

Study on irrigated land tenure in Cambodia and Myanmar

Interim report for Cambodia

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List of abbreviations

ADB	Asian Development bank
AFD	Agence Française de Développement
CAVAC	Cambodia Agricultural Value Chain Program
COSTEA	Comité Scientifique et Technique Eau Agricole - <i>Scientific and Technical Committee on Agricultural Water</i>
CTFD	Comité Technique Foncier et Développement. <i>Technical Committee for land tenure and Development</i>
DS	Dry Season
EAI	Environmental Impact Assessment
F	Flooded
FWUC	Farmer Water Users Community
GIS	Geographic Information System
LA-SSP	Land Administration Sub-Sector Program
MoWRaM	Ministry of Water Resources and Meteorology
MLMUPC	Ministry of land Management, Urban Planning and Construction
MAEE	Ministère Français de l'Europe et des Affaires Etrangères. <i>French Ministry of Europe and Foreign Affairs</i>
MoEF	Ministry of Economic and Finance
MoE	Ministry of Environment
NF	Not Flooded
RS	Rainy Season
SLC	Social Land Concession
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

Introduction

Context of the study

Since the late 1990s, the French Development Agency (AFD) has supported the development of the irrigation sector in Cambodia (Venot & Fontenelle, 2015) and more recently in Myanmar. In addition to significant technical assistance, AFD provides institutional support for the development of public policies related to irrigation.

To inform and capitalize on these experiences, AFD created in 2013 a Scientific and Technical Committee on Agricultural Water (COSTEA), which is coordinated by the French Association for Water, Irrigation, and Drainage (AFEID). *COSTEA brings together a diverse community of experts and aims to contribute to improving the effectiveness of irrigation policies and projects. It is a place for sharing experiences and knowledge, which is opened to anyone interested in part-taking a reflection about how French actors and their partners in the South support the development and implementation of irrigation policies and projects¹.*

As part of its knowledge management strategy, COSTEA has identified the issue of irrigated land tenure as an important field of research. A significant study on the subject was conducted in West Africa - in the context of the Sahel Irrigation Initiative (Hochet, 2015) - and COSTEA wishes to renew the initiative in the Mekong region where AFD is active i.e Cambodia and Myanmar. The idea is to better understand land tenure challenges² revolving around irrigation projects and design an analytical framework that could inform the design of irrigation projects that AFD supports.

The Technical Committee on "Land Tenure and Development" (CTFD) of the French Cooperation is a group of reflection and exchange on rural and urban land issues in Global South (Africa, Asia, and Latin America). CTFD works for more than 15 years under the auspices of the French Development Agency (AFD) and the French Ministry of Foreign Affairs (MAEE). With funding from AFD, the committee is currently piloting the project "Support to the Elaboration of Land Policies" that aims to provide land policy actors with conceptual frameworks and in-depth knowledge to support their reflection³. As such, he plays for the land sector a role similar to COSTEA in the water sector. Collaboration between these two committees is therefore fully justified insofar as the study focuses on the intersection between land and irrigation.

Institutionally, this research proposal is anchored in the work of CTFD and its Asia Working Group in particular. The two researchers who will be in charge of the study will receive support from the CTFD and COSTEA (STP) and their study will be discussed in these two committees.

Objectives of the study

The study aims to understand how land issues arise in a variety of irrigation situations in Cambodia and Burma. In particular, it aims to:

1. Produce a first grid of analysis to address the land issues raised by irrigation projects and the way in which, in practice, the actors respond to them
2. Formulate recommendations on the institutional framework and practices to improve the consideration of these land issues in the design of irrigation schemes
3. Identify topics of study to feed the production of knowledge and exchanges on the issue of irrigated land organized by COSTEA in South-East Asia

¹ <https://www.comite-costea.fr/le-costea/qui-sommes-nous>

² E.g. access to land, land reconfiguration, the recognition of land rights and land tenure security

³ <http://www.foncier-developpement.fr/acteur/le-comite-technique-foncier-et-developpement-de-la-cooperation-francaise/>

Scope and structure of this interim report

The present report is a preliminary contribution to the overall study presented above and specifically responds to the first objective. Due to a slow start and the difficulty to travel across the country due to COVID, the report is entirely based on secondary data and interviews with key stakeholders.

The current report is structured as follows:

In the first section, we characterize the diversity of irrigation contexts in Cambodia by establishing a typology of irrigation systems. The typology is based on agro-ecological variables concerning the context in which the irrigation is situated and technical variables concerning the mode of water control. In the second section, we turn to a discussion about land tenure dynamics in Cambodia and specific land tenure issues relating to the different types of irrigation systems identified above. In the third section, we present a more detailed analysis of the institutional framework governing irrigated land tenure. The discussion is articulated around 5 key themes and includes a review of the legal and institutional framework that prevails, its limitation and shortcoming, and how it is implemented in practice.

1 Characterization of irrigation systems in Cambodia

1.1 Methodological approach

To generalize information on highly diverse irrigation situations, we first identify clusters of irrigation based on agro-ecological variables (river basin boundaries, the incidence and magnitude of floods) and the magnitude of the irrigation schemes (size of the command perimeters and seasonality of agricultural production). We then examine the diversity of irrigation schemes in each cluster based on water control strategies (Figure 1).

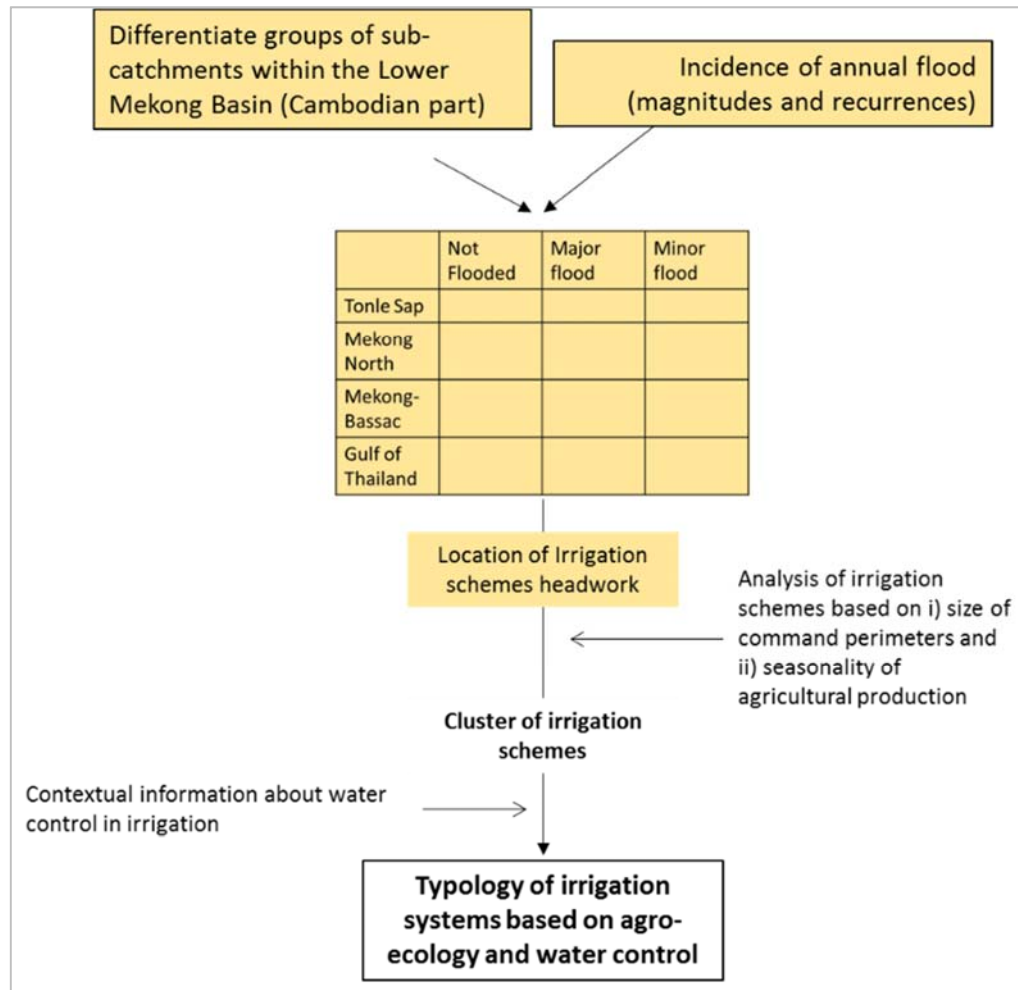


Figure 1: Approach followed to characterize the diversity of irrigation systems in Cambodia

1.2 Mapping and identification of clusters of irrigation systems

Cambodia nearly entirely located within the Lower Mekong Basin. Four main hydrographic regions are identified as groups of sub-catchment areas (Figure 2)

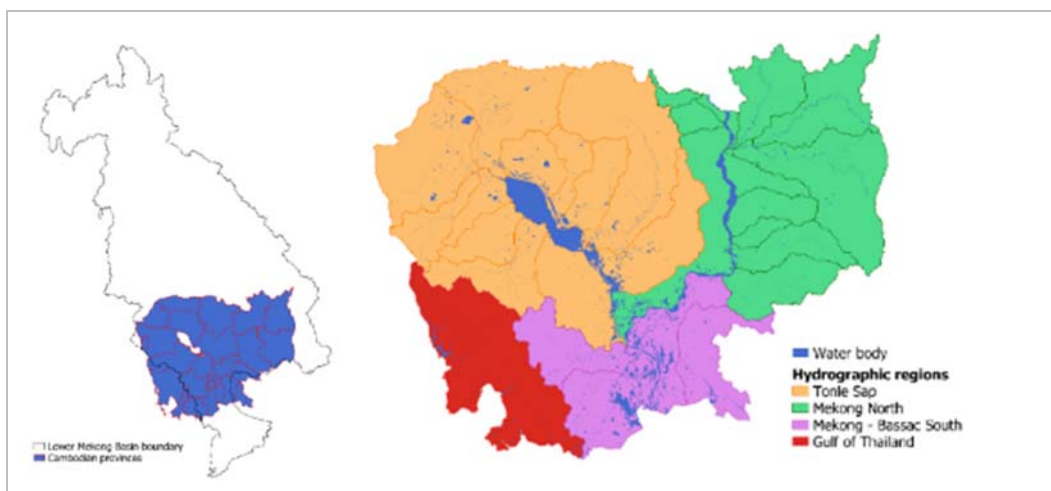


Figure 2. Main hydrographic basins in Cambodia

Data sources: Hook et al 2003 (MRC Interactive Atlas), Aruna technology 2014, ODC, 2014. Mapping: authors

Two main flood areas identified (Figure 3):

- ⇒ Minor flood area with an annual or bi-annual occurrence
- ⇒ Major flood area with occasional occurrence (every 10 to 15 years)

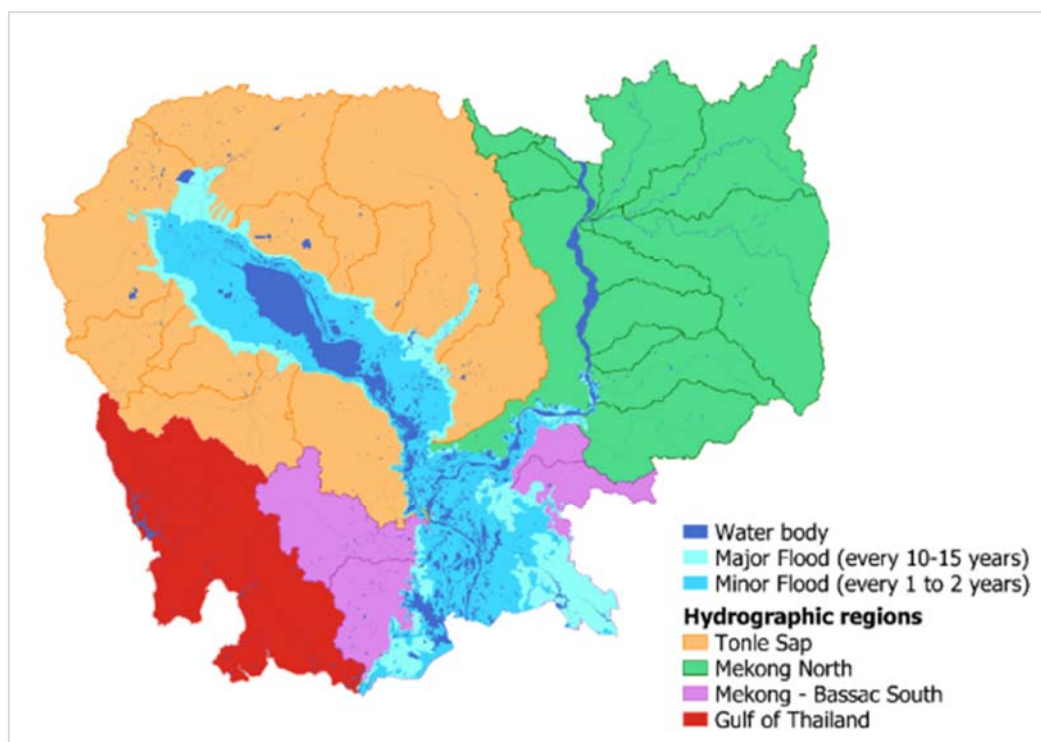


Figure 3. Incidence and magnitude of flood in Cambodia

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014. Mapping: authors

The frequency distribution of irrigation schemes based on the hydrographic region and flood incidence is summarized below and in the following table (Figure 4 and Table 1).

- ⇒ Relatively equal repartition between non-flooded environment (46% of total) and annually flooded environment (43%)
- ⇒ Relatively equal repartition between the Tonle Sap system (40%) and Mekong-Bassac system (42%)

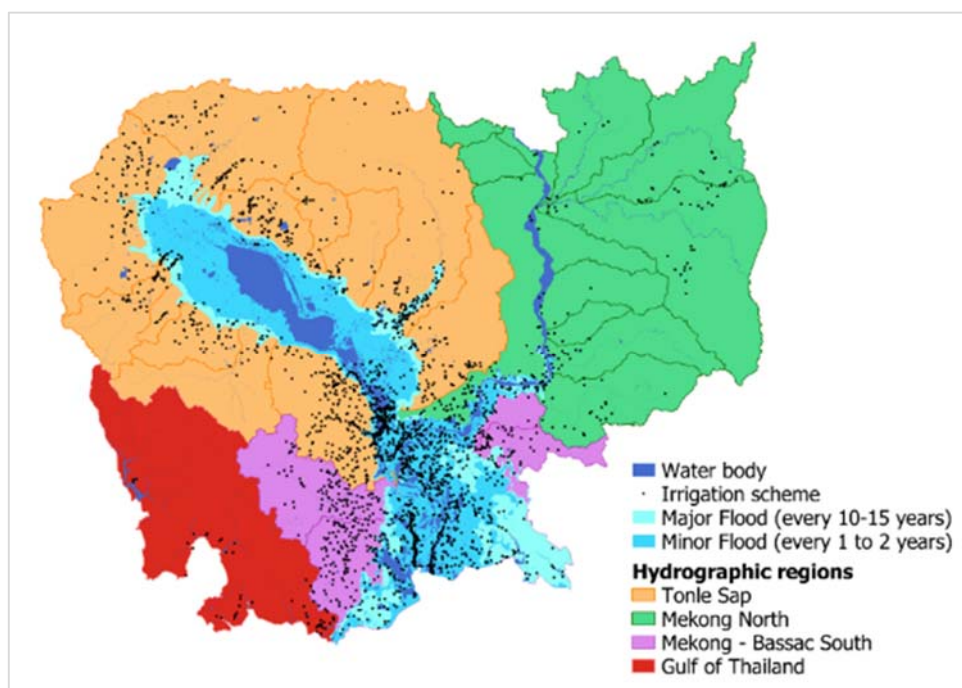


Figure 4. Location of irrigation systems (head work)

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014, CISIS, 2017. Mapping: authors

Table 1. Count of irrigations by hydrographic region and flood incidence

		Not flooded	Major flood only (occasional)	Minor flood (annual)	Grand Total
Tonle Sap	#	661	174	185	1020
	%	26%	7%	7%	40%
Mekong - North	#	160	19	234	413
	%	6%	1%	9%	16%
Mekong-Bassac - South	#	289	98	676	1063
	%	11%	4%	27%	42%
Gulf of Thailand	#	49		1	50
	%	2%	0%	0%	2%
Grand Total	#	1159	291	1096	2546
	%	46%	11%	43%	100%

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014, CISIS, 2017. GIS-based computation: authors

To identify clusters of irrigation schemes, we include the area of command perimeter in the analysis, i.e total area irrigated, area irrigated in Dry Season, and area irrigated in Rainy Season

Frequency. We refer here to an area potentially irrigated as opposed to the area under actual irrigation (Table 2).

Table 2. Main clusters of irrigation systems in Cambodia

		Not flooded	Occasional Flood	Annual flood	Grand Total
Tonle Sap	# schemes	661	174	185	1,020
		26.0%	6.8%	7.3%	40.1%
	Irrig. area in DS (ha)	70,897	21,740	54,367	147,004
		15.1%	4.6%	11.6%	31.4%
	Irrig. area in RS (ha)	574,126	102,826	20,626	697,578
		52.5%	9.4%	1.9%	63.8%
Mekong - North	# schemes	160	19	234	413
		6.3%	0.7%	9.2%	16.2%
	Irrig. area in DS (ha)	12,519	4,329	46,806	63,654
		2.7%	0.9%	10.0%	13.6%
	Irrig. area in RS (ha)	39,597	2,079	2,932	44,608
		3.6%	0.2%	0.3%	4.1%
Mekong-Bassac - South	# schemes	289	98	676	1,063
		11.4%	3.8%	26.6%	41.8%
	Irrig. area in DS (ha)	16,726	32,339	203,237	252,302
		3.6%	6.9%	43.4%	53.9%
	Irrig. area in RS (ha)	113,280	71,957	132,904	318,141
		10.4%	6.6%	12.2%	29.1%
Gulf of Thailand	# schemes	49	0	1	50
		1.9%	0.0%	0.0%	2.0%
	Irrig. area in DS (ha)	5,155	0	146	5,301
		1.1%	0.0%	0.0%	1.1%
	Irrig. area in RS (ha)	32,639	0	0	32,639
		3.0%	0.0%	0.0%	3.0%
Grand Total	# schemes	1,159	291	1,096	2,546
		45.5%	11.4%	43.0%	100.0%
	Irrig. area in DS (ha)	105,297	58,408	304,556	468,261
		22.5%	12.5%	65.0%	100.0%
	Irrig. area in RS (ha)	759,642	176,862	156,462	1,092,966
		69.5%	16.2%	14.3%	100.0%
Grand Total	Irrig. area (total) (ha)	788,466	201,293	415,024	1,404,782
		56.1%	14.3%	29.5%	100.0%

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014, CISIS, 2017. GIS-based computation: authors

Note: 1/ DS: Dry Season – RS: Rainy Season – Irrigated area (total): total agricultural area potentially irrigated
Percentages indicate share of total in category. 2/ Letter assigned to clusters correspond to description given below and those on the map

- ⇒ Total agricultural with potential irrigation is 1,404,782 ha, of which 55% is in the Tonle Sap hydrographic basin, 35% in Mekong Bassac
- ⇒ Potential area irrigated in the rainy season (1,092,966 ha) is 2.3 times more important than area irrigated in the dry season (468,261ha).

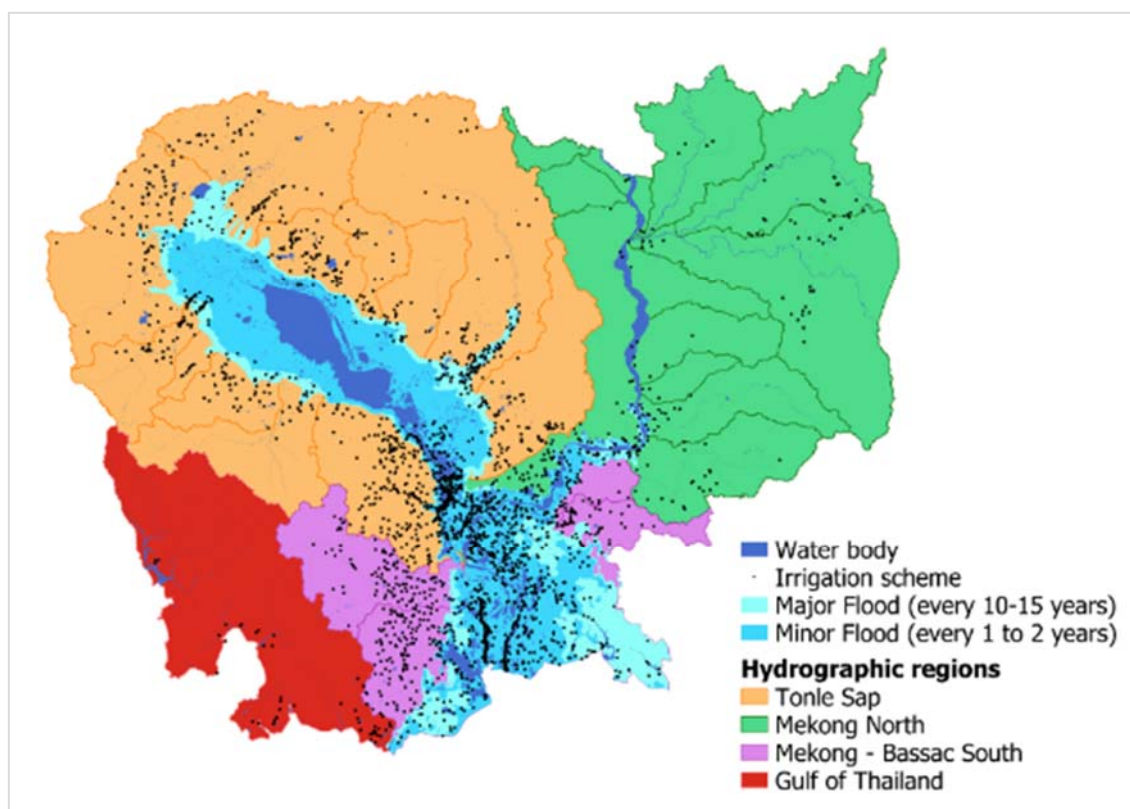


Figure 5. Location of main irrigation clusters in Cambodia

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014, CISIS, 2017. Mapping: authors

Main clusters - from the largest to the smallest irrigated area - are as follows (Figure 5)

1. The most important cluster of irrigation schemes (n=661, 26.0% of total – **595,509 ha** irrigué, 42.4% of total) is in the non-flooded part of the Tonle Sap hydrographic region, and mainly for rainy season agricultural production: 574,126 ha (52.5% of irrigated area in the rainy season and 41% of the total [agricultural] irrigated area). If areas occasionally flooded are accounted for, an additional area of 102,826 ha (9.4% of total irrigated in rainy season) can be added.
2. The second-largest main cluster is in the annually flooded area of the Mekong North and Mekong-Bassac hydrographic regions. It consists of irrigation schemes (n=910, 35.8% of total – **344,352 ha**, 24.5% of total) mainly dedicated to dry season agricultural production: 250,043 ha (203,237 + 46,806) (53.4% of total irrigated area in the dry season)
3. The third-largest cluster (n=289, 11.4% of total – **115,227 ha**, 8.2% of total) is in the Mekong Bassac region as well but in the non-flooded environment (old alluvial terraces of the Mekong) for rainy season agriculture (113,280ha, 10.4% of irrigated area in the rainy season and 8% of the total [agricultural] irrigated area)
4. The fourth-largest (n=185, 7.3% of total – **70,526 ha**, 5.0% of total) are located respectively in the seasonally flooded environment of the Tonle Sap hydrographic region and for dry season agricultural production (totaling 54,767 h, 11.6 % of total irrigated in dry season).

5. The fifth-largest group consist of irrigation schemes located in non-flooded environment of the Mekong North region, in the North-east region (n=160, 6.3% of total – **45,091 ha**, 3.2% of total irrigated), mainly for rainy season production (39,597 ha).
6. The sixth cluster in the list is formed by the irrigation schemes located in the hydrographic region called Gulf of Thailand (n=49, 1.9 % of total – **32,639 ha**, 2.3% of total). These are irrigation schemes that control the water for rainy season production.

1.3 Typology of irrigation systems

In each of these geographic clusters, there is a variety of irrigation systems depending on size, control of water, management, etc. To simplify and generalize this diversity, we propose a general description of one or two irrigation system archetypes of each cluster. Each type is identified with a letter and a number. To link with the cluster analysis above, we differentiate irrigation systems between flooded and non-flooded environment (Figure 6).

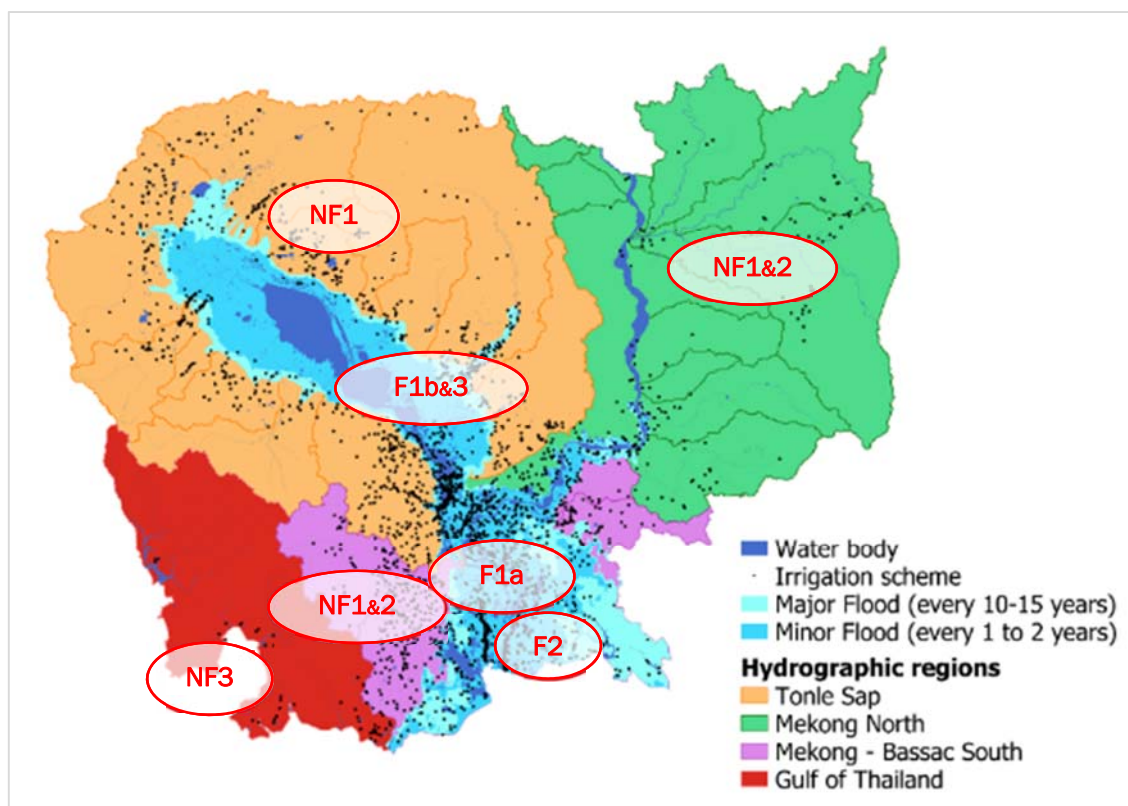


Figure 6. Location of main irrigation clusters in Cambodia
Mapping; authors

1.3.1 In non-flooded environment

NF1 - Systems of water diversion from river or reservoirs with a nested hierarchy of canal allowing for gravity-fed irrigation (and pumping occasionally) used mainly for two consecutive cropping seasons: the early rainy season rice and for the main rainy season agricultural production. To a less extent, this system allows for recession rice in the dry season in lowland areas. The infrastructure is heavy and the control over water management is important. This form of irrigation is typically build to divert the water of Tonle Sap main tributary rivers such as Steung Pursat (below in picture), Steung Chinit, Steung Siem Reap, Steung Mongkol Borey, Steung Sankae, etc. The largest irrigation infrastructure in the country belong to this type.



Pursat (headwork for diversion of river water)



Pursat (nested system of canal and command perimeter)

NF2 - Pumping systems (as opposed to river/reservoir deviation system) with or without canals for gravity-fed irrigation and mainly for rainy season agriculture (in non-flooded conditions). The pumping takes place through a central pumping station that provides water for an entire perimeter⁴. The latter is the system developed by CAVAC (Cambodia Agricultural Value Chain Program). The infrastructure is low key compared with the previous type; narrow concrete-lined canals are preferred to large nested hierarchy of canals. The irrigation system operate in a smaller areas. These irrigation systems are also developed by CAVAC in a flooded environment for dry season production and in other hydrographic systems but are mainly concentrated in the Mekong-Bassac system.

⁴ Wherever there is a supplemental source of water not too far from the cultivated field pumping can also take place privately with low power machine. This type of irrigation can be found basically everywhere across the country.



Kampong Speu (pumping from river but no massive irrigation infrastructure)

1.3.2 In flooded environment

F1 – Built-up system for recession agriculture. Systems based on the control of floodwater and or flood protection schemes. Water is used during the recession of floods with drainage canals and/or water level control dyke allowing for irrigation with individual/decentralized pumping mainly for early season rice (F1a). The infrastructure (primary and secondary annals) is substantial and the control over water management is conducted by entrepreneurs or groups of farmers. Around the Tonle Sap, the built-up infrastructure consist sometimes of a flood reservoir that stock water during the flood for gravity-fed irrigation on large command perimeters during recession (F1b).



Takeo (drainage canal - large scale)



Takeo (drainage canals - small scale)

F2 - Prek. The system of Prek observed in Kandal province, between the Mekong the Bassac Rivers are simpler structure (just one primary canal, no nested network of canals). It irrigates cropping systems oriented towards intensive gardening and vegetable production and not primarily rice-based. Prek are connected through a lake (បឹង - *Boeung*) that receive all outflow water and around which recession rice is usually cultivated.



Kandal (prek systems, just one primary canal, no nested network)



Kandal (prek systems, just one primary canal, no network)

F3 – Low infrastructure systems for recession agriculture. System of partial control of water with minimal to no infrastructure established in flooded lowland environment for dry season production (recession rice). Water flows gradually with the recession of flood. This system is typically found in the flooded environment around the Tonle Sap but also in the southern part of the Tonle Sap flood plain up to the point of confluence between the Mekong and the Tonle Sap rivers.



Kampong Chhnang (recession rice perimeter)



Kampong Chhnang (recession rice perimeter)

1.3.3 In coastal environment

NF4 – Polders. The polder system consists of an ensemble of dikes and drainage canals that prevent from saline intrusion along the coasts and drain the excess water to the sea

2 Land tenure regimes in irrigation contexts: an quick overview

2.1 Methodological approach

We now turn to a short discussion on key land tenure dynamics in Cambodia and how they related to agrarian change across the country. This includes an overview of main dynamic of land use change and the legal pluralism that characterized each land tenure regimes (Figure 7).

Against this backdrop, we then present some key tenure issues that typify each irrigation “type” identified in the previous section. This discussion is structured around three institutional dimensions: the issues at stake and possibly the conflicts, the actors who animate these issues and the institutional context (formal and informal) that frames their behaviors and decision-making.

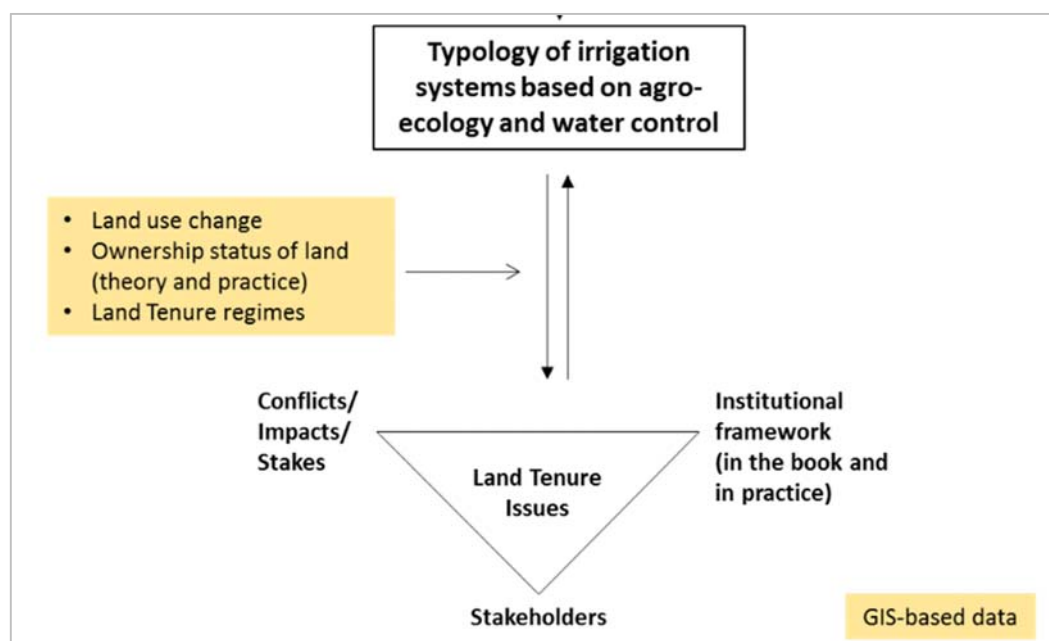


Figure 7. Approach followed to identify the irrigation system typology and discuss corresponding land tenure issues

2.2 Land ownership: private versus state land domains

In Cambodia, full legal private ownership today can originate from possession rights (*paukeas*) on State [private] land that graduates to full ownership under the 2001 Land Law (as well as from sales and donations of State private land by the State or swaps with the State). Under the 2001 law, possessors are people who started occupation of State [private] land in ways that were open, peaceful, continuous, and recognized by local authorities. Once the occupation had lasted for at least five years, the possessor was entitled to ownership. This is the legal basis for the provision of land titles by the cadastral administration under the Land Administration Sub-Sector Program (LA-SSP). However, the 2001 land law does not allow possession to be based on occupation that starts on or after the effective date of the law in 2001 (Articles 30 and 31). This means that the practice of clearing and temporary occupation leading to legal possession that existed in the 1992 law is no longer allowed. In other words, any piece of land cleared after 2001 is not eligible for titling according to the current land law institutions. In practice, the cadastral administration adopt a flexible and negotiated approach when titling occurs but the difference between formal institution and practice is central here. And by extension, all land not cultivated as of 2001 is considered *de facto* as State land.

As far as land titling is concerned, the year 2001 (and august 2001 singularly) is thus a turning point as agricultural land cultivated as of this date roughly delineates the adjudication area for the systematic and sporadic land registration.

Yet, there is not clear authoritative spatial reference used by the cadastral administration to mark this 2001 turning point. To approximate the location and size of this area, it is useful to examine the 2001 Cambodian land cover (Figure 8). By overlaying it with the location of irrigation scheme headwork, it appears that the command perimeters of most irrigation system across the country are located in areas that were under cultivation in 2001, thus are eligible for titling.

The low prevalence of land conflicts in these central areas is due to the fact that these were regions where the decentralized and locally-driven distribution of land to the households by the *Krom Samaki* had allowed the peaceful creation of secured land tenure arrangements. Besides, the granting of Economic Land concessions does not occurs in these areas, which are by large cultivated by smallholder's farmers. We have argued elsewhere that the process of land titling in these areas has not necessarily changed the security of land tenure in these area as the land title has basically reinforced possession land rights that were already secured (Diepart and Sem, 2019).

The main land tenure issues here relate to the process of demographic pressure on land bringing an increasing number of households to live on very small agricultural landholdings (and have little other livelihood options other than leave). The decline of agricultural labor force, the incidence of indebtedness, combined with wealth-biased land market and the increasing intervention of external actors wanting to invest in land (for agriculture production or for mere speculative purposes) result in land concentration.

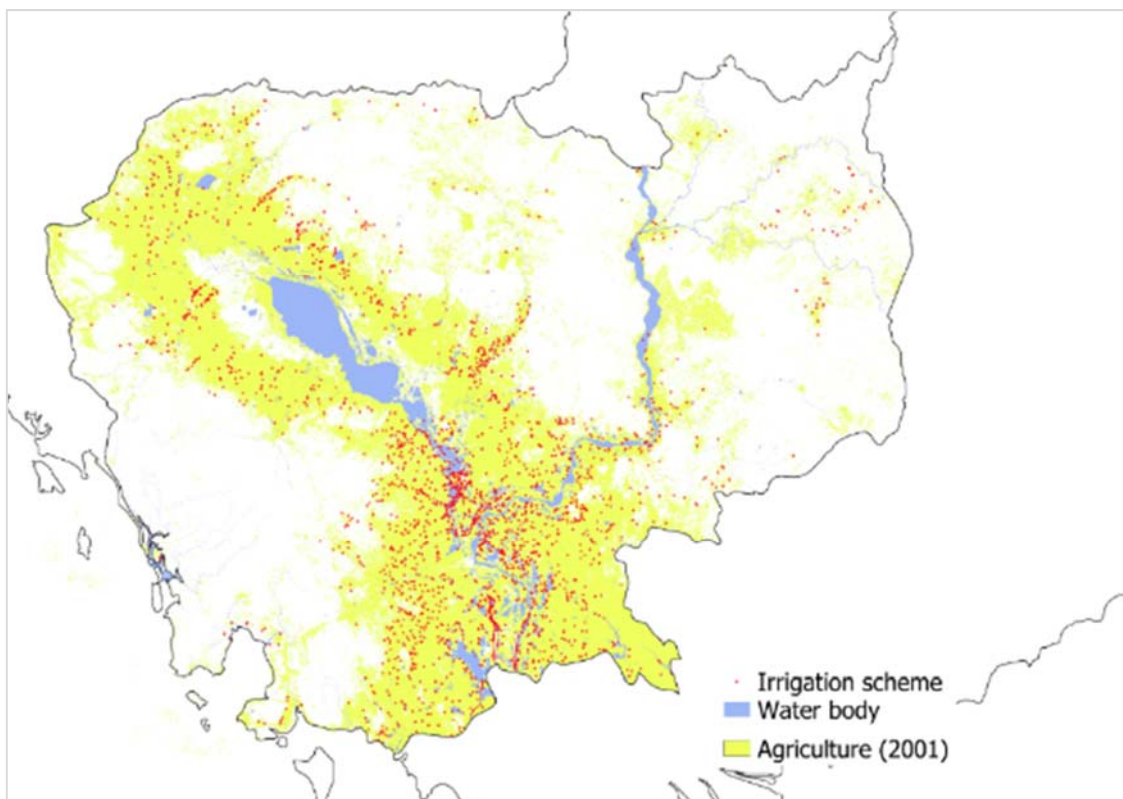


Figure 8. Agricultural areas as of 2001 (year of land law promulgation)

Data sources: Hook et al 2003, Aruna technology 2014, ODC, 2014, CISIS, 2017. Mapping: authors

2.3 The dynamics of agrarian expansion

Processes of agrarian expansion that are relevant to our subject matter have been at play since the promulgation of the land law in 2001 (Figure 9).

2.3.1 Going into flood plains

At the edge of the central rice plain (Tonle Sap and Mekong-Bassac regions), a large agricultural area that used to be cultivated but abandoned during the war was recolonized from the nineties to the early 2000s. This land reclaiming movement went naturally beyond the limit of land previously cultivated into shrub, grassland and secondary forest. The expansion of the cultivated area into flood plain took place at the expense of flooded vegetation (grassland, shrub land, and forest). It is driven by local farmer communities aiming to expand their agricultural landholding but also increasingly by external investors, in what resemble relatively small-scale and opportunistic land pioneers. The typical irrigation system here is **Types F1 and F3** (see above).

In the Tonle Sap flood plain in particular, declared as a Biosphere Reserve by UNESCO and foundational for the livelihood of millions of farmers, land classified as Public State Land. The legal status of land cleared has remained vague until recently as the cadastral administration did not know where to set the limit of the adjudication area. A few years ago, the Tonle Sap Authorities have established a zoning that differentiates between an area of land eligible for land titling (zone 1) and an area where dry season cultivation is allowed if it does not conflict with capture fisheries activities. In this zone 2, farmers are granted with usufruct rights at by local authorities. These rights are less secure than possession and ownership rights and are more easily subject to encroachment or expropriation by the State. In this case, the absence of title means that farmers are not offered appropriate compensation.

2.3.2 Expanding rice plain outward

A similar process of agrarian expansion has been taking place on the other edge of the central plain, towards non-flooded areas. Land transfer in the period that followed the distribution by *Krom Samaki* - particularly in the 1990s - was not well regulated. The possibility for certain households to access land in the forest periphery of the village kept as reserved land by local authorities. Access to this peripheral land - usually located in the surrounding degraded forested - was possible through either reclamation of land (secondary forestland) possessed by the household before the war or was contingent on good connections with the commune and/or district authorities. Power and social relations have played a key role here. Besides, starting in 2001 - when the Land Law which forbade forest land clearance was passed - land was negotiated financially in certain cases with local authorities. Nowadays, the intense land speculation by companies or individuals on State land has made access to additional land by clearing more difficult.

The tenure on these areas is relatively unclear for the reasons explained above. What is typically at stake here is a question at the interface between agrarian expansion, irrigation, and land tenure. The key question being: if the irrigation system incentivizes the expansion of agricultural landholdings into areas classified as State land that are not eligible for land titling, how can farmers obtain some forms of security on their land claims? This is a question particularly relevant for irrigation **types NF1 and NF2**.

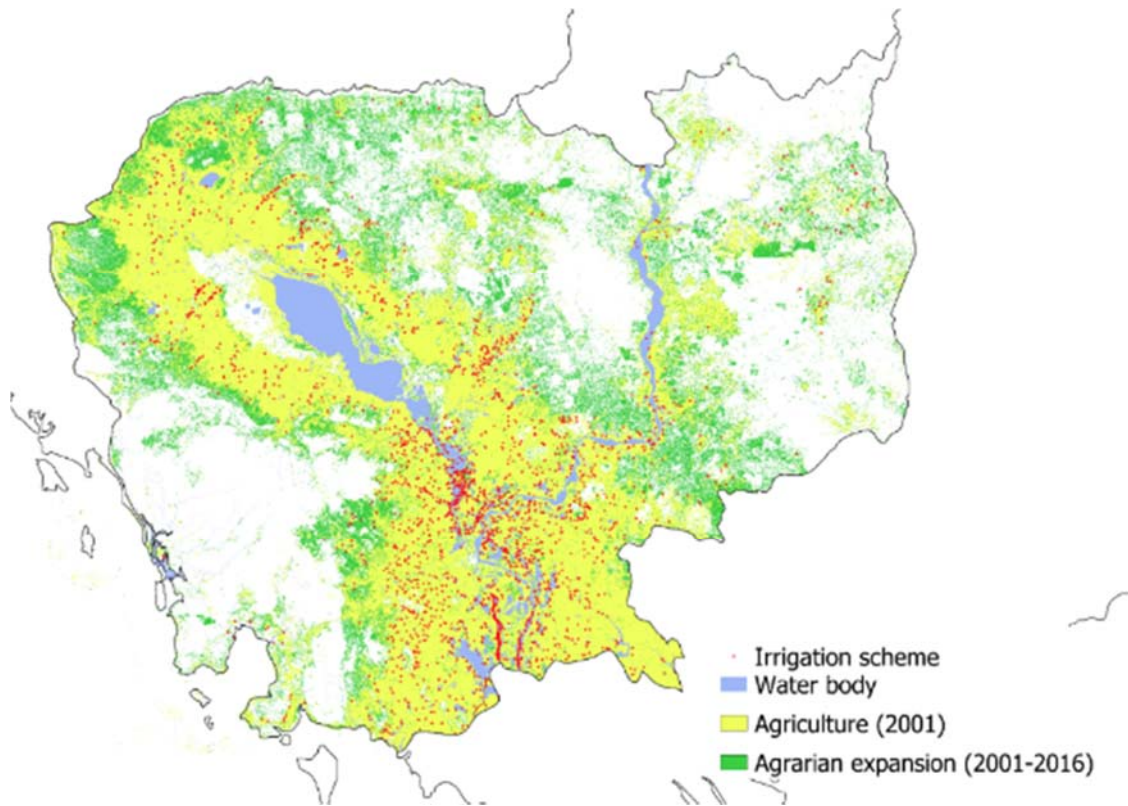


Figure 9. Agrarian expansion in Cambodia (2001-2016)

Data sources: SERVIR, Aruna technology 2014, ODC, 2014, CISIS, 2017. Mapping: authors

2.4 Irrigation and fisheries management⁵

Another issue affecting farmers and the promoters of irrigation is the intricate relation between farmers maneuvering in an irrigated perimeter and the proponent of capture fisheries.

The key set of questions here is how the transition from fishing lots (concessions) to community fisheries is being addressed in policies and on the ground and if/how this transition has an impact on the development of irrigation.

The fishing lots system was a formal arrangement that has framed large-scale commercial fishing activities in Cambodia since the end of the nineteenth century. It was introduced during the French protectorate and has been managed through centralized leasing of fishing rights. It was conceived as a concession model wherein the State leases fishing grounds based on management plans submitted by private entrepreneurs and against payment of royalties to the national budget. As of early 2000, the total area covered by fishing lots in the six provinces around the Tonle Sap lake was 5,178 km² (Figure 10). The lease system worked through a succession of sub-lease contracts so that the area delineated as one lot was actually operated by a range of sub-lessees – under high military control – and often stretched far beyond the lot boundaries.

⁵ The section on fisheries is mainly derived from “Diepart, Oeur and Mellac (2019). Whose commons? A political ecology perspective on fisheries co-management in the Tonle Sap flood plain”.

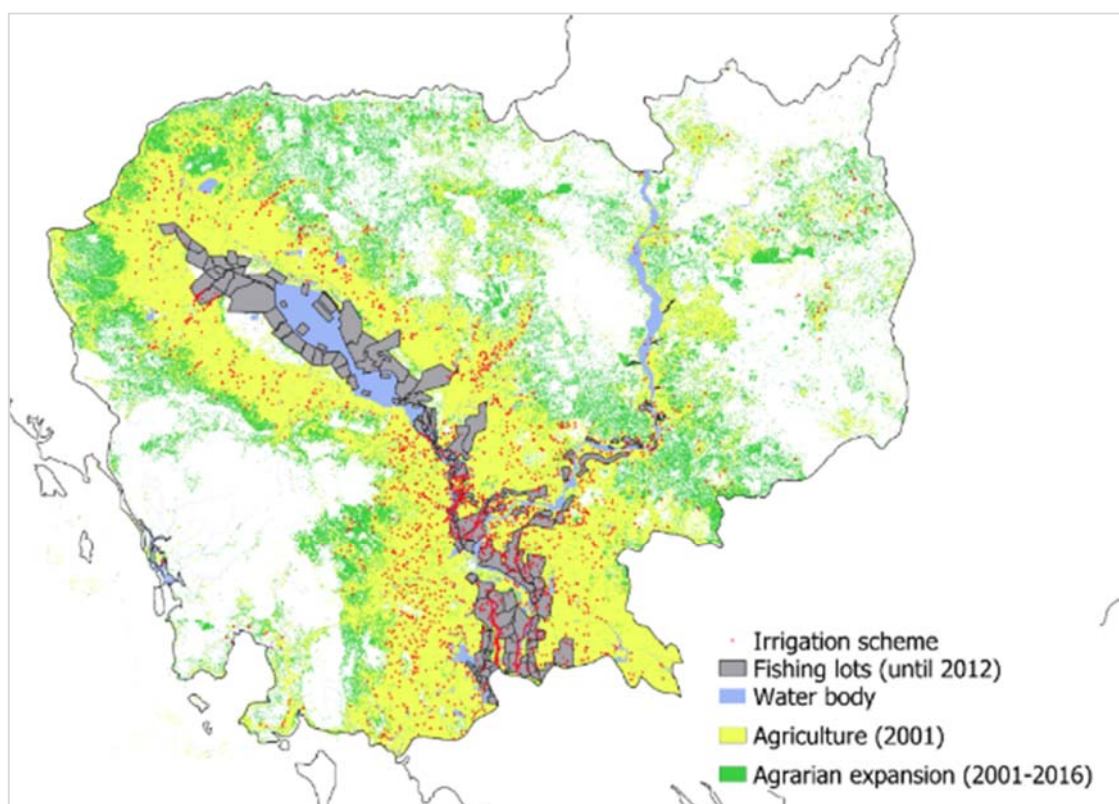


Figure 10. Location of fishing lots in Cambodia (until 2012)

Data sources: SERVIR, Aruna technology 2014, ODC, 2014, CISIS, 2017, FiA. Mapping: authors

In late 2000 however, Prime Minister Hun Sen declared that Cambodian fisheries management was in a state of ‘anarchy’ and initiated ambitious reforms to restructure the whole sector. Through the two-stage reform, fishing lot area was canceled and in areas released from fishing lots, the new fisheries administration established Community Fisheries. Community Fisheries are a co-management arrangement wherein responsibilities and rights over fisheries management are co-produced by a community of users and the provincial Fisheries Administration. The creation of CFIs received keen support from many donors and development agencies. Within a short space of time, a significant number of CFIs were established through a blue-print process including registration of users as members of a community, the election of a local management committee, the development of internal regulations and a management plan, and the signing of an area agreement, which formalizes the transfer of management right from the fisheries administration to the local community. By 2011, 178 CFIs had been created around the lake to cover a total area of 4,580 km² (Figure 11).

Yet, the movement was not the result of the mobilization of small-scale fishing folk: it was driven by the State itself and its foreign development. Furthermore, the decision to cancel fishing lots has opened up an institutional vacuum because it was not accompanied by clear direction as to how these fishing grounds and commercial fisheries, in general, should be managed (CFI are limited to subsistence fisheries activities and not allowed to engage in commercial fishing). In fact, the opening of the fishing frontier created a space for opportunism, attracting commercial middle-scale fishing folk (mostly previous fishing lot owners and operators) who have continued to enjoy tacit protection from powerful people. They are not new actors but they took advantage of the institutional vacuum to pursue their activities and enclose the fishing grounds, using mostly illegal fishing equipment.

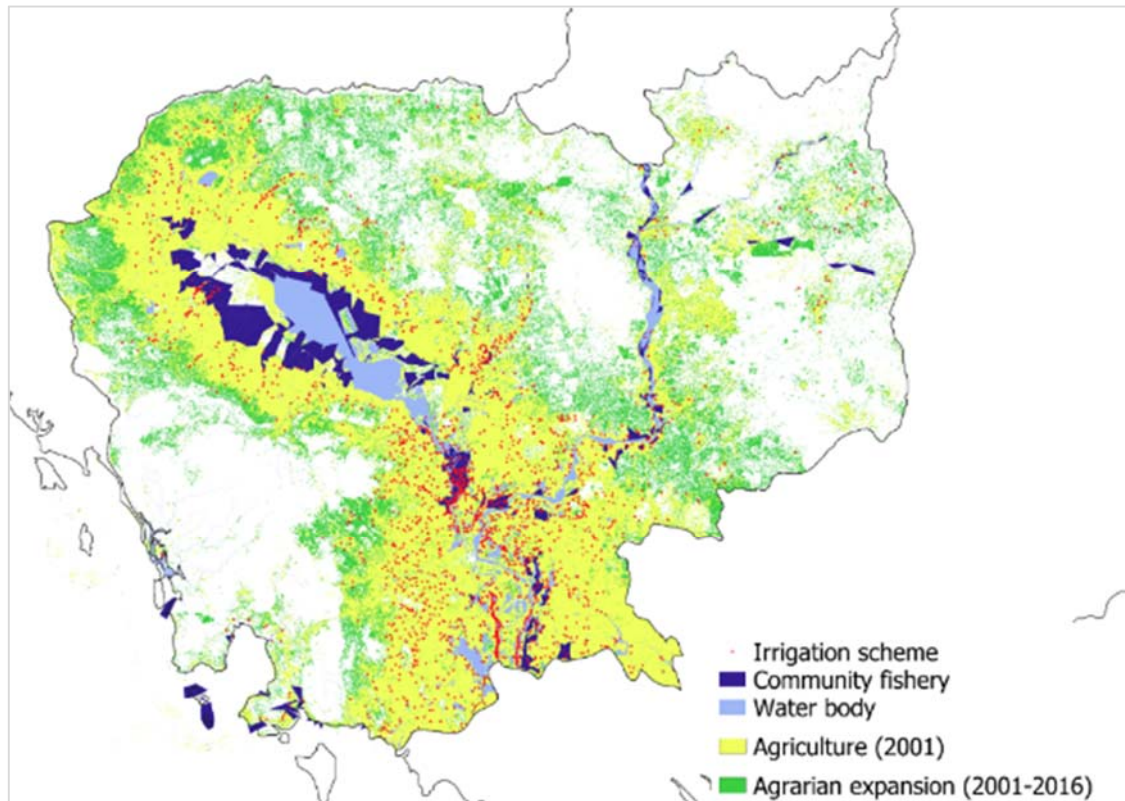


Figure 11. Location of community fisheries in Cambodia

Data sources: SERVIR, Aruna technology 2014, ODC, 2014, CISIS, 2017, FiA. Mapping: authors

The issues at stake here typically occur in **Types F1 and F3** and relate to the contradictions between natural resources governance and land tenure management, both of which being physically and conceptually linked by water management.

The first type of conflict occurring between irrigation and fisheries actors has to do with water management during the dry season when there is a competition over the access to water between fishing folks (dry season is the main fishing season) and irrigation for recession rice or dry season rice. It typically occurs when irrigation is equipped with infrastructure allowing to retain water.

A second issue occurs through the opportunistic and unregulated behavior of actors in the fisheries and irrigation sectors. The cancellation of the fishing lots, particularly in places where they have not been replaced by community fisheries, has given rise to unregulated capture fisheries activities that may have an impact on the availability (in space and time) of water for irrigation (in space and time). The cancellation of the fishing lots has also resulted in opportunistic land clearance to extend agricultural landholdings, which raise a series of question in terms of power dynamics (exclusion/inclusion double-edge), land securitization of land cleared (usually located in State domain), the intertwined process of water and land control, etc.

2.5 Preliminary mapping of land issues in different irrigation context

In an attempt to bring together the different issues described earlier, we propose a preliminary mapping of land tenure issues as they relate to the typology of irrigation system established

Type of IS	Issues at stakes, conflicts	Stakeholders	Institutions
NF1	<ul style="list-style-type: none"> - Construction of irrigation infrastructure leading to expropriation and the need for appropriate compensation. Valuation of local contribution (in land) by farmers - Land-market driven land concentration, in conjunction of indebtedness, mechanization, social differentiation and land speculation - Agrarian expansion into State land and security of land tenure - Urban expansion 	<ul style="list-style-type: none"> - Smallholders farmers contextualized in network of actors - Donors involved in the design and funding of irrigation scheme - Cadastral administration (MLMUPC) - Micro-Finance Institutions - MoWRaM at central and sub-national levels + Farmer Water User Committees - Commune council - Urbanization promoters - External investors on land and agriculture 	<ul style="list-style-type: none"> - Power/patronage networks - Water/Land laws and policies - Land titling guidelines - State land management - Law and guidelines on expropriation - Safeguard policy and due diligence guidelines of donors - Irrigation project/design document - Sub-national and communal development plans - Local land use planning documents - Urbanization policy
F1a, F1b and F2	<ul style="list-style-type: none"> - Construction of irrigation infrastructure leading to expropriation and the need for appropriate compensation - Land-market driven land concentration, in conjunction of indebtedness, mechanization, social differentiation and land speculation - Cross-border land leases - Conflicts farmers-fisher folks (small scale or middle scale/subsistence/commercial fishing) - Urban expansion - Seasonal enclosure of land for agricultural production (and negotiations with fishers, herders) - Opportunistic land clearance and land tenure security - Agrarian expansion into State land and security of land tenure 	<ul style="list-style-type: none"> - Smallholders farmers contextualized in network of actors - Donors involved in the design and funding of irrigation scheme - Cadastral administration (MLMUPC) - Micro-Finance Institutions - MoWRaM at central and sub-national levels + Farmer Water User Committees - Commune council - Community Fisheries - Commercial fishing stakeholders including ex-fishing lot owner/sub-leasers - Fisheries Administration - Urbanization promoters - External investors on land and agriculture, including from neighboring countries through land lease arrangements 	<ul style="list-style-type: none"> - Power/patronage networks - Water/Land/Fisheries laws and policies - Land titling guidelines - State land management - Law and guidelines on expropriation - Safeguard policy and due diligence guidelines of donors - Community Fisheries management plans - Irrigation project/design document - Sub-national and communal development plans - Local land use planning documents - Urbanization policy

Type of IS	Issues at stakes, conflicts	Stakeholders	Institutions
NF2	<ul style="list-style-type: none"> - Land-market driven land concentration, in conjunction of indebtedness, mechanization, social differentiation and land speculation - Agrarian expansion into State land and security of land tenure on State land - Urban expansion 	<ul style="list-style-type: none"> - Smallholders farmers contextualized in network of actors - External investors on land and agriculture - Donors involved in the design and funding of irrigation scheme - Cadastral administration (MLMUPC) - Micro-Finance Institutions - MoWRaM at central and sub-national levels + Farmer Water User Committees - Commune council - Urbanization promoters 	<ul style="list-style-type: none"> - Power/patronage networks - Water/Land laws and policies - Land titling guidelines - State land management - Irrigation project/design document - Law and guidelines on expropriation - Safeguard policy and due diligence guidelines of donors - Sub-national and communal development plans - Local land use planning documents - Urbanization policy
F3	<ul style="list-style-type: none"> - Land-market driven land concentration, in conjunction of indebtedness, mechanization, social differentiation and land speculation - Conflicts farmers-fisher folks (small scale or middle scale/subsistence/commercial fishing) - Seasonal enclosure of land for agricultural production (and negotiations with fishers, herders) - Opportunistic land clearance and land tenure security on State land - Agrarian expansion into State land and security of land tenure 	<ul style="list-style-type: none"> - Smallholders farmers contextualized in network of actors - External investors on land and agriculture - Cadastral administration (MLMUPC) - Micro-Finance Institutions - MoWRaM at central and sub-national levels + Farmer Water User Committees - Fisheries Administration - Community Fisheries - Commercial fishing stakeholders including ex-fishing lot owner/sub-leasers - Tonle Sap Authorities - Ministry of Environment - Commune council 	<ul style="list-style-type: none"> - Power/patronage networks - Water/Land/Fisheries laws and policies - Project/Design document - Land law and land titling guidelines - Safeguard policy and due diligence guidelines of donors - State land management - Fisheries law and policies - Community Fisheries management plans Sub-national and communal development plans - Local land use planning documents

3 Legal and institutional framework governing irrigated land tenure in Cambodia

In this section, we present the main bodies of laws, decrees, and relevant policies concerning irrigated land tenure (Figure 12) and how they are implemented in practice. We examine these documents around five interconnected themes: 1) Expropriation, compensation, and relocation 2) Land tenure security 3) Land market, concentration & consolidation 4) Environmental trade-offs 5) Multi-functionality of wetlands.

For each theme, we first present the scope of the legislation, its strengths/weakness, and the institutional roles and responsibilities of institutions that oversees the implementation. We then highlight some implications and shortcomings of this institutional setup. And based on a series of interviews conducted with donors and relevant ministries, we present how the legal framework and policies are implemented practically, including if/how the limitations and shortcomings identified earlier are addressed in context⁶.

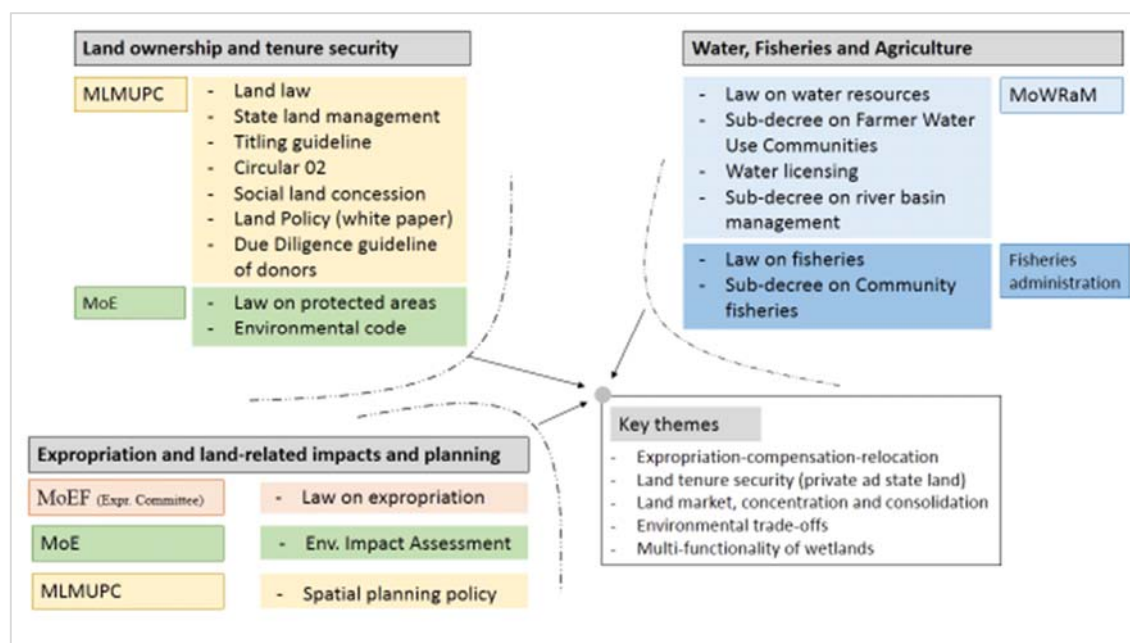


Figure 12 Three main bodies of legal documents governing irrigated land tenure in Cambodia

⁶ The analysis proposed in this section is entirely based on text reviews and interviews with resource people (see annex). It will be enriched and possibly nuanced through the collection of field data and information we will collect in the field in a later stage of the study.

3.1 General presentation

3.1.1 Land ownership and tenure security

This body of documents includes the legal foundation for land ownership classification in Cambodia, making a clear distinction between State and private land. It also specifies the conditions under which land titles can be issued and if not, how land possession can be regularized on state land, including inside the protected area system.

Text	Relevance to irrigated land tenure
Land law (2001)	<ul style="list-style-type: none"> - Differentiates between private land (eligible for titling) and state land. - Determine how legal possession that commenced before 2001 can be upgraded into ownership.
Land titling guidelines (2002+ updates)	<ul style="list-style-type: none"> - Determines procedures for adjudication, land measure and issuance of titles.
Sub-decree on Social Land Concession (2003)	<ul style="list-style-type: none"> - Defines the criteria, procedures and mechanisms to grant of social land concessions to landless or land-poor households, for residential use and/or farming.
Sub-decree on State Land Management (2005)	<ul style="list-style-type: none"> - Determines the principles, procedures, mechanisms and institutional arrangements for state land management: i) identification and mapping of state land, ii) registration and classification of state land, 3) creation and maintenance of a State Land Database, allocation and management of state land, and 4) reclassification of state land.
Circular 02 (2007)	<ul style="list-style-type: none"> - Provides measures against illegal holding of state land (recognition of land occupancy on state land prior or after rehabilitation of irrigation systems).
Law on Protected Area (2008)	<ul style="list-style-type: none"> - Defines the framework for the management, conservation and development of protected areas. - Identify the possibility to establish zonation inside protected areas to differentiate between areas for protection, conservation of biodiversity, sustainable use and community-based use.
Land policy (white paper) (2012)	<ul style="list-style-type: none"> - Intends to strengthen land tenure security and promote efficient land markets.
Environmental Code (sine die)	<ul style="list-style-type: none"> - Provides comprehensive framework for collaborative management in the protected area system, including for irrigation projects.
Due diligence guideline of donors	<ul style="list-style-type: none"> - Specifies how donors and irrigation project proponents aim to address land issues and land security in the feasibility, implementation and monitoring of irrigation projects.

3.1.2 Water, fisheries and agriculture

This group of documents relates to the different sectors relying on water. It also places irrigation in the context of cross-sector spatial planning emphasizing the need to strike a balance between development and sustainable land management.

Text	Relevance to irrigated land tenure
Law on Water Resources (2007)	<ul style="list-style-type: none"> - Determines the rights and obligations of water users, the principles of water resources management, and the participation of users and their associations in the sustainable development of water resources. - A core concept is Integrated Water Resources Management establishing linkages between water resources and other components of the natural environment.
Law on fisheries (2006)	<ul style="list-style-type: none"> - Regulates fisheries resources management in all fisheries grounds: natural, artificial and aquaculture. - Designates fishery domain and fishing zone to support conservation and development of sustainable fisheries resources to ensure people's food security and to socioeconomic development.
Sub-decree on Community fisheries (2007)	<ul style="list-style-type: none"> - Determines of the rules and legislative procedures for establishing and managing community fisheries and the scope (right and duties) of community fisheries management.
Spatial Planning Policy (2011)	<ul style="list-style-type: none"> - Defines key strategies and action plan for spatial development of Cambodia in an hierarchy of plan at different level and principle for cross-sector collaboration. - Proposes a mechanism to strike balance between private land development (ie through irrigation) and sustainable management of naturel resources.
Sub-decree on river basin management (2011)	<ul style="list-style-type: none"> - Establishes river basin management for ensuring conservation, exploitation and development of waters and ecological system in an effective, sustainable and balanced manner.
Sub-decree on Farmer Water Use Communities (2015)	<ul style="list-style-type: none"> - Frame the creation of water user groups to ensure the management and use of the irrigation systems in an effective and sustainable manner.
Agricultural and water development policy (2007, updates)	<ul style="list-style-type: none"> - Applies river basin approach to land & water river basins as the fundamental physical unit for management. - Suggests that water resources, irrigation and land management ought to be managed in an integrated manner at the river basin scale with key focus on land use planning and land allocation and tenure program.

3.1.3 Land expropriation and land-related impacts

These documents lay down the legal foundation that regulates the expropriation and assessment the environment (and social) aspects of irrigation development.

Text	Relevance to irrigated land tenure
Land on Environmental Protection and Natural Resources management (1996)	- Provide a legal basis for the Environmental Impact Assessment sub-decree.
Sub-decree on Environmental Impact Assessment (1999)	- Defines procedure to conduct Environmental Impact Assessment.
Law on expropriation (2010)	- Defines principles, mechanisms, and procedures of expropriation, and defining fair and just compensation for any construction, rehabilitation, and public physical infrastructure expansion project for the public and national interests (irrigation project are in this category)
Land Policy (white paper) (2012)	- Stresses the need for collaboration between MoWRaM and MLMUPC to jointly develop irrigated agricultural towards poverty reduction and adaptation to natural disasters (floods, droughts).
Due Diligence guideline of donors	- Specify how donors and irrigation project proponents aim to address land issues and land security in the feasibility, implementation and monitoring of irrigation projects.
Environmental Code (sine die, draft only)	<ul style="list-style-type: none"> - Provides comprehensive framework for collaborative management in the protected area system, including for irrigation projects. - Instil principle of Strategic Impact Assessment (at policy/program level).

3.2 Key themes

3.2.1 Expropriation, compensation and relocation

Legislation and institutional set-up

When an irrigation project results in expropriation, the question of defining fair and just compensation is central. The legal framework mobilized for expropriation is bound by international law. Under international human rights law, coerced and involuntary resettlement is seen as a deliberate retrogression in the enjoyment of human rights (*No one shall be arbitrarily deprived of his property*, article 17 of the 1948 Human Rights Declaration). Cambodia is a party to the UN Human Rights Declaration and therefore obligated to protect its citizens against arbitrary deprivation of landed property.

At the national level, the laws and institutional mechanisms mobilized towards expropriation are in line with the constitution, the land law, and the law on expropriation. Both the Constitution and the 2001 Land Law guarantee an individual's right to property protection. But it was only in 2010 that a legal mechanism was put in place to govern the process by which the government can fairly and justly expropriate private property for public purposes. In its article 4, the law views expropriation as the confiscation of ownership - with fair and just prior compensation - of immovable property (including land, building, and cultivated plants) for the construction, the rehabilitation, or the expansion of public physical infrastructure, which is in the national and public interests. Public physical infrastructure primarily refers to a wide range of infrastructures, which definitively include irrigation systems (article 5).

The expropriation process is managed by an expropriation committee consisting of representatives of all relevant ministries and led by a representative of the Ministry of Economy and Finance (MoEF). The law also foresees the creation of an *Complaint Resolution Committee* led by representatives of the Ministry of Land Management, Urban Planning and Construction, and representatives of other concerned ministries/institutions shall be involved.

Governed by the Expropriation Committee, the process for expropriation follows several steps: i) a project proposal for government review, ii) a survey detailing the rights of property owners or leasers, iii) meetings with local authorities, iv) a notice to owners in the form of a declaration in multiple forums, v) the possibility for owners of the expropriated property have the right to file a complaint to contest the validity of the appropriation or to see if it can be moved and vi) the compensation and/or relocation proposal as such. To navigate through this process, farmers require appropriate, affordable, and timely support.

The law states that the compensation for the expropriated property must be fair and just. It should be paid in advance based on the fair market value of a property, excluding changes in value after the irrigation project came into effect.

Implications and shortcomings of the institutional set-up

- As State is the only entity that can expropriate in the public interest, the scope of the law does not extend to evictions by private entities or concessionaires. In this case, the entire expropriation process, including compensation and relocation is borne by concessionaires or private investors according to relevant state legislation such as the EIA and any specifications in the contract or agreement between the concessionaires/investors and the State, if any.
- The law does protect individuals who are not considered the rightful owner. i.e who lack title to their land or live on state property and are therefore deemed illegal settlers. However, these circumstances are not rare in rural areas, particularly in upland regions that have received important influxes of migrants over the last 20 years. In 2007 the government issued Circular 02 on measures against the illegal holding of state land which provides various options for resolving land right issues. The circular explicitly recognizes that compromises are needed, especially to find a solution for the real poor families and when the land is truly exploited. The circular aims to address each infringement separately (on a case-to-case basis) which limits the possibility to find a collective solution for a group of people or

village facing similar problems. On top of that, the procedures foreseen by circular are sophisticated as they imply several committees and authorities (National Authority for Land Conflict Resolution, Provincial State Land Management Committee, State Land Trustee Authority). It is very difficult for a farmer to navigate alone through these institutions and networks.

- Adding to the point above, problems arise when the expropriation concerns common-pool resources that are not effectively possessed individually (such as cultivated land) but rather used collectively by a group of users, under customary management or in open access. In this case, appropriate compensation measures require to document the different types of access and use of the resources that are expropriated.
- Even if the law explicitly states that land lost must be compensated at market price, there is no clear guidance to determine if the agro-ecological and socio-economic environment in the new location meets the necessary conditions to support livelihood development.
- The entire process of expropriation requires coordination between several ministries and institutions at the provincial level.

In practice: experiences of ministries and donors

Asian Development Bank

- ADB has developed its own set of safeguard policy and measures. And to get ADB's loans, the government is requested to follow these guidelines. On the other hand, the government pays for the compensation scheme, so the expropriation mechanism is a hybrid process that follows ADB guidelines and government institutions.
 - Due diligence analysis to assess the impacts of the project
 - Preparation of resettlement plans (usually by a consultant)
 - The expropriation committee suggests an area for relocation but ADB has a say on it
 - Development of compensation measures → submit to General Department of Resettlements for endorsement (MoEF) → send to ADB for no objection → implementation
- The goal of ADB with their compensation scheme is to ensure that those who are being affected by the development project should not be worst off, but at least remain the same or getting much better for their livelihoods.
- When the safeguard policy puts too much a burden on the government (eg payment for compensation), the government may decide to shift toward China money which comes with less strict guideline and conditionality (interview).
- According to ADB guidelines and practices:
 - the criteria considered in land valuation are: size + crops and trees on it
 - the criteria that are not considered: the quality of land, the socio-economic environment (comparing old and new locations), a detailed review about the diversity of rights enjoyed by the land users (ownership, possession, usufruct, leases, sharecropping, etc.)
- State land versus private land classification
 - The delineation of state land and private land within the command perimeter is outsourced to local authorities. The ADB team and other project proponents do not intervene in this process and step in only when an agreement is reached between all local stakeholders. MLMUPC does not intervene in the process.
- With regard to the compensation schemes, the problems that frequently occur are:
 - The value of land for compensation does not meet the expectation of farmers, usually because the rate used is the rate before the project (ADB set a cut-off date and value property before this cut-off date).
 - The agro-ecological and social-economic environment in new locations is not equivalent to previous places (interview).

- Common pool sources are usually undervalued in the assessment of the property to be expropriated (interview). The question of opportunity costs of the project is therefore not sufficiently taken into account.
 - Quality of resettlement plan is not accepted
- Resolutions process in a case of a dispute during expropriation process
 - The preferred option is to address complains and disputes locally. ADB tries to settle all complaints before the civil work start, which may take several months or years.
 - If conflicts remain unresolved when civil starts, local folks can complain through ADB-created Grievance Redress Mechanisms. Another avenue is the Complaint Resolution Committee set out in the Law on expropriation. In the last recourse, a complaint is filed at court.

MLMUPC

- The valuation of land and resources to be expropriated follows a process led by the Ministry of Economy and Finance. The MLMUPC partakes but does not have a leading role.
- In practice if the owner of the land to be expropriated cannot show proof of residence and land possession, the expropriation will likely occur without proper compensation (exclusions mechanisms).
- There are examples of good practices by which formal recognition of land rights was conducted by the cadastral administration before expropriation, so that residents could be properly compensated (eg in Sa Ang District, Kandal province, an irrigation project supported by AFD).

3.2.2 Land tenure security (private and state land domains)

Legislation and institutional set-up

As explained above (2.2 Land ownership private versus state land domains), the 2001 land law does not allow possession to be based on the occupation that starts on or after the effective date of the law in 2001 (Articles 30 and 31). This means that all land not cultivated as of 2001 is considered de facto as State land and as such, is not eligible for titling.

A key step along the titling process is the adjudication, whereby existing rights in parcels of land are authoritatively ascertained, the adjudication does not alter existing rights on land and it does not create new rights (Lord and Soun, sd). And to determine whether a plot is eligible for titling (i.e has been possessed before 2001) the titling team uses a satellite images of 2001 but also consult with local authorities to identify the context in which lands are hold privately (interview). The land titling guidelines utilized in the context of an irrigation scheme are the standard guidelines (interview).

Implications and shortcomings of the institutional set-up

A regular problem occurring during the adjudication process concerns the identification of the land legally possessed that is eligible for titling. The cadastral administration at the provincial and district level uses land cover maps to differentiate between lands utilized before and after 2001.

The strict obedience of this provision set in the land law is basically excluding for all of those who acquired land through clearance after 2001. Given the context of the internal movement of people, this is highly problematic.

However, local authorities are issuing land possession certificates to residents and farmers through 2 types of documents: the certificate of land transfer (*aekesa pte kamaset*) and a request for land occupation (*pi sna som can kap dey*). These documents are also issued for land cleared after 2001, thus a mismatch that needs to be reconciled during the adjudication process.

In practice: experiences of ministries and donors

MLMUPC

The cadastral administration usually adopts a strong stance in following the 2001 rule, i.e not issuing title for land cleared after 2001.

- This is particularly the case for all land cleared after the rehabilitation or construction of the irrigation project.
- Other trustee state land authority usually lobbies to keep State land under their jurisdiction, thus putting pressure on the cadastral administration to not issue titles on what is categorized as State land (interview).
- If the cadastral team is confronted with land tensions and disputes, a process of conflict resolution – potentially very long - needs to precedes the titling. In this case, the 2001 rules is the official cut-off date.

In practice, however, the context in which the land titling proceed has a bearing on its outcomes. Put in other words, the 2001 rule serves as a framework, but the outcomes of the tiling are highly contingent to local deliberations between actors (interview). Compromises are often made to find a solution, particularly when the titling ineligibility affects poor families and/or land that are being truly exploited (interview).

Asian Development Bank

In the design phase of any irrigation project, ADB studies land ownership inside the command perimeter. The land profile produced includes land size and current land use. Based on the project documents available to us, this land survey does not provide much detailed information about the year and mode of land acquisition, which limits the ex-ante analysis concerning land tenure arrangements. The main purpose of the exercise is for ADB to be able to collect Irrigation Service Fees (10 USD/ha/year-1), and not to address any potential land issues.

If land cultivated by people is claimed as State land by the government (eg reservoirs abandoned since Khmer Rouge and that have become rice field cultivated by people), the ADB team let local authorities get full clarity on land occupation (and issue land possession certificates as needed) before stepping in. MLMUPC does not intervene in this process at this stage.

If the irrigation project incentivizes agrarian expansion beyond the command area, ABD may consider extending the project. But in this case, a new project design is required and the key consideration revolved around technical feasibility rather than land ownership and land tenure issues (interview).

Cooperation between ADB and MLUPC concerning land securitization in irrigation project

In the past, ADB has tried to mobilize the cadastral administration to title the land that is located inside the command perimeters. However, the price for titling services charged by MLMUPCC was very high (sporadic registration rate). As these costs are incurred by the government, MoEF blocked the titling process and the irrigation schemes were developed without prior securitization of land. It seems this has made a jurisprudence. There is usually no contact between ADB and MLMUPC at all. MLUMP provides land tiles once the irrigation perimeter is operational and does so along with the usual Systematic land Registration procedure.

ADB reports cases where land inside the command perimeter was not titled by MLMUPC because the land was considered as state land. In this case, the size of the plot is reduced (with or without proper expropriation process) or farmers are allowed to cultivate with usufruct rights (as opposed to possession or ownership).

3.2.3 Land market, concentration & consolidation

Legislation and institutional set-up

The 2001 land law and 2011 land policy institutionalize private land ownership and the development of land market between willing buyers and sellers efficient to ensure an efficient and fair distribution of land between farmers. In these documents, however, there is no real provision as to how these land markets should or could be regulated, for instance by setting an upper ceiling to land accumulation.

Implications and shortcomings of the institutional set-up

There is no doubt that an irrigation project increases the productive capacity and value of agricultural land located inside the command perimeter. And given that land markets are largely wealth-biased, a possible effect of a free land market could be the concentration of land into the hands of well-off farmers. This process works possibly through speculative land purchases before the rehabilitation/construction of the irrigation schemes or after the civil work had been carried out.

In practice: experiences of donors, jurisprudences

ADB and MLMUPC

From the feasibility study until the irrigation system is in process, irrigation project proponents do not monitor land transactions. ADB sets a cut-off date to determine the owner and the size of land inside the command perimeters but does not follow the process of land transfers that unfolds. The project conducts an ex-post study on the livelihood of beneficiaries, but land tenure and land transactions are not featured in the survey.

Likewise, the cadastral administration does not monitor land transactions before and after tilting. Most land transactions are not following the official procedure organized around the cadastral administration and people continue to rely largely on the village and commune authorities to legitimize their land acquisitions and transfers.

3.2.4 Environmental trade-offs

Legislation and institutional set-up

As required by the dedicated sub-decree, the owner of any public or private large-scale irrigation schemes (larger than 5,000 ha) is required to conduct an Environmental Impact Assessment (EIA). The sub-decree is implemented along with two ministerial declarations (prakas), namely the General Guidelines for Initial and Final Environmental Impact Assessment Reports and the guideline on Public Participation in Environmental Impact Assessment process.

The supervising ministry for EIA is the Ministry of Environment (MoE) and in particular the Department of Monitoring and Environmental Impact Assessment. This legislation is framed by the Law on Environmental Protection and Natural Resource Management (1996), the Sub-Decree on Water Pollution Control (1999), and the Sub-Decree on Solid Waste Management (1999). Additionally, the Law on Nature Protection Area (2008) and the Sub-Decree on the Control of Air Pollution and Noise Disturbance (2000) released subsequently provides references for the EIA sub-decree and its implementation. Since the release of the sub-decree in 1999, the legal framework has not changed much. The project of an EIA law seems buried.

The sub-decree is complemented by the National Environment Strategy and Action Plan 2016–2023 (NESAP) adopted by the Royal Government in 2017. NESAP is a commitment to sustainable development that envisions strengthening enabling conditions and leverage for the environment and natural resources management and conservation for sustainable and stable socio-economic development in Cambodia.

Under the leadership of the Ministry of Environment, the Royal Government of Cambodia is developing an Environmental and Natural Resource Code that will frame and update the institutions and procedures foreseen in the EIA sub-decree. The draft code integrates all the elements of the current sub-decree but differentiates between the so-called Strategic Impact Assessment (SIA) and Environmental Impact Assessment (EIA). Both aim to ensure that environmental considerations are integrated into development practices in Cambodia, but the SIA addresses it at policies, plans, programs, and legal level and EIA at the project level.

The EIA process follows a clear procedure: i) the screening of the project to determine whether an EIA is required, ii) the scoping and terms of references of the assessment (parameters, stakeholder's involvement, the methods, etc.), iii) the assessment as such, iv) the identification and measurement of mitigation measures, v) reporting and vi) monitoring.

In Cambodia, only registered Cambodian firms are allowed to conduct environmental assessments. All the costs incurred through the entire EIA process are covered by the owner of the project. Therefore, the project owner has substantial influence and control over the content of EIAs.

Implications and shortcomings of the institutional set-up

Several observers have noted that Cambodia's legal framework and high-level requirements for EIA contrast with the skills of the administration in charge of reviewing EIA reports and follow-up with recommendations (Xia, 2020⁷).

There are also practical challenges in ensuring that the integrity of the EIA process is respected. Indeed, when those carrying out the EIA are paid by the company that submits the projects, the door for biased results and conflicts of interest is wide open.

Beyond the legislation on EIA (sub-decree and prakas), there is no technical guideline including specific issues to be scrutinized. Technical scrutiny of any project proceeds on a case-to-case basis, without systematic and consistent guidelines with threshold values and red lines. In conjunction with the point above, this impedes a transparent implementation of EIA processes.

As with any cross-sector mechanisms embedded within one particular ministry, a challenge in the implementation of EIA for irrigation projects is the coordination with other project proponents and ministries responsible for infrastructure, industrial or agricultural development.

In practice: experiences of ministries and donors

According to several observers and development practitioners, the implementation of EIA in Cambodia have very limited outcomes (Xia, 2020⁸). Environmental and social considerations and requirements are usually pale in comparison with development imperatives. EIA rarely suggest major deviations from the intended project and serve predominantly the interest of the project owners who finance the impact assessment. A second limitation lies with the fact that public consultation and participation in the EIA process is often limited.

MoE

The EIA entails a lot of requirements on a multitude of issues. It puts a high burden on those involved in the process as they have to be familiar with multiple laws, procedures, and mechanisms. In an attempt to support the process, MoE has released several sector guidelines but these documents mainly provide guidance on report structure and format, not on technical matters. As a result, the EIA reports are of low quality.

There are just a few cases of EIA being conducted for irrigation projects in Cambodia. Concerning land issues, the EAI covers the following areas: i) land tenure security in the command perimeters, ii) encroachment into State land and iii) soil fertility protection measures. In general, those who implement the EIA are particularly concerned with the land-related issues that may

⁷ Xia, H. (2020). The Role and Problems of Environmental Impact Assessment in Governing Hydro-Power Projects in Cambodia. Beijing Law Review, 2020, 11, 501-518. <https://www.scirp.org/journal/blr/501-518>

⁸ *ibid*

occur as a result of the project, and not particularly about the ex-ante situation. For instance, the EIA report will provide criteria and measures to make sure that the project does not provide any incentives to encroach into State land but does not examine the land acquisition processes from the past.

A recurrent problem in the EAI process is the delay to get approval from MoE. It can extend to 1 year, well beyond the 30-day time frame foreseen in the sub-decree. So very often, the project starts without considering the conclusions and recommendations of the EIA report.

ADB-JICA

According to the ADB project documents made available to us, it seems that environmental assessment puts much focus on impacts such as air and water pollution, soil erosion, traffic congestion, community health and safety, and climate change (in the construction phase). A point of concern is the loss of terrestrial vegetation and habitat in new areas (not previously farmed or long abandoned with forest/shrub regrowth) that come into the command area. Typically, these areas have unclear land tenure because they are usually classified by default as state land (see above). Yet, the EIA process does not examine land tenure issues.

Coordination ADB-(JICA) with MoE

When the EIA is conducted where donors are involved with their own due diligence guideline and environmental/social safeguard policy, there is redundancy in the process. Regularly facing the problem, ADB has requested MoE to harmonize the process, but the dialogue has not started yet (interview).

When the EIA requires conducting a complete economic analysis (i.e. costs benefit of the irrigation project); the team from MoE in charge of the EIA has a difficult time getting all relevant information from the project proponents who are reluctant to disclose it.

3.2.5 Multi-functionality of wetlands

Legislation and institutional set-up

As explained above, there are multiple claims on wetland resources across Cambodia from the local level to the river basin. These claims are supported in various legal texts and policies implemented by different ministries. Water for agriculture is managed under the water resources legislation while fisheries resources (including water) are managed under the law of fisheries.

The law of water resources clearly states that water resources are part of the Public State domain of land. Groups of agricultural water users are constituted under a so-called Farmer Water User Community, a mechanism that delegates from the Ministry of Water Resources and Meteorology to a local user group the responsibilities for the management and development of an irrigation system. The delegation is limited though as the Ministry of Water Resources and Meteorology retains a leading role in the management of the FWUC.

With the cancellation of the fishing lots, the key mechanism to manage capture fisheries is now community fisheries (see detailed description above). Community fisheries groups manage an area delineated theoretically as public state land. In recent years, the fisheries reform has opened up the way for the development of aquaculture, which has arguably become the key pillar of the fisheries sector in Cambodia.

A third institutional layer comes into play if the resources are located inside protected areas, for instance, the Tonle Sap Multiple Use areas. In this case, the Ministry of Environment and the legislation on protected areas are also relevant.

Theoretically, the legal framework regulating water and land management in wetland areas offers a wide set of possibilities towards integrated and inclusive management. The idea of integrated water resources management takes center stage in the law on water resources. The water and agriculture policy suggested that water resources, irrigation, and land management ought to be

managed in an integrated manner at the river basin scale with a key focus on land use planning and land allocation and tenure program.

Implications and shortcomings of the institutional set-up

Despite an apparent clarity in the legal framework, it is important to recognize that current agrarian development in Cambodia results in intensified use of land and water resources in wetlands areas, making the claims and interests of stakeholders increasingly competing against each other.

While the documents all eloquently propose integrated approaches, the institutions and committees supposed to create this integration are still very much nested within sector ministries, thus posing similar issues of coordination as noted above.

Adding to these difficulties, neither the legislation on water nor on fisheries address explicitly the trade-offs inherent to multi-functional management. The spatial planning that could play this role is embedded within the Ministry of Land Management, Urban Planning, and Construction, which does not necessarily help coordination.

In practice: experiences of ministries and donors

In the last decade, both the demographic increase and the commodification of agriculture have pushed the demand for agricultural and settlement land and have opened up the enclosure of wetland resources across the country. The process is driven by smallholder farmers as well as larger agricultural entrepreneurs and is very often accompanied by the construction of small-to-large scale irrigation infrastructure, which often imply transfer or pumping water from CFI reservoirs.

At the same time, community fisheries have performed quite poorly and were not able to offer a credible alternative to the privatization of common property resources. This is due to at least three reasons:

- The community fisheries areas usually include a mix of state land (flooded) and private land (agriculture and settlement). As community fisheries regulation has a bearing only on fisheries activities (fishing gears, protection of flooded forest, etc.) and not on agriculture, it is very difficult for the CFI committee to control agrarian expansion within a community fishery area. A related problem is that CF areas are just approved at the level of the Ministry of Agriculture, Forestry, and Fisheries (MAFF) but they are not properly registered as state land in the state land cadaster.
- Community fisheries are under-financed and under-supported. The right to operate community-based fisheries activities for income generation at the community level is not granted by current Cambodian law. In a context of decreasing support from non-state actors, any CFI scheme has only a limited capacity to generate revenue to help finance its regular activities, such as patrolling, organizing, meetings and consultations. The absence of a collective commercial right to sell is a key obstacle to sustain CFI activities in the long run.
- At the policy level, the key focus of the fisheries administration to boost the sector is now on aquaculture and community fisheries do not receive sufficient institutional support as a result.

In practice, despite their interconnectedness, the sector of irrigation and agricultural water and the sector of fisheries are evolving in divergent directions. And the infant mechanisms of spatial planning have not enough institutional maturity to address these contradictions.

4 List of interviews

Ryutaro Takaku	ADB headquarter (South-East Asia department)
TE Bunna	MLUMP (cadastral administration)
LONG Piseth	ADB Senior project officer in charge of irrigation water at ADB Cambodia
CHHUN Sophal	ex-MoE (Department of Environmental Impact Assessment)
LY Vuthy	Fisheries Administration (Office of Community Fisheries management)
KONG Rada	CIRAD (M&E focal point for Asset project)

Postponed interviews

Ab Koster	CAVAC
MUONG Sideth	AFD