodia



Efforts	Preparation and Implementation	Update
Time	10 weeks	Continuous
Costs	app. 10,000 USD	
Human Resources	2 international experts 1 national expert	District Land Management, Urban Planning and Construction's GIS unit

Relevant complementing measures and tools:

Participatory hot spot mapping allows implementers to make a transparent decision on the suitability of land proposed for use as a social land concession at an early stage in the process. But, in a second step, detailed surveys must substantiate the suitability of the area, especially with regard to plots within the area which are previously occupied or used for agricultural purposes by private persons. Final clarification on the legal status of

the land is reached only with systematic/sporadic land registration, which is currently under process in the entire country.

Impacts achieved:

1. Useful reflection of land availability in the province for further investigation and surveying; land for distribution identified;
2. Tool established for identification and initial screening of future social land concession areas (in Khampong Thom and other provinces);
3. Database established. GIS tool together with the collected data is used and maintained by the District Land Management, Urban Planning and Construction's GIS unit; information can be provided to serious requests for land-related information in the future;
4. Trust and coordination between relevant line departments at the sub-national level improved;
5. Awareness and knowledge on landlessness and social land concession program increased;
6. Increased openness for more inclusive processes and realization of possible win-win outcomes in transparent cooperation with NGOs and private sector; groundwork for future cooperation in the land distribution program.

Reflections/Lessons learned/Critical assessment:

With the "multi-stakeholder dialogue tool" governance gaps – characterized by gaps in information and gaps in inclusion – were addressed by providing a transparent procedure for participation. The joint hot spot mapping demonstrated the mutual benefits of information sharing and cooperation. This can be considered a first 'success' for the longer-term multi-stakeholder process on social land concessions.

The hot spot mapping was hindered by lacking data, outdated data, data without date as well as false data (data not in compliance with the real situation on the ground). Including more private sector and NGO partners in the future may further improve the quality of information, and could also help to identify potential partners for the social and economic development of the social concession areas.

Finally, during the process it became evident that it is never possible to gather all information on explosive topics in one fell swoop. Instead, the entire dataset must be continuously updated in the sense of a "living" document.

A 9 List of Figures, Maps and Tables

A 10 List of Boxes

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Published by:
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

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Text and editing
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Design and layout
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As at:
March 2012

Photographs:
All photographs © GIZ. For picture credits, please find the detailed list of photographs in Annex 11, page 265

GIZ is responsible for the content of this publication.

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