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Final Thesis

The new Geopolitics of water in the Himalayas

And the case of the Brahmaputra river

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Introduzione in Italiano

Per secoli gli esseri umani hanno vissuto con l'idea che le risorse naturali fossero illimitate. Oggi più che mai queste risorse appaiono altrimenti scarse, sia a causa dell'aumento demografico che dell'impronta ecologica sempre più pressante di ogni singola persona sull'ambiente naturale. La popolazione del nostro pianeta sta per raggiungere i 7,4 miliardi e, secondo le stime attuali, supererà i 9 miliardi di persone a cavallo del secolo corrente. Se da un lato le campagne si spopolano, dall'altro i centri urbani s'affollano. La conseguenza di questa tras migrazione è la perdita sempre più inevitabile del contatto diretto tra l'uomo e la natura. Ne consegue che la cura e il rispetto per gli elementi fondamentali che regolano gli ecosistemi naturali stiano progressivamente venendo meno. Il caso tra tutti più complesso è quello dell'acqua, un caso per certi versi drammatico, se si considera l'importanza di questo bene comune per la vita di noi tutti. Ne abbiamo bisogno per soddisfare i nostri bisogni biologici, per produrre cibo ed energia, per mantenere una vita igienica e sana. Eppure è proprio l'acqua una delle risorse più scarse e vulnerabili del pianeta. Per l'acqua non esistono sostituiti, né alternative. Del 71 per cento della superficie terrestre da essa coperta, solo l'1% è direttamente utilizzabile, e cioè quella dei fiumi, dei laghi e delle falde acquifere (USGS Water School). Il suo consumo ha raggiunto livelli senza precedenti a causa dell'impiego nel settore agricolo (il 70% del totale dei consumi) e industriale (il 20%). Ogni oggetto, merce e prodotto di cui facciamo uso è stato realizzato con il consumo di una determinata quantità d'acqua "virtuale". Una maglia di cotone, per esempio, ne richiede 2,700 litri. Un chilogrammo di carne ne necessita 15,000 litri (Friends of the Earth). Nel mercato globale attuale queste merci, essendo trasferite quotidianamente da un lato all'altro del pianeta, generano anche un trasferimento "virtuale" di una determinata quantità d'acqua, che è quella utilizzata per la produzione di queste stessi merci.

Il miglioramento delle condizioni di vita nel continente asiatico, oltre alla già citata crescita demografica, ha notevolmente accelerato il ritmo dei consumi idrici. Solo in Cina vivono 1,35 miliardi di persone, poco più del 18% della popolazione mondiale, con un consumo pro-capite di 150 metri cubi d'acqua, il più alto del continente. Il paese dispone però soltanto del 6,7% delle risorse idriche, che utilizza principalmente per fabbricare prodotti che vengono venduti nei supermercati di tutto il mondo. In India vivono 1,25 miliardi di persone, il 17% della popolazione globale, che può contare soltanto sul 4,3% delle risorse di acqua dolce della Terra. La crisi idrica colpisce in particolare paesi come il Bangladesh, il Nepal, la Cambogia, l'Indonesia, il Laos e il Pakistan. Il continente che ospita la metà della popolazione del globo è anche quello con la più grave scarsità d'acqua.

Di fronte ad uno scenario così critico, i leader dei principali governi asiatici non hanno sviluppato una rete di cooperazione valida a ricercare soluzioni congiunte ai problemi comuni. Al contrario, essi stanno fallendo miseramente nel tentativo di stabilire una cooperazione efficace sul tema della condivisione delle risorse idriche. La maggior parte degli stati sono interessati principalmente a favorire le politiche nazionali interne che a cercare un equilibrio, basato sulla cooperazione, con le diverse potenze regionali. Sta di fatto che si sta formando una nuova geopolitica dell'acqua, che ha a che fare con il controllo delle preziose risorse idriche transnazionali. Prendere possesso delle risorse idriche regionali significa mantenere intatto il livello di sviluppo economico che ha contraddistinto la crescita di molti paesi asiatici negli ultimi decenni.

La competizione idrica è sentita in maniera particolare nei corsi d'acqua transnazionali, vere e proprie arterie del continente asiatico, che trovano la loro origine nelle vette del sistema himalayano. La catena dell'Hindo-Kush Himalaya viene anche definita "il terzo polo" per le sue cime ghiacciate e la ricchissima quantità d'acqua in esse contenuta. Dalle sue straordinarie montagne, abitate da quattro milioni di indigeni tibetani, scorrono i fiumi che sostentano circa la metà della popolazione mondiale. Paesi come la Cina e l'India, ma anche Bangladesh, Birmania, Bhutan, Nepal, Cambogia, Pakistan, Laos, Thailandia e Vietnam, dipendono profondamente dalle acque di questi fiumi. Dall'Himalaya prendono origine i fiumi asiatici più importanti: l'Indo, il Brahmaputra, il Salween, il Mekong, lo Yangtze, il Fiume Giallo e più a sud, in territorio indiano, il Gange. Questi fiumi scorrono attraverso i confini dei sopra-citati paesi, stuzzicando molteplici rivalità per il controllo e lo sfruttamento delle loro acque. Questi corsi d'acqua sono al contempo caratterizzati da un forte inquinamento, generato principalmente dagli scarti industriali, dagli scarichi non trattati e dai residui agricoli che vengono in essi liberati. Secondo la Banca per lo Sviluppo Asiatico, l'80% di questi corsi d'acqua sono attualmente in pessime condizioni a causa della pesante contaminazione. Il fiume Giallo, attorno al quale si è sviluppata la cultura tradizionale cinese, è considerato il più inquinato dell'intero continente. Situato nel nord della Cina, è stato il più sfruttato per garantire l'incredibile crescita industriale del paese che per anni ha cavalcato un regime di crescita superiore al 10% del PIL annuo e ora si è assestata intorno al 7%. Nel fiume Giallo, come negli altri fiumi cinesi, gli incidenti ecologici legati all'inquinamento sono all'ordine del giorno. La SEPA, istituto governativo di protezione ambientale, ne ha calcolati 1,400 nel solo 2009.

La drammatica situazione ha convinto i leader cinesi, nel 2002, a dar vita ad un progetto di diversione idrica senza precedenti, al quale Mao Zedong aveva già pensato negli anni '50. Il 'Grande Timoniere' aveva proposto di trasferire, attraverso dei canali, le acque del sud del paese alle regioni più aride e industrializzate del nord. Il progetto di 'diversione idrica da nord a sud', che sarà completato nel 2050, ha l'intenzione di trasferire circa 44,8 miliardi di acqua

dall'umido sud all'arido nord, a fronte di un investimento di almeno 62 milioni di dollari. Il progetto si divide in tre settori principali. Una rotta orientale che sfrutterà il corso del Canale Grande, costruito tra il quinto e il settimo secolo AC, per trasferire l'acqua da Hangzhou a Pechino. Un ramo centrale, già completato nel 2014, che diverte le acque dalla riserva di Danjiangkou alla regione centrale dell'Hubei. Un ramo occidentale, studiato per trasferire circa 4 miliardi di metri cubi di acqua da tre tributari dello Yangtze, situati nelle alte pendici himalayane, nel nord-est del paese. Un progetto di dimensioni colossali che stravolgerà la geografia fisica e gli ecosistemi dell'intero paese e dei suoi vicini. La costruzione di una serie di dighe serviranno inoltre a regolare i flussi idrici, facilitare le irrigazioni, generare energia idroelettrica e portare l'acqua fino alle grandi città.

Negli ultimi decenni sono sorte dighe cinesi nella maggior parte dei fiumi transfrontalieri, come l'Indo, il Mekong, lo Yangtze, il Fiume Giallo, il Karnali, il Salween, il Sutley e il Brahmaputra. Per la Cina, le acque tibetane sono considerate la salvezza per il futuro del paese. Una serie di teorie basate sul libro del 1980 di Li Ling "Le acque tibetane salveranno la Cina" hanno fatto da fondamento ideologico alla concretizzazione del progetto di sfruttamento da parte di Pechino delle risorse idriche di questi preziosi fiumi. Queste iniziative di colossali proporzioni hanno però una forte risonanza geopolitica, dal momento che consistono in un autentico "furto d'acqua" commesso a scapito degli stati co-ripariali, un'azione definita anche *water grabbing*. Per *water grabbing* si intende una situazione nella quale dei soggetti dotati di notevole potere politico ed economico sono in grado di prendere il controllo e di ridistribuire a proprio vantaggio delle risorse idriche che già da tempo vengono utilizzate da altre comunità. Grazie a questa appropriazione tali soggetti possono beneficiare delle risorse idriche acquisite, nonché creare profitto dal loro utilizzo a discapito delle comunità locali. L'appropriazione di queste risorse è generalmente associata ad alcune forme di investimento, volte a creare dei ricavi attraverso il loro utilizzo a livello agricolo o industriale. Questi attori associati alle élite politiche, economiche e finanziarie globali, sottraggono oltre alle risorse, anche i diritti di utilizzazione posseduti precedentemente dalle comunità locali sui corsi d'acqua. In molti casi il *water grabbing* è di fatto illegale, ma in molti altri è perfettamente a norma. Chi prende possesso delle risorse acquifere fa normalmente uso di tutti i cavilli legali possibili pur di raggiungere i propri obiettivi.

Questa corsa all'acqua è stata sostenuta dalle politiche delle principali organizzazioni internazionali. Epocale è diventata la frase pronunciata dall'ex vice-presidente della Banca Mondiale Ishmael Serageldin: "Le guerre del ventunesimo secolo saranno combattute per il controllo dell'acqua". Ishmael Serageldin è stato tra gli architetti dei programmi della Banca Mondiale, volti a convincere i paesi del Sud Globale a vendere a ditte straniere il controllo delle acque pubbliche. Lo stesso Serageldin è stato il presidente dell'Associazione Mondiale dell'Acqua, che ha definito la preziosa risorsa come un "bene economico", come

del resto è stato affermato dei Principi di Dublino del 1992 e dall'ONU, nella conferenza di Rio de Janeiro sull'Ambiente e lo Sviluppo. Basandosi su queste interpretazioni, la Banca Mondiale ha assunto il ruolo propulsore nel finanziamento di progetti di privatizzazione dell'acqua e di realizzazione di dighe. Di fatto, dal Forum Mondiale dell'Acqua dell'Aja nel 2000 in avanti, il settore privato ha svolto la funzione principale nel tentativo di risolvere i problemi di scarsità idrica, attraverso copiosi investimenti e investimenti diretti esteri. Nel "Quadro di Azione" del forum è stato deciso che il 95% degli investimenti debbano venire dal settore privato. L'idea generale alla base di queste politiche sviluppatesi in Europa è che la privatizzazione sia funzionale a soddisfare i bisogni idrici fondamentali attuali. Da questo quadro emerge la convinzione che il commercio sia più efficace della pianificazione statale nel permettere l'acquisizione più rapida di capitale rispetto al settore pubblico. Di converso, molti di questi progetti hanno evidenziato come la privatizzazione possa causare notevoli rischi, soprattutto quando agisce in paesi con governanti deboli che non hanno le capacità di proteggere in maniera efficace gli interessi pubblici dei propri paesi. Un problema etico è sorto inoltre dal fatto che la maggior parte dei progetti realizzati ambiscono alla massimizzazione dei profitti, prediligendo l'aumento dei consumi di acqua, anziché auspicarne la loro conservazione, incrementando così la scarsità idrica. Con la privatizzazione delle utenze, le corporazioni possono creare profitti attraverso l'utilizzo dei sofisticati prodotti finanziari offerti dalla cosiddetta "finanza creativa". Patrimoni privati e fondi speculativi hanno finanziato la maggior parte dei progetti idroelettrici dei principali fiumi del mondo, spesso in partnership con istituzioni tradizionali come la Banca Europea degli Investimenti e la Banca Mondiale. Quest'ultima ha finanziato la maggior parte dei progetti di gestione idrica nei paesi in via di sviluppo, attraverso prestiti erogati dalla Società di Finanza Internazionale (IFC). Secondo una ricerca di Antonio Estache, in molti di questi progetti il settore privato ha privilegiato realizzare investimenti in aree abitate da consumatori con una "possibilità di pagare" più elevata rispetto alle comunità più indigenti. Lo studio elenca inoltre una serie di problemi legati all'affidabilità, alla sostenibilità finanziaria, all'efficienza, ai rischi monetari e alle perdite economiche generate da alcuni di questi progetti. L'importanza dell'acqua a livello sociale e culturale ha generato diverse proteste da parte di gruppi di ambientalisti, sindacati, associazioni religiose e spirituali, nonché da parte di attivisti anti-globalizzazione contrari alla privatizzazione. I difensori dell'importanza del settore privato nel settore idrico sostengono che le politiche di privatizzazione siano le più efficaci nel ridurre i costi per i consumatori. Al momento vi sono tre aziende principali che gestiscono un quasi-monopolio dei progetti di privatizzazione dell'acqua a livello globale: le francesi Suez e Vivendi e la tedesca RWE-AG. Queste tre aziende controllano il 70% del totale dei sistemi idrici privatizzati in Europa e in America del Nord.

Le proteste contro a queste politiche di privatizzazione non sono mancate. Di fatto, la privatizzazione dell'acqua ha generato rimostranze molto più vivaci rispetto ai casi di privatizzazione di altre risorse, proprio per il fondamentale valore energetico e ambientale che essa ritiene, nonché per l'importante valore religioso e spirituale che l'acqua esercita per moltissime comunità. Alla fine del secolo scorso, la privatizzazione dell'acqua era una delle questioni più controverse ad essere dibattuta nei circoli di sviluppo internazionale. In molte parti del mondo l'opposizione è emersa sulla base di una certa dubbiosità rispetto al fatto che dei mercati del tutto privati potessero impegnarsi a trasferire dei profitti alle comunità locali. Di fatto, oltre ad essere stata definita un 'bene economico' dai principi di Dublino, l'acqua è stata dichiarata anche un diritto umano dalle Nazioni Unite e rientra nei bisogni di base affermati per la prima volta dalla Conferenza Internazionale del Lavoro nel 1976.

Gli effetti della privatizzazione dell'acqua e del *water grabbing* possono essere particolarmente gravi per alcune comunità, regioni e paesi che vengono privati di questa risorsa essenziale. L'impatto di queste politiche può portare ad un incremento dell'inquinamento dei corsi d'acqua situati ai piedi di complessi industriali, nonché al danneggiamento di determinati ecosistemi e alla variazione dei cicli idrologici. I progetti di *water grabbing* possono intensificare la resistenza di comunità locali, come è il caso delle piattaforme nazionali di protesta che sono sorte tra le comunità danneggiate dalle costruzioni di dighe. Il movimento per la giustizia dell'acqua si è focalizzato soprattutto nella lotta alla privatizzazione, promuovendo pratiche di distribuzione equa, sostenibile e democratica delle acque, senza però ottenere particolare ascolto da parte dei governi.

A livello accademico, negli anni Novanta si è discusso molto sull'eventualità del verificarsi di "guerre dell'acqua", generate dall'incremento della competizione dei paesi per l'accesso a questa risorsa vitale. La discussione ha affrontato le diverse caratteristiche della competizione idrica odierna. Uno scenario conflittuale è tuttora visto come un rischio e come una possibile eventualità, mentre molti accademici sono convinti che la cooperazione finirà per prevalere sulle questioni riguardanti questo elemento così fondamentale. Il fatto che non esista un surrogato per l'acqua fa pensare che i paesi decideranno di trovare una soluzione condivisa, piuttosto che arrivare ad un punto di rottura estremo e passare alle armi. Di trattati bilaterali per il regolamento delle questioni relative ai corsi d'acqua ne sono stati siglati parecchi negli ultimi anni. Ad ogni modo, al di là di quelli che vincolano alcuni fiumi europei, i maggiori bacini idrici del mondo non sono regolati da accordi con gli stati co-ripariali. Nella maggior parte dei casi gli accordi coinvolgono soltanto qualche paese. Una svolta è avvenuta nel 1997, quando oltre cento nazioni si sono radunate per adottare una Convenzione sul diritto delle utilizzazioni dei corsi d'acqua internazionali diverse dalla navigazione. In sé stessa, la Convenzione si propone di stabilire un quadro legale globale che determini le regole standard per la cooperazione, nell'utilizzazione, nello sviluppo, nella

conservazione e nella protezione dei corsi d'acqua internazionali. La Convenzione è entrata in vigore il 21 Maggio del 2014 con la ratifica del Vietnam, il trentacinquesimo stato a depositare la ratifica. La Convenzione si divide in sette parti e consiste in 37 articoli. Si ispira alle Regole di Helsinki del 1966 che hanno messo su carta i principi cardinali riguardanti le modalità di disporre dei corsi d'acqua internazionali da parte degli stati co-ripariali. La Convenzione obbliga gli stati a cooperare attraverso dei meccanismi e delle commissioni uniche, per uno scambio regolare dei dati e delle informazioni relative ai corsi d'acqua. I pilastri della convenzione sono la relazione tra l'utilizzazione equa e ragionevole delle risorse, l'obbligo di non creare danni agli altri stati e l'obbligo generale di cooperazione. La relazione tra l'utilizzazione equa e ragionevole delle risorse, nonché l'obbligo di non creare danni agli altri stati non ha convinto molti dei paesi signatari della convenzione. Il processo di ratifica, di conseguenza, è stato molto lungo e ha visto svilupparsi un acceso dibattito sul significato della convenzione stessa. Per questa ragione, molti paesi hanno esitato a ratificare la convenzione, che è entrata in vigore solamente 17 anni dopo la sua ideazione. Per gli stati che soffrono maggiormente le politiche di *water grabbing* da parte di paesi terzi, l'obbligo di non creare danni è ritenuto particolarmente importante ed è considerato una forma di protezione. Al contrario, i paesi motivati da interessi opposti, si sono dimostrati più interessati a far valere il principio dell'equa e ragionata utilizzazione delle risorse, rispetto agli altri. Il corso delle negoziazioni ha portato ad un compromesso tra i due principi che ha soddisfatto entrambe le posizioni.

Il Vietnam è l'unico dei paesi situati ai piedi dell'Himalaya ad aver ratificato la Convenzione. La Cina, invece, è stato uno degli unici tre paesi, insieme alla Turchia e al Burundi, ad aver votato in maniera contraria alla convenzione del 1997. Bangladesh, Thailandia, Nepal, Cambogia e Laos hanno votato a favore nel 1997, ma non hanno ancora ratificato la convenzione. Non l'hanno fatto neppure l'India e il Pakistan, che nel 1997 si sono astenuti. Secondo gli ufficiali cinesi il testo della convenzione non riflette un ampio consenso tra gli stati e fallisce nel creare un reale equilibrio di interessi tra i paesi a monte e i paesi a valle dei corsi d'acqua. Il governo cinese ha giustificato la propria posizione ribadendo che il meccanismo obbligatorio di accordo sulle dispute non sia accettabile nel quadro della Convenzione e che costituisca una perdita di sovranità per i paesi coinvolti. Di fatto, la Convenzione preoccupa Pechino poiché istituisce maggiori responsabilità per i paesi che si trovano a monte dei corsi d'acqua. La Cina, attivissima nella costruzione di dighe nei fiumi trans-frontalieri, non ha nessun interesse a ratificare una convenzione di questo tipo. Ratificarla significherebbe perdere una priorità di azione che il quasi-anarchico sistema di relazioni internazionali che riguardano l'utilizzo delle acque internazionali ancora permette. Al di là della Convenzione, la Cina può continuare ad utilizzare a proprio vantaggio il principio della "prima appropriazione", che legittima la teoria del "primo nel tempo, primo

nei diritti”. Secondo questa teoria, non vi è nessuno stato ad essere proprietario dei corsi d’acqua. Di conseguenza, la Cina è autorizzata ad utilizzare per prima le risorse dei corsi d’acqua internazionali, a discapito dei paesi a valle, che vedono ridotti i flussi a loro favore. Questo principio contrasta con il concetto di utilizzo equo e ragionevole della convenzione. La Cina salvaguarda così i propri interessi idrici, ostacolando al contempo lo sviluppo di relazioni internazionali oneste e durature con i paesi confinanti. La competizione per le risorse idriche contraddice nei fatti le parole del presidente cinese Xi, che ha definito in varie occasioni l’approccio di cooperazione win-win che la Cina intende avere con i suoi vicini. Il pragmatismo alla base della politica cinese in questo caso considera soltanto imperativi geopolitici e strategici. Come la Cina, anche altri paesi a monte hanno ignorato la convenzione per non trovarsi in condizioni sfavorevoli nei confronti dei paesi a valle. Anche l’India ha rifiutato la Convenzione, contestando il fatto che il testo danneggia l’autonomia degli stati, nell’imposizione del principio di “uso sostenibile”, senza chiarire adeguatamente il concetto di “sostenibile”. Ad ogni modo, l’accordo concluso tra India e Nepal sul fiume Makahali è stato risolto ricorrendo alla Convenzione. I paesi a valle come il Pakistan e il Bangladesh sono, dal canto loro, i più interessati a far sì che la Convenzione entri a far parte della prassi di diritto internazionale e che le relazioni tra stati si basino sulle norme da essa elencate.

Sfruttando la propria posizione privilegiata, essendo il paese a monte della maggior parte dei fiumi transnazionali himalayani, la Cina si erge a paese idro-egemone nel contesto asiatico-himalayano. L’idro-egemonia viene definita da Zietoun e Warner come “una strategia di controllo delle risorse strategiche attraverso l’appropriazione di risorse, l’integrazione e il loro controllo. Questa forma di controllo può essere condivisa, consolidata a favore del fiume geograficamente favorito o contestata. L’idro-egemonia definisce il comportamento di una potenza regionale nei confronti degli stati co-ripariali. Il paese idro-egemone ha il potere di definire le regole del gioco e di stabilire quali sono le questioni o meno” (Zeitoun and Warner, 2008). L’idro-egemonia viene allo stesso tempo considerata come un fenomeno che può assicurare un regime di sicurezza nel gestire i corsi d’acqua, stabilizzando le azioni dei paesi più deboli, creando un efficace sistema di gestione ed evitando schermaglie e i rischi di possibili “guerre dell’acqua”. I paesi a valle non condividono certamente questa visione e si focalizzano piuttosto sulle disuguaglianze strutturali, nella mancanza di potere decisionale e nella distribuzione ineguale delle risorse. L’egemonia può funzionare se lo stato egemone stabilisce un sistema positivo, negoziando gli accordi di condivisione dei corsi d’acqua in maniera favorevole anche per gli stati a valle. La Cina, al momento, cerca di rafforzare il controllo delle risorse idriche senza particolari interessi per le richieste dei paesi circostanti, molti dei quali le sono dipendenti a livello economico e tendono a non contestare l’egemonia cinese sulle risorse regionali. La

dipendenza economica degli altri stati assicura a Pechino un 'soft power' necessario nelle negoziazioni. La Cina condivide circa cinquanta corsi d'acqua internazionali con altri paesi della regione, ma meno dell'1% di questi ha origine al di fuori dei propri confini. Episodi di cooperazione si verificano nell'ambito dello scambio di dati e informazioni sulle proprie dighe con i paesi co-ripariani, come nel contesto della Commissione del Fiume Mekong. Oppure nel monitoraggio della qualità delle acque dei fiumi condivisi con la Russia, o negli accordi di cooperazione con il Kazakhstan. Nel resto dei casi, Pechino ha gestito la situazione a proprio favore senza avventurarsi in accordi che potessero risultarle sfavorevoli. Il potere economico e geopolitico cinese è tale che il paese può continuare a dettare la propria agenda regionale e rafforzare la propria posizione egemonica, senza calcolare i bisogni dei paesi a valle. Le questioni politiche su questi fiumi trans-frontalieri vengono quindi osservate come un gioco a somma zero, in cui ogni concessione data da un paese terzo viene vista come una "perdita" e ogni acquisizione come un "guadagno".

Per la Cina, i problemi principali si pongono nei confronti dell'India, paese in forte crescita economica, nonché martoriato da una profondissima crisi idrica. Le relazioni sino-indiane sono caratterizzate sia da collaborazione che da competizione, a seconda delle materie trattate e degli interessi dei due paesi. Sta di fatto che nei confronti delle acque himalayane i due paesi si trovano in piena competizione. L'India, per cultura e tradizione, è molto più vicina al Tibet di quanto lo sia la Cina. Dal 1959 il Dalai Lama, leader spirituale dei tibetani, è in esilio a Dharamsala, nel nord dell'India. Le acque del fiume Brahmaputra, sul quale i due paesi competono, hanno un significato sacro sia per i tibetani, che per gli indiani che abitano la regione di Assam e dell'Arunachal Pradesh dove le sue acque scorrono. Sia per gli induisti che per i buddisti tibetani il libero corso dei fiumi è considerato sacro e la costruzione di dighe sui fiumi sacri è visto come un sacrilegio. Il Brahmaputra, al quale i cinesi si riferiscono con il nome di Yarlung Tsangpo, è uno dei fiumi transfrontalieri più importanti. Il 50,8% del suo corso si trova nel Tibet controllato dalla Cina, il 33,6% in India, l'8,1% in Bangladesh e il 7,8% in Bhutan. Per geologi e ambientalisti, il Brahmaputra è un fiume unico, poiché scorre attraverso ambienti totalmente diversi, dall'altopiano tibetano alle piovose pendici himalaiane, passando per le piane alluvionali dell'Assam e il delta del Bangladesh. La sua fonte si trova nelle montagne di Chemayungdung, ad un'altitudine di 5300 metri, nella catena del monte Kailash. Questa montagna è considerata un luogo sacro per le quattro religioni che hanno contraddistinto la storia himalayana: Bon, Buddismo, Induismo e Jainismo. È un luogo unico per il pellegrinaggio degli aderenti di ciascuna di queste regioni. Dal monte Kailash e dalla panna di Tamchok Khambab, il fiume scorre e diventa lo "Tsangpo", lungo il quale la cultura tibetana si è sviluppata e ha prosperato per secoli. Lo "Tsangpo" scorre per 2,880 chilometri fino al nord-est dell'India, dal quale scorre verso le terre del delta del Bangladesh, confondendosi al Gange e terminando nella baia del

Bengala. In India, il fiume prende il nome di Brahmaputra, che significa “figlio di Brahma”; ovvero il dio creatore nella tradizione induista. Il Brahmaputra riceve le acque di diverse tributari nel suo percorso tibetano, come il Raka Tsangpo, il Lhasa e il Nyang Qu. Il fiume passa attraverso delle profondissime gole, che hanno suscitato l'appetito energetico del governo cinese, il quale le considera zone ideali per la produzione di energia idroelettrica. Dopo le gole, il Brahmaputra entra la regione contesa dell'Arunachal Pradesh, ufficialmente sotto il controllo indiano, ma più volte reclamata da Pechino, in un contesto di competizione regionale che risale agli accordi tra l'impero britannico e il governo tibetano e alla formazione della linea di confine McMahon. Per l'India, la regione dell'Arunachal Pradesh costituisce un cuscinetto di sicurezza che la separa del territorio cinese. La Cina, oltre ad avere un interesse strategico per la regione, ha interesse a portare tutti gli elementi della cultura tibetana sotto la propria amministrazione. Per questa ragione, il governo cinese sta costruendo una ferrovia che connette Lhasa alla prefettura di Linzhi, nel nord dell'Arunachal Pradesh. La competizione in questa regione ha ravvivato i nazionalismi in entrambi i paesi, con i cittadini indiani che non sopportano l'aggressione cinese e con i cittadini e gli osservatori cinesi, che spingono il governo centrale ad attuare misure più aggressive nei confronti di Nuova Delhi. Sulle rive del fiume si parlano ben 220 lingue diverse, della famiglia indo-ariana e tibetana-birmanese. Gli alluvioni e le erosioni costituiscono il problema principale del fiume, che impatta la vita politica, sociale ed economica soprattutto della regione dell'Assam, dove il letto del fiume si è allargato di circa una volta e mezzo nell'ultimo secolo. Problemi simili ci sono anche in Bangladesh, dove una serie di violenti alluvioni hanno avuto luogo nel 1987, 1988, 1998 e 2004.

Nel 2003, il governo cinese ha cominciato a sfruttare le acque del Brahmaputra per i suoi interessi energetici, da quando cioè ha annunciato di lavorare ad un progetto idroelettrico sulla “grande piega” del fiume, dotata di un potenziale energetico di circa 100 milioni di chilowatt. Per il governo indiano, questo progetto è stato un campanello d'allarme riguardo alle intenzioni cinesi sul corso d'acqua condiviso. Nel 2006, Pechino ha autorizzato un piano dettagliato dei suoi progetti nella grande piega nei pressi di Mutuo, che consiste appunto nella costruzione di una diga di dimensioni doppie rispetto a quelle delle Tre Gole sullo Yangtze, attualmente la più grande del mondo. Il progetto consiste anche nella diversione delle acque del Brahmaputra verso nord, attraverso il ramo occidentale del progetto di diversione delle acque sud-nord. Per l'India e il Bangladesh, questi progetti cinesi sono considerati una calamità che può scatenare dei veri e propri conflitti idrici, a causa dei danni causati all'ecosistema da progetti di questo tipo. La prima delle dighe ad essere stata costruita è stata quella di Zhangmu, attuata nel 2010, nella contea di Sangri e Gyaca, ad un'altitudine di 3,269 metri nell'altopiano tibetano. La diga permette di creare 540 MW di elettricità. Il governo cinese ha assicurato a Nuova Delhi di non aver intenzione di limitare il

flusso delle acque del fiume verso sud, dichiarando inoltre che la diga non intende immagazzinare le acque, né alterare i flussi d'acqua stagionali naturali. Ciò non ha tranquillizzato il governo indiano, dal momento che la diga di Zangmu è soltanto la prima di una lunga serie di progetti idroelettrici che saranno sviluppati a Gyatsa, Zhongda, Jiexu, Langzhen e soprattutto a Mutuo, sulle grandi gole al confine sino-indiano.

Nel gennaio del 2013, il governo cinese ha approvato il piano quinquennale sull'energia, che comprende la costruzione di tre dighe di media dimensione sul Brahmaputra, progettate senza la consultazione del governo indiano. Le proteste di Nuova Delhi si sono fatte sentire, quando l'ex presidente Singh ha affrontato la spinosa questione durante il summit dei BRICS nel Marzo dello stesso anno. Secondo le fonti indiane, i progetti delle dighe cinesi ridurranno del 60% il corso del fiume, il che può essere considerata come una dichiarazione di "guerra dell'acqua". La Cina ha rifiutato le richieste indiane di firmare un patto sulla condivisione delle acque e non si è mostrata interessata neppure a condividere i propri dati dei fiume a monte. Il governo cinese ha inoltre accusato Nuova Delhi di lamentarsi soltanto per suscitare le simpatie della comunità internazionale.

Per l'India, il fiume Brahmaputra ha un potenziale idroelettrico di 34,920 MW, tale da poter soddisfare il 41,5% della produzione di energia idroelettrica in tutto il paese, ragione per la quale Nuova Delhi si è affrettata a sviluppare dei progetti idroelettrici sulle zone del fiume sotto il controllo indiano. Una dozzina di stazioni idroelettriche sono già state costruite dall'India nella regione contesa dell'Arunachal Pradesh. L'India ha considerato a sua volta la diversione delle acque del fiume verso i più aridi stati dell'ovest e del sud. Il progetto di Connessione dei Fiumi Indiano (RPL), consiste nel collegamento di 14 fiumi himalayani del nord con 16 fiumi peninsulari del sud, in modo da trasferire acqua per l'irrigazione, la produzione di energia e la navigazione. Il progetto aggiungerebbe 35-37 milioni di ettari di acqua irrigate, per generare 34,000 milioni di chilowatt di energia. Gli ambientalisti indiani sono contrari all'RPL, che a loro avviso causerà una perdita di biodiversità, una riduzione del flusso del fiume a valle, danni alla flora e alla fauna del luogo, nonché trasferimento forzato di persone.

I progetti cinesi sul fiume Brahmaputra costituiscono un serio ostacolo allo sviluppo di relazioni pacifiche tra la Cina e l'India, e più in generale tra i paesi che condividono i fiumi principali dell'area himalaiana. Nonostante sia Pechino che Nuova Delhi riconoscano le profonde difficoltà attuali a livello idrico, non c'è stato nessun accordo comprensivo che abbia beneficiato i due paesi sulla questione. La Cina non ha mai consultato i fiumi a valle prima di cominciare un progetto di diga. Pechino non ha ratificato la Convenzione dei fiumi non navigabili e continua ad agire seguendo i propri interessi, basandosi sulla dottrina di prima appropriazione. Gli ufficiali indiani sono rimasti basiti dinanzi alle decisioni cinesi, anche alla luce del comportamento del subcontinente, che si è impegnato in accordi di

condivisione delle acque dei fiumi Indo e Gange, rispettivamente con Pakistan e Bangladesh. Secondo gli ufficiali indiani, questi accordi potrebbero costituire un esempio a cui guardare per risolvere l'intricata questione del Brahmaputra. Di fatto nel Brahmaputra, come negli altri fiumi transfrontalieri soggetti a dispute internazionali, un accordo tra i vari paesi coinvolti potrebbe soddisfare gli interessi di tutti, attivando un controllo congiunto della situazione idrica per ottimizzare la protezione ambientale, l'efficienza idrica e le strategie di conservazione. Ciò favorirebbe il monitoraggio del cambiamento climatico, la ricerca di soluzioni per i disastri naturali, lo sviluppo di progetti idro-elettrici, oltre a migliorare le relazioni internazionali tra paesi. Questo tipo di cooperazione, per quanto necessaria, è estremamente difficile se gli stati continuano ad alimentare un "gioco a somma zero" che allontana lo sviluppo di possibili soluzioni collettive. La creazione di istituzioni comuni che possano stilare norme internazionali per l'utilizzo dei fiumi, sarebbe a questo punto necessaria per creare ponti di dialogo e di cooperazione e per dare senso compiuto alla Convenzione del '97. Il Consiglio di Sicurezza dell'ONU stesso, potrebbe giocare un ruolo chiave nella creazione di un progetto di questo tipo. Senza una soluzione del genere, la Cina non smetterà di agire in posizione di egemonia idrica e continuerà invece a costruire tutte le dighe di cui ha bisogno, sfruttando le relazioni asimmetriche di dipendenza economica dei suoi vicini nei suoi confronti.

Abstract

The competition over the water resources of the Himalayan plateau is shaping the geopolitics of the Asian continent. Economic growth, industrialisation, pollution and growing population have created an unprecedented water-stress on the world's driest continent. Water shortages have created geopolitical tensions and intensified competition over the resources of the transboundary rivers such as the Ganges, Indus, Brahmaputra and Amu Darya. This research examines the international relations amongst the countries where these rivers flow and the challenges that arise from friction over water resources, taking the Brahmaputra as a case study.

1. Asian Water Crisis

1.1 Introduction: A dire scenario

The idea that natural resources are infinite is nothing but an illusion that most of the human beings still hold firmly and mistakenly, as if they would be afraid to be surprised by an opposite dire scenario. The truth lies unfortunately beyond this misconception. Natural resources are scarce, and are growingly becoming scanty, due to the impact the consumerist society has on the environment. From the industrial revolution, at a progressively faster pace until now, humans have developed an increasingly sophisticated society, based on the production of industrial goods, high technology and corporate farming, and their worldwide circulation across mountains and oceans. This rapid development was made possible by the massive use of resources such as fossil fuels and water, which allowed the world to get transformed more rapidly than ever. Its population, in the last two hundreds years, has increased more than sevenfold and our planet is now inhabited by about 7,4 billion people. According to the latest UNESCO report, Earth's population will reach 9.1 billion in 2050 (UNESCO, 2015). More than a half of the people have abandoned the traditional way of living that have sustained their elders for generations, in what was one the most radical change the world has ever experienced. Farmlands and remote areas have been progressively abandoned and people have started to flood to the cities, looking for a more rewarding way of living. In 1950, only 746 million people were living in urban areas, against the 3.9 billion of 2014. The UN World Urbanization prospect estimate that by 2050, world's population growth and urbanization will add 2.5 billion people to the planet, with nearly 90% of them concentrated in Asia and Africa (UN, 2014). Asia is currently the continent that experienced the most recent and dramatic transformation, with a staggering population growth and an astounding economic development. This explains how the impact of human consumption on nature has become as dire as ever. All natural resources, especially water, but also mineral ores and fossil fuels such as gas, oil and coal, are exposed to a continuous competition between corporations, states, political parties and alliances. As a consequence, these strategic natural resources are rapidly occupying the central stage of the most important geopolitical struggle of the XXI century.

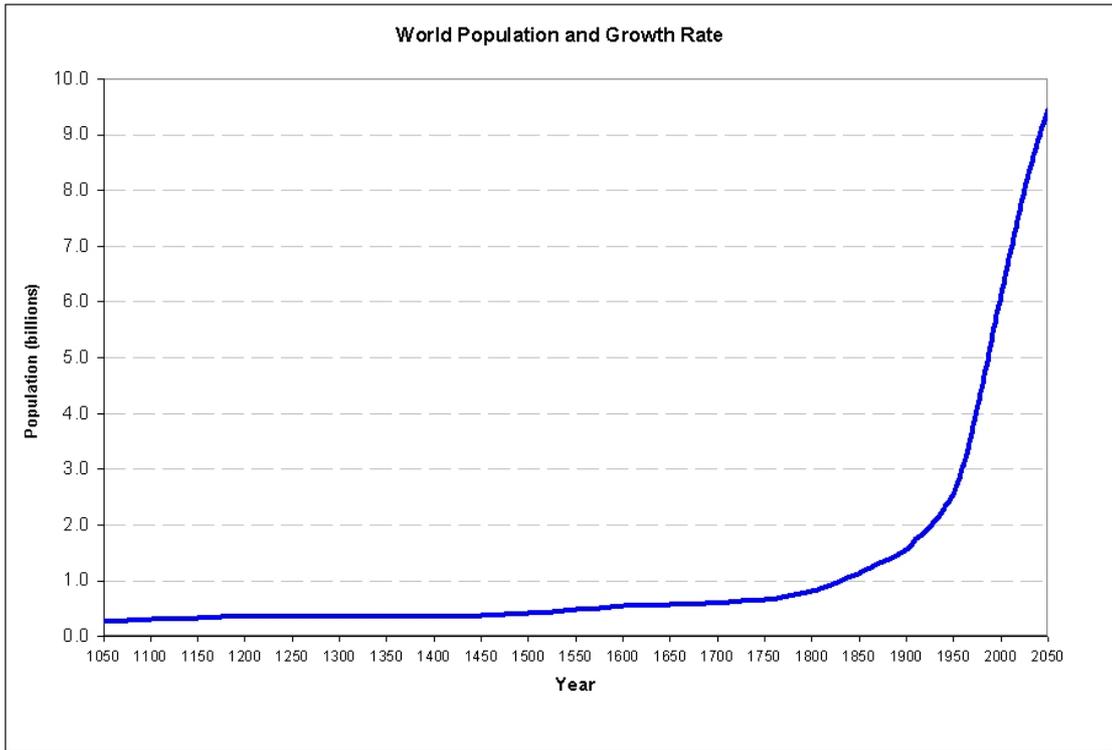


Table 1. Source: US Census Bureau, Graph representing world population growth rate

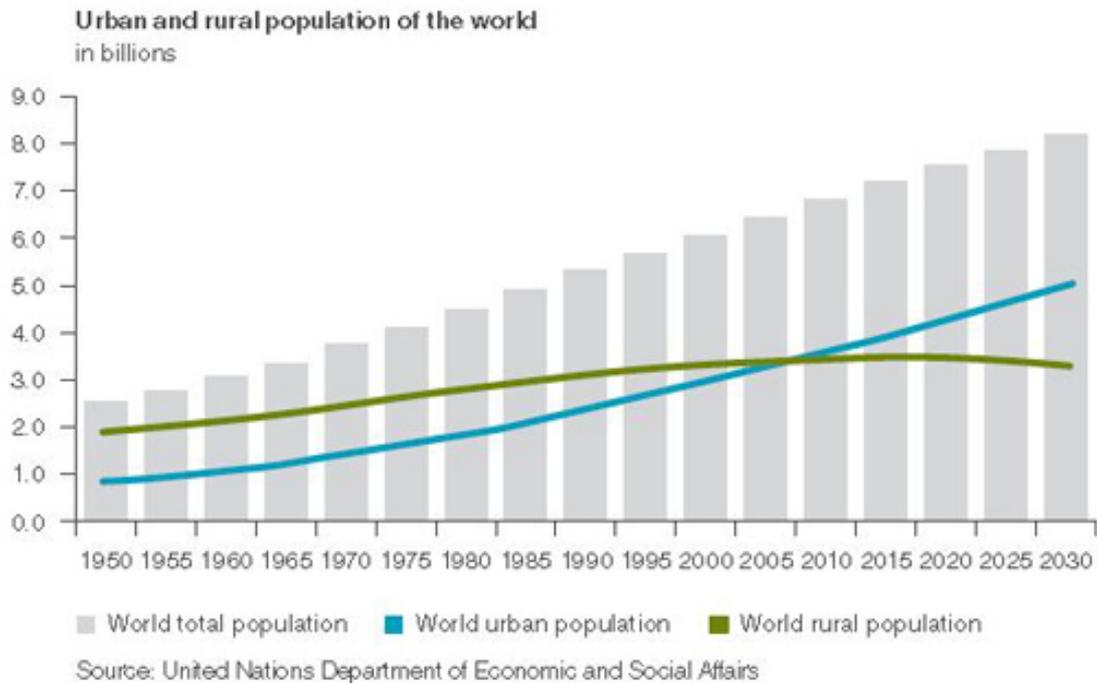


Table 2. Source: United Nations Department of Economic and Social Affairs

1.2 Water importance and global water usage

Water, besides being the most fundamental of all, is the most vulnerable and scarce of all the resources. There is no life without water, even though this finite, vulnerable and precious element has been taken for granted for too long. Each and every human being requires water and energy to produce food to survive. Energy and water are completely related to each other. While water is needed for energy production, extraction and procession, energy is essential to treat, distribute and supply water. But while there can be replacement for fossil fuels such as renewable energies, there can be no substitute for water. This clarifies how water is at the moment the most important natural resource to allow life to flourish in the future. As Vandana Shiva asserted:

“When water disappears, there is no alternative. For Third World women, water scarcity means traveling longer distances in search of water. For peasants, it means starvation and destitution, as drought wipes out their crops. For children, it means dehydration and death. There is simply no substitute for this precious liquid, necessary for the biological survival of animals and plants.”(Shiva, 2014)

The United Nations General Assembly has clearly certified the human right to water and sanitation with the 64/292 Resolution expressed on July 28th, 2010. The resolution acknowledges that clean drinking water and sanitation are essential to the realization of all human rights. It calls upon States and international organizations to provide financial resources, to assist developing countries in acquiring efficient technology and capacity-building skills in order to ensure safe, clean, accessible and affordable drinking water and sanitation for all.

About 71 percent of the Earth's surface is water-covered and in fact, less than 1% of it usable. This small percentage is what counts when we deal with the water challenge. The ocean holds about 97.5% of the entire world's water, while another 1,6% is locked in glaciers, permafrost and polar icecaps (USGS Water School). According to a US government geological survey, if all Earth's liquid freshwater, including groundwater, swamp water, rivers, and lakes, was to put into a sphere, then the diameter of that water ball would be about 272.8 kilometers, more or less the distance between the cities of Milan and Venice. A very small amount compared to the Earth's dimension. It is considered that for each and every human being on the planet there are just 1,700 m³ of available water. According to UN data, every person requires 20 to 50 liters of water a day, just to ensure their basic needs for

drinking, cooking and cleaning. However, in some regions of the world, not even a liter of this water is available for these purposes.

Since there is no major world market where water is itself traded, in order to understand how water move around the globe today it's useful to familiarize with the concept of "virtual water", which consist on the amount of water necessary to produce a service or a commodity. The largest amount of water is consumed for producing things that we consume on a daily basis, such as paper, cotton and clothes. However, the greatest share of water consumption is taken by the agricultural sector. The 70% of the global water is consumed by the agriculture sector, an amount that reach about the 90% in the Global South. (WWaP, 2014).

It is estimated for example that about 1000 liters of virtual water are required to produce one kilogram of wheat, while every kilogram of meat need as much as 15.000 liters of virtual water. To allow these cereals to grow, many of the world's forests have been cut to leave space for crop to grown, exacerbating consequently the amount of carbon dioxide in the atmosphere and thus the impact of global warming. The industrial process to produce a cotton t-shirt needs about 2,700 liters of water, which consist in the water use for the irrigation of the farmed cotton (Friends of the Earth).

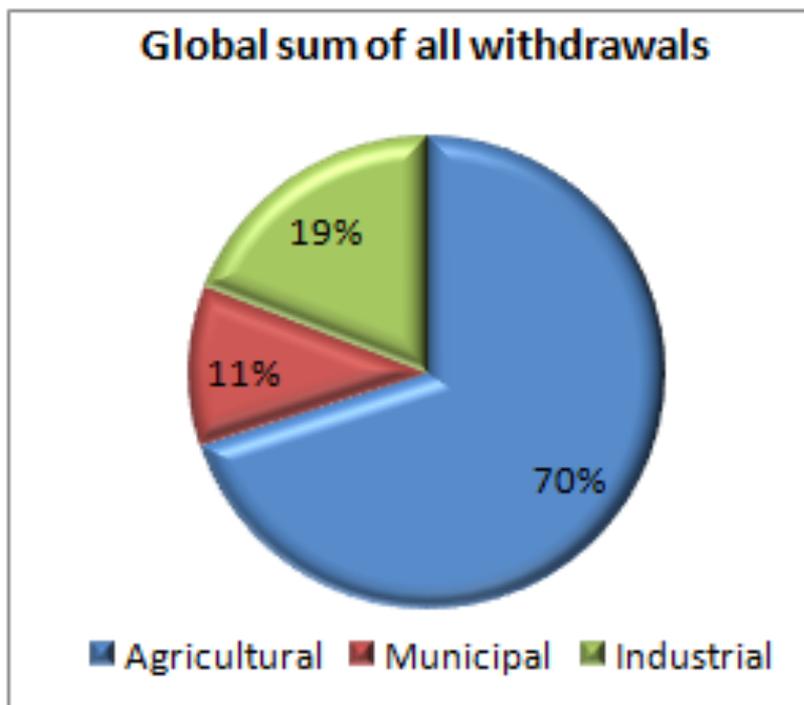


Table 3. FAO, Aqua Stat, Picture representing water usage by sector

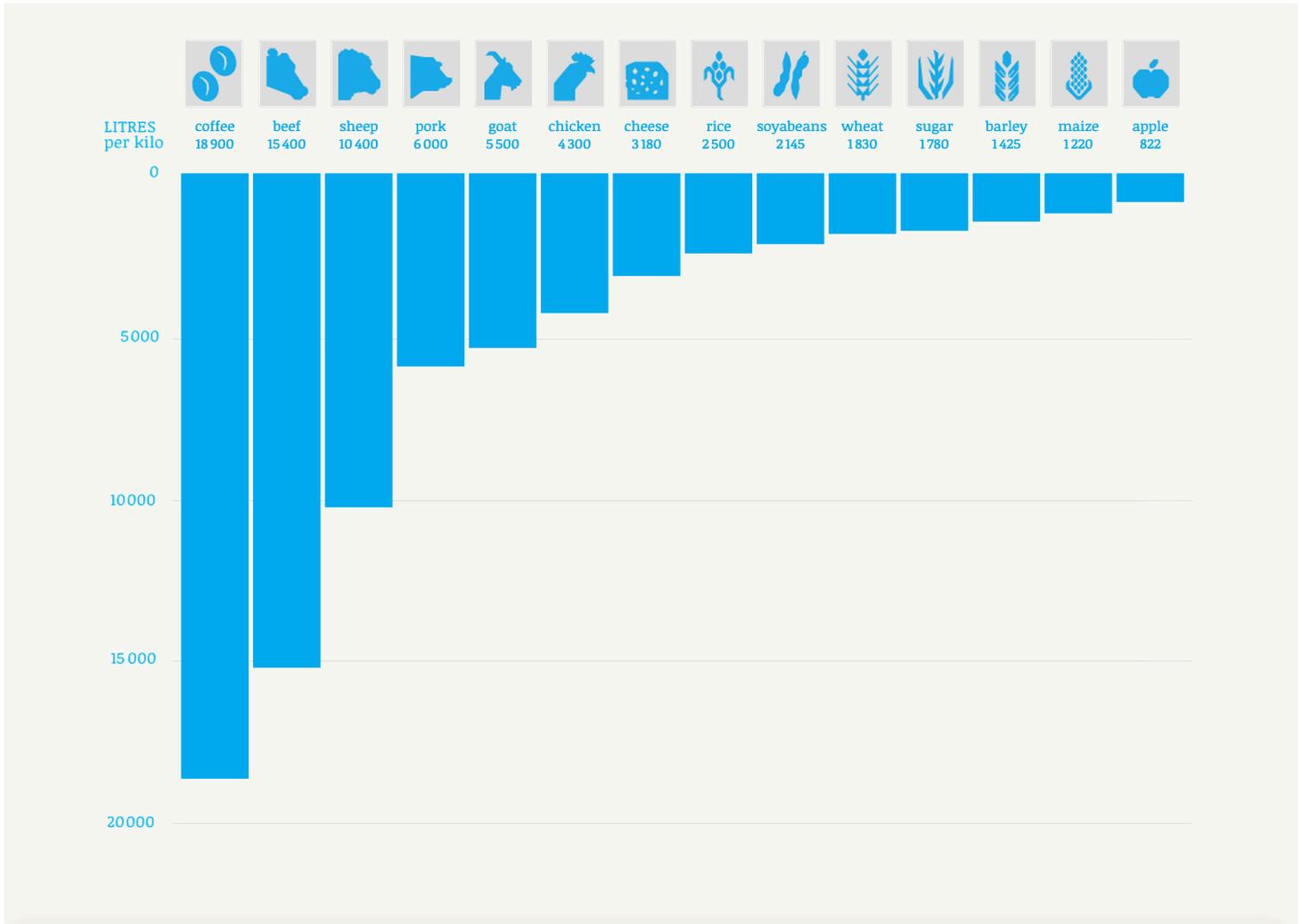


Table 4. Angela Morelli, <http://www.angelamorelli.com/water/>
Water consumption for food item

1.3 The Asian water stress

While Asia hosts more than half of the human population, its amount of fresh water is the least of any other continent, except Antarctica, and result in 3,920 cubic meters per person (Chellaney, 2007). Asia's river, aquifers and lakes endow every Asian citizen less than what African fresh water resources gives to an average African citizen. Asia per capita freshwater share is about one-third the availability for an European, about one-fourth of the share for a North American and one-tenth the water available for South America or Australia and New Zealand combined. A report made by the Asian Development Bank assert how in Asia, three out of four countries suffer for water-stress.

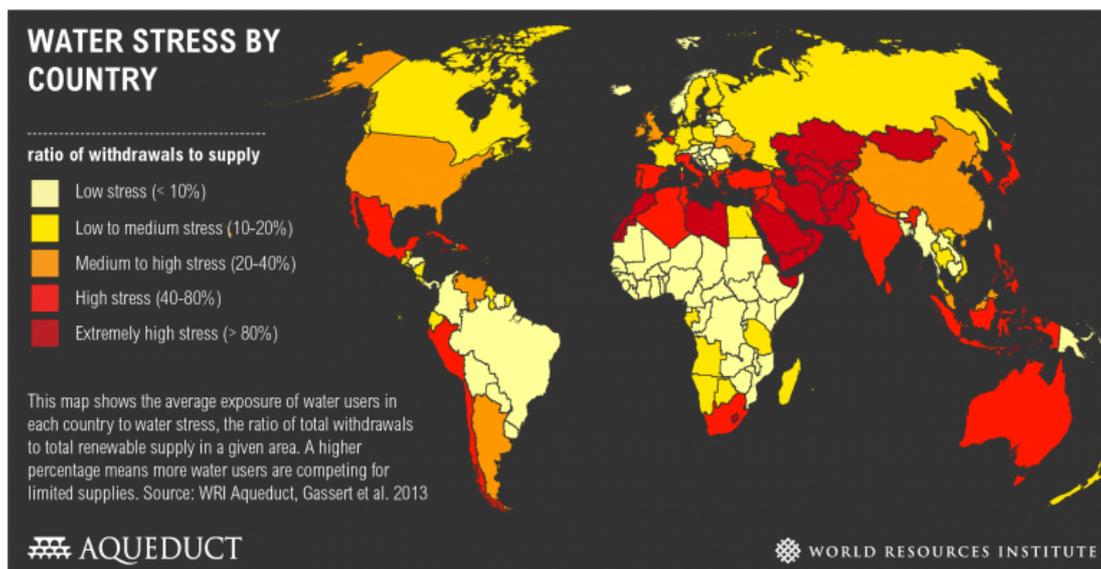


Table 5. Source: World Resources Institute - Water Stress by Country

The mismanagement of natural resources is aggravating the situation, while failing to respond to the escalating pressures of demography. Generally speaking, Asia has the lowest level of water efficiency and productivity in the whole world. With the population of South Asia expected to soar in thirty years by 32 per cent, the prospect under current trends is for greater competition over water between agriculture, urban centers and industry, and between countries sharing rivers. According to the Asian Water Development Outlook 2013, most of the Asian population doesn't have access to a secure household water supply. In Bangladesh, for example, only 6 percent of the 156 million people have access to piped water (AWDO, 2013). The situation is also harsh for Nepal, Cambodia, Indonesia, Laos, Pakistan and India and it's just slightly better in China, Thailand, the Philippines, Japan, Malaysia, Singapore and South Korea. The latter are the Asian countries endowed with better facilities to provide piped water to their populations. Renewable water resources in the region have fallen dramatically on a per capita basis since the 1960s. Biofuels production, through the cultivation of corn, wheat and palm oil, has increased the competition for land and water in some of the regions that are already considered water stressed.

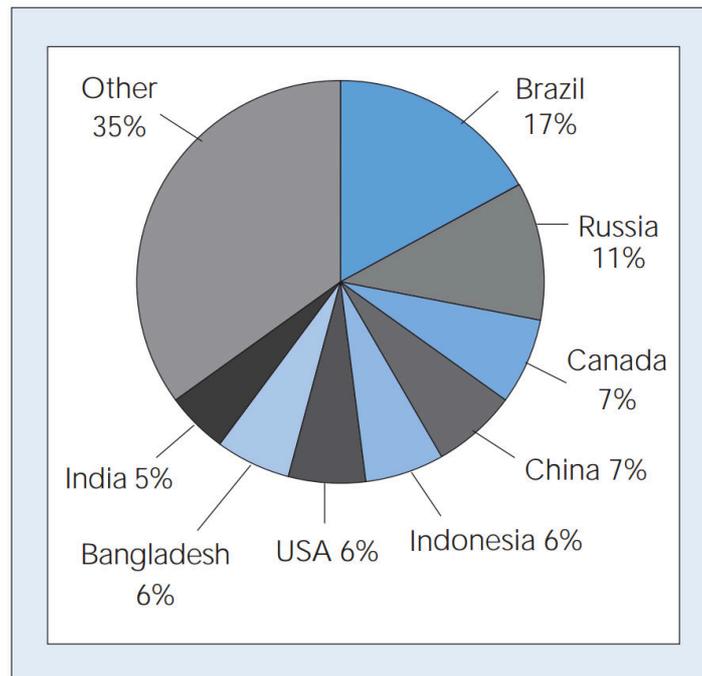
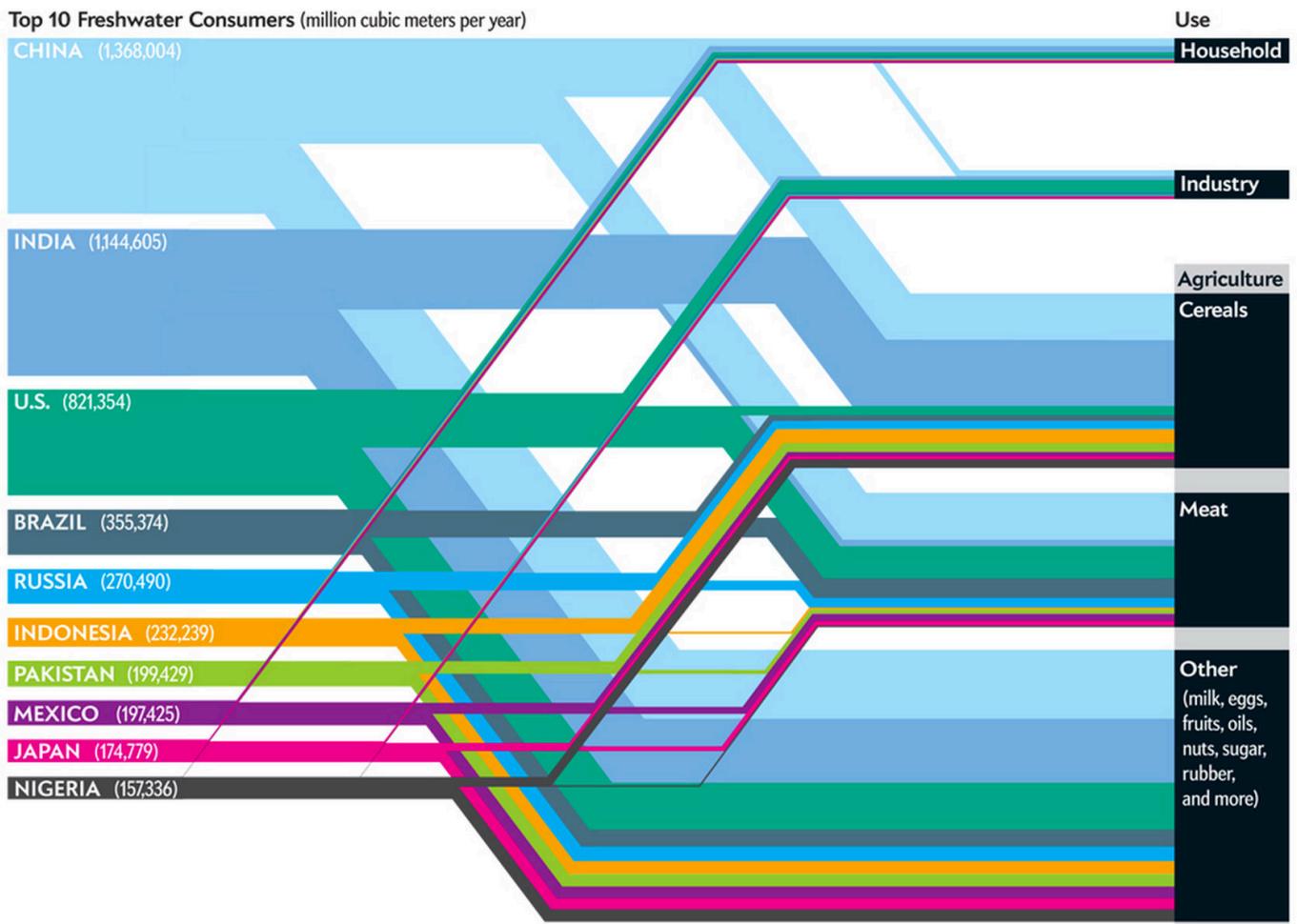


Table 6. Source: Gleick, *Distribution of the world's water*

India hit the 'water stress' mark around a decade ago, while Pakistan did it slightly earlier. Groundwater is fast depleting in India, Pakistan and Bangladesh. China is today a country of 1,35 billion people, an enormous citizenry that constitute about the 18% of the world's population. The problem with China is that the country can only count on the 6.7% of water resources. India find itself in a similar, but even worse, situation. Home to 1,25 billions inhabitants, the subcontinent host the 17% of the world's population, but can only count on the 4.3% of the water available worldwide. Such a perilous scenario might threaten very soon the incredible economic and political rise of these two major Asian economies. The cost of setting up business and maintaining the rate of growth in the continent is progressively rising. Businessmen have expressed preoccupation for the future and are advocating to their government concrete actions to solve the critical scenario of a possible water lack.

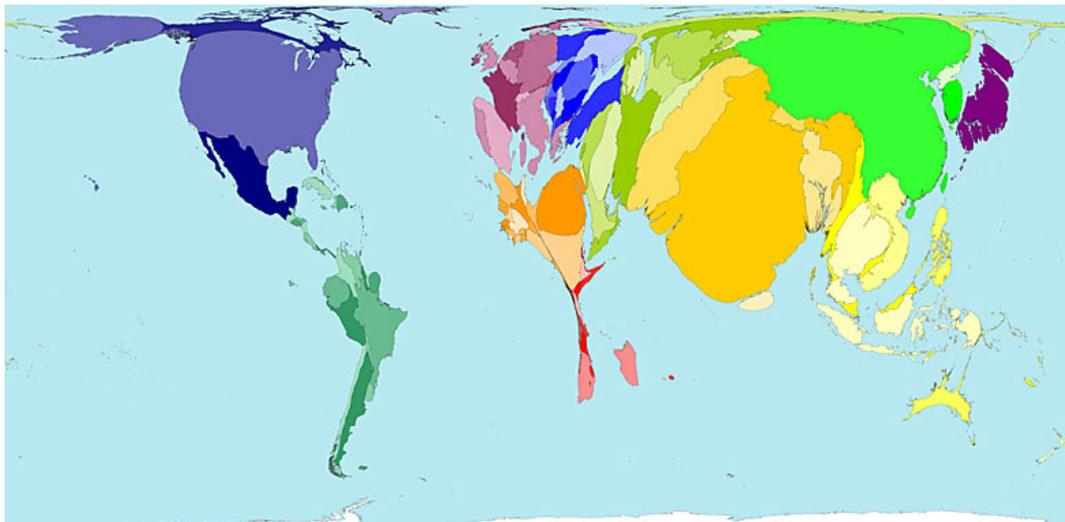
Fast-pacing developing Asian societies have produced a change in the lifestyle and dietary change, that have spurred meat consumption, resulting on a much larger usage of land, cereals and water. According to the latest UNESCO water report, by 2030, the world is projected to face a 40% global water deficit under the business-as-usual scenario. Energy production is hugely water intensive and thus water use is predicted to increase with the growth in demand. Despite the per capita consumption is way inferior to the United States and European standards, China is currently the larger consumer of freshwater globally. In Beijing, the thirstiest of the Chinese metropolises, water consumption per capita is about 150 cubic meters. It is mostly used by the industry and farming sectors.



Graphics by Jen Christiansen
 Source: "The Water Footprint of Humanity," by Arjen Y. Hoekstra and Mesfin M. Mekonnen, in Proceedings of the National Academy of Sciences USA. Published online February 13, 2012

Table 7. Jen Christiansen, "The Water Footprint of Humanity"
 Graph representing the 10 ten water consumers in the world and their usage

In China and India agriculture accounts for about the 70 and the 50 percent respectively of water consumption total. The most significant tradable commodity is foodstuff. China and India account for about 52.8% of world's rice production, the 30,1% of wheat production, 21% of corn and the 28,5% of total grain (Chellaney, 2011). The context of water scarcity would force these countries to seek additional imports of food from water-rich countries, while creating a context of internal food insecurity. In this context, the water of the Yarlong Tsampo / Brahmaputra holds a crucial importance, since they could benefit the food supply of Beijing, while choking off the food supply of its Indian neighbor. This food insecurity will be accompanied by a flashpoint of tension that could lead to renew skirmished between the two countries. The situation is going to become even more dangerous now that the levels of consumption, especially in China, but generally in the most of the Asian countries, are setting to rise.



Map 1. Source: Forbes, World Water Use

Consumption in China is growing as the middle class can gradually afford goods and services as their Western counterparts do. The usage of household electric appliances, which require a great amount of water, such as for laundry and dishwashers, but also for flushing toilet, bathing and showering, is definitely on the rise. People diet has changed, with the consumption of a much larger amount of meat, which requires for every kilo, about 15 liters of water.

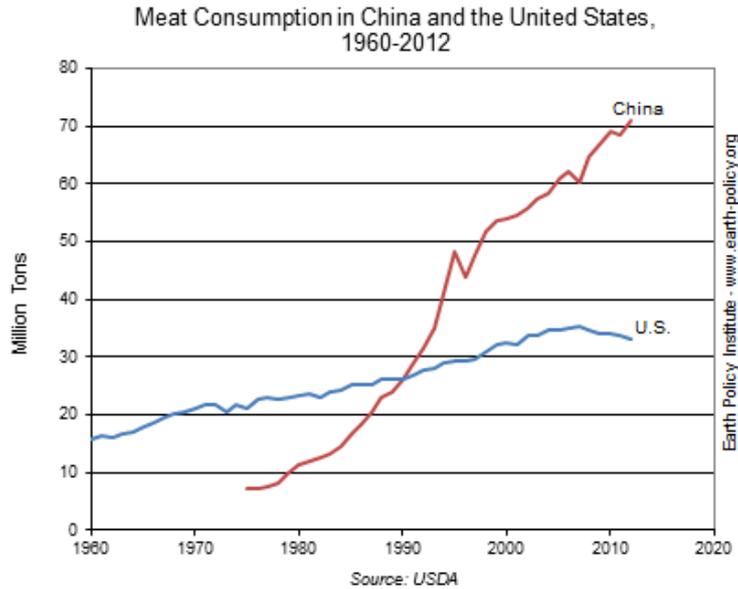


Table 8. Source: USDA, Meat consumption in China compared to the US

In a context of water scarcity, the Asian government has failed to establish a network of water cooperation, which could be useful for the whole region. A new geopolitics of water is developing, as cross-boarder issues are emerging, based on the control of the water resources. This competition might become a driver of regional and international conflict, as water is becoming fundamental to keep up the fast-development of the Asian economies. Getting access to water resource translates into acquiring the means to maintain each country's economy development. Environmental degradation and climate change are exacerbating the situation, the increasing extreme weather phenomena and water-related disasters such as floods and droughts are compounding the problem, pushing countries even more towards more competition than cooperation. Over the past decades, annual rainfall has declined in north and northeast China, in northeast India and in the plains of Pakistan (Chellaney, 2011). Extreme rainfalls has occurred in Nepal, Bangladesh, India and China, defining once more how water has become essential in defining not only the mitigation and adaption strategies to climate change, but also the international relations amongst the state involved.

1.4 International Transboundary Rivers flowing from the Himalayas

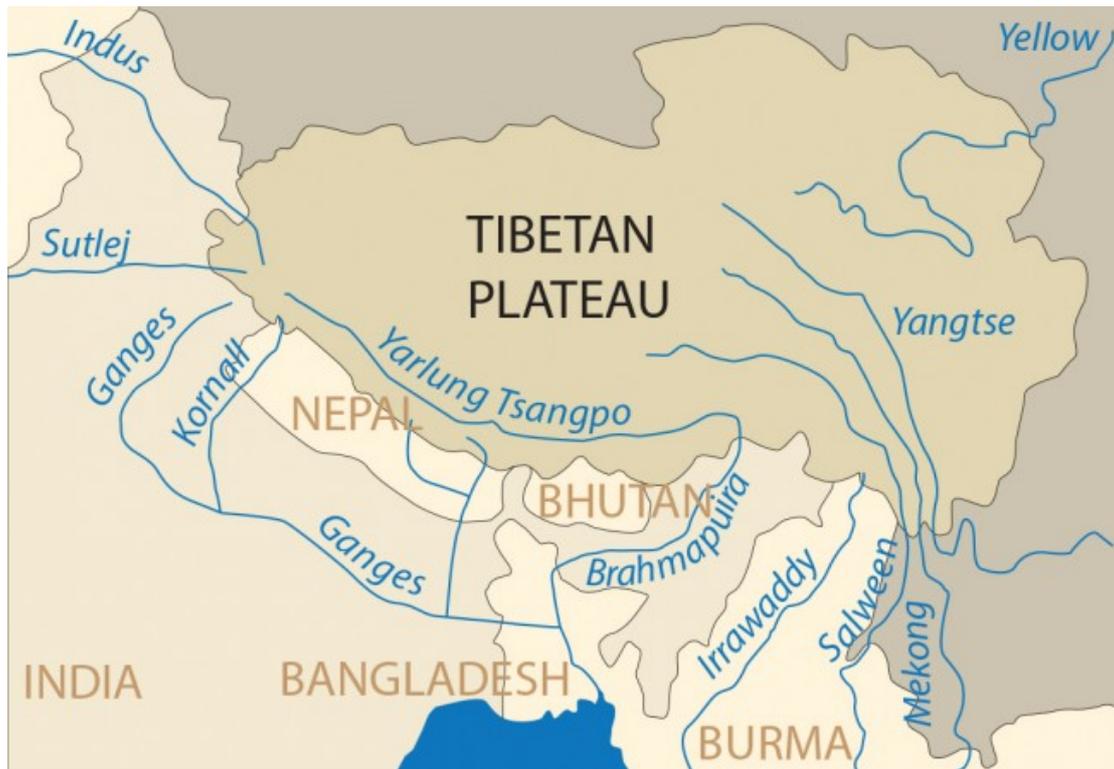
Nearly half of the global available surface water can be found in the 263 international river basins and groundwater resources (SIWI, 2009). The Asian continent, besides being the world's driest region, is also home for some of the most water-polluted watercourses. Industrial wastes, untreated sewage and agricultural runoff flowing into river waters, have heavily polluted most of the Asian watercourses. According to the Asian Development Bank, 80% of Asia's rivers are in poor health, overwhelmed by pollution and uncoordinated development of water resources. Such mismanagement is leading to the transformation of the flow system and the change in flood control, hydropower and diversion. The Himalayan chain constitutes the lifelines of South and East Asia, providing water, and consequently energy and food for the surrounding countries. It is also named "The third pole" for the exceptional quantity of ice caps and water in form of ice. In the glaciers of the Tibetan plateau the world's greatest rivers originate, which sustain China and India, the world's two most populous countries, as well as Bangladesh, Burma, Bhutan, Nepal, Cambodia, Pakistan, Laos, Thailand and Vietnam, making up almost the half of the global population. The Tibetan plateau, referred to by Tibetans as the "Roof of the World", is the highest and largest mountain chain on planet Earth. The chain is tied in the west by the Karakorum Range, in the north by the Kunlun, Gobi and Altyn Tagh mountains, on the south by the Himalayas, and on the east by several mountain ranges between the major rivers draining the Plateau.

Some of the world's largest rivers drain from the plateau:

- The Indus (Ganges) drains the southwest
- The Yarlung Tsangpo / Brahmaputra drains the southern and southeastern area
- The Salween (Nu), Mekong and Yangtze drain the central and eastern areas
- The Yellow river drains from the northeastern area.

About four million Tibetans live in the plateau, but about half of the world's population lives in the drainage basins of these six rivers. These great rivers have defined the history, culture and geography of South Asia for centuries and are nowadays sustaining the lifelines of millions of people. These rivers are currently under great pressure due to industrial development, urbanization, population growth and environmental pollution. Moreover, as the rivers flow through disputed political boundaries, the problem of water competition amongst countries arises. This water challenge will be mainly played by China and India. Most of the rivers in the regions originate in China's controlled Tibet, which water resources are considered fundamental in order to support the northwest desertic part of China where the

Yellow river flows.



Map 2. Source: *The Epoch Times*

Maps showing Transboundary Rivers flowing from the Tibetan plateau

The Yellow river, where historically Chinese society has sprout and developed, is considered to be the unhealthiest river in Asia, right before Indian's Ganges and Yamuna. Loss of natural wetlands, deforestation and building constructions have contributed to the deterioration of the sanitation in these rivers. Heavy solvents and toxic sludge, among other substances, are constantly discharged into the Brahmaputra, the Ganges, and the Meghna basins, therefore polluting the freshwater sources. In these three basins, about 88% of the water withdrawals are used for irrigation, and the return flows to the river systems often are contaminated with agricultural chemicals and pesticides.

When discussing about the Asian water crisis, we cannot only refer to the natural lack of resources, but we must also address the social, political, economic and environmental factors that generate such crisis. As former Indian Water Minister Ramaswamy Iyer argues, water conflicts arise both out scarcity and out of gross mismanagement, in response to an apparently unlimited demand for water (Singh, 2008). According to Iyer, water crisis is primarily a crisis of understanding and therefore water related tensions must be considered in their political context. River policies are generally implemented in the framework of a political context. The different views of the riparian states, in terms of cooperation, generate

a power game. When addressing the water challenges in the region, it's important to adopt sensible riparian policies and 'healthy rivers' schemes, while not ignoring the political realities. Many of the existing treaties may have to be evaluated afresh and the new treaties based on the current hydrological knowledge would need to be framed. Water relations in the region are seen as zero-sum game and riparian states differ in their views of what cooperation entails for them. Not surprisingly, a power game ensues. Rivers, in effect, can no longer be viewed as a soft component of a country's foreign policy. Rather, they are intricately linked to developmental goals and domestic needs that impact bilateral relations. Part of the problem is the zero-sum way in which water relations are viewed throughout the region. There is little perception of water as a 'shared challenge'. Rather, sentiments towards other riparian implement nationalist standpoints, focusing on past injustice or perceived hostile intentions. These factors mean that negotiations as they are currently configured, stand little chance of success, enhancing distrust if they fail.

2. From water competition to water grabbing

2.1 The great Chinese Thirst

2.1.1 Consequences of water pollution

The incredible growth of Chinese population and economy over the last three decades came at a tremendous cost for the country's environment. The unwavering level of economy growth, which averaged about 10 percent per year for the last 20 years, and has now leveled at about the 7 percent, has created unprecedented pressure on water resources. The availability of water has been necessary for this extraordinary development, and for the consequent improvement of Chinese people's standard of living. However, China is experiencing serious troubles in keeping up the growth rate with the available water resources. These resources are used inefficiently, they are distributed unevenly across the territory and they are seriously polluted because of human, agricultural and industrial waste. The main Chinese aquifers are consumed unsustainably, water has been over-pumped, several species of aquatic life have gone to extinction and generally the health of the ecosystems are severely under threat. The North of China is experiencing a progressive desertification. About 500 million people living in these regions get access to only one fifth of the total fresh water of China.

Hence these problems represent serious challenges for the country, which could lead to social unrest. China, more than any other country, has to face today a complex scenario, as vast stretches of rivers are extremely polluted and many of the lakes are cesspools of waste. About three million people lack access to proper safe drinking water. Episodes of illnesses, such as cancers and other diseases, flared-up in these regions that suffer the most out of the high levels of pollution. According to Chinese statistics, about the 40% of the available water in the Middle Kingdom territory fit only for industrial and agricultural use, and only after some sort of treatments. About 20,000 chemical factories located alongside the Yangtze River are reported to dump pollutants into the river, along which the Han civilization arose (Gleick, 2009).

The dumping of untreated wastewater has a dire impact also on the groundwater, which quality is increasingly deteriorating. According to the State Environmental Protection Administration (SEPA) statistics, China experienced over 1,4000 environmental pollution accident only in 2006, more than half of which were related to water pollution. SEPA has reported increased deterioration in China's seven major watercourses and noted further deterioration in the Songhua, Hai He, and Huai He rivers as well as in Taihu, Chaohu, and

Dianchi lakes, despite the programs addressed for cleaning them. In March 2013 the Guardian has reported the story of the 16,000 dead pigs, which were found floating on the Huangpu River (Minghe, 2013) and brought Shanghai under scrutiny.

The Organization for Economic Co-operation and Development (OECD) have estimated that hundreds of millions Chinese have been drinking inorganic contaminated water, with toxins, chemicals, excessive fluoride and arsenic (OECD 2007). Some efforts have been done to clean up the main polluted rivers, with limited results.

Citizens are becoming slowly more conscious about the impact of water pollution on their life. Elizabeth Economy has reported on her book "The river runs black: The Environmental Challenge to China's Future" how in the Huai He basin, known to be over-polluted, some young men were not able to pass the physical examination for entering the Army, for reasons ascribed to water-related illnesses and contamination. The Huai He, which runs through four of the most populated provinces, influencing the life of about 100 million and it's very known for its infamous level of pollutions. Its untreated wastewater volumes exceed national standards while the chemical oxygen remains 30 percent above the targets, despite the major government investment to upturn the situation (Economy, 2004). In some other contaminated regions of China, farmers, concerned about the quality of their water, have been selling their grains to get money in order to buy other grains that they believed were safer (Guo, 2007). The poor quality of water is having an impact on cancer rates, a fact that has been acknowledged also by the Ministry of Health. Chinese medias have increasingly reported episodes of villages being affected by elevated cancer rates related to river's pollution. Despite these problems becoming more and more known in the country, very little progress has been done to reduce the dumping of pollutants. The OECD has reported how the major Chinese cities are far to meet state drinking-water quality standards. About one third of the surface-water examined is considered extremely polluted (OECD, 2007). It is undisputable that these problems can be considered as a threat for the country's economic expansion, internal cohesion and political stability. The World Bank has reported that environmental degradations cost China roughly the 9 percent of its gross national income (World Bank). According to China's Ministry of Environmental Protection own "green GDP" number, the cost of pollution estimate is around 1.5 trillion RMB, the 3.5 percent of the country's GDP.

There is a growing dissent amongst the population over environmental issues, such as water allocation and water quality, which often turns into political pressures, addressing regionals and central governments. Advocacies are increasingly felt on the government level when they come from businessmen and companies cancelling projects over water concerns. However, even from citizens and increasingly on social networks the ruling Communist party have been criticized for health concerns. In February 2013 the newspaper People's Daily published a poll in which citizen named the environment as the most critical issue to address

the Beijing government. Protests have emerged in May 2013 against the building of a chemical plant in the city of Kunming, which is supposed to produce about half million tons of carcinogenic chemical each year. In October 2012, a series of demonstrations arose against at the petrochemical plant in the city of Ningbo, which succeeded in halting the expansion of the project. The protests continue several months later against when the spillover of toxic chemicals from a factory in Shanxi province, heavily polluted a local river.

The government has taken action to solve these series of environmental issues by drafting an ambitious five-years plan to curb pollution, to control factories behaviors and to clean up the air. Beijing has shown at the same time a renewed commitment in pushing towards renewable energies, which according to National Energy Administration make up about the 57 percent of the new energy-generating plants. This has been done also thanks to advocacy of GONGOs and NGOs active in the country to promote new policies implementations.

2.1.2. The water diversion project

Having taken controlled of Tibet with the rise of the Chinese Communist Party ruled by Mao Zedong, China put its hands over the richest water resources of the continent, establishing a situation of water hegemony in Asia. Since then, China holds the strategic position as supreme upper riparian state in most of the tranboundary rivers flowing from the Himalayas. To solve the problem of water scarcity in China, back in 1952, Mao Zedong proposed the idea of an unprecedented engineering project consisting in the diversion of the main watercourses of the country.

"There's plenty of water in the south, not much water in the north. If at all possible; borrowing some water would be good."

In 1958, during a meeting of the politburo of the Chinese Communist Party, Mao passed the Directive on Hydraulic Works, coining the expression "south-to-north water diversion (*nanshui beidiao*, in Chinese pinyin). The first step of the water diversion project has been the construction of the huge reservoir in Danjiangkou, on the Haijian River, in Hubei province. In the following years the project slowed down because of the unsuccess and the mass starvation generated by the "Cultural Revolution" and the "Great Leap Forward". The project was revived in 1991, when it was included in the country's five years and ten years plan at the National People's Congress. The State Council approved the "South to North Water Transfer Project" (*Nanshui Beidiao Gongcheng Zongti Guihua*) in 2002, an overly ambitious project aiming to channel fresh water coming from the Yangtze River to the arid and industrialized northern region of China. The engineering project, attempting to correct

the country's imbalance of water ability, is expected to be completed by 2050 and would eventually divert about 44.8 billion cubic meter of water from the humid south to the industrialized north annually. The project was launched thanks to a 5.86 billion dollars credit given by state-run Chinese banks, and a 7 billion dollars credit pumped by the federal government. However, the project became soon much more expensive, reaching a total of 37 billion dollar investment in 2008, according to the SNWD Project office, Zhang Jiyao, just for the eastern and central route. The State Council has approved a 62 million dollar total budget for the whole project, even though the amount could be even higher.



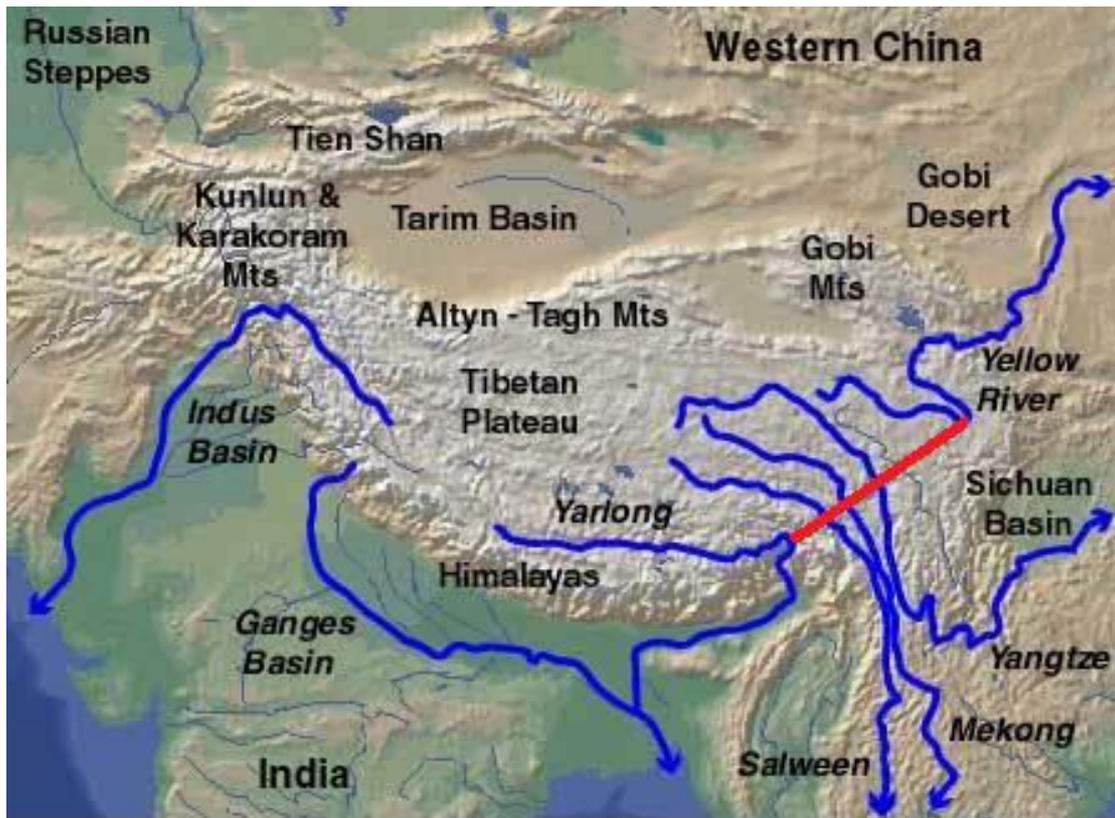
Map 3. Source: Brookings. The water diversion project

The project was developed through three-canal system:

- The eastern route one flows via the Grand Canal. The Grand Canal is an artificial river that links the Yellow River and the Yangtze River, built between the 5th century BC and the 7th century AD during the Sui Dynasty, running from Hangzhou to Beijing. It was used mainly to transport rice northward from the fertile south. This eastern part of the project is yet to be finished and once completed will bring water up to Tianjin. It has been estimated that this eastern route will take 14.8 billion cubic meters of water per year, from the Yangtze up to Tianjing, though a tunnel excavated beneath the Yellow river and expanding the Grand Canal, making it the world's largest aqueduct.
- The 1,421 kilometers-long central route was completed in the end of 2014,

diverting water from the Danjaingkou reservoir on the Han River, in central China's Hubei province. River waters have been channeled on a new canal located on the western side of Huanghuaihai plain in order to run through Henan and Hebei provinces and later on to Beijing, handling 9.5 billion cubic meters of water annually. The length of the route can be compared with the distance from London to Corsica. This project is about to supply a third of Beijing's annual demand, as well as providing water to the 13 million people city of Tianjin. According to the Californian nonprofit International Rivers, 330,000 people were relocated for the expansion of the Danjiangkou reservoir, where the middle line begins.

- The Western route is the most ambitious projects of all. It is designed to bring about 4 billion cubic meters of water from the three tributaries of the Yangtze, the Tongtian, Yalong and Dadu rivers, located on the Tibetan plateau in Qinghai region, where about one-third of the country's water resources are concentrated, across 500m through the Bayankala Mountains and then on to northwest China. This route involves a transfer of water through elevations ranging from 3,000 to 5,000 meters above sea levels to northwest China, where the water will replenish the highly polluted Yellow River and meet the demands of the industries and cities in the North West, as well as irrigating millions of hectares of land (Wilson Center, 2011). The Western canal would profit from the melting of the Tibetan plateau glaciers, which water would be injected into hydroelectric projects, which are currently underway. The reduced water flows would impact negatively water scarce riparian states such as India and Bangladesh. Indian leaders have expressed preoccupation about the possible leverage that such project could give to China over India, since the first could exert greater control over the river's flow and damage the interests of the latter. The western route has been forcibly debated owing to political and strategic outcomes for China's riparian neighbors particularly on the Mekong and the Yarlong Tsampo-Brahamaputra, as well as the Salween, Irrawaddy, Sutlej and the Indus.



Map 4. Source: World Defence – The diversion on the Yalong Tsampo / Brahmaputra

The water diversion project has provoked several environmental concerns because of its impact on nature, with destruction of pastureland as well as because of the displacement of people. Sichuan Provincial Academy of Social Science's researcher Lu Jiaguo, and Lin Ling, has strongly criticized the projects, drawing attention on the fact that the Yellow river would be saved but at the Yangtze River's expenses.

Concerns over river quality did also slow down the work on the central route, which should have been completed in 2010, but was only finished in 2014. The central route has generated several problems for the high costs of its engineering challenges and the pollution that has been generated. The redistributive nature of the project have stirred the criticism at the provincial level, with environmentalist complaining about the fact that the project is intended to benefit mainly the residents of Beijing, while creating harmful environmental impacts to the other regions, including the potential to transmit diseases from southern China to the north, the deposit of sediments which are critical to wetland formation, the possible salt-water intrusion on the canals as well as the habitat destruction. Farmers in Hebei province have been required to switch productions from rice to corn to preserve water for the canal, experiencing a decline of 50 percent of water availability in the recent years. Some central Chinese leaders and provincial and municipal authorities have advocated the government to compensate localities whose water have been diverted, since the diversion

project have forced some enterprises to shut down and have polluted water that people were drinking downstream. Citizen resettlement has also created a certain malaise toward the project (Lipes, 2014). In 2009, local protests erupted in Hubei provinces, in the area of the Danjiangkou reservoir, where about 350,000 residents sought to be relocated to the most-populous China's province of Henan, inhabited by nearly 100 million people. Despite the protests, the Chinese state steadily completed the central route project.

2.1.3 Chinese water projects on transboundary rivers

The ambitious large-scale and capital-intensive water projects developed by the Chinese government aren't exclusively affecting some of the Chinese provinces, but are impacting also the lower riparian Asian states. The Chinese government is trying to dam or redirect most of the Tibetan plateau's rivers, where the Yangtze, the Yellow, the Indus, the Karnali the Mekong, the Salween, the Brahmaputra and the Sutlej Rivers originate. Among Asia's mighty rivers, only the Ganges starts from the Indian side of the Himalayas. The Chinese government is using this strategic position to build a series of dam that are increasingly concerning the southern riparian states. The construction of dam is intended to regulate water supply, to control floods and facilitate irrigation, to generate electricity and bring water to the cities. There is no place in the world that can count the same amount of dams as Asia.

In this era of water stress, these actions carry resonant social and political implications, when dam building is perceived as an action of "water grabbing" by the co-riparian states that see the water flow of their rivers getting progressively reduced. For Chinese officials, Tibetan's waters are seen as the resources that could save the country's rush for economic world's primacy. This project has been discussed for many years by Chinese scientists, who have been studying how to move large quantities of water, from the Tibetan plateau to the north and west of China. These theories are contained on Li Ling's book "Tibet's water will save China", which expresses a stream of thoughts that enthralled officials since the 1980s. The Chinese government and its agencies bought 10,000 copies of the book for circulation amongst the country's officials. The writer, who was himself a former official of the People Liberation Army (PLA), explains the benefits for China of these inter-river and inter-basin water transfer projects in Tibet, and include the idea of rerouting not just the waters of the Yangtze's tributaries, but also those of the Yarlung Tsangpo River, as it is called in China, but bears the name of Brahmaputra in India. The Brahmaputra would thus be rerouted towards the moribund Yellow river and sustain the cities and factories of the north. The water transfer projects would involve the construction of building tunnel across some six mountains ranges. The main challenge for this project is however essentially geopolitical. Part of the river flows through the disputed region of Arunachal Pradesh, officially under the Indian

sovereignty, but claimed in several circumstances by the Chinese government. We will describe the situation of Arunachal Pradesh further on this essay. Chinese's government actions on the Brahmaputra is to build a series of dams on the Chinese side of the river, including a proposed 38 GW dam at Metog ("Motuo" in Chinese). Beijing's plan is to reroute the Brahmaputra northward, in an action that is seen by India and Bangladesh effectively as a declaration of "water war" to the co-riparian states. India and Bangladesh are also preoccupied by the fact that the construction of such dam in the river plateau will inevitably and dreadfully damage the natural ecosystem, while threatening diverse indigenous cultures.

China is not only damming the Brahmaputra, but it is building dams also on the Sutlej river, which flows from the Tibetan plateau under the name Langqên Zangbo and run through the Himachal Pradesh, before joining the Beas River and entering Punjab state and Pakistan. According to the Indus Water Treaty, the waters of the Sutlej are allocated to India. However, China has now built the capacity to divert its waters, by controlling the roots of the rivers, where its waters originate. The same destiny is occurring to the upper reach of the Indus River, located in Tibet and one of those rivers suffering the most from water scarcity, partially blocked by the new dam constructed at Senge-Ali (Albinia, 2008).

The Chinese government is also building the giant 4,200-megawatt Songta Dam in Tibet on the Salween river, running through the Yunnan Province, flowing inside Myanmar and running through the border with Thailand before draining into the Andaman Sea. China is also sponsoring dam project outside its territory, as in Myanmar, where the construction of the Myitstone Dam have drawn attention because of its mounting environmental and human costs. If completed, the dam would have been the fifteenth largest hydroelectric power station in the world, but in 2011 the authorities decided to suspend the project, after the construction instigate new disputes and fighting between the Kachin Independence Army and government forces.

Competition for water is particularly emerging between China and Vietnam, as Vietnam is located downstream on the Red River and the Mekong, both flowing in from the edge of the Tibetan plateau. The 5,000 km Mekong river forms a vast basin, estimated to support up to 100 million people as it passes through China, Myanmar, Lao PDR, Thailand, Cambodia and Vietnam. Most of the fishing communities, in particular, depend on the river water. The Chinese have also built a series of dams that have created serious resentment not only in Vietnam, but also in Laos, Cambodia and Thailand.

However, one of the most discussed projects is the 5,850-megawatt that China built at Nuozhadu on the Mekong, in the Yunnan province, near the boarder with Laos and Vietnam. The Nuozhadu dam can alone generate more electricity than the combined installed hydropower capacity in the lower-Mekong countries at present. This water grabbing process for hydroelectric power generation purposes, besides enervating South-East Asian's

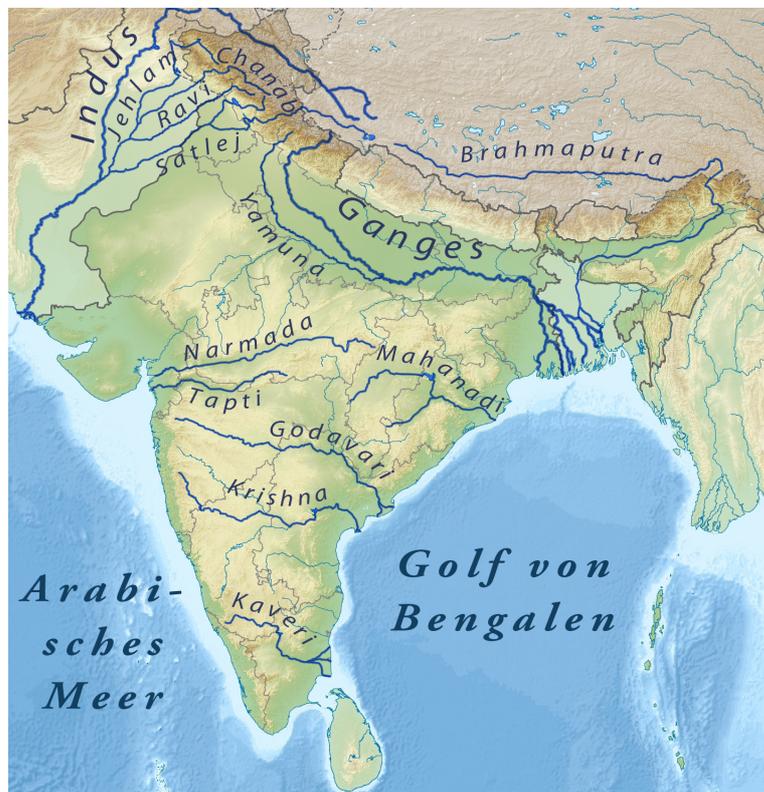
countries, are blocking migrating fish from reaching their spawning grounds and holding back nutrient-rich sediment. With a total of 50 dams in the Mekong basin, only 46 per cent of the original ecosystem is estimated to remain intact. (Friends of the Earth – July 2013 report).

On the diplomatic sphere, the US government has sponsored an initiative to promote cooperation amongst Indochinese countries in the areas of environment, education, health, and infrastructure, urging Beijing to overcome its loathing of institutionalized water cooperation and joining the Mekong River Commission, which was set up in 1995 to foster integrated and sustainable management of basin resources (Lipes, 2014). The Mekong Agreement of 1995 prohibits the riparian states to divert or construct any hydraulic structures, which would affect water flow of the Mekong. China, however, refused to take part in the project. So far the Chinese government did not engaged in any water sharing treaty with any co-riparian state. The government is focusing in acquiring, mainly through dam construction, the resources it needs to continue its magnificent, yet unsustainable, growth. Therefore no cooperation has been set up by the most powerful countries in the region, which are currently claiming their “indisputable sovereignty” on the river’s water originating in their territories. These countries continue to freely make use of the water of its trans-boundaries rivers, in an action that could be defined as “water grabbing”. These issues will be further discussed on this paper.

2.2 India’s water crisis and inter-river relations

India, the second largest population in the world, is one of the most water-stressed countries in the world. The country’s population is expected to reach about 1.6 billion in 2050, becoming the most populous nation, increasing therefore the stress on natural resources. Its growing economy will require always more water, both for industrial and agricultural usage. The most of water consumption in India is taken by agriculture, which currently use about the 90% of total water resources (UNICEF, 2002). India is a major grain producer, a crop that requires a great quantity of water. About the 60 percent of Northern India is irrigated by agriculture that counts on ground water (Zhu, Ringler, Cai). According to the World Bank, about 20 years India’s aquifers will reach critical conditions (World Bank, 2012). India is also the largest user of groundwater. According to the World Bank, it uses an estimated 230 cubic kilometers of groundwater per year, one fourth of the global total. Most of the farmers living in the most arid areas utterly depend on groundwater for irrigation purposes (World Bank, 2012). However, the government has put no limitation on the volumes of groundwater that farmers could possibly extract. Everyone is free to take possess of this water as long as the water comes from their soil (Global Envision, 2007). Groundwater is important because it constitute a fundamental buffer against the volatility of the monsoon rains. According to a

report by the World Resource Institute (WRI), about 600 million people are at higher risk of surface-water supply disruptions, especially in the Northwest of the country (WRI, 2015). Water is also important for industrial use, and the Indian factories are the most responsible of the pollution of the country's watercourses. At the government level, pollution is badly regulated or even not regulated. The rivers have become the dump of sewage disposal, chemicals, industrial effluents, fluoride and arsenic that has turned the main rivers unfit for drinking, irrigation and industrial use (Global Envision, 2007) The 21% of India's diseases are water-related, while approximately one third of the population that lack access to proper sanitation. Mismanagement is for India one of the greatest problems related to water, due to inadequate government planning, privatization of resources, corruption and industrial waste. Rivers have been always viewed as an unlimited source instead that as a scarce commodity to protect.



Map 5. Source: Wikipedia – India's main rivers

India's main rivers are depending on the snow and glaciers of the Himalayas chain, which is home to the greatest resource of ice and freshwater. In relations with its co-riparian states, India is the uppermost riparian, the mid-riparian and lowermost riparian of the different rivers of the region. India can also be considered the country mostly affected by the water policies of the Chinese government, since the subcontinent receive nearly half of all river waters that leave the Tibetan plateau. According to FAO, a total of 718 billion cubic meters

of surface water spill out of Chinese territory yearly, of which 48.33% runs directly into India. Unlike China, India has engaged in a series of agreement with its co-riparian states and differently from China, the internal political situation of India makes it harder for the Indian government to plan massive projects as the ones developed by China. Government plans for large projects and dams are constantly opposed by influential nongovernmental organizations, which make it difficult for the state to implement hydropower projects. Many internal projects have indeed been blocked halfway.

India's problems with river sharing began with its independence, with the split of the once united country. The Indus dispute was settled with the Indus Water Treaty between India and Pakistan, which have been generally seen as a successful example of cooperation between two countries in a high-risk situation, which came out of many years of negotiations, involving external actors such as the World Bank. However, the initial success of this treaty can be found in the ability of both India and Pakistan to consider water issues separated from the conflict between the neighboring countries. In 1948, India and Pakistan were very close to entering into a conflict for the division of the Indus basin (Wolf 1998). However due to the conclusion of the Indus Water Treaty in 1960, water relations between the two countries remained stable, despite India and Pakistan are two amongst the most water-stressed countries in the world. In the latest years, India created new tensions by undertaking several aggressive dam building project to exploit the river's hydroelectric potential.

The sharing of the waters of the River Ganga was a tougher issue to resolve. With the independence of Bangladesh from Pakistan, the Ganges was shared by one more nation. India and Bangladesh share 54 common transboundary rivers. India has also engaged in a water sharing treaty with Bangladesh in 1996, guarantying the downstream state specific cross-boarder flows in the critical dry season (Giordano, Wolf 2002). The agreement is far from being flawless and new disagreements have emerged, both regarding smaller river basins and India's proposal of reviving the Tipaimukh dam project. The dam project aimed at controlling floods, improving river navigation and generate a 1,5000 megawatt of hydropower. India and Bangladesh are currently in a dispute for the waters of the Teesta river, which start flowing from the Indian state of Sikkim and merge with the Brahmaputra in the Bangladeshi delta.

The relations on transboundary rivers between India and Burma have been quite successful. Unlikely, the pacts stipulated between Nepal and India has been judged controversial in Kathmandu. People believe that the agreement favor India and it's not a coincidence than Nepal has turned to China for dam construction collaboration. More details on water sharing agreement between India and its co-riparian states will be further discussed on this paper.

2.3 The Himalayan Rivers in Central Asia



Map 6. Source: <http://www.cawater-info.net/>

The flow of the Amu Darya and Syr Darya crossing Central Asia

Two of the main rivers flowing down the Himalayan plateau descend eastward through Central Asia and define the international relations of the post-Soviet countries. The dissolution of the URSS transformed the Syr Darya and the Amu Darya into international watercourses that flow through Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and Turkmenistan. The Syr Darya originate in the Tian Mountains in Kyrgyzstan and eastern Uzbekistan before flowing through the remains of the Aral Sea in southern Kazakhstan for about 2,212 kilometers. The Amu Darya flows instead for 2,400 kilometers through Afghanistan, Tajikistan, Turkmenistan and Uzbekistan. The Amu Darya mainly constitute the boarder between Tajikistan and Afghanistan and between Uzbekistan and Turkmenistan, before flowing to what is left of the Aral Sea. The Amu Darya holds a strong geopolitical importance since antiquity, when the river represented the boundary between the Greater Iran and Central Asia region. Nowadays these two rivers are still at the center of fierce competition between co-riparian states. The Commission for Water Coordination (ICWC) was created to establish a regional water management system on the use of these rivers. However, the rising nationalism and competition in Central Asia did not allow a new agreement to develop. As a result of that, water issues are still regulated with the old previous system, that benefited the most powerful countries of the region: Uzbekistan, Kazakhstan and

Turkmenistan. These hydrocarbon-rich and most powerful states are using the bulk of the region's renewable water resources, believing their right to do so are "historical". The status quo is currently maintained with the threat of the use of force. The political frontiers between countries do not correspond with ethnic identities, generating an instability that increase the water insecurity in the region, since it's impeding new agreements to possibly form. Uzbekistan, Kazakhstan and Turkmenistan, despite being the lower riparian states, are imposing their decision and generating a condition of "water grabbing" because of their military power, disadvantaging the smaller and weaker states in Kyrgyzstan and Tajikistan. By so doing, they are preventing Kyrgyzstan and Tajikistan to build new hydro-engineering project that could alter the trans-boundary flows.

3. Water grabbing in academia

3.1 Definition of water grabbing

Water grabbing is defined as a situation where powerful actors are able to take control of, or reallocate to their own benefits, water resources already used by local communities, or feeding aquatic ecosystems on which their livelihoods are based (Mehta, Veldwisch, Franco, 2012). These actors can be bureaucrats, financiers, energy, water and agricultural specialists, but also banks and business elites that use legal means to divert water and take profit away from local communities. We could include among these actors also water-targeted investment funds aimed at seeking profit out of the monetization of water, which is turned into an economic asset, gaining in scarcity value. These actors have defined the land acquired as 'marginal' and 'unproductive' in order to move into large-scale agriculture projects around the world, with the goal of making profit. Water grabbing can be basically defined as an expression of an economic model of development that connect capital accumulation to the control of natural resources such as food, energy and water, in abundant and cheap supplies. The capturing of these resources is embedded in new models of production and their associated trade and investments regimes. (Franco, Key, Kishimoto, Pracucci, Feodoroff, 2012). Water grabbing involves therefore both the physical capturing of water as well as the acquirement of local people's previously established rights to use the river's water. (Mehta, Veldwisch, Franco, 2012). Kay and Franco have argued that water and land grabbing are essentially investment in 'virtual water', which is the water used to produce every kind of products. When water is used to irrigate crops of products that are subsequently transferred elsewhere, these freshwater resources are virtually transferred elsewhere. This process reduces therefore the water availability for the irrigation of neighboring farmland areas, meaning the areas that have not been grabbed. Such procedure bring water stress in the regions, countries or communities affected, and reduce the possibilities for other farmers to grow crops on their own, generating poverty or creating a malaise that can lead to social unrest.

The most of the researches about land grabbing have described how behind every land grabbing there is water grabbing. Investors are therefore buying lands around the world and getting access to those water resources that are scarce in their own countries. This process is not always concealed. We could quote for instance the statement appeared in an Economist article published in 2009 by the chairman of Nestlé Peter Brabeck-Letmathe, who claimed that the most of the deals, supposedly aimed at the acquisition of land around the world were mainly about water, because

“With the land comes the right to withdraw the water linked to it, in most countries essentially a freebie that increasingly could be the most valuable part of the deal” (The Economist, 2009).

On the International Land Coalition that took place in Tirana in 2011, land grabbing was defined as land acquisitions in violation with human rights, with no prior consent of preexisting land users and without consideration of the social and environmental impacts. Therefore, in many cases, the land grabbing is far from being a transparent and democratic decision process (International Land Coalition, 2011). Unlike land, water does not obey to boundary lines and therefore the impact of the investors can have stronger effects on natural resources. Water can be considered grabbed when it has been polluted to a point that it cannot be safely used for the purposes that it was previously used.

3.2 Academic debate on water grabbing and ‘water war’

While dealing with water grabbing on a global scale we must address a series of complexities that Franco and Key have pointed out clearly in their analysis:

- The first one regards the hydrological complexities, which involve the water and groundwater interactions and the inter-annual water variability.
- The second one is related to the ecological complexity, since the water system span a vast array of ecological contexts, which include freshwater lakes, inland rivers, floodplain, desert and semi-desert areas, coastal lands and wetlands.
- The third one regards the legal and administrative complexity and particularly the unclear connection between legal and illegal as well as between formal and informal right.

The debate over water grabbing has been changing over time. In the 1990s there was a general conviction amongst analysts that the world would face a period of conflicts related to water. Former vice president of the World Bank Ishmael Serageldin once stated:

“The wars of the 21st century will be fought over water”.

This sentence, quoted by many analysts and observers, was instrumental for sustaining their views of a world going towards a series of water conflict. Ishmael Serageldin was one of

architects of the World Bank's program to push on the Global South's governments to constrain them to sell their public water asset to foreign corporations in exchange of funds. He was the chairman of one of those institutions that defined and considered water as an "economic good", the Global Water Partnership that advocates for water privatization as a strategic choice for the governments. The UNESCO report on international water summarized some of the views from the scholars who have looked at the competition over water as a drive for conflict. In 1986 Arthur H. Westing stated that the "competition for limited" resource would "lead to severe political tensions and even to war" and listed the waters of the Jordan rivers as the cause of the Six Days War waged by Israel in 1967 (Westing, 1986) Such view has been shared by several observers who agreed that Israel was driven by a 'hydraulic imperative' when conquering the water-rich Jordan River basin. Taking the Nile as an example, Peter Gleick in 1993 considered the water resources as military and political goals, and as the most compelling environmental issues of today and tomorrow (Gleick, 1993). While studying the Middle East, South Asia and South America, in 1995 Remans asserted how the water competition in these regions would lead to armed conflicts. In 1997 Samson and Charrier wrote about potential conflicts in about eighteen river basins. In the same year, Butts expressed how 'history is replete with violent conflict over water'. Chellaney himself describe the current situation in the Himalayas as a potential flashpoint of conflict (Chellaney, 2014). These observations, sustained by the writings of many journalists, have often labeled as 'conflict' a situation of political tension and a permanent state of competition over resources. However, these years of tensions did not lead any of the countries involved in water competition into real warfare. Based on this outcome, we could assume that the 'water wars' literature has proven to be at least an exaggeration, as well as a deceived attempt of describing how the fundamental challenge for water will unfold in the future. What has been seen as 'water wars', is constituted by a series of incidents at the subnational level and sometimes between regional groups or tribes over the posses of water, which have developed throughout time and not particularly in the last decades, when water-stress have become an always more critical issue. Examples of conflicts can be considered the clashes which erupted between Turkey, Iraq and Syria, over the Tigris and Euphrates' waters, and the tensions in Cochabamba after the privatization of water which lead to an increase of water prices and prompt thousands people to take the street. On a smaller extent, conflict can be considered the skirmishes that happened in the region of Arunachal Pradesh, contested by India and China.

However, global international institutions have been inclined to look at the water competition under another framework. The UN Food and Agriculture Organization has identified about 3600 historical treaties related to international transboundary watercourse between 805 and 1984 (FAO, 1978, 1984). It is estimated that 150 of these treaties have been

signed in the last century, while armed conflict have taken place only in few cases.

By focusing more clearly on modern water grabbing, some institutions such as the World Bank, UNESCO, and FAO have been defining this process as an opportunity both for investors and for the targeted countries. This definition strongly contrast with the views already reported in the previous chapter of this paper, which indeed describe how powerful actors use whatever mean to make profit out of land and territories, despite the resistance of the local community. Rulli, Savori, D'Odorico have indeed looked at water grabbing as a form of colonialism that has intensified in the last 4 years, in response of the increase of food prices (Rulli, Savori, D'Odorico, 2013). The World Bank insist however in looking at it as a “win-win” situation, in which the interest of those who purchase foreign land for food and energy production can be reconciled with those of the communities, regions or developed countries, when the impact of their activities can create jobs, bring investments and produce technological advances which the local economy could somehow benefit. A vision that doesn't differs that much from the purpose outlined in the last stages of colonialism. Still, some analysts argue that out of this deals the local communities, regions and countries can gain a lot in terms of money, opportunities, infrastructures and rural and industrial development (Hofman and Ho, 2011). With the program “From Potential Conflict to Cooperation Potential (PCCP)” UNESCO promoted cooperation specifically on transboundary rivers, assuming that such an approach could lead to a peaceful development globally. Conversely, the mechanisms of power have shown how it is quite often the stronger hegemon state to gain from water grabbing, by withdrawing a disproportionate large share of the waters (Zeitoun and Warner, 2006).

In fact, most of the power relations over water have evolved through both the trajectories of conflict and cooperation. Mirumachi and Allan have affirmed that the relations of basin states evolve over time and generally experience both periods of interaction and non-interaction, evolving through coexisting conflictive and cooperative interactions (Mirumachi, Allan, 2008).

3.3 Forms of water grabbing

Given the always more strategic importance of water, the process of water grabbing has developed in many different forms of enclosure. The grabbing can take place through the dispossession of the previous user either by violent appropriation, by delegitimizing claims embedded in legislation or through market mechanisms. Water grabbing is in many cases illegal and in some cases ‘perfectly legal’, but usually the grabbers make use of all the possible legal complexity about water rights to fulfill their goals. Boelens and Gaybor identified four different ‘levels of confrontation’, on which water grabbing takes place

(Boelens, 2014)

- The first level involves direct struggles over access, appropriation and concentration, and thus refers to those who have the power to grab water resources.
- The second level refers to the power to determine the contents of rules, rights and laws for the governance of water distribution and allocation. This mainly occurs in countries that have weak legal system frameworks, and where the rights over water are unclear.
- The third level addresses the exercise of legitimate authority and thus who is entitled to take part in the making of laws and rules around water management. The corporate sector is for instance gaining an always-stronger decision power within different international policy-making forums and bodies dealing with water governance, at the expense of civil society voices.
- The ultimate level of confrontation is at the level of discourse, and therefore it is based on what languages and practices prevail in the framing of water rights and laws, and what are the preferred ways of conceptualizing water issues.

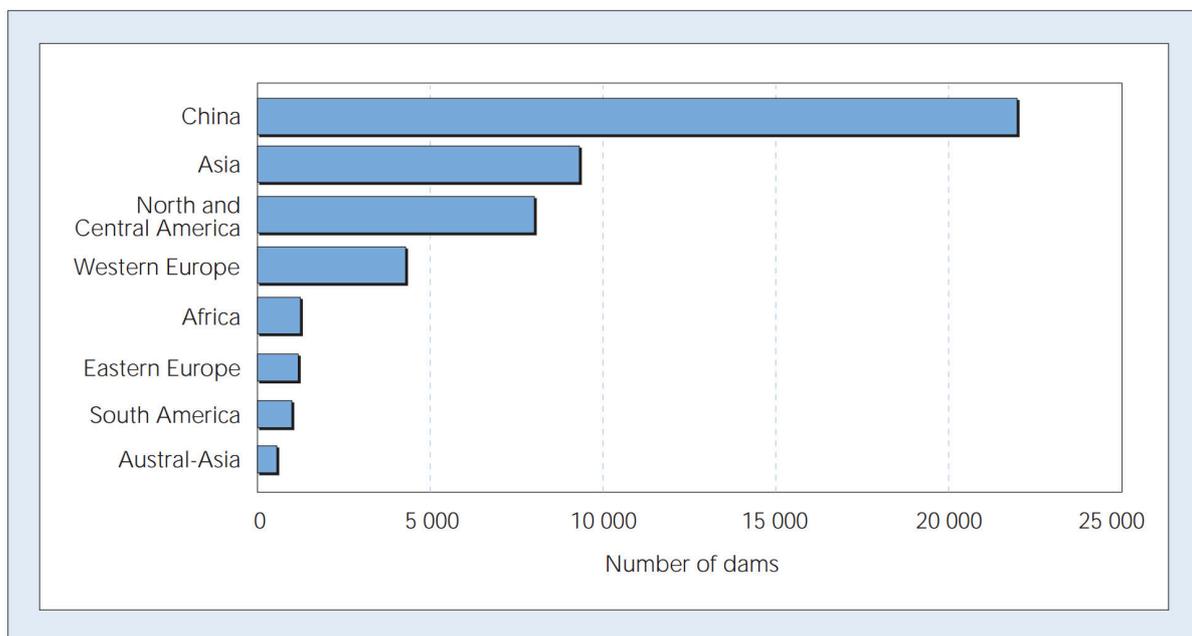
The Transnational Institute of Amsterdam have defined three main current of thoughts related to land and water grabbing.

- The process of land and water acquisition should explore the ways in which the grabs could benefit all the impacted stakeholders, resulting in a win-win situation.
- The grabs will continue as a result of the global market system, and focus on raising issues on how to mitigate the damage caused from such a trend. This school of thought sees a land and water rights based approach as the best way to ensure that the subjects mostly affected by the grabs could also have benefit.
- There can be no benefit by the process of land and water grabbing and opt to an end of the expansion of the grabs that have occurred.

Franco and Key enlisted four mayor forms of water grabbing:

- Extraction of water for large-scale food, fuel crop monocultures, and “flex crops”
- Privatization of public water management in cities,
- Trade of virtual water,
- Damming of rivers for hydroelectricity.

In the next chapters we will describe these points, with a particular attention to the privatization processes and the damming of rivers for hydroelectric purposes. The water grabbing process taking place in Asia is mainly implemented with the intention of generating hydropower. In China, a high number of dams have been constructed in the past years to make use of the water flowing from the Tibetan plateau, exploiting their power potential. China is the most dam-dotted country in the whole world. Most of the dams have been built in the last decades to secure the economic growth of the country in a context of great water scarcity.



*Table 9. Source: WCD estimates based on ICOLD.
Regional distribution of large dams at the end of the 20th century*

About half of the approximately 45,000 large dams presents in the world are located in the Middle Kingdom, but Chinese companies and worker are also involved in about 300 hundred dams projects disseminated around 70 countries, many of them in South Asia and Africa. A substantial part of China's electricity needs is covered by some of these investments in hydropower plants in co-riparian countries located downstream, especially in Laos and Cambodia. Many of these projects are not intended for benefiting the local population and they are generally accompanied by the privatization of the energy provisions. The hydroelectric project are in the hands and at the benefit of large transnational companies such as mining, metallurgy and supermarket conglomerates that can count on an amount of energy at rates ten times lower than those paid by the general population. These projects threaten the livelihood of many downstream water users.

China is definitely not the only country involved in dam mega projects. In many cases the funders of these projects are actors such as the national banks of China itself, but also of India, Thailand and Brazil, as well as a wide range of private banks, equity firms, export credit agencies and regional development banks. However, it is generally the World Bank group that has spearhead the construction of large-scale damming with the official stated aim of creating development. The bank has funded the construction of about 600 dams in the past 65 years around the world with a total cost of about US\$100 billion in loans and guarantees.

3.4 Water as an economic good: Privatization and Financialisation

Water is generally considered a public trust as naturally all living beings strictly depend upon an adequate supply of water for their survival. As previously described, the United Nations General Assembly explicitly recognized the human right to water and sanitation through the Resolution 64/292, acknowledging that clean drinking water and sanitation are essential to the realization of all human rights. In the majority of the countries today, water services are run by public and municipal system, therefore water isn't treated like a commodity to be sold and bought in the market. Increasingly however, in the past decades, water has begun to be privatized. Privatization is not a new tool in the global arena, since private entrepreneurs and investors have provided for long time water services in many parts of the world, especially in the United States and France. The issue nowadays, is that the extent of privatization and the relative awareness of the benefits and problems associated to it.

Global institutions like the World Bank Group and International Monetary Fund vigorously promoted a private sector driven range of water sanitation policies, addressed to a wide range of countries amongst the Global South. Institutions and observers supporting privatization propound that private companies can perform more efficiently in the water and sanitation sector, supplying more finance and arrange higher-quality expertise than what their government could offer. Such proponents argue that the involvement of private companies can facilitate broader reforms, which can guarantee environmental friendly results such as water conservation and pollution-reduction. Supporters assert that government management is plagued by:

- Inefficient management
- Low coverage rates
- Underinvestment
- Overstaffing
- Deteriorating infrastructure

- Unresponsiveness to the needs of the weaker layers of society (Bakker, 2010).

According to these arguments, it would be unethical for the governments to do not involve private companies to perform better than the government. Privatization policies have been ultimately related to a set of neoliberal reforms, often names structural adjustments, which has been imposed to the countries by multilateral financial institutions despite the local resistance. These neoliberal doctrines demolish the ideas that society's needs and problems can be best handled by the state through the political process. They affirm conversely that social functions and economic development should be undertaken by business within free markets, with the state playing a regulatory and facilitating role without direct engagement. The 1992 Dublin Principles illustrate these international institutions' perspective on water on the fourth principle:

“Water has an economic value in all its competing uses and should be recognized as an economic good. Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.”

The principle of considering water as an economic good was enough vague to be accepted by the participants and set the precedent for challenging traditional approaches to government provision of water services. The United Nations Conference on Environment and Development, which was held in Rio de Janeiro in the same year, reiterate that economics must play a part in efficient water management:

“Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource, and a social and economic good.”

Based on this ideological framework, many international organizations realigned their position in the water sector and the World Bank came to play a central role in developing and promoting new approaches consistent with its interpretation of the Dublin Principles, in particular with the treatment of water as an economic good. As a consequence of these ideological principles, brand new global water firms have emerged, shaped by corporations

interested in gaining control over the water services around the world.

In 2000, at the World Water Forum in The Hague, new emphasis was put on the need to mobilize financial resources to solve water problems with a greater involvement of the private sector. The “Framework for Action” released at the forum, called for \$105 billion per year in new investment on water sanitation and treatment as a way to meet drinking water and agricultural water needs between 2000 and 2025. Under this framework, it was decided that the 95 percent of the investments should come from private source. In 2002, after receiving pressure from the US government, the World Bank adopted a new overarching strategy aimed at advancing privatization in the health care, education and water sectors (Alexander, 2005)

Privatization strategies in Europe were initially driven by ideological reasons, such as the belief that privatization could achieve to satisfy unmet basic water needs, that business works better and provide capital faster and cheaper than the public sector and that efficient water-system operation require private participation. In the US, efforts for privatization were initially pragmatic but turned ideological, as free-market policy institutes strongly pressured for water privatization. In the developing world, water privatization strategies were seen as pragmatic and financial, more than ideological, and some observers argue that the advantages were relevant (Gleick, Wolff, Chaleki, Reyes, 2002). China has chosen the path of privatization both for ideological and pragmatic foundations. A report realized by the Polaris Institute distinguishes three basic models of water privatization:

- The first one is the complete sell off by governments of public water delivery and treatment systems to private corporations, as it has been the case of Britain.
- The second is the granting of long-term leases or concessions, which allows corporations to takeover the delivery of water services and the collection of revenues, as it has happened in France. Under concession contracts, the private contractor manages the entire utility and is required to invest into the maintenance and expansion of the system at its own commercial risk. Concessions have longer terms, to allow the operator to recoup its investment and, at the end of the contract, the assets either are transferred back to the state or a further concession is granted. The private operator takes responsibility for all operation and maintenance functions, including billing and revenue collection.
- The third is the approach through which corporations are contracted by governments to manage water services for an administration fee. On general terms, the water service that has been offered by transnational corporations around the world is basically based on the ‘ability to pay’ (Polaris Institute, 2003)

In some cases, this scheme translates to the fact that the poorest communities frequently end-up without adequate services. Such trend is risky considered that the greatest risks of privatization resides where the governments weak and are unable to provide the management functions necessary to protect to public interest. Despite the acknowledgement that public utilities have been too slow in extending access to services, and that they can be inefficient and corrupt, the increasing private sector involvement to address these problems remains very controversial.

Opponents of privatization assert that government management of water and sanitation services is more equitable and effective if properly organized, with the benefit of accessing cheaper forms of finance. The main problem with the maximization of profits related to water is that the increase of water consumption is basically desired and favored by the corporations, which have no interests in promoting any form of water conservation. With the privatization of water utilities, the corporations can make profits through the sophisticated financial products offered by the financial markets. For example, it is possible today to make money while issuing complex bonds and other derivatives, transforming the gathering of liquidity in a potential profitable operation. Through privatization strategies based on “creative” finance, it becomes increasingly harder to reclaim private companies for the public good and to eventually re-publicize them.

The public-private partnership (PPP) deals for example, requires companies to be indebted on financial markets and makes great deals for the banks in charge of bond issuance and other financial products. A growing attention is being directed towards the financing of water infrastructures, with hedge funds and private equity funds playing a major role. These funds are financing infrastructures projects around the world, such as the construction of great dams on the major rivers, often in partnership with traditional financiers like the World Bank and the European Investment Bank. It is exactly in these terms that water grabbing is directly connected with water privatization.

Privatization opponents assert that it is unethical to profit from water, which is an essential resource to life and cannot be substituted. They argue that privatization may by-pass under-served and under-served communities, because of their lack of power and representation and their inability to pay for water. Those who oppose privatization believe that such a method can lead to the loss of ownership of water system and water rights and to public participation and monitoring of contracts failure, leading to ineffective service provision, discriminatory attitudes or infringement of water-quality protections. Opponents believe that the privatization process fail to consider the impacts on the ecosystems, especially relating to down riparian states and may lessen protection on water quality. Amongst the greatest concerns of local communities is that privatization could lead to an

increase of the general costs of water and water services. The World Bank Group has identified privatization as a key solution to the water crisis. By taking advantage of the “Washington Consensus” model of development adopted by its donor countries, the Bank has been forcing many countries to privatize their water resources, and to put them on sale to the highest bidder. By so doing, they are promoting the interests of a handful of transnational water corporations. The bank is the largest funder of water management in the developing world, with loans and financing channeled through the group’s International Finance Corporation (IFC). Since the 1980s, the IFC has been promoting these water projects as part of a broader set of privatization policies, with loans and financing tied to enacting austerity measures designed to shrink the state, from the telecom industry to water utilities.

In 2005, Antonio Estache, a World Bank infrastructure expert, released a study of PPPs in infrastructures ranging from 1994 to 2004. His research outlined how poorly structured PPPs projects have generated substantial fiscal risks for the countries that gave priority to PPPs at the expenses of improving systems for public investments (Estache, 2005) The study outlined problems related to affordability, fiscal stability, cream skimming (the process of separating profit-making from loss-making markets in the water sector), efficiency, collusion, currency risk, and non-economic externalities. The World Bank promotes specific subsidies intended at benefiting the poorest people, which often are mostly benefited by the middle-income classes. Estache found out that by seeking profit out of water, private firms have stronger incentives in investing in areas where the consumer have the ability to pay, neglecting those areas where bill collection result harder.

Anna Lappé on an article on Al Jazeera America has described how “even as the World Bank Group continues to promote water privatization, its own data reveal that a high percentage of its private water projects are in distress. Its project database for private participation in infrastructure, documents a 34 percent failure rate for all private water and sewerage contracts entered into between 2000 and 2010, compared with a failure rate of just 6 percent for energy, 3 percent for telecommunications and 7 percent for transportation during the same period.” These results, in fact, had the effects of making the World Bank reconsidering some of their policy, and shift away from a purely privatization-based agenda.

Corporate Accountability International (CAI), a Boston-based advocacy group that focuses on corporate abuse and represents an international coalition of water activists, drafted on a 2012 report on what it calls a litany of failures by private corporations, particularly multinationals, that have failed to expand water supplies to benefit the world’s poorest. Private ownership or management of water utilities, encouraged by and funded by the IFC, has diverted money critical for maintaining water systems into shareholder dividends, executive pay packages and corporate taxes. In many cases, water itself is directly transformed into a tradable commodity on large global market. One of the most striking

examples of these processes is the system established in Chile by the neoliberal doctrines of Pinochet. In Chile, it became possible to buy and sell different types of water rights: hydroelectric, irrigation, potable, etc. which are independent from the land tenure, this means that along a river, the water can belong to a different owners than the land along its banks. The implementation of such a model on a global scale would mean that water rights could be traded, as it is already happening with other commodities such as raw material and carbon credits. In such kind of water trading market, the seller would hold a water right or entitlement that is surplus to his current water demands, and the buyer faces a water deficit and is willing to pay to meet his water demand. The chief economist of Citigroup Willem Buiter has portrayed this possible scenario:

“I expect to see a globally integrated market for fresh water within 25 to 30 years. Once the spot markets for water are integrated, futures markets and other derivative water-based financial instruments...will follow. There will be different grades and types of fresh water, just the way we have light sweet and heavy sour crude oil today. Water as an asset class will, in my view, become eventually the single most important physical-commodity based asset class, dwarfing oil, copper, agricultural commodities and precious metals.”

In such system, water would be an important asset not just to trade, but also to produce, through purification, but mainly through desalinization. In such a system, a network of dams and large-scale canal systems would connect the different water basins. Once water is valued it will turn into a financial asset and thus holding a physical quantity of water would generate financial rent.

Privatization advocates point out that private water companies must still comply with local and federal regulations on water safety and argue that privatizing water saves the consumer money. Since private water utilities are both dependent on customer satisfaction and are for-profit businesses, they have the necessary incentives to maintain water rates and investments at a level adequate to maintain excellent service and the long-term integrity of their infrastructure. The common point amongst water privatization advocates is that the greatest water problems occur in places where the government is too weak to either provide adequate services or to regulate private companies. Richard G. Little, senior fellow at the Sol Price School of Public Policy at the University of Southern California, stated on an article on the Wall Street Journal how:

“Water private management can be the most efficient system, since private-sector managers focus on the cost of service and return on capital. The new and

innovative technologies in which they invest may have a higher initial cost, but they offer savings, too, which can be shared with customers while improving service and quality. Privatization offers economies of scale wherein a single company can provide the financial and human resources to serve many small systems in a far more cost-effective manner.”

Mark Strauss, president of American Water Enterprises, affirms that private water company very business is upgrading infrastructure, thereby accumulating skills, resources, specialized knowledge and staff, all of which could be accessible to communities as needed. Proponents of water privatization claim that efficiency gains will benefit all service users and, in particular, the poor, who will be connected to the system as paying customers. However, this argument ignores the fact that not all private operators make profits from being efficient while some publicly operated utilities do face commercial incentives.

The Polaris Institute enlisted the ten major corporate players now delivering fresh water services for profit. Between them, the three biggest:

- Suez from France
- Vivendi (recently renamed Veolia Environment) from France
- RWE-AG from Germany

These three major companies deliver water and wastewater services to almost 300 million customers in over 100 countries, and are in a race, along with others such as Bouygues SAUR, Thames Water (owned by RWE) and Bechtel-United Utilities, to expand to every corner of the globe. World Bank infrastructure expert A.Estache and D.Benitez have described in their study “How Concentrated are Global Infrastructure Markets?” that most of infrastructure projects of these giants are highly political, due to the concentration of corporate investors which pose high risk of collusion. The authors have described that concentration was present in the 20% of the projects observed, and presumed concentration was found in an additional 30% of their samples. The study concludes how a supranational regulatory agency would be needed to avoid risks of further collusion in the water sector (Estache, Benitez, 2005).

Because of its no substitutable essence, water privatization has generated more criticism compared to other forms of energy privatization. At the end of the last century it was the most controversial issue to be debated in international development circles. In many parts of the world, opposition arose because of the doubts that purely private markets can address the different social good aspect of water. There has been a general distrust of corporate player

and fear that the transfer of profits would not benefit local communities. Water cannot be considered the same way as other commodities, because of its importance to life. As Karen Bakker pointed out:

“Water is simultaneously an economic input, an aesthetic reference, a religious symbol, a public service, a private good, a cornerstone of public health, and a biophysical necessity for humans and ecosystems alike.” (Bakker, 2010)

This is why the protests against water privatization have united a various range of actors, such as worker unions, environmental groups, religious and spiritual organizations, anti-globalization activists and human right organizations to cite just a few. The debate over water privatization has extended to the contemporary discussion over the role of states and markets and over the acceptance of private mechanism of management of resources, which are essential to human life.

3.5 Impacts and Responses on water grabbing

The impact of water grabbing and water privatization can be extremely distressing for the region, countries and communities that get their water stolen. These people, who are generally those who are settled downstream in co-riparian states, very often lose their access to water that they normally use for irrigation and other agricultural activities. Most of the poor and marginalized communities who are subjected to water grabbing, either from rural areas or urban metropolitan areas, see a re-distribution of the water flows that severely damage their livelihood. However, the right of access to clean water and sanitation at an affordable price is considered an essential right for every individual. This right is not only acknowledged by the Dublin Principles that were established on the International Conference on Water and the Environment (ICWE) in 1992, but also from many other international statements in the water sector. In 2002, the United Nations Committee on Economic, Cultural and Social Rights issued a General Comment declaring that water is not merely an economic commodity, but asserted instead that the access to water is a human right:

“The human right to water entitles everyone to sufficient, affordable, physically accessible, safe and acceptable water for personal and domestic uses.”

Therefore, according to the UN, the countries that have ratified the United Nations International Covenant on Economic, Social and Cultural Rights are now required to

“...take the necessary steps towards the progressive achievement of the right of everyone to an adequate standard of living, including access to water and sanitation.”

The impacts of water grabbing are not always easy to measure and analyze. There are indeed countless cases in which factories and plantations use water located along the rivers and discharge toxic effluents on them. There are many cases when diversion, depletion and pollution of local water sources, which often feed into larger water systems, affect natural drainage patterns and interact with seasonal and annual variations at different moments of the hydrological cycle, in ways that are still yet to be properly understood. This is one of the main reasons why water grabbing represents such a threat. Rarely the effects of water grabbing can be confined within the borders of a specific project. Instead, they often spillover, disrupting ecological flows and balances, affecting the lives of people located in a much larger areas. All these impacts are also triggering the intensification of water conflicts and resistance from local communities.

Water grabbing projects has also met an active resistance by specific groups of people who reacted in different ways through several forums at various levels. A part of the civil society has engaged in FAO arenas, such as in the consultations over responsible agricultural investment (RAI) or the guidelines on fisheries (COFI). Dam-affected people have been establishing national platforms as a way to protest against these large dams projects. The organization International Rivers has been in the frontline of a global effort to protect both the rivers and the communities' rights that are related to them. The World Forum of Fish Harvesters and Fish Workers (WFF) and the World Forum of Fisher Peoples (WFFP) have been fighting for the rights of small-scale fishing communities and against the privatization of the oceans and aquatic resources.

The water justice movement has demonstrated a resistance, which mostly focus on the fight against privatization and urban water management. In December 2013, the abroad unions-NGOs alliance successfully put forward the first European Citizen Initiative (ECI) with regards to the human right to water, gathering about 2 million signatures from all over Europe with the request to halt water privatization. These grassroots projects promote water management practices based on common values to refrain from profit-seeking approaches and aim at redefining the concept of 'public', which can't be ideally connected, only with the meaning of "state-run". These projects advocates for a fairly distributed, sustainably-managed and democratically controlled water for everybody.

Governments around the world have responded in different ways to the growing concern over land and water grabbing. However, the generally responses regarding global water

governance framework is not sufficient to stop, or inverse the trend, of the global water grabbing process. At this time there has been no development of an integrated and holistic approach over water governance. Even though water and land management are directly related to each other, their management have been developed in isolation from the global agencies. The most of the initiatives developed in the last years, about the issue of land grabbing, have neglected the connection from land grabbing to the grab of water. The FAO Tenure Guidelines, which are trying to set up a human rights framework where policies and laws shall conform, have considered water as a 'too complicated' issue to manage. The process attempts to regulate water access, use and distribution, but it is limited and offers little understanding on how to address the water grabbing process on a large scale. Water is indeed mainly governed on a regional scale despite the global nature of water.

The Integrated Water Resources Management (IWRM), which originated by the Dublin Conference on Water and the Environment in 1992, has dominated the debates over processes and policies of water governance. The IWRM is based on the principles of social equity, ecological sustainability and economic efficiency. However, the process have been dominated by organizations highly influenced by corporate interest, such as the the International Water Resources Associations (IWRA), the World Commission on Dams (WCD), the World Water Council (WWC), the International Commission on Irrigation and Drainage (ICID), the Global Water Partnership (GWP) and even the Global Water Operators' Partnership Alliance (GWOPA) (Franco, Kishimoto, Kay, Feodoroff, Pracucci, 2014). Many of these forums have mainly promoted a water privatization agenda, sustaining the concept of water as an economic good. They are sustained by multilateral institutions such as the World Bank, the International Monetary Fund and various regional development banks and large donor organizations that embrace neoliberal principles and relate development aid directly to the privatization of water resources.

The framework, which has been used to defend water as a public good, did not succeed in limiting the impact of water grabbing. It has been widely debated in water justice forums whether or not it makes sense to engage the discourse of human rights to set the framework of the water struggles. The Right to Water and Sanitation has been recognized by the United Nations, but its scope still remains confined to domestic water usage, which is addressed for drinking and sanitation. The main drivers of water grabbing such as mining, agriculture, energy, hydropower and other activities driven by strong corporate involvement have been generally disregarded.

3.6 The World Commission on Dams

Large dams have been the symbol of modernization and development for most of the previous century. They have turned out to be the most effective infrastructures in order to take possess of transboundary rivers' waters for energetic, industrial and agriculture purposes. Dams have played a role in development since the third millennium B.C., allowing the greatest ancient civilization to flourish along the Nile, the Tigris-Euphrates and the Indus. Dams have been built in the main rivers of the world, establishing the control of man over nature and increasing the pace of human development by supplying water, irrigate agriculture, control floods and more recently, to produce electricity and motive power. Large dams have started to be constructed in the United States in 1935 with the 221-meter-high Hoover Dams. Between the 1950s and the 1980s about 35,000 dams have been constructed. However, over the last decades, numerous and conflicting positions have emerged on the debate on the role of large dams in development. World Commission on Dams chairman Kader Asmal, described on the commission final report:

“ I saw: dams built of dirt and dams generating no electricity; dams praised by ecologists and dams despised by engineers; dams used for centuries by indigenous peoples, dams boosting fisheries, dams causing deadly floods; dams changing river chemistry or increasing net greenhouse gas emissions. I saw dam benefits by-pass thirsty adjacent communities en route to the city; dams exhaust and erode rich soils through water logging and salinity. I saw dams displace no one, dams create wetlands and work, dams cost thrice their budget, dams utterly abandoned and which had no symbolic value. Then I saw politicians approach rivers with ambitious, bureaucratic schemes, opposed by local activists shouting, Save our beloved dam’.”

With the transformation of development priorities, various groups started to criticize the construction and operation of large dams, describing the environmental and social costs of dams building, which had previously never been taken into account. Large dams have an impact on the natural and social environment of the areas in which they are located, especially because they are often constructed in upstream areas, which are often home to indigenous populations and to a great biodiversity. The macro-economic benefits usually contrast with the negative environmental and social impacts that the large dams produce. The World Bank has been one of the institutions mostly criticized for the funding of dam building, for the controversies that emerged from some of the institution's main projects. In 1995, James Wolfensohn became the president of the World Bank, promptly announcing his

intention to review the effectiveness of the major dams for development. The independent Operation Evaluation Department (OED) was established in order to review a series of large dam projects, to analyze their effectiveness in terms of economic, social, technical and environmental implication for future funding of the World Bank. As a result of the World Bank's new policies, only about one-quarter of the dams previously considered to be acceptable, were eventually complying with the policies. In 1997, the World Bank partnered with the World Conservation Union (IUCN) to jointly host a workshop to discuss the findings of the OED, so to address one of the most social and environmental most controversial issues. At the same time, the OED review was highly criticized by the International River Network (IRN), which issued a statement supported by 49 NGOs from 21 different countries, which expressed the "seriously flawed methodology and incomplete and inadequate data". During the workshop the limitation of the OED review were acknowledged. The most important achievement of the workshop was the agreement to establish a World Commission on Dams, by November, with the following aim:

- Assess the experience with existing, new and proposed large dam projects so as to improve practices and social and environmental conditions
- To develop decision-making criteria and policy and regulatory frameworks for assessing alternatives for energy and water resources development
- To evaluate the development effectiveness of large dams
- To develop and promote internationally acceptable standards for the planning, assessment, design, construction, operation and monitoring of large dams projects, and, if the dams are built, ensure affected peoples are better off
- Identify the implications for institutional, policy and financial arrangements so that benefits, costs and risks are equitable shared at the global, national and local levels
- To recommend interim modification of existing policies and guidelines, and promote "best practices"

The Commission had the role of addressing the numerous and conflicting positions about the large dams debate and gather information, experiences and perspective, and bringing them to the public arena of discussion. The Commission was established to open up the dialogue involving all stakeholders, introducing critical issues to discuss and using consultative exchange to create a set of recommendation to guarantee that the future intervention will abide with basic parameters for greater development benefits. The members of the Commission would be between five and eight persons with experience and expertise, including a chairperson, regarded as being objective, independent and representative of the

different perspectives of the different communities, regions and public and private sector actors involved. The group members worked as a consultative group of participants of the workshop and a small Secretariat of full-time professionals, which operate through study groups, hearing, contracted studies and task forces. The result of the Commission is based on recommendation on policies, standards, guidelines, best practices and codes of conduct to ensure the improvement of the conditions of the affected parties. The main issues on the debate are mainly about the problem with development, which should be based on the analysis of multiple criteria including food, water, energy, foreign currency, health, employment, human rights, equity, conservation of ecosystem, sustainable use of natural resources. These criteria form a new development paradigm including a more efficient and transparent decision-making process (IUCN, 1997). In 2000 the WCD published the report *Dams and Development: a new framework for decision-making*. The seven main strategic priorities outline the messages of WCD are:

1. Gaining public acceptance;
2. Comprehensive options assessment
3. Addressing existing dams
4. Sustaining rivers and livelihoods
5. Recognizing entitlements and sharing benefits
6. Ensuring compliance
7. Sharing rivers for peace, development and security

The report lists that there cannot be doubts over the following facts:

- Dams have made a significant contribution to the human development with considerable benefits deriving from their usage.
- In too many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment.
- Lack of equity in the distribution of benefits has called into question the value of many dams in meeting water and energy development needs when compared with the alternatives.
- By bringing to the table all those whose rights are involved and who bear the risks associated with different options for water and energy resources development, the conditions for a positive resolution of competing interests and conflicts are created.

- Negotiating outcomes will greatly improve the development effectiveness of water and energy projects by eliminating unfavorable projects at an early stage, and by offering as a choice only those options that key stakeholders agree represent the best ones to meet the needs in question.

With the report the WCD fulfilled its mandate and ceased to exist. The report was welcomed by most of the stakeholders, including environmental and social organizations, but criticized by financial institutions and industry association, which described it as unrealistic, too far-reaching and imprecise. As a consequence, these institutions did not accept the WCB recommendations but the report still had a remarkable impact. The recommendations were outlined as voluntary commitment and were not equipped with enforcing mechanisms.

In the final report of the World Commission on Dams, chairman Kader Asmal again affirmed:

“Some may feel this Report makes water use decisions even more difficult; by raising the bar higher, as we do, a government must exercise more energy and creativity to reach a sustainable result. But in truth we make those decisions easier; for we show clearly which, how, where and why decisions can either work well or fail to deliver. For that reason I assert that we are much more than a ‘Dams Commission’. We are a Commission to heal the deep and self-inflicted wounds torn open wherever and whenever far too few determine for far too many how best to develop or use water and energy resources. That is often the nature of power, and the motivation of those who question it. Most recently governments, industry and aid agencies have been challenged around the world for deciding the destiny of millions without including the poor, or even popular majorities of countries they believe to be helping. To confer legitimacy on such epochal decisions, real development must be people centered, while respecting the role of the state as mediating, and often representing, their interests.

The Asian Development Bank has been introducing some of the Commission’s suggestion in their safeguard policies, while the World Bank has been slower in reviewing its safeguard policies. The German Ministry for Economic Cooperation and Development (BMZ) has fully endorsed the WCD recommendations as guidance for all dam related activities (Mollinga, Scheumann, Neubert, Kipping, 2008). The main issue with the WCD recommendation is that they need to be operationalized and translated into the specific context of a region, country or dam project, before they can be used for improved planning of future dams or management of existing ones. Some organizations jointly supported the formation of a global Dams and Development Programme (DDP) hosted by UNEP.

4. The legal framework of water sharing

4.1 The necessity of a legal framework for transboundary rivers

The major transboundary rivers can be considered the battlefields where the current competition over the control of the world's water is unfolding. The 263 watercourses and lakes flowing through more than one country in the world constitute some of the most important and vulnerable resources on the planet. The control over these waters has emerged as major political concern in this context of water scarcity and competition for natural resources. The international watercourses regulated by interstate agreements are only the 40% of total, the 80% of which have been signed only by two countries. Most of these water basins are lacking sufficient legal protection. While some agreements are functioning, the most of them are inadequate and inefficient. This lack of regulation make it difficult for co-riparian states to cooperate instead of competing, while facing the challenges of overpopulation, environmental damage, increased urbanization and industrialization. Beside a few European rivers, the major basins in the world are not regulated by agreements involving all riparian states. The most of the times the agreement are between a few states, and the interpretations and implementations of them are always very difficult. On such a difficult operation framework, in 1997, more than 100 nations gathered to adopt the Convention on the Law of the Non-Navigational Uses of International Watercourses, an adaptable and overreaching global legal framework, which establishes some of the basic rules and cooperation standards between inter-river states over the utilization, management and protection of international watercourses.

On 21 May 2014, Vietnam became the 35th contracting state to the UN Watercourses Convention. The UNWC entered into force officially on the 17th of August 2014, setting up the first global legal framework for cooperation over water resources between countries. The convention has been inspired by the 1966 Helsinki Rules, which set as a cardinal principle of the equality of all the riparian states in the uses of the shared watercourse and the determination of equitable and reasonable utilization. These factors have been incorporated also by the Berlin Rules. However, the correlation between the two principles of equitable-reasonable utilization and not-to-cause-harm obligation has created doubtfulness for some countries, and that's the reasons why many nations have delayed or refused the ratification of the Convention. In water conflicts it has been arduous to determine the criteria for equitable use of resource, since the international water law is sometimes contradictory and ambiguous.

4.2 Brief History of International Water Law

While looking at the history of international water treaties, some analysts argue that the first agreement date as far back as 2500 BC, at the time when the two Sumerian city-states of Umma and Lagash drafted an accord to end the long overdue water dispute along the Tigris River (Wolf, 1998). Since that time water diplomacy has developed, creating the framework of the international water relations of today. The Food and Agricultural Organization (FAO) have documented that about 3600 international water treaties have been signed between 805 AD and 1984. The most of these accords concern navigational issues, fishing, wood transport and other related activities, while others addressed water as a limited and consumable resource apart from navigation. The outset of the industrial revolution in Europe produced a massive movement of goods, people and materials across the continent. As a consequence, the rivers became the main form of transportation for the industries and their navigation started to require some form of regulation. In 1815, the major European powers drafted the Act of the Congress of Vienna, which established the principle of freedom of navigation for all riparian states on the rivers they share on a reciprocal basis. In 1885, the General Act of the Congress of Berlin confirmed the priority of the navigation established by the previous treaty and extended the freedom of navigation to non-riparian states, with the clear intention of opening the door for the colonial power on some of the main African rivers, such as the Congo and the Niger. With the Peace Treaty of Versailles in 1919, all the navigable European rivers were opened for navigation for all the European countries. The multi-dimensional uses of international rivers and lakes have been classified therefore, for legal purposes, into navigational and non-navigational uses. With the turning of the century, with the evolution in energy and industrial production, river's water begun to be increasingly used for energy and industrial purposes. The constant population growth created always more stress on water, for domestic purposes and irrigation. The 3600 agreements documented by FAO, shows the positive trends in the management of international rivers basins, which have developed throughout time. They highlights how the hydrologic linkages formed by the world's international basins created shared interests among each basin's co-riparian states in matters of agriculture, industry, hydropower, flood control and recreation (Giordano, Meredith, Wolf, Aaron)

In 1895, the General Attorney of the United States of America Judson Harmon expressed an opinion over the usage of the waters of the Rio Grande, which are shared between the United States and Mexico. Mexico claimed that diversions in the US states of Colorado and New Mexico were reducing significantly the supply of water to Mexican communities. Protesting the diversion, Mexico declared its legal right to use the water of the Rio Grande, since their inhabitants were using it since hundreds of years. However, according to

Harmon's opinion, every state should be free to dispose of the water of the transboundary rivers in any possible way inside their territories, irrespective of the detrimental effects that might be caused to other riparian states. According to Harmon's judgment, international law did not foist any obligation on the United States in restricting its use of the portion of the Rio Grande among its territory. Drawing from this theory, every riparian state had no rights to demand a continued flow of water from other states. A country is sovereign over the portion of international watercourse within its borders and is free to divert all the waters of it, leaving none for downstream states. Despite the fact that world's diplomacy in that period of time was dominated by the Westphalian concept of absolute territorial sovereignty, the Harmon's doctrine remained marginal and inapplicable to the practical realm of water sharing and international water law. However, Harmon's opinions have been used by those who claim that an upstream state holds the right, under international law, to make use freely of an international watercourse within its territory. This theory failed to receive universal support and was mainly used as a negotiation technique known as the 'zero-sum game' to attain a favorable bargaining position before a compromise agreement would be reached.

In 1911, The Institute of International Law (IIL, also Institut de Droit international), an organization devoted to the study and development of international law, published a series of recommendations regarding the Use of International Watercourses for Purposes different than Navigation, in what is known as the Madrid Declaration on the International Regulation. These recommendations discouraged harmful modifications and basin variation of international rivers, and advocate for the creation of a joint water commissions. The Madrid Declaration points deeply contrasted with the Harmon Doctrine.

The usage of water's rivers 'for matters beyond navigation' was recognized by the Barcelona 'Convention and Statute on the Regime of Navigable Waterways of International Concern' concluded in 1921. In 1923, the Geneva 'Convention Relating to the Development of Hydraulic Power Affecting More than One State', examined the right of riparian states make use of international rivers for operation regarding the development under "the limits of international law". The heavy reliance on rivers and lakes for non-navigational purposes increased with the reconstruction and development efforts undertaken as a consequence of the Second World War. However, no official rules regulating non-navigational uses of transboundary rivers were adopted.

At the beginning of the 20th centuries, many other principles over the status of international rivers have been discussed, but almost none of them became part of the international law. One of these principles affirmed how every river basin is an economic unit and the rights over the waters must be divided among riparian states, with an agreement on the basis of proportionality. Such principle failed to get acceptance, because the riparian states believed to be forced into reaching an accord. The only principle that got wide

acceptance is the one that affirm how every riparian state is endowed with the right of using transboundary rivers in a way that will not harm other riparian states. This last theory survived until this time and formed the basis of modern international water law. Such theory, based on the equality of all riparian states, encompasses both the right to use the waters of the shared watercourse, as well as the duty not to cause significant harm to other riparians.

The Salzburg Resolution, adopted by the ILI in 1961, emphasized the states' obligation in not causing harm to other states, subjected however the right of every state to use the shared river's water to the right of use by other states, relaxing therefore the absolute prohibition of the Madrid Declaration. The Dubrovnik Statement, released in 1956 by the International Law Association (ILA), confirmed the sovereign control that each state has over the international river within its own boundaries. The statement however, required that the state would exercise such control with due consideration of its effects on other riparian states. The New York Resolution refined the Dubrovnik Statement, stating that each co-riparian state is entitled to a reasonable and equitable share in the beneficial uses of the waters of the drainage basin. The principle of equitable utilization was further discussed by the ILA both at the Tokyo meeting in 1964 and at Helsinki meeting in 1966, which produced one of the most important agreements on water sharing.

4.3 The Helsinki Rules

The Helsinki Rules on the Uses of the Waters of International Rivers developed by the ILA was the first prominent attempt for the codification of international water law, encompassing the fundamental principles of customary international law at that time. It delineates the principles related to the "equitable utilization" of shared watercourses, as well as the commitment not to cause "substantial injury" to co-riparian states. These principles started to be codified in 1970 by the International Law Commission (ILC), United Nations' legal advisory body. They were fundamental for the draft of the law on the non-navigational uses of the international watercourses, which brought to the adoption of the Convention on the Law of the Non-Navigational Uses of International Watercourses. The first article states that the Rules can be applied to regulate to the water use of an international drainage basin, defined as "a geographical area extending over two or more States, determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus". The Helsinki Rules address the transboundary groundwater for the first time and have specified a number of factors for determining the reasonable and equitable share for each basin state. The Article V of the Rules states that the relevant factors that must be considered encompass though are not limited to:

- The geography of the basin, including in particular, the extent of the drainage area in the territory of each basin state
- The hydrology of the basin, including in particular the contribution of water by each basin state
- The climate affecting the basin;
- The past utilization of the waters of the basin, including in particular, existing utilization
- The economic and social needs of each basin state
- The population dependent on the waters of the basin in each basin state
- The comparative costs of alternative means of satisfying the economic and social needs of each basin state
- The availability of other resources and the avoidance of unnecessary waste in the utilization of waters of the basin
- The practicability of compensation to one or more of the co-basin states as a means of adjusting conflicts among uses
- The degree to which the needs of a basin state may be satisfied, without causing substantial injury to a co-basin state

The Helsinki Rules also express the law principle that grants each riparian state the right of free navigation on the entire course of the river, or lake, on a reciprocal basis. The Helsinki Rules were the first general codification of law for the international watercourses. Even though they had no legally binding effects, they remained the most authoritative set of rules regulating the use and the protection of international rivers until the adoption of the UN Convention 30 years later. These Rules were adopted to solve the dispute over the Ganges River, which was presented by India and Bangladesh to the United Nations in 1975 (Salman & Uprety, 2002).

The Helsinki Rules were followed by a series of other rules produced by the International Law Association (ILA), such as the 1972 Articles on Flood Control and the 1976 Rules on Administration of International Watercourses. In 1980, at the Belgrade Conference, more rules on the regulation of the water flow of the international watercourses, and on the relationship of international water resources to other natural resources' environmental elements were drafted. In 1982, the ILA drafted and adopted a set of articles over the pollution of the international drainage basin waters'. In 1986, in the context of the Seoul Conference, the ILA approved the 'Complementary Rules Applicable to International Water Resources' with the intention of explaining some element concerning the application of the Helsinki Rules. This set of rules addresses the issues of the transboundary groundwater,

extending the application of the Helsinki Rules to those inter-state aquifers that don't contribute water to, nor receive water from the surface waters of an inter-river basin. The Seoul Rules also handle the issue of groundwater protection and encourage the riparian states to consider the integrated management of their international groundwater. The ILA met in June 1999 in Campione, Italy, during the Water Resources Committee and drafted 'The Campione Consolidation of the ILA Rules on International Water Resources, 1966–1999', a compilation of all the rules approved by the association since the Helsinki Rules were issued in 1966. In 2004 in Berlin, the association drafted a new report with the revision and updating of the Helsinki Rules, to be consistent with the present state of customary international water law.

In support of the emerging water legislation, multinational organization such Organization for Economic Cooperation and Development (OECD), the European Union and the Southern African Development Community (SADC) have formulated agreement laying down region-specific guidelines. The OECS has formulated a series of recommendation relevant to the management of international rivers amongst European government, such as the Convention on Environmental Impact Assessment in a Transboundary Context (1991) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992). In the southern African context, the southern African context, the Southern African Development Community (SADC) member states, have established the Protocol on Shared Watercourses in the Southern African Development Community (2000).

The Atlas of International Freshwater Agreements has listed some of the most important bilateral agreement that has proliferated during the last century. Among these treaties, the 1957 Mekong River Agreement, through which Thailand agreed to provide financial support for a hydroelectric project in Laos, in exchange for a proportion of the resultant power generation. In 1964, the Iraqi government offered Kuwait access to water without requiring compensation. In 1966, India found an agreement with Nepal to plant trees upstream to protect its own water supplies located downstream. South Africa and Portugal reached an agreement in 1969 on the Kunene river, as part of a larger project for hydropower, in order to allow 'humanitarian' diversions exclusively for human and animal requirements in southwest Africa. South Africa in 1986 supported the financing of a hydroelectric/water diversion facility through the 1986 Lesotho Highlands Water Project Agreement, receiving in turn the rights to use the drinking water for its industrial heartland in Gauteng province. Regarding the above mentioned Agreement on the Use of Water and Energy Resources of the Syr Darya Basin of 1998, Uzbekistan and Kazakhstan agreed to compensate partly the Kyrgyz Republic for the transfer of excess power generated during the growing season.

4.4 The UN Convention on the Law of the Non-Navigational Uses of International Watercourses (UNWC)

On December 8th, 1970, the United Nations General Assembly adopted a resolution, asking the International Law Commission (ILC) to study the topic of international watercourses. The ILC is a UN body composed of legal experts nominated by states, elected by the United Nations General Assembly and is tasked with the codification and the progressive development of international law. The ILC started working on a draft Convention in 1971 and completed its work by 1994, recommending the articles that were drafted that same year at the General Assembly. It took about three years of deliberation by the Sixth Committee of the UN, convened as Working Group and by the General Assembly of the United Nation, to adopt the Convention on 21 May 1997. 103 countries votes for the Convention, 27 countries abstained, 52 countries did not take part in the voting and 3 countries voted against, namely China, Turkey and Burundi.



Image 1. Source: UN - The UN Convention on the Law of the Non-Navigational Uses of International Watercourses (UNWC)

TABLE 2 – Voting Record / UN General Assembly / 1997 Convention

FOR (104)	AGAINST (3)	ABSTAINED (27)
<p>Albania, Algeria, Angola, Antigua & Barbuda, Armenia, Australia, Austria, Bahrain, Bangladesh, Belarus, Belgium, Botswana, Brazil, Brunei Darussalam, Burkina Faso, Cambodia, Cameroon, Canada, Chile, Costa Rica, Côte d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Estonia, Federated States of Micronesia, Finland, Gabon, Georgia, Germany, Greece, Guyana, Haiti, Honduras, Hungary, Iceland, Indonesia, Iran, Ireland, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Laos, Latvia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Malta, Marshall Islands, Mauritius, Mexico, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Norway, Oman, Papua New Guinea, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Samoa, San Marino, Saudi Arabia, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Sudan, Suriname, Sweden, Syria, Thailand, Trinidad & Tobago, Tunisia, Ukraine, United Arab Emirates, UK, USA, Uruguay, Venezuela, Vietnam, Yemen, Zambia</p>	<p>Burundi, China, Turkey</p>	<p>Andorra, Argentina, Azerbaijan, Bolivia, Bulgaria, Colombia, Cuba, Ecuador, Egypt, Ethiopia, France, Ghana, Guatemala, India, Israel, Mali, Mongolia, Pakistan, Panama, Paraguay, Peru, Rwanda, Spain, Tanzania, Uzbekistan</p> <p>(*33 States were absent)¹²⁷</p>

¹²⁷ The absent States: Afghanistan, Bahamas, Barbados, Belize, Benin, Bhutan, Cape Verde, Comoros, Democratic People's Republic of Korea, Dominican Republic, El Salvador, Eritrea, Fiji, Guinea, Lebanon, Mauritania, Myanmar, Niger, Nigeria, Palau, Saint Kitts & Nevis, Saint Lucia, Saint Vincent and the Grenadines, Senegal, Solomon Islands, Sri Lanka, Swaziland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Uganda, Zaire, Zimbabwe.

Table 10. Source UN - Voting record at the UN Convention on the Law of the Non-Navigational Uses of International Watercourse (UNWC)

On 21 May 1997 the Convention was opened for signature and required 35 ratifications to enter into force. Vietnam was the 35th country to ratify on 21 May 2014. The controversy over some concepts of the Convention and the personal interests of many of the States involved, widely delayed the entering into force of the Convention. The text of it is based largely on the ILA work, particularly the Helsinki Rules and partly on that of the IIL. The Convention acknowledges “the valuable contribution of international organizations, both governmental and non-governmental, to the codification and progressive development of international law in this field”.

The Convention is conceived as a framework that aims at ensuring the utilization, development, management, conservation and protection of transboundary rivers with the intention of encouraging their optimal and sustainable utilization for the present and future generations. The Convention deal with basic procedural aspects and leaves the details for the riparian states to complement in agreements that would take into account the specific characteristics of the watercourse in question. Such agreements can adopt or adjust the provisions of the Convention. The Convention is divided into seven parts and consists of 37 Articles, including an Annex on arbitration. The main areas that the Convention addresses include are watercourses agreements; the equitable and reasonable utilization of the watercourse and the obligation not to cause harm; planned measures; protection, preservation and management; and dispute settlement.

Pillars of the Law of Non-navigational Uses of International Watercourses	
<p>Substantive Law</p> <ol style="list-style-type: none"> 1. Equitable and Reasonable Utilisation 2. No Significant Harm 3. General Obligation to Cooperate 	<p>Procedural Law</p> <ol style="list-style-type: none"> 1. Duty to Exchange Information 2. Duty to Notify 3. Duty to Consult and Negotiate

Table 11. Source UN

The term ‘watercourse’ is defined by the Convention, in the Article 2, to include both “surface water and groundwater, constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus”. The watercourse definition is based on the one drafted under the Helsinki Rules, which includes the groundwater connected to

surface water, but does not integrate the aquifers that are not connected as defined by the Seoul Rules.

The article 3 deals with the situation in which less than all of the states sharing a watercourse enter into an agreement concerning its use. In such a situation, the agreement must not affect negatively the uses of other states on the same watercourse without their previous consent. In such a situation, the states sharing the watercourse must enter into consultations "with a view to negotiating in good faith for the purpose of concluding a watercourse agreement." Article 4 addresses the situation in which an agreement applies to an entire international watercourse and endows the right of all states on the watercourse to participate in the negotiation of, and to become a party to the agreement. Article 5 on the "Equitable and Reasonable Utilization and Participation", sets forth the principle under which a state must make use of an international watercourse in a way that is both reasonable and equitable to other riparian states. This principle represent a cornerstone of the law of international watercourses and it is directly connected with the principle of equitable and reasonable utilization, already expressed by the Helsinki Rules. The article lay down the factors and the circumstances that must be taken into account for determining such equitable and reasonable utilization on the Article 6 of the Convention.

‘Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits there from, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse’

In this context, equitable utilization is built on the concept of equality of rights, which does not mean equal division of a shared water resource among riparian states. Instead, it requires the recognition and balancing of reasonable use of and benefits from shared water resources by the states (Caponera, Dante). The Article 6 affirms how in order to make use of an international river in a way that is both equitable and reasonable, a series of factors and circumstances must be taken into account:

- Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character
- The social and economic needs of the watercourse states concerned
- The population dependent on the watercourse in the watercourse state

- The effects of the use or uses of the watercourse in one watercourse state on other watercourse states
- Existing and potential uses of the watercourse
- Conservation, protection, development and economy of the water resources of the watercourse and the cost of measures taken to that effect
- The availability of alternatives, of comparable value, to a particular planned or existing use.

Article 6 states that the weight to be given to each factor is to be determined by its importance in direct comparison with that of the other relevant factors, which must be considered together in order to draw a conclusion based on the whole. Importantly, the Convention handle with the obligation to do not cause harm and requires the inter-river states to take political measures to avoid causing harm to other watercourse states. On the article 7, the Convention deal with such obligation of not provoking significant harm and states the following:

1. Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States.
2. Where significant harm nevertheless is caused to another watercourse State, the States whose use causes such harm shall, in the absence of an agreement to such use, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

It is clear that generally, the lower riparian states tend to favor the no harm rule as a form of protection from the impact resulting from the upper riparian states' activities, causing environmental pollution, diversion of waters, construction of new structures on the transboundary river. Conversely, they tend to favor the equitable and reasonable utilization principle, since it let them more freedom on undertaking a range of activities that impact the downstream states. This is a very important issue, very difficult to be dealt with by the International Law Commission, which have been in fact treated very differently in different times by the ILC, which sometimes equated the two principles and some others subordinated one principle to the other. Agreement on which rules to prevail has been definitely elusive. After a long discussion by the Working Group, which generated strong differences of opinions, a compromise was reached between the two principles. The compromise partially

satisfy both positions, as the lower riparian states felt that the Convention was enough neutral not to suggest the subordination of the no-harm concept by the principle of equitable and reasonable utilization. The most of the upper riparian states were also quite satisfied, since they believed the formula expressed was forceful enough to support the idea of the desired subordination. Indeed, this view is the more correct of the two, since language of the Convention has somehow subordinated the obligation not to cause significant harm to the principle of equitable and reasonable utilization. Therefore, as it was the case of the Helsinki Rules, also the UN Watercourses Convention's main principle is the equitable and reasonable utilization. The 1997 Watercourse Convention expresses the obligation to cooperate through the establishment of joint mechanisms or commissions and the regular exchange of data and information, and through notification of other riparian states of planned measures with possible significant adverse effects. In its commentary to Article 8 of the Convention, the ILC stated:

‘Cooperation between watercourse States with regard to their utilization of an international watercourse is an important basis for the attainment and maintenance of an equitable allocation of the uses and benefits of the watercourse and for the smooth functioning of the procedural rules contained in part three of the draft’.

The principle of cooperation laid down in Article 8 has the goal of providing ‘a general framework for further specification through special watercourse agreements for the prevention, or settlement of disagreements, or disputes over the utilization and management of an international watercourse’ and to ‘stands as a legal obligation of its own’ (Arcari, Tanzi, 2001). On the Article 9 and the Article 11, the Convention set out the duty to regular exchanges of information and data in terms of cooperation between co-riparian states. The duty is an integral part of the principle of equitable utilization and prevention of significant harm. Under Article 12, the Convention requires states to notify ‘planned measures which may have significant adverse effects’ and that the threshold of these adverse effects is intended to be lower than ‘significant harm’ expressed in Article 7. The article states that the notification requires to be accompanied by available technical data and information, which include any environmental impact assessment, to enable the notified states to evaluate possible effect of planned measures. In regard to the environment, the Convention include a detailed part entitled ‘Protection, Preservation and Management’ of international watercourses which handle the:

1. Protection and preservation of ecosystems

2. Prevention, reduction and control of pollution
3. Introduction of alien or new species
4. Protection and preservation of the marine environment

The dispute settlement mechanism is handled in the Article 33, which lays down a number of methods for settlement disputes, including negotiations, jointly seeking the good offices of, or mediation and conciliation by a third party, or use of joint watercourse institutions, or submission of the dispute to arbitration or to the International Court of Justice. The greatest shortcoming of the Convention is the ambiguity between the issue of equitable and reasonable utilization stated in Article 5, as well as the obligation not to cause significant harm, since there is no clear definition of what constitutes 'significant'. For this reasons, the Convention entered into force only in 2014 with the ratification of Vietnam. In 1997, right after the Convention was adopted, the Water Resources Committee of the International Law Association begun considering the question of how to proceed with the revisions of the Helsinki Rules. The ILA met in London in 2000 and in New Delhi 2002, preparing a revised set of rules, which were debated and approved during the ILA Seventy-first Conference, which took place in Berlin in August 2004 and brought the name of 'The Berlin Rules on Water Resources'. The Berlin Rules consist of 73 Articles, divided into 14 chapters, covering various issues on water resources not strictly connected with the Helsinki Rules and the UN Watercourses Convention. According to the Report of the Water Resources Committee, the Rules were taking into account the development of part of the international environmental law and the international human rights law. They deal with the humanitarian law relating to the war and armed conflict as well as with the adoption, by the General Assembly, of the United Nations of the UN Convention. A great number of the Berlin Rules are applicable to the administration of both national and international waters, which differs quite significantly from the previous work of the ILA, the IIL and the ILC. On the Second chapter of the Berlin Rules, many issues related to all waters are addressed:

“Ranging from participation of persons likely to be affected by decisions concerning the management of waters; the conjunctive management of surface waters, groundwater and other waters in a unified and comprehensive manner; and integration of the management of waters with the management of other resources, as well as the sustainable management of water and the prevention or minimization of environmental harm.”

The Berlin Rules differ from the UN Watercourse Convention and the Helsinki Rules by defining how basin states shall, in their respective territories, deal with international water

basin in a reasonable and equitable manner, with regards with the duty not to cause harm to other basin States. Whereas the UN Watercourse Convention and the Helsinki Rules establish and emphasize the right of each of the riparian states to a reasonable and equitable share, the Berlin Rules emphasize the obligation to use, protect, regulate and control the shared watercourse in a reasonable and equitable matter, without causing harm to other basin states. By so stating, the Berlin Rules subjected the two main principles - the obligation not to cause significant harm and the principle of reasonable and equitable use - to the other and present them as equal, deviating from the Helsinki Rules and the UN Watercourses Convention. Some experts in the field have gone further and indicated that the Berlin Rules even subordinate the principle of equitable utilization to the no harm rule, thus reversing the principle shaped by the Helsinki Rules (Bourne, 2004). While trying to create equality between the two principles, the Berlin Rules have added some confusion in the debate. The Berlin Rules have express new principlew that goes beyond the ILA's concept of customary international law, by incorporating emerging principles as well, even though the Rules does not clarify which articles indicate established criteria and which ones indicate the emerging ones. The Berlin Rules have downgraded the established principle of international water law of equitable and reasonable utilization, and have equated it with the duty to do not cause significant harm. The latter point has been criticized in the Dissenting Opinion handed overt to the ILA by members of the Water Resources Committee (Bourne, 2004).

4.5 The UNWC and the countries sharing the Himalayans waters

Vietnam has been the 35th country to ratify the UN Convention on the Law of the Non-Navigational Uses of International Watercourses on August 17, bringing the Convention into effect and setting up the first global legal framework for cooperation over the water resources between countries. However, Vietnam is the only country sharing the watercourse deriving from the Himalayan plateau to ratify the convention. In 1997, when the Convention was brought to votes, China was amongst the three countries (together with Turkey and Burundi) to vote against it. Bangladesh, Thailand, Nepal, Cambodia, Laos and Kazakhstan approved the convention in 1997, but they are not under legal obligation since they didn't ratify it. Their sponsorship and favourable vote creates a more appreciative expectation of them eventually joining the Convention. India, Pakistan and Uzbekistan abstained from the voting, while Myanmar, Afghanistan, Tajikistan and Turkmenistan were not present back in 1997 at the time of the voting.

Participant	Signature	Approval(AA), Acceptance(A), Accession(a), Ratification
Benin		5 Jul 2012 a
Burkina Faso		22 Mar 2011 a
Chad		26 Sep 2012 a
Côte d'Ivoire	25 Sep 1998	25 Feb 2014
<u>Denmark</u>		30 Apr 2012 a
Finland	31 Oct 1997	23 Jan 1998 A
France		24 Feb 2011 a
Germany	13 Aug 1998	15 Jan 2007
Greece		2 Dec 2010 a
Guinea-Bissau		19 May 2010 a
<u>Hungary</u>	20 Jul 1999	26 Jan 2000 AA
Iraq		9 Jul 2001 a
Ireland		20 Dec 2013 a
Italy		30 Nov 2012 a
Jordan	17 Apr 1998	22 Jun 1999
Lebanon		25 May 1999 a
Libya		14 Jun 2005 a
Luxembourg	14 Oct 1997	8 Jun 2012
<u>Montenegro</u>		24 Sep 2013 a
Morocco		13 Apr 2011 a
Namibia	19 May 2000	29 Aug 2001
<u>Netherlands</u>	9 Mar 2000	9 Jan 2001 A
Niger		20 Feb 2013 a
Nigeria		27 Sep 2010
Norway	30 Sep 1998	30 Sep 1998
Paraguay	25 Aug 1998	
Portugal	11 Nov 1997	22 Jun 2005
Qatar		28 Feb 2002 a
South Africa	13 Aug 1997	26 Oct 1998
Spain		24 Sep 2009 a
State of Palestine		2 Jan 2015 a
Sweden		15 Jun 2000 a
<u>Syrian Arab Republic</u>	11 Aug 1997	2 Apr 1998
Tunisia	19 May 2000	22 Apr 2009
United Kingdom of Great Britain and Northern Ireland		13 Dec 2013 a
Uzbekistan		4 Sep 2007 a
Venezuela (Bolivarian Republic of)	22 Sep 1997	
<u>Viet Nam</u>		19 May 2014 a
Yemen	17 May 2000	

Table 12. Countries that ratified the UN Watercourse Convention

China had several reasons for voting against the Convention. The official version given by the Chinese representative is that the text did not reflect a broad consensus amongst States, because it failed to create a proper balance between upstream and downstream riparian states' interests and because the mandatory dispute settlement mechanisms were unacceptable within a framework Convention. Such position reminds the Harmon doctrine drafted in 1895 in the US, revived in a new fashion, but based on similar geopolitical interests. The truth behind this choice is that the 1997 agreement preoccupied Beijing, since it added more responsibility for the upstream states. The Convention require the nations that share watercourses to consult and negotiate on 'planned measure, moreover, the mechanism for settlement of disputes include giving a fact-finding commission access to the country's territory, which are seen by China as a weakening of its national sovereignty. The Chinese explained Chinese dissatisfaction as such:

“First, it failed to reflect general agreement among all countries, and a number of States had major reservations regarding its main provisions. Secondly, the text did not reflect the principle of the territorial sovereignty of a watercourse State. Such a State had indisputable sovereignty over a watercourse which flowed through its territory. There was also an imbalance between the rights and obligations of the upstream and downstream States. China could not support provisions on the mandatory settlement of disputes, which went against the principles set out in the United Nations Charter. China favoured the settlement of all disputes through peaceful negotiations. Accordingly, China voted against the draft resolution to which the draft convention was attached”

China has been building dams in the recent decades on the main Asian international watercourses, mainly for the production of hydropower. The Chinese official must have thought that, by ratifying the convention, they would have lost the priority they enjoy in a lawless context, over the use of those waters they so desperately require. Outside of the convention, Beijing has the right to make use of the 'first appropriation' principle, which legitimizes the "First in time, first in right" theory. According to this theory, no country is understood as the owner of an international stream. Conversely, through the 'first appropriation' regime all the persons, municipalities and corporations, can make use of any quantity of the waters for any purposes. The allocation of the water rests therefore on the principle that the first state to uses it (called a "senior appropriator") acquires the right, or the "priority", to its future use. Such principle result unfavorable for the states using the river waters only on a later stage. The applied doctrine of customary international water law

contrasts with the concept of reasonable use, and with the duty not to cause significant harm conveyed by the Convention. The doctrine will be explained in the next paragraph. By the time the Convention will become increasingly morally binding, the stubbornness of China in not ratifying it could have a negative impact for Beijing, as it attempts to extend its diplomatic 'soft power' over the neighboring states. The significance of harmonizing relations with its boundary states has drove the Chinese leadership to assume a friendly rhetoric, based on the assumption that China must be seen as a trustworthy, peace-loving developing country that take care about its people. President Xi asserted in his speech in Boao Forum, in April 2013, that his country intends to set up "a new type of international relations and a better world of win-win cooperation", rooting its foreign relations on the approach of 'China as the good neighbor'. However, by the time the Convention will increasingly be used globally to solve issues related to water sharing, China might face the time when it cannot continue to avoid its own responsibilities.

However, by merely considering the geopolitical and strategic imperatives, there would be no competing state benefiting by ratifying a Convention that the others co-riparian states have not intention to sign. The mistrust is so high among riparian pairings that it will be difficult to predict that the Convention will produce a forthcoming successful agreement on transboundary river basins. Transboundary water issues in the region are viewed as a zero-sum game, where one country concession is seen as a "loss" relative for the other country's "gain" and vice-versa. China is not the only country to be not ready to commit to the measures produced by the Convention. Most of the South Asian states sharing the favorable upstream position are reluctant to embrace the rules outlined by the Convention and to be forced to lose their river management advantages. Those countries that find themselves on a weaker position at the current stage, such as Bangladesh and Pakistan, would surely increasingly refer to the Convention in order to support their arguments. Their actions is intended to shape a new international law which make use of the Convention as a custom, by pressuring the international community of doing the same.

India's representative at the UN Watercourse Convention opposed several aspect of the agreement. They have been arguing that the Convention was not providing some important general principles and they particularly expressed disagreement with the articles 3, 5, 32 and 33. According to the Indian representatives, these articles are affecting the States' autonomy by superimposing the principle of 'sustainable utilization', while not proposing an adequate definition of the term 'sustainable'. On regards to the Article 5, India cited the ambiguity of the term 'equitable and reasonable', as one of the main reason of its abstention to the vote of the UN Convention. Some of the disputes over the water flowing from the Himalayan plateau have been addressed using the 1997 Watercourses Convention. It is the case of the agreement concluded by India and Nepal over the Mahakali River. The Convention was useful in order

to observe the procedural principles for achieving equitable solution of water utilization disputes. However, the Convention wasn't used to review earlier agreements to conduct fresh negotiations over unresolved river disputes such as the very significant 1996 Ganges Treaty between India and Bangladesh, as well as the disputed between China and its neighbors.

4.6 The appropriation doctrine

The appropriation doctrine is based on the assumption that individuals, municipalities and corporations have the right to a quantifiable amount of water. The doctrine originated in California at the time of the Gold Rush, when miners were looking for water resources to conduct their operations. The general principle of the doctrine is that water rights are not connected with the ownership of the land and can be used, sold and mortgaged in different ways just like other properties. These rights however, can also be lost when it is demonstrated that the water has not been used for a certain period of time. The concept of the doctrine is usually summarized within the phrase "first in time, first in right." Under the appropriation law, the first person to obtain the appropriation rights attain the legal possibility to use a fixed amount of water with no regards for other water users which could possibly be interested in the water usage as well. There are three main elements to acquire an appropriation right: the intention to use the water, the physical diversion of the water from the original stream course to another location and the application of the water diverted to a beneficial use.

The beneficial use is generally considered the agricultural, industrial or household use. This doctrine does not include any ecological purpose, such as the safeguard of maintaining the natural body or water, nor the wildlife depending on it. When a person, a municipality or a corporation obtain the right over the water, this right can be bought or sold. The acquired right of water utilization can be used in any possible way that is considered beneficial for the first person to use it, called a "senior appropriator". Through the appropriation of the water, with the "First in time, first in right" principle, one person, corporation or country can divert the watercourse's flow and use it for its purposes, including irrigation, industrial or mining purposes, electric power generation, and municipal supply, removing the water from its source and move it for beneficial use in other locations. The water is seen as a commodity, without regard to the location of the use or location of the source. This law is based on a property law doctrine which allows individual to transform nature into usable economic commodities, giving incentives to capture water, resources, wild animals, to make hydropower project or to mine gold by giving the person the title to do what he intends to do.

5. The new geopolitics of water in the Himalayas

5.1 Water as a tool of power

5.1.1 Definition of power in International Relations

The concept of power is one of the most important and discussed topics in the field in international relations, although despite the long history of discussions, there is no general agreement about it. Some observers suggest that international relations are dominated by the struggle between nations to attain power. According to Hans Morgenthau, one of the founding fathers of the realist theory, all politics is a struggle for power. Morgenthau was aware that “the concept of political power posed one of the most difficult and controversial problems of political science”. His assumption, one of the first theorization of the concept of power, is rooted on the idea that the desire to dominate is “a constitutive element of all human associations”. In the Realist’s school view, all states seek to maximize their power and thus international relations can be analyzed as a struggle between independent states seeking to dominate others. Later realists like Kenneth Waltz and John Mearsheimer have embraced the early theories of Morgenthau, so that international relation developed as a discipline focused on material resources and the way the states control them. This theory gave little importance to small states and didn’t consider morality in the relations amongst states. States were depicted as seeking to maximize power,, producing a ‘balance of power’ in which a hegemon country could emerge. The theories of Mearsheimer are also defined ‘offensive realism’, since they define power not only as a necessity, but also as a goal to attain and to defend in military terms.

In the second half of the twentieth century, international scholars began to acknowledge the distinction between ‘potential’ and ‘actual’ power, in which the latter is seen as the capacity of actor A to influence B in doing what it would otherwise not do. This definition had a profound impact in international relations theory and fortified the discipline’s focus on states and its methodological behaviorism as a material phenomenon. In this view, largely influenced by the publication of ‘Power and Society’ by Harold Lasswell and Abraham Kaplan in 1950, power is seen as a potential relationship between two or more actors, and not just a property of anyone of them. The relational power perspective allows the possibility that power can increase in one dimension while declining in another. The main dimension of power is its scope, domain, weight, cost and its symbolic, economic, military and diplomatic means.

One of the most influential debates on power is the one about the ‘faces of power’ that

was triggered by the reaction to Dahl's study on governance in New Haven, Connecticut (Dahl, 1961). Each of these faces has relevance for the study of international relations. The first face is focused on decision-making in relation with specific issues, when one country tries to influence the choices of another country. The second face refers to the situation in which actors can exploit their institutional position to silent dissent (Bachrach and Baratz, 1962), with decision-making and compliance in international institutions.

The third face refers to the Gramscian conception of power as hegemony and Nye's concept of soft power. This added to the discussion the fact that in order to understand power, relations between actors must consider their position and social structures, since socially privileged actors can impose their domination on the less privileged ones. This view push scholars to look just beyond the great powers and to pay attention to weak states, observing the mechanisms of power in relationship between market and class, instead of focusing only in inter-state relations. The Gramscian conception demanded a new systemic and normative international relation theory to address the issue of oppression and emancipation from structural power.

The fourth face of power coincide with the constructivist view, which had a profound impact in international relations, by stating that power is expressed through the discourses that create social meaning. According to the constructivist theory, power is a discursive process and world politics is constructed through social processes that make actors and behaviors meaningful.

While working on the definition of power and working under the framework of a specific theories, with empirical focuses and methodological approaches, the scope of international relations have ended up narrowing instead of broadening. Most of the scholars have worked on theoretical niches without reaching a discipline-wide consensus and have preferred to analyze the manifestation of these theories in the world's events, instead of conceptualize power in a well-defined theoretical frame. As a consequence, the theory of international relations are lacking a common conception of power and are missing at the same time a common framework where to place the different conceptions. Such problem has lead some scholars, such as Michael Barnett and Raymond Duvall, to argue that the different conception of power can be understood as "the production, in and through social relations, of effects that shape the capacities of actors to determine their own circumstances and fate" (Barnett and Duval, 2005). According to this view, scholars define the possible conditions for the emerging of these different forms of power, expounding how these multiple forms might cooperate in various forms. Rather than trying to theorize the nature of social reality, international relations are on the way to focus on what concepts of social reality those different methods can generate and how the different methods of defining power can generate a conversation over the discipline of international relations itself.

5.1.2 A competition set to increase

As much as the scramble for energy resources has defined the world - and especially the Asian - geopolitics in recent decades, the struggle for water will inevitably define many of the inter-country relationships in the coming years. As Brahma Chellaney has pointed out:

“At a time when territorial disputes and separatist struggles in Asia increasingly are being driven by resource issues, water indeed is becoming the new oil. But unlike oil—dependence on which can be reduced by tapping other sources of energy—there is no substitute for water.” (Chellaney, 2014)

Population pressures, urbanization, climate change will reduce water availability, leaving no country untouched. The great thirst will nevertheless be mainly felt in the world's two most populous countries: India and China. The Strategic Foresight Group (SFG) from Mumbai has conducted a study titled 'The Himalayan Challenge', describing how in the next 20 years, the Himalayan's sub-region four countries (India, Nepal, China, Bangladesh), will face the depletion of almost 275 billion cubic meters (BCM) of annual renewable water. This amount is bigger than the total amount of water available in Nepal at the present time. Simultaneously demand will increase due to population growth and economic development. China will face a yearly water shortage of about 50-100 BCM in 2030, while India's water surplus will get reduce to 200-260 BCM. Water availability will shrink in Nepal and Bangladesh. Desertification, soil erosion, decline in food availability, reduction in livelihood opportunities in rural areas, sea-level rise and dams construction will lead to the displacement and migration of approximately 50 to 70 million people in the four countries by 2050. Such water deficit will have a cumulative, destructive effect on agricultural production, power generation, food availability and livelihood, forcing the four countries in the sub-region to try and secure water resources. Most of the regional waters will be consumed by the agricultural sector, although the industrial and domestic sectors will require more and more water in the future. Agriculture makes up the 65% of water consumption in China, the 90% in India, the 95% in Nepal and Bangladesh (Strategic Foresight Group, 2010). Pollution and inefficient management will exacerbate the precarious water availability. The 34% of the Yellow River is already unfit for drinking, aquaculture, and agriculture. The tributaries of the Yangtze River are polluted to the extent of 30%. In India, the Yamuna River, main tributary of the Ganges, is polluted up to 50%. Most of the rivers in Bangladesh are considered extremely polluted. In addition to shrinking rivers, the loss of permafrost, deforestation and the disappearance of lakes is furthering creating water-stress and lead to geo-political tension.

At the current stage, water can be turned into a tool of power in the interstate context, through resource capture and control, or by upholding inequitable utilization patterns. Even though the watercourses are internationally shared, in certain cases we are assisting at a fusion between national identity and rivers basins, which is shaping a sense of ownership and propelling the efforts to control such water sources. This is being done by the construction of hydro-engineering structures and dams, as well as through the use of disputable agreements, defended with the use of force or in the name of “historical rights” or through the “prior appropriation” doctrine. Most of the dams’ constructions involve the displacement of local populations and have an adverse impact on water flows on lower riparian countries. Building dams is often regarded as the quickest way to secure and harness available water resources and to produce clean and renewable energy source. However, dam building projects on fragile river ecosystems can cause harm to the environment and lead to the destruction of the marine life in rivers. Many species of fish got already extinct in the Yellow river because of the excessive hydropower projects.

Dams on Himalayan Rivers

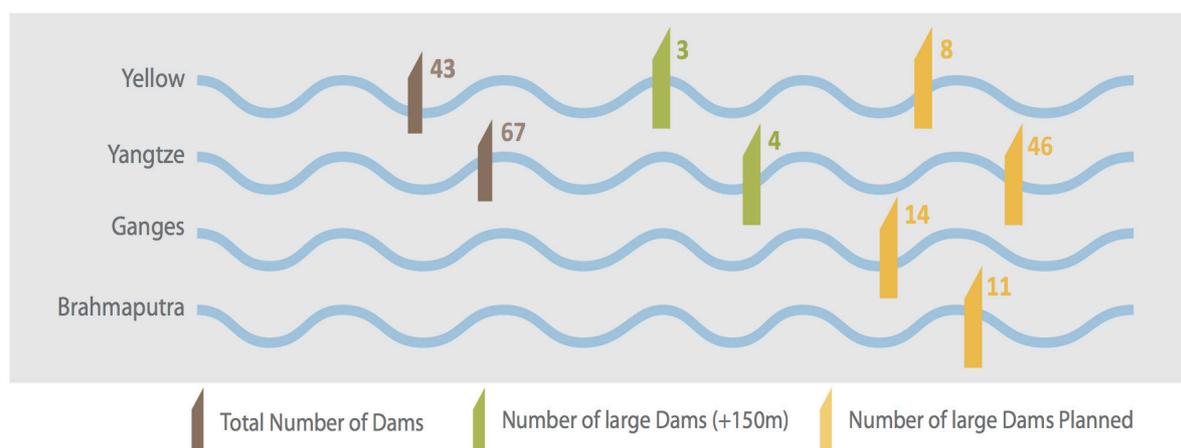


Table 13. Source: Asian Development Bank - Dams on Himalayan Rivers

The vast water resources of the Tibetan plateau are fundamental to sustain the water scarce Chinese regions of the northwest, as well as for revitalizing its deserts and the highly polluted Yellow river. The Himalayan resources are crucial to the economic development of the Middle Kingdom. The Chinese appetite for resources has prompted analyst and observer to say that ‘China’s thirst will leave others thirsty’ because China’s need and water requirement create contesting and conflicting situation with the other lower riparian countries. Without Tibet, China’s would not enjoy its current hydrological supremacy and would be overturn from being in the enviable situation of being water-independent to utterly water dependent. Tibet has given China the possibility on enjoying the status of the world’s

most independent riparian country, since Beijing's total control over Tibet in effect is the 'total' control of the water resources. The 'absolute territorial sovereignty' of Chinese government over the waters of the Tibetan plateau gives an added strategic sharpness to China's regional approach. By using water as a tool of power, control and manipulation, the international relations amongst countries became increasingly unequal. Therefore, only the economically and militarily stronger states can use the water resource as a possible weapon, no matter where the aquifer originate.

5.1.3 Hydro-hegemony and the asymmetry of power

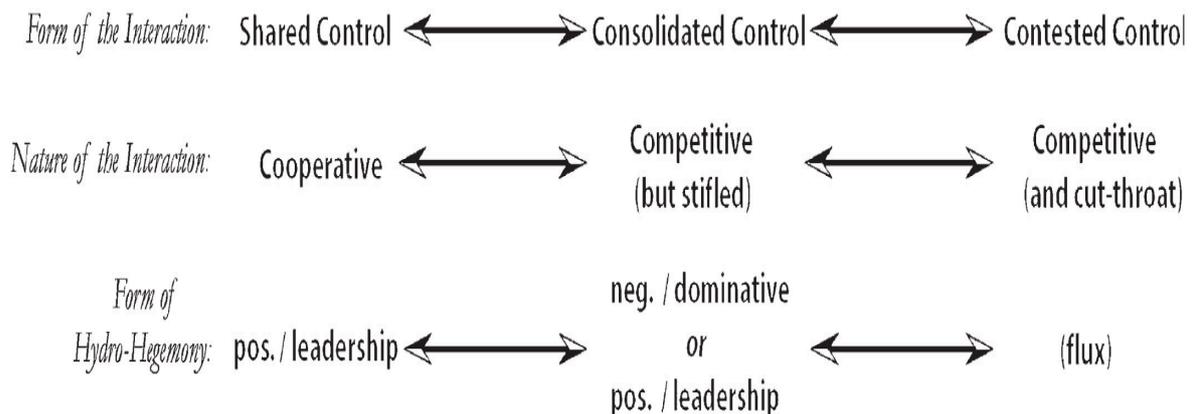
Hydropolitics has been defined by Arun P. Elhance as "the systematic study of conflict and cooperation between states over water resources that transcend international borders." Hydropolitics depend from physical geography, which determine the nature and the level of dependence of the various riparian states on transboundary rivers, as well as the urgency of its need for cooperation with other riparian states. Human activity can intentionally or unintentionally alter the physical parameters of a shared basin, paving the road both for potential conflict or cooperation amongst co-riparian states. The structure of a basin depends on the position of the international borders and the physical geography defines the bargaining powers that each riparian state has in hydropolitics. It has been a generally accepted trend that the uppermost riparian state is potentially the strongest; because of the possibility it has to alter the flows of the river. Such position could lead the uppermost riparian state to subordinate the lower riparian in shared water negotiations. The degree of freedom that can be used by the uppermost riparian state for its own benefits depends by the geographical features of the basin, which have substantial implications in the developing of international laws for the non-navigational uses of international rivers.

In the realm of politics, hegemony is still a central feature of the global power balance. By hegemony we would define a form of leadership supported by authority. With water becoming always more a contented resource, the term hydro-hegemony has come out to define hegemony at the level of the river basin. Mark Zietoun and Jeron Warner described hydro-hegemony as "hegemony at the river-basin level, achieved through water resource control strategies such as resource capture, integration and containment. This form of control can be shared, consolidated in the stronger riparian's favor, or contested. Hydro-hegemony comes to define the behavior of a regional great power with respect to their co-riparians (Zeitoun and Warner, 2008). Lustick (2002), drawing from Amitai Etzioni and David Held's work, has defined four ways to produce obedience:

- Coercive

- Utilitarian
- Normative agreement
- Ideological hegemony on Gramscian terms

Lustick also explain how hegemon countries would prefer to avoid coercive tactics to get obedience and rather count on other ways of compliance. The hegemon actor is endowed with the power to define the rules of the game and to establish which are the issues and which are not (Zeitoun and Warner, 2008). Hydro-hegemony has been observed as a phenomena which can provide international order and assurance of the river flows, by stabilizing the actions of weaker states, by developing proper management and regulations and by avoiding skirmishes and the prospect of the largely predicted ‘water wars’. However, this favorable points might not be seen in the same way by weaker states, which at the opposite, might focus their observation in the structural inequalities, in the lack of decision power, and in the unequal allocation of resources. The first view of the establishment of a stable situation through hegemony can work whereby the hegemon state exercise a positive leadership, by negotiating water-sharing agreements that are generally welcome by all riparian. The hegemon state might, on the opposite, seek to consolidate maximum control of the water resources, thus exerting a negative or dominative hydro hegemony, by capturing resources without any agreements with their co-riparian. In this case, the hegemon carry out facts on the ground such as land acquisition, annexation and construction of hydropower project that we can define as water grabbing.



*Table 14. Source M. Zeitoun and J. Warner / Water Policy 8
Continuum of Forms of Interaction over Transboundary Water Resources*

The most powerful riparians can make use of all these strategies to assert its hydro-hegemony over a weaker riparian, since there is no universally recognized water law that can

guarantee equal rights to the states in a weaker position. Benvenisti has summed up the situation in the following sentence:

“The two basic building blocks of the global political and legal environment – the concept of sovereignty and the allocation of jurisdiction by political borders – have joined forces to preclude an efficient and sustainable use of trans-boundary resources. Absent legal constraints and well-defined rights, relatively powerful downstream states began resorting to economic and military threats to elicit cooperation, while relatively weaker riparian acquiesced and actual practice reflected the regional military balance of power.” (Benvenisti, 2002)

The hydro-hegemon state has the power to transform the hydrogeology of the water resources. However, now that the UN Watercourse Convention has entered into force and many states have started to consider it as a reference point over water law issues, the hydro-hegemon state may find it more efficient to find common grounds of cooperation with its riparian states. M. Zeitoun and J. Warner (2006) have enlisted a different range of tactics to explain coercive measures and resources.

- The coercive-compliance mechanisms tactics include the use of military force, which however is rarely used in water conflicts. Through this system, the competitors will be weakened through coercive pressure and threats of military action, economic sanctions, political and diplomatic isolations, espionage and propaganda.
- Another tactic is the utilitarian compliance-producing mechanisms, which consist in incentives for compliance upon mutually beneficial “shared interest”.
- A third way to produce compliance is through normative mechanism such as institutionalized agreements, which however can sometimes turn into an instrument of leverage for the stronger side.
- The hegemonic compliance-producing mechanism refer instead to securitization of facilities to “build knowledge” around a water-related issue. It is the process of manufacturing consent to attain compliance through a “sanctioned discourse”, which create a new definition of reality that accommodate the weaker riparian, in what Plato would define as a “noble lie.”

States that are suffering from negative forms of hydro-hegemony resort to agenda-framing power such as international law, delay, and economic development.

5.1.4 An overview of China's water-hegemony

Although power is a complex and contested concept, it is viewed in international relations mainly as the ability to influence the international system and to define the control over resources, capabilities and outcomes. In these terms, China's supremacy control on the Himalayan waters and the influence of its economy, being the largest of the continent, gives the country a position of political hegemony, particularly in the water context. Many observers have been pessimistic about China's ability to "continue rising peacefully", particularly among the English School (Zhang and Buzan, 2010). The international relations over water undertaken by China need to be understood in the context of co-existing conflict and cooperation. Moreover, the driving forces beside either the conflictive or cooperative tendencies of power balance must take into account important factors such as population. The drivers of cooperation are partially present in river basin commission, as it's the case of the Mekong River Commission (MRC), where China is not present as a member state, but at least agree in exchanging data over floods as well as information about its dams. In most of the cases however, the Chinese management approach over transboundary waters can be seen mainly through a realist lens, when China is set to exploit its position of upper riparian states without caring about the effects of this hegemony over lower riparian states. China can count upon an unbalanced amount of political, economic and military power that tends to coerce riparian states to agree on water-sharing policies that affect them negatively. With this disproportionate amount of power and its strategic geographic position, China can dictate the agenda for all riparians and use any hydrological information to enhance it's position of hegemony. Brahma Chellaney has pointed out that China get its hand on Asia's waters often without prior consultation and through sort of furtively unannounced construction activities on international rivers (Chellaney, 2011).

The economic importance and the status of the dependency that co-riparian states have towards the Middle Kingdom, assure China the 'soft power' required to attain 'bargaining' power to be leveraged without resorting to hard power. In relations with India, Bangladesh and the lower riparian on the Mekong, China is considered hydro-hegemon and acting by its own interests. In terms of power balance, the downriver states are generally in a stage of preoccupation regarding the possibility of the upper riparian giant to manage the shared watercourse's water on its own desired manner. In Asia, transboundary water issues are increasingly seen as a zero-sum game in which a concession by one country is viewed as a "loss" relative to the other country's "gain" and vice-versa, instead of focusing on the possible benefits of cooperation. The danger that riparian disputes could escalate into a geopolitical conflict is realistic in this period of fast running and ambitious economies.

A geopolitical conflict is defined as clash of interests between nation states happening

when countries differ on certain policies in politics, geography, demography and economics usually with respect to foreign policy. Geo-political conflicts invariably lead to stressful relations between stakeholders, expressed through diplomatic protests, sanctions, dissolution of agreements, verbal condemnation and third-party intervention that could also lead to an armed response or war. As the countries sharing the precious Himalayan basin try to secure their individual water resources for the future, the possibility of internal grievances and demand for water turning into a geo-political conflict will increase.

Drivers of Fresh Water Conflict

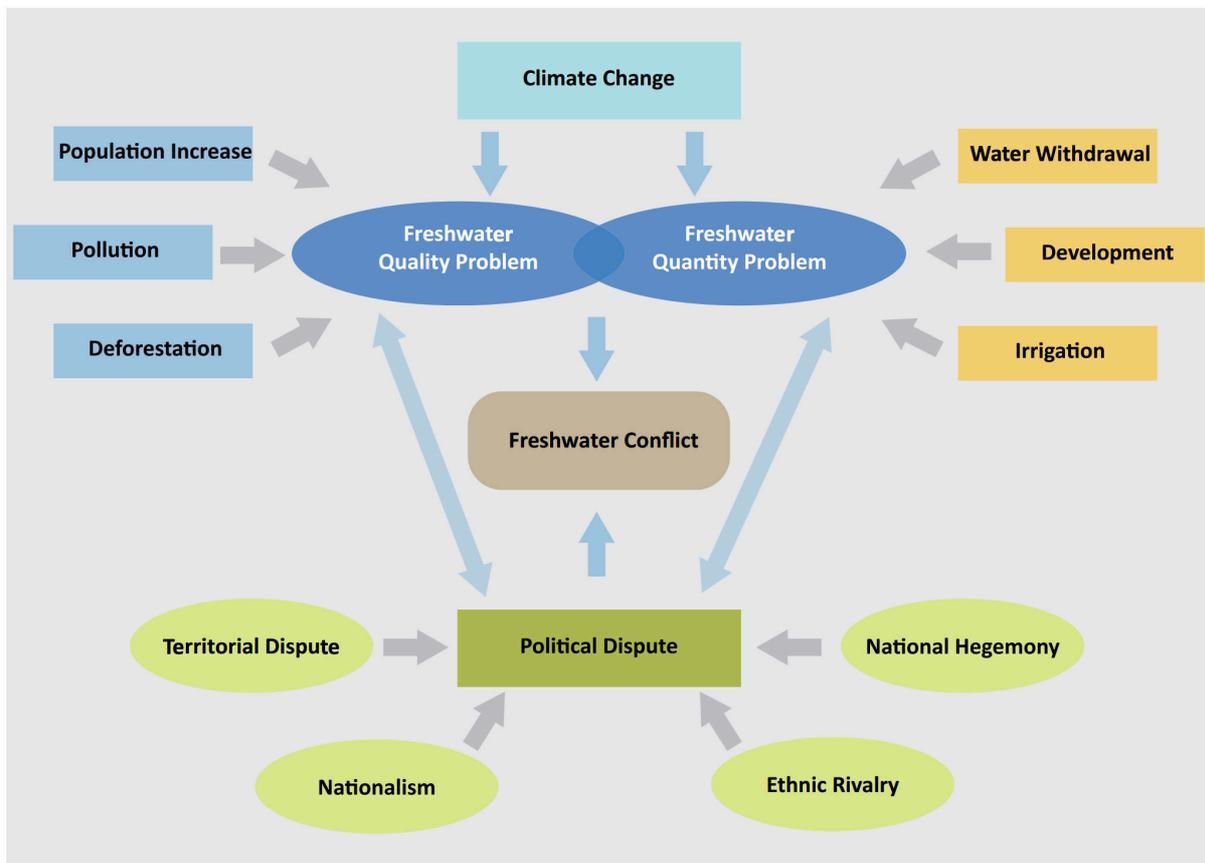


Table 15. Source: Asian Development Bank. Drivers of Freshwater conflict

China’s effort to obtain hegemony must be understood both through the domination of the continental and maritime side. The control of the Tibetan watercourses and the gas-rich region of Xinjiang have guarantee the country a similar continental domination that once belonged to the Soviet Union. Countervailing powers such as the United States in the Asian littoral and India in the ocean are still challenging the maritime dominance

5.2 Cooperation accords amongst countries sharing the Himalayan watercourses

The trans-boundary nature of the major Himalayan Rivers and the stringent water crisis of the Asian continent could create the ground for a fertile international cooperation, which would currently be both necessary and opportune for the good of all the countries involved. The impact of climate change, the threat of its effects on the Himalayan regions and the uncertainties that derives from it, should be sufficient to convince politicians to engage into discussions and cooperation, instead of driving them towards the selfish path of confrontation. On the light of these considerations, the framework of the 1997 UN Watercourses Convention, which has brought forward an institutional form of international water management and regulations, could constitute a nonpareil opportunity to enhance transboundary cooperation. A joint effort of international academics, scientists, policy-makers and institutions, would be crucial to solve the many challenges which are now facing the Himalayan Rivers. As we have seen however, many countries in the region, and especially the hydro-hegemon China, are more interested in rivalry rather than partnership. China shares about fifty major international watercourses with other countries in the region, predominantly downstream riparian neighbors such as North Korea, Russia, Mongolia, Kazakhstan, Kyrgyzstan, Tajikistan, Bhutan, Myanmar, Laos, Nepal, Pakistan, Afghanistan, India and Vietnam. However, less than 1% of the Chinese waters spring outside its borders. Nine of the provinces and autonomous regions across the country – Guangxi, Heilongjiang, Inner Mongolia, Jilin, Liaoning, Qinghai, Tibet, Xinjiang and Yunnan – are located inside transboundary watersheds, which include several contiguous and successive rivers, lakes and aquifers with diverse geo-physical qualities (Wouters, 2014).

Politically, the actions undertaken by the Chinese government, concerning international watercourses, deeply contradict its statements. Both president Xi, as well as other political leaders, have stressed on the necessity of creating an harmonious society, based on peaceful relations with its neighbors. For instance, in the Boao Forum speech in April 2013, President Xi affirmed that China

“...Should boost cooperation as an effective vehicle for enhancing common development... While pursuing its own interests, a country should accommodate the legitimate concerns of others [...] We need to work vigorously to create more cooperation opportunities, upgrade cooperation, and deliver more development dividends to our people and contribute more to global growth.”

Such pronouncements are rarely followed in practice by the Chinese leadership, despite the country engaged in a wide range of treaty arrangements, even though they are not related with water sharing issues. The most developed of those treaties arrangements is the Sino-Russian, which was signed in 2001 and comprise a treaty of Good-Neighborliness, providing the legal basis for water and environmental cooperation. The series of Sino-Russian agreements concerning water, work towards a coherent approach in shared water management. Sino-Russian water cooperation appears to be focused primarily on the joint monitoring of transboundary water quality and emergency response measures, which fall far short of joint management.

China has signed a treaty with Kazakhstan in November 2014, in which the both parties commit to “take every possible measure to complete the Implementation Plan of Water Allocation Technical Work of Transboundary Rivers. China did not sign any water agreement concerning some of the world’s greatest international rivers, such as the Yarlung Tsangpo River / Brahmaputra, the Ganges, the Indus, the Mekong and this has created skepticism on other countries that contest the truthfulness of China’s ‘good neighbor’ policy (Water Politics, 2014). China still consider however its approach to international law as aligned with the “Five Principles of Peaceful Co-existence” which are:

- Mutual respect for sovereignty and territorial integrity;
- Mutual non-aggression;
- Non-interference in each other’s internal affairs;
- Equality and mutual benefit
- Peaceful coexistence

Trough this approach, China takes into account other riparian country needs, but only in the context of China’s national interests. India and China are the greatest competitors in the region in terms of natural resources and economical development. The two countries did not sign any water-sharing treaties, but they did signed two memorandum of understanding about their shared international rivers. The first was signed in 2002 for provision of hydrological information on the Yarlong Tsangpo/Brahmaputra during the flood season, by China to India. China provides India with hydrological information regarding water level, discharge and rainfall from the three stations of Nugesha, Yangcun and Nuxia, located on the Yarlong Tsangpo/Brahmaputra. The second memorandum was signed in April 2005 for the provision of hydrological information on the Sutlej/ Langquin Zangbu in the flood season. Since 2006, India’s Council of Scientific and Industrial Research (CSIR) and China’s National Natural Science Foundation have worked together on issues covering changing environments, ocean

variability, land ecosystems, land-ocean interactions, land-atmosphere interactions, ocean-atmosphere interactions and coupled-modeling. In November 2009, India and China signed an agreement that includes conducting joint research on the impact of global warming on the Himalayan and Tibetan glaciers. China has shared flow data over the Sutlej and Brahmaputra rivers also with Bangladesh.

India and Bangladesh share 54 rivers, however, the Ganges Treaty is the only water sharing agreement that exists between Bangladesh and India. Article IX of the Ganges Treaty stipulated that, guided by the principle of equity, fairness, and no harm to either party, both Bangladesh and India would conclude water sharing treaties/agreements with regard to other transboundary or common rivers. The treaty deals with the sharing of Ganges waters at Farakka during the lean season, a barrage built in 1961 by the Indian government across the Ganges river, 11 miles upstream from the border with Bangladesh (which at the time was still East Pakistan), aimed at diverting the water to the Hooghly river to solve the siltation problems at the Calcutta port. The Pakistan government protested, raising the argument that there was no adequate amount of flow in the Ganges to meet the water demands of both countries. Pakistan defended the position that flow diversion from the main channel of the Ganges would result in adverse impact on the agriculture, ecology and economy of what was by then East Pakistan. The treaty was signed only on December 12, 1996 and is valid for 30 years. It came out after many years of negotiations. The water sharing treaty is now monitored by a Joint Committee, which comprises members of the Indo-Bangladesh Joint River Commission (JRC). According to the Indo-Bangladesh Treaty on Ganges' Waters, India has been providing Bangladesh with flood data for the Ganges River from June 15th to October 15th every year; the flood data for the Brahmaputra River from the Pandu, Goalpara and Dhubri stations; and the flood data for the Barak River from the Silchar station, during the monsoons, for the purposes of flood forecasting. India also provides Bangladesh with data of the rivers Teesta, Manu, Gumti, Jaladhaka and Torsa. Notwithstanding the current cooperation, Bangladesh still claims to do not receive the quantity of water, through the Farakka Barrage, that had been agreed to in the 1996 treaty. Bangladesh has also sought Indian cooperation for fair sharing of other trans-boundary rivers including the Teesta in January 2010. Bangladesh, in addition, has complaints against India over the Tipaimukh project and over the now-stalled Indian River Linking project.

India and Nepal are involved in dialogue for cooperation on issues related to development of water resources. The Joint Committee on Water Resources (JCWR) chaired by the Water Resources Secretaries of both countries, is the body that discusses all water-related issues between Nepal and India. The two countries signed a treaty on the Integrated Development of the Mahakali River/Sarda River in February 1996. The Treaty includes three components: the Sarada Barrage, the Tanakpur Barrage and the Pancheshwar Project. The first two projects

have been executed by India at Mahakali on the Indo-Nepal Border. The third project involves new construction of a 315 meter high dam called the Pancheshwar on the Mahakali and is expected to generate 6480 MW of power for supply to India's northern power grid and to provide the Gangetic plains with waters for irrigation (Khan, Anjal and Gurung, 2011). The provisions of the treaty affirms that India is willing to join hands with Nepal in the development of water resources for the common benefit of her people, and according to the principles of equity (Upretym 2006). The treaty was met with resistance in Nepal and was ultimately passed with specific strictures or conditions. Disputes still exist on the issues of defining consumptive use of the countries and fixing the selling price of Nepal's excess share of electricity to India (Salehin, Kahn, Anjal, Gurung, 2011).

The regional cooperation between India and Bhutan has been very successful, with India, which has a power shortage, providing both technical and financial assistance to develop numerous hydropower projects in Bhutan. While India benefit from Bhutan's hydroelectric energy resource to meet a part of its huge power demand, Bhutan benefits from the revenues earned from the export of power. The hydropower cooperation between Bhutan and India started with the signing of the Jaldhaka agreement in 1961 and the first major hydroelectric project started in 1974 when a bilateral agreement was signed between India and Bhutan for the construction of the 336 MW Chukhahydel project, across river Wangchu in Western Bhutan, for meeting internal power demand and exporting the surplus electricity to India (Biswas, 2008). The cooperation between Bhutan and India has also been with respect to the establishment of hydro-meteorological and flood forecasting network on rivers common to India and Bhutan. A scheme titled 'Comprehensive Scheme for Establishment of Hydrometeorological and Flood Forecasting Network on Rivers Common to India and Bhutan' is in operation. The network is composed of meteorological stations that are funded by India but located in Bhutan (India government, 2011).

In 1985 the governments of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka established the South Asian Association for Regional Co-operation (SAARC). Afghanistan was accorded membership a little later and a dialogue partnership was created with a few countries including China and the United States. SAARC provides a platform for data-sharing and policy cooperation by creating a program focused on the Himalayan ecosystem. However, the platform have an impressive track record in the delivery of concrete results due to their excessively bureaucratic nature and because national interests of the states involved have taken precedence over the regional priorities

6. Case Study: The Yarlung Tsangpo / Brahmaputra River

6.1 Geology and mythology of a river



Map 7. Source: Wikipedia

The Yarlung Tsangpo / Brahmaputra river is known as one of the world's most important and large transboundary rivers. It ranks as the fourth largest river by discharge. Amongst the world's major rivers, it is geologically the youngest, known as a moving ocean. Its river basin is spread over four countries, Bhutan, Tibet, India and Bangladesh, with a total basin area of 5,80,000 square kilometers. Out of this total catchment area, 50.5% lies in Tibet, 33.6% in India, 8.1% in Bangladesh and 7.8% in Bhutan. For geologist and environmentalist, the Brahmaputra is a very unique river because "drains such diverse environments as the cold dry plateau of Tibet, the rain-drenched Himalayan slopes, the landlocked alluvial plains of Assam and the vast deltaic lowlands of Bangladesh." Its source is in the Chemayungdung mountain ranges, about hundred kilometers South-East of Mansarovar lake, in the Mount Kailash range in Southern Tibet, at an elevation of 5300 m. The Mount Kailash is considered to be a very special place for the devotees of some of the most important religions that shaped life in the Himalayan plateau for thousands of years: Bön, Buddhism, Hinduism and Jainism. It is therefore a place of pilgrimage for many adherents of these religions that every year flows numerous at the mountain's feet. Out of the Mount Kailash glaciers, the Tamchok Khambab spring, spill out and by gaining breath and volume become the 'Tsangpo', which in Tibetan means purifier, and is the highest river in the world. The basin of the 'Tsangpo' has been a lifeline for the Tibetan civilization, just like the Yellow river has been the cradle of

the Han civilization. On the 'Tsangpo' banks the Tibetan religion and culture have flourished. The Tsangbo flow down from the Himalayan chain, crossing the Tibetan plateau and running for 2,880 kilometers until the northeast corner of India, in the region of Arunachal Pradesh, where it flows into the deltaic lowlands of Bangladesh, joining the river Ganges and ending up in the Bay of Bengal. In India the river takes the name of 'Brahmaputra', which literally means 'Son of Brahma'. Brahma in the Hindus tradition is one of the Trimurti, and specifically the god of creation. The "Great Trinity" includes Vishnu, who is considered the preserver, and Shiva, who is considered the destroyer and the transformer. The Brahmaputra is one of the few rivers in India regarded as a 'male' river, and connected to its origins there are several myths and legends. One of the most popular, and considered sacred, legend about the river's birth is the one contained in the religious book 'Kalika Purana'. The story describe how one of the incarnations of Lord Vishnu, bringing the name of Parushurama, got purified of his sin by killing his own mother with an axe and by taking bath in the sacred river thereafter. Parushurama was executing the will of his own father Yamadagni, who has suspected his wife Renuka of adultery and order his son of getting rid of her. However, after this act of killing, the axe got stuck to his hand and he couldn't free himself of it. After asking advices to sages and wise men of his surroundings, he embarked on a pilgrimage to reach the place called Parashuram Kunda, in Arunachal Pradesh. At the time the watercourse was confined amongst the mountains in the shape of a lake and Parashuram cut the hills on one side to release the holy waters and to benefit the people living in the area. By so doing, the axe came out of the hand of Parashuram, freeing him for his sin.

The Yarlong Tsampo receives its water from many tributaries by flowing across Tibet. According to the Encyclopedia Britannica, the Raka Tsangpo, the Lhasa (Kyi) and the Nyang Qu (Gyamda) are some of its north bank tributaries, while the Nyang Qu is a tributary on the south bank. The river reaches its magnitude by traversing India, making a U-turn through a series of cascades and rapids through deep gorges between the Mount Namcha Barwa, which is the highest peak of the eastern Himalayan range with 7,782 meters and the 7,294 meters high Mount Gyala Peri. In Upper Assam, in the area of Dibrugath, the river is about 16km wide. In the region of Assam the river reaches the size of 18km and have a profound impact on the local people. For the people of Assam the river is a symbol of pride and assumes a profound religious and spiritual meaning by being "the son of Brahma". However, the river is considered very powerful also for the danger it ignites on the locals, due its largeness and the strength he gets during the monsoon and the floods. On his incredible journey the river flows through the world's deepest gorges and spread over an area of 64,300 kilometers, across the eastern extremity of the Himalayas, with canyon walls that extends upward for 5,000 meters and more on each side. These are considered to be the deepest canyons, with the largest slope deflection of any river surface in the world. The Great Bend is revered as a sacred place in

Tibetan Buddhism, which personifies Tibet's protecting deity Dorjee Pagmo. For the Tibetans, the damming of the rivers at the Great Canyon and the mining operation are considered as a desecration of a sacred landscape and another attempt from the Chinese rule to threaten the Tibetan cultural traditions. What for Tibetans is a place to be "freed from rebirth in the lower realm of existence" is considered by the Chinese pragmatically as a fundamental source of energy. The Great bend region is ecologically unique for its diverse climate zones, the icefalls, the snow peaks, the subtropical jungles and hot springs, which can be affected negatively by the dam projects. The Chinese government didn't establish any sort of dialogue, nor consultation, with the Tibetans about the water projects in their homeland.

The river in this area erodes the bedrock at about 7mm every year, transporting load of sediments and nutrients on which the river basin's farmer heavily depends. These incredible gorges have created great interests on geographers and explorers. For many years, they have been looking for waterfalls within the gorges, even though it was hard to get access to the site due to its steep and forbidding walls. In 1924, the British explorer Frank Kingdon-Ward undertook an 11-month botanical expedition and discovered a 12-meters waterfall. However, the greatest discoveries happened in 1998 when Ian Baker and Ken Storm found the access to the most remote part of the gorges, where a 30-meters long waterfall was to be found. Chinese engineers have seen in the bend a great potential for hydropower. Some experts have described the possible energetic resource exploitable by the bend as a potential "energy Eldorado". The Chinese hydropower project will be described in the next paragraphs. After the Gorges, the river enters the political disputed Arunachal Pradesh province in northeast India in Gelling. The river at this place is known as Siang and flows for about 294 km till the confluence with Dibang and Lohit River. The Siang River crosses the Dibang and Lohit tributaries in the west of Sadiya, from where it starts to be known as Brahmaputra until it enters Bangladesh. In India, the river flows for about 918 km and it crosses Assam in the south of Dhubti. In the region of Assam the river has been widening constantly in the last century and became almost one and a half times larger, in some areas, than how it was a century ago. The Indian side of the Brahmaputra river basin hosts 610 glaciers, covering an area of 928.91 square kilometers and the volume of 49.57 cubic kilometers. The majority of these glaciers are in Teesta river basin, about 449, while 161 glaciers are in Arunachal Pradesh region. The Himalayan snow and melting of the glaciers have a fundamental role in the water availability of the region, and that's why climate change is considered a great threat to the people living along its basin.

The river flows through Bangladesh for 337 km, where the river is known as Yamuna. In Bangladesh, the Brahmaputra-Jamuna receive water from the Teesta River in the Northwest and joins in the Ganges at Goalundo Ghat. From this point, the two mighty rivers are known as Padma and join the river Meghna in the downstream. The united stream known as Meghna

end its journey in the Bay of Bengal.

The Yarlong Tsampo / Brahmaputra basin is inhabited by a great range of different cultural groups who speak different languages and dialects. The most of the area of the river is immersed into an incredibly rich cultural area, with important social and political connotations. The regions in the Northeast are home for hundreds of different tribes, sub-tribal communities and ethnic groups, bordering India, Bhutan, Tibet, Burma and Bangladesh. About 220 different languages are spoken, mainly from Indo-Aryan, Tibetan-Burmese origins.

One of the greatest problem of the Yarlong Tampo / Brahmaputra river basin is its proneness to erosion and floods, especially in the northeast areas of India's Assam. This problem has severely affected the social, political and economical life of Assam. Dr. D.C. Goswami, one of the most renowned environmental scientists from Assam, has described the situation on the region in the following terms.

“The unique geo-environmental setting of the region vis-à-vis the eastern Himalayas, the highly potent monsoon regime, weak geological formation, active seismicity, accelerated erosion, rapid channel aggradations, massive deforestation, intense land use pressure and high population growth especially in the floodplain belt, and ad hoc type temporary flood control measures are some of the dominant factors that cause and/or intensify floods in the Brahmaputra and the Barak basins (Goswami, 1998).

Floods and erosion are threatening the lives of the people of Assam by leading to permanent loss of land. The dangers are similar in Bangladesh, which is very dependent on the Brahmaputra/Jamuna's water for fertile fields and diverse flora and aqua culture. About 600,000 people are living on the riverine islands and bars alone. In Bangladesh, floods have been occurring quite regularly in the recent years and especially in 1987, 1988, 1998 and 2004. Although the people of Bangladesh have learned to adapt to the consequences of these floods, the growing population of the country and the expansion of infrastructures has created increase flood damage. The government of Bangladesh has launched a flood control program in 1989, through the construction of embankments, but has been strongly criticized. To solve the issue of the flood, many have advocate for the construction of a multi-purpose dams. The hydro-development projects proposed in the region had as a pretext indeed the hydro-development of these regions. However, a number of studies such as ‘Unraveling Bhakra’ by Shripad Dharmadhikary, “One Valley and a Thousand: Dams, Nationalism, and Development, Studies in Social Ecology & Environmental History” on Damodar Valley dams by Daniel Klingensmith, ‘Drown and Dammed’ by Prof Rohan D'Souza, have proven

that even the construction of dams could lead to even more disasters. Many of the hydropower projects based on dam building have been severely opposed in the Brahmaputra valley, also because of the impact they can have downstream, on the biodiversity, seismicity, society and culture of one of the most ecological sensitive areas. Between 1989 and 1995 the People's Liberation Army has used explosive and drilling equipment to build a six kilometers long tunnel through the Garbala mountains to create waterfalls from the lake into the Brahmaputra river. While producing 90 megawatts of the electricity, the lake used as a reservoir is losing part of its traditional ecosystem and the holy character it has for centuries in the Tibetan culture.

6.2 India-China Relations over Arunachal Pradesh

6.2.1 Brief history of the modern disputes over Arunachal Pradesh

The construction of hydroelectric projects in the great bend of the Yarlong Tsampo / Brahmaputra have alarmed India about the possibility of seeing the flow of one of its major rivers altered, as China affirmed to start using its water resources for its industrial and development benefit. Transboundary rivers such as the Yarlong Tsampo / Brahmaputra, constitute some of the greatest challenges over the Sino – Indian relations, because of the great importance of their waters for domestic, agricultural, industrial and energetic use. The importance of these waters could possibly undermine the security relations of these two states, bringing them into a context of strategic competition. Considered the size of the two populations, and the increasing impact of their economies in the global scale, India and China are generally interested in avoiding conflicts and containing the disputes over resource, territories and regional influences. Since the late 1980s, the two countries have successfully preferred diplomacy to conflicts, they have developed important economic ties and China is currently India's largest trading partner at the moment. Nevertheless, it is no mystery that both countries are trying to extend their regional political and economical influences on neighboring countries, in order to get access to strategic resources located elsewhere. In these attempts to widen their sphere of influence, the interest of the two countries are sometimes overlapping and creating renewed competition. Particular preoccupation in New Delhi is given to the strategic bilateral relations between China and Pakistan and the economic activities that Beijing is undertaking in the disputed South China Sea. However, one of the greatest security challenges the two countries are currently facing regards the waters of the Yarlong Tsampo / Brahmaputra. When it enters into India, the watercourse flows through Arunachal Pradesh and Assam's regions. The first of these two regions has a long story of

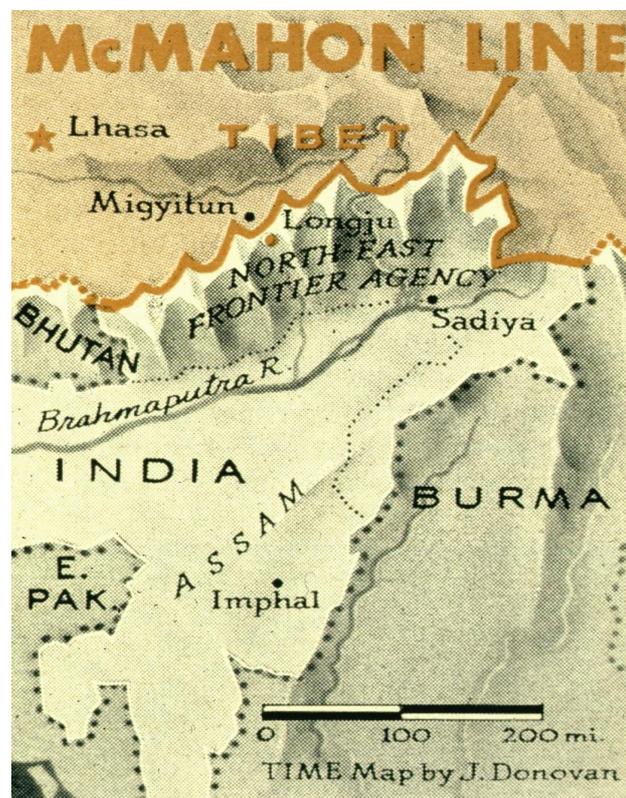
disputes between India and China over its control. In 1951, the government of New Delhi enacted official control of the region that since the Simla Convention of 1914 was part of the British Raj. However, the Chinese government defined the demarcations of the Simla Convention as illegitimate, so the region became a focus point of Sino-Indian competition. The Simla Accord was a convention between colonial Britain, China and Tibet that dealt with divided Tibet into “Outer Tibet” and “Inner Tibet”. The agreement signed between the British and the Tibetan governments established a line that followed the Himalayas for about 885 kilometers from Bhutan to Burma and brings the name of the British plenipotentiary McMahon. Both countries believed that the region was an important base for defending their interests and influences in South Asia, being important for geographical and cultural reasons, as it’s endowed with rich reservoirs of timber and coal.



Map 8. Source: Wikipedia - Pre-Simla British map published in 1909 shows the so-called "Outer Line" as India's northern boundary

The deal gave control to the British Raj of the North East Frontier Tract (NEFT), which later became the region of Arunachal Pradesh. At the time of the accord, the deal was rejected both by the Chinese plenipotentiary Ivan Chen that by the Government of India. The representative of the Republic of China were not consulted about the final demarcation and claimed that Tibet should have been under sovereignty of China. Chinese leaders affirmed that the Tibetan government should have consulted China before entering into agreements with a foreign power. However, the British government, which had previously recognized the Chinese Qing Dynasty's claim over Tibet, did not the same with the new Chinese Republican government, prompting the Chinese plenipotentiaries to withdraw from the Convention. The creation of the McMahon Line moreover, did not establish an exact location about the line of control between India and Tibet, creating confusion over the sovereignty of the area.

With the rise and victory of the Communist party, Beijing assumed a more confident policy that triggered new tensions in the area. In 1957, the Chinese government built a road to connect Tibet with Xinjiang through the Indian-controlled Aksai-Chin Plain. After the reaction of the Indian government, which saw the event as a violation of its territory, the Chinese government announced its sovereignty over the region. As a response, the Indian army assent an incursion of Indian patrols into the territory and even beyond the MacMahon line.



Map 9. Source: Time - The McMahon Line and the NEFT

In 1959, Chinese Chairman Mao Zedong order the People's Liberation Army (PLA) to take place along the border, following the decision of the Indian government to give asylum to the Dalai Lama after the failed Tibet Rebellion of 1959. This action stirred a series of competitive measures that generate the presence of both countries' military along the boarder and create a series of skirmished that led to the Sino-India War on 1962. Beijing troops invaded the NEFT, with the intention of asserting dominance over the area to assume the total control of Tibet. China's claimed that the NEFT represented "South Tibet" and belonged to China. The Chinese withdraw with the declaration of a ceasefire on November 20th, 1962. The aftermath of the conflict led space to a period of détente during which the Chinese leaders tacitly acknowledge India's control over the region, while continuing claiming the fact that the region belonged to China.

In 1986, the New Delhi's government granted formal statehood to the NEFT, changing its name to Arunachal Pradesh. Following the protests of the Chinese government, India dispatched over 200,000 troops to Tawang, enlightening the spectrum of a new war. However, India and China were able to find a solution and to avoid a new military conflict, creating the basis for a new period of détente. The two countries' relations remained quite stable until 2006, when the Chinese ambassador to India Sun Yuxi affirmed on a television interview that China was considering Arunachal Pradesh as a part of its own territory. Meanwhile, China started the construction of a new road crossing the northwest of the Indian region of Sikkim, deploying Chinese troops into the disputed areas. A series of actions confirmed China's renewed intention to claim the region. An Indian Administrative Service officer from Arunachal Pradesh was granted free access to the Chinese mainland on the assumption that he was a Chinese citizen and did not require visa (Goswam and Namrata, 2010). Since then the relations between the two countries deteriorated, India's changed its support for China's international policies and increased its relations with Japan and the United States. Nationalism was stirred in the region by the two countries respectively.

6.2.2. The geopolitical importance of Arunachal Pradesh

The Sino-Indian boarder conflict and the tensions over Arunachal Pradesh must be understood more through a geographical lens than through a cultural and historical one. Culture and history play a relevant role into the conflict but are subordinated by geography's importance and centrality on the conflict. Just like the strategic importance of the Yarlong Tsampo / Brahmaputra waters, the dispute over Arunachal Pradesh can be considered as a zero-sum game between India and China, although the two countries' need for the region are very different from each others. New Delhi's views Arunachal Pradesh mainly as a defensive buffer from the Chinese mainland. Arunachal Pradesh is surrounded by the Himalayas, which

constitutes a natural defensive barrier against possible invasions from the North and to prevent a potential Chinese expansion in South Asia and the Bay of Bengal. New Delhi is preoccupied by China's economic relation with Pakistan and from the increased presence of the People's Liberation Army Navy's (PLAN) in the Arabian Sea. Moreover, India is in competition with China over the influence in Myanmar and Bhutan, which both countries considers essential to their respective security and stability. The control of the boarder area of Tawang, which lies at the Indian-Bhutanese boarder, is considered essential by New Delhi to prevent China's penetration into Bangladesh, which would give them access to the Bay of Bengal. Moreover, controlling a region inhabited by Tibetan people has a strong important cultural importance to avoid China to gain full control over what it consider "Southern Tibet". China, on the opposite, sees Arunachal Pradesh as an important region to protect its internal security over the Tibet Autonomous Region (TAR). For this purpose, the Chinese government has created a strong military buildup across the region, involving military infrastructures, surveillance capabilities, signal intelligence installations and infrastructures much superior to the Indian deployment (Holslag, 2009). India has responded modernizing its troops and reinforcing its deployment in the mountainous region as well as improving roads and infrastructures.

Arunachal Pradesh is not so important in itself, since China can already count on the Tibetan plateau to possibly wage offensive against China, but is extremely interested in confining all the elements of the Tibetan culture under China's control. By gaining control of Arunachal Pradesh, China could relax the presence of its militaries in the region and shift its deployment towards others contested boarders such as Taiwan. It is no coincidence that China has been planning to build a railway, which connects Lhasa with the Linzhi Prefecture, located right north of Arunachal Pradesh and will be strategic to deploy troops quickly to the contested border. The region is also important for its resources, beside the waters of Yarlong Tsampo / Brahmaputra, Arunachal Pradesh is rich and copper and iron ore. By controlling the region, China could limit its dependency of resource imports from Africa and the Middle East. For India, Arunachal Pradesh its important for hydroelectricity, timber, soil and other mineral resources.

6.2.3 The rise of nationalism in Arunachal Pradesh

The Sino-Indian competition over Arunachal Pradesh has led to rising nationalism on both sides, fueled by the respective governments. Beijing and New Delhi are casting support to their respective counterparts, exacerbating the society fracture in the Himalayan region. The Indian residents in Arunachal Pradesh, as well as the most of the Indian citizens of the country, deeply resent the Chinese claim over a territory they considered utterly integrated to

Indian culture and economic system. The distaste of Chinese aggression is confirmed by regional and national opinion polls and by the advocacy of students union and academics. Indian citizens have grown a wide resentment against China, which keep being fueled by China's claim over Arunachal Pradesh, such as the episode of allowing people from the region to enter China without visa, as symbolic gesture to claim the sovereignty over the region. The All Arunachal Pradesh Students Union (AAPSU) is very active in advocating to New Delhi's government greater Indian military and economic presences in the region and especially in the most remote areas, as a way to protect Indian residents against Chinese regional influence. This rising nationalism is complicating even more the boarder issue, making the use diplomacy between the two governments incresingly difficult.

On the Chinese side, nationalism has grown exponentially in the last decade, following Beijing's toughening policy in regards to India. A widening part of the Chinese public opinions, including cultural institutes, bloggers and military official, have advocated the central government to increase aggressive policies towards India, even resorting to war. Across the Internet many pages have appeared claiming to crush India and gain control of South Tibet. The China Times and the Global Times have conveyed these claims through editorials and opinion polls, proving the willingness of Beijing to raise nationalism on the region.

6.3 Hydro-electricity projects and dam building on the Yarlong Tsampo/Brahmaputra River

The Yarlong Tsampo / Brahmaputra River is the most strategically important resource in the region, since it can offer China, India and Bangladesh what these countries need the most: water and energy. All three face enormous problems of water scarcity and are subjected to a rising demand of power. As a consequence, the energy potential of the river has generated a scramble, mainly by China and India, for the exploitation of the watercourse resources. Both countries challenge the other in the establishment of the first user right. The Yarlong Tsampo / Brahmaputra River has a strategic importance for the following reasons:

- Its annual transboundary runoff volume is equal to the combined volume of cross-border flows of all the other rivers flowing into India from Tibet
- India's dependency on the cross-border river flows from the Tibet and the relative vulnerability to China's use as political instrument
- The key importance in China-India relations
- The devastating consequences for Bangladesh of the upstream diversion of the

waters of the Himalaya

- The unprecedented Chinese interest in diverting northward the river waters

The Yarlong Tsampo / Brahmaputra River waters add an ominous dimension to the India-China relations. Under the appropriation doctrine, the first country that obtain the appropriation rights, attain the legal possibility to use a fixed amount of water with no regards for other water users, which could possibly be interested in the water usage as well. There are three main elements to acquire an appropriation right: the intention to use the water, the physical diversion of the water from the original stream course to another location and the application of the water diverted to a beneficial use. India has a particular interest in establishing this right because of its downstream position and the fear that China could interrupt the river water flow. The Indian preoccupations started in 2003, when the Chinese state newspaper's People's Daily announced that the government had implemented a feasibility study to examine the possibility of starting a "major hydropower project" over the potentiality of the Brahmaputra's Great Bend to be a remarkable source of energy. The report anticipated the potential power that could be produced, asserting that the project could "boasts a water energy reserve of about 100 million kilowatts, or one-sixth of the country's total, ranking second behind the Yangtze river, China's longest."

To Indian leaders, the fact that the information was already clear was a ringing alarm of the seriousness of Chinese leaders in considering the exploitation of the river. Indian leaders are aware of the fact that China has always started with the construction of small upstream dams before engaging in large constructions projects, as it happened with the Three Gorges Dam on the Yangtze River and with the Mekong. China is considered to be the most aggressive dam builder and the most dam-dotted country in the world. Dharmadhikary has listed some of the reasons behind China dam building policy:

- The need to meet the growing demands of energy power as a consequence of the recent economic development;
- The increasing demand of water for agricultural, industrial and domestic uses;
- The potential capacity of hydropower to act as a driving force behind economic growth of the local regions (characterized by a low industrialization);
- New policies promoted by local governments that make it easier for private companies to make profits from hydropower projects;
- Financial concessions from international financial institutions (like the World Bank) for dams' construction basing on the claim that Himalayan hydropower sites are "environmentally and socially benign

The Chinese water projects have been accused of causing environmental depletion and coercive displacement of people in the lower riparian countries. Dams have far-reaching impacts all the way towards the river delta, affecting fisheries, agriculture as well as the life of people affected by the changes in the water flow. The Chinese dams on the Mekong's created preoccupations on downstream nation of Thailand, Vietnam, Laos, and Cambodia, since the dams have disrupted the river flow and produced environmental damage. Moreover, these dams have been constructed to deliver electricity to load centers far away and not to benefit the locals. Since the 1990s, most of the local people have seen their energy tariffs rising instead of diminishing. Dam construction on the Himalayan transboundary rivers are decreasing the availability of water for the downstream nations, disrupting the cycles of the natural floods, holding back nutrient-rich sediments and generally changing the ecology of the rivers. The impact of climate change is exacerbating the situation, since higher temperatures will increase the rate at which the glaciers melt, leading to an increase of river flows in the short run and decrease of it in the long terms. This scenario is very threatening for the population living in the Brahmaputra basin and for India's economic goals as an emerging, but water scarce, super power. In addition to that, the dam building process attracts a large number of foreign workers, which in many case is seen as a threat for local communities with distinct ethnic features, historically characterized by isolation. The people mostly affected by the dams are those who have little to say in the planning, design and execution of the projects. Despite the negative outcomes of dam outlined by several authors and by the World Commission on Dams, the trend of dam construction is not decreasing. In 2006, China's State Council authorized detailed planning for the dam project on the Yarlong Tsampo on the Great Bend near Motuo. The unveiled plan is made up of two main projects:

- The construction of a massive dam at the Great Bend, which would size twice the dimension of the Three Gorges Dam, currently the world's largest and would have a planned capacity of 38,000 megawatt hydropower station (Tsering 2010).
- The diversion of the Brahmaputra's course northward to bring water to dry industrialized regions of the Chinese mainland, as part of the South-North Project's Great Western Route. This project consist in:
 1. Make the Yellow River navigable to use it as high capacity and low cost navigation corridor for every kind of goods (Arpi 2014);
 2. Solve the water scarcity problem in the extremely densely populated northeast region, which has less than a fifth of the country's fresh water and almost half the Chinese population (Jayaram 2013).

The projects of extending the SNWDP to the Brahmaputra is considered a ‘calamity waiting to happen’ for downstream India and Bangladesh, because of the potential impact of a hydroelectric project of magnitude dimension in a region prone to seismic activities, landslides and flash floods. Some press reports have fueled new discussions over the usage of nuclear detonations to blast a 16-kilometer long tunnel to divert the river flow. China did not ratify the Comprehensive Test Ban Treaty (CTBT), an international accord upon which countries agree not to detonate any nuclear devices, to prevent the use of nuclear bombs in civil engineering. China at the contrary has requested the option to use peaceful nuclear explosions (or PNEs) to develop its hydrological engineering projects. In order to be able to achieve the plan of bringing forward the Western Route of the river diversion project, China could undermine the weak nonproliferation regime in South Asia.

Hydropower Projects in the Yarlung Tsangpo Region

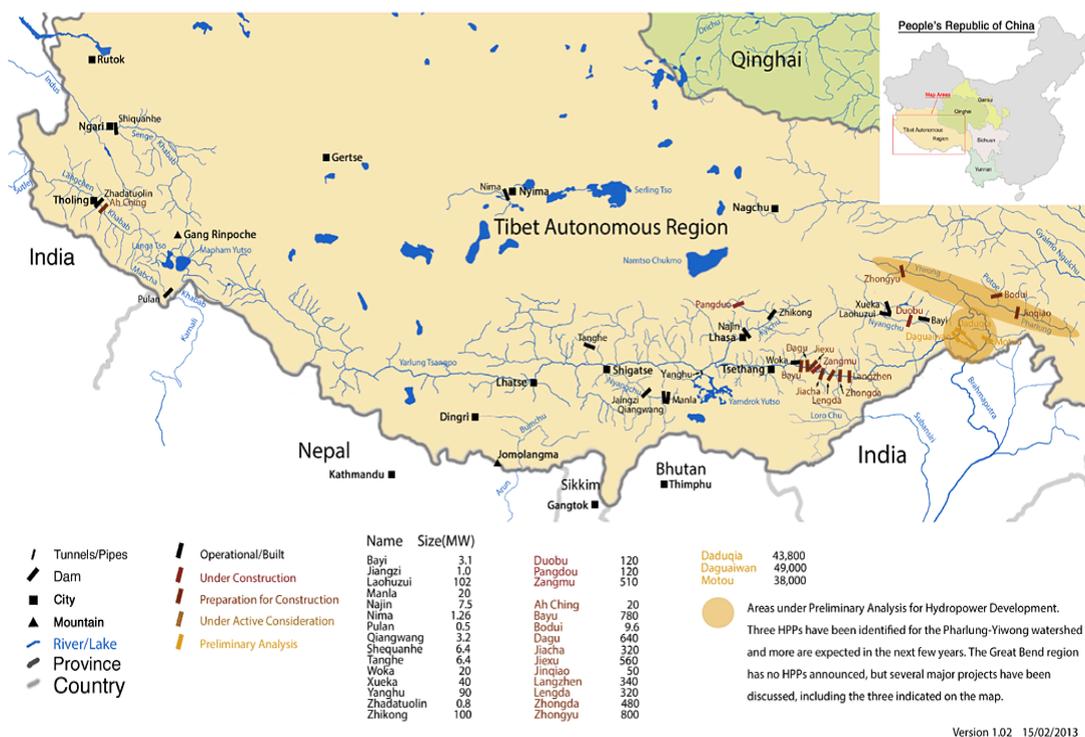


Table 16. Source: Tibetan Plateau Blog - Hydropower project in Yarlung Tsampo / Brahmaputra

In 2010, a Chinese official communicate to the Indian Foreign Minister S.M. Krishna that the first dam to be build on the Yarlung Tsampo / Brahmaputra would be in Zangmu, in the Tibet plateau. However, the Chinese official assured India that the project would no create water shortage downstream and it would be run-of-the-river, which means that the possible hydroelectric power plant would not store the water and would no alter the seasonal water

flow. According to Hong Lei, Chinese Foreign Ministry’s spokesman:

“China adopts a responsible attitude towards the development of cross border water resources. We adopt a policy that protection goes together with development, and take into full consideration the interests of downstream countries.”

On November 12, 2010, the Yarlung Tsangpo was dammed. Located in a gorge between the counties of Sangri and Gyaca, 140km southeast of Lhasa at an altitude of 3,260 meters altitude, the Zangmu Dam is 116 meters high and 390 meters long. The dam started generating power on November 2014 and is said to generate 540MW of electricity. The power generated by the dam is said to be equivalent to the hydropower generating capacity in Tibet. The Zangmu is the first of a series of dams that will be develop in the region, the others being the Gyatsa, Zhongda, Jiexu and Langzhen as well as the giant project in Mutuo and Daduqia in in the Tsangpo canyon Great Bend. The project marks the beginning of a new era in Chinese engineering and construction capability.



Table 17. Source: *International Rivers, Project of dams on Yarlung Zangbo/Brahmaputra*

In January 2013, at the release of China’s five-year energy plan, Beijing included the proposal of three medium sized dams on the Yarlung Tsampo / Brahmpatura with no previous consultation with the Indian government. In fact, Indian officials learned about the plan directly from the Chinese press. The account outraged the Indian leadership, which strongly protest against China’s freedom in making plans that could considerably affect India as a lower riparian state. Former Prime Minister Singh during the BRICS summit in March

2013 proposed a joint mechanism to study Chinese activities on the Yarlong Tsampo / Brahmaputra. By speaking on Indian television he affirmed:

“I also took the opportunity to raise the issue of trans-border river systems and I requested the Chinese Government to provide a joint mechanism to enable us to assess the type of construction activity that is going on in the Tibetan Autonomous Region. The President of China assured me that they were quite conscious of their responsibilities and the interest of the lower riparian countries.”

Prime minister Singh also stated:

“As of now, our assessment is that whatever activity are taking place on the Bramhaputra region in Tibet, they are essentially the run-of-the-river projects and therefore there is no cause for worry on our part.”

However, the Chinese government did not started a water negotiation with India and continue to work on the dam construction projects on the river. The general manager of China Hydropower Engineering Consulting, Yan Zhiyong, has affirmed:

“By about 2020 most of China’s hydropower projects outside of Tibet will have been completed, and the industry’s focus will shift to the Jinsha, Lancang, the upper reaches of the Nujiang river and the Yarlong.”

In the latest visit to China, Indian Prime Minister Narendra Modi solicited Beijing to “reconsider its approach” over those issues which he considered to be preventing the realization of the “full potential” of the two countries partnership. His Chinese equivalent has nevertheless not heeded its appeal. Beijing has also decline the proposal of drafting a new agreement to sell India the hydrological data on the transboundary rivers shared by the two countries. In so doing, China is not only dismissing the possibility of engaging in a water-sharing pact with its most important neighbor, but has also demonstrated the unwillingness in sharing comprehensive data on upstream river flows (Chellaney, 2014). According to Indians officials, the Chinese dam projects on the Yarlong Tsampo, and the plan of diverting the Sang Po’s waters towards China’s increasingly dry north might lessen the water flow in the Brahmaputra River by 60 percent and could be regarded as a “water war” declaration. The impacts of these projects are creating vulnerability for the farmers on the northeast regions of India, which environment is subjected to environmental hazard. The reduction of the

discharge of the Brahmaputra is adding to other problems of poverty, migration, violence and social instability.

For India, the Brahmaputra River has a hydropower potential of 34,920MW at 60 percent load factor that could fulfill about the 41.5 percent of all hydroelectricity generated in India. For this region, the government has moved on to step up the hydroelectric development of the shared watercourse. The Indian government has set up already dozens of hydro power stations to bolster its control over the disputed Arunachal Pradesh. India has also considered the diversion of the river to its drought-stricken western and southern states as part of the India's River Linking Project (RLP). The RPL is the project, yet not developed, to link 14 Himalayan Rivers in the North with 16 peninsular rivers in the south, which could transfer water for irrigation, energy production and river navigation efficiency by controlling floods and limit the effect of drought. The project would have the benefit of adding 35-37 million hectares of irrigated land and generate 34,000 million kilowatts of electricity. Indian environmentalists are convinced that the project could cause the loss of biodiversity, reduction in downstream flows, damage on wild life and fisheries as well as people displacement. According to Vandana Shiva, every water diversion project is wrong on its assumptions, since rivers change their course about every century:

"This is a natural phenomenon that can't be altered. You may link them today but once the rivers start changing their course after a few decades then the entire project would be in vain."¹

In response to the Indian protests, the Chinese government blames the Indians of complaining in order to gain sympathy and support from the international community. China claims that its development do not impede the flow of the river and affirms that India is preventing China to develop the Tibetan water resources. China refers to India's preoccupation as propaganda.

6.4 Future scenarios and considerations

Beside constituting a threat for Indian and Bangladesh practical interests, the Chinese project on the Yarlong Tsampo / Brahmaputra river constitute a serious threat to the development of peaceful and harmonious relations amongst riparian states, and especially between India and China, the fastest-rising world economies. This threat is extremely acute since both countries have been plagued by drought and shortage of drinkable water, which represent a threat to

food security. Despite the leaders of the two countries recognize these challenges, there have been no remarkable water sharing agreement to solve of the issues of the sharing water. China's approach is pushing the whole region towards a pragmatic realist approach in the use of transboundary rivers, which in the long term might end up favoring none of these actors. China never consulted downstream states before approving the dam' projects. Beijing has not signed, nor ratified the UN Convention on the Law of the Non-Navigational Uses of International Watercourses and continue to act following its interests based on the appropriation doctrine. Legally, therefore, when China announced its plans to dam the Yarlong Tsampo / Brahmaputra, it was under no formal obligation to share any information on its dam construction plans. As a result, India's officials have been frustrated by not having an international legal body jurisdiction to appeal. In 1960, India voluntarily entered into a water sharing agreement with Pakistan over the Indus River, and in the 1996 with Bangladesh over the Ganges water. These agreements could serve as a reference point for negotiations over the Yarlong Tsampo / Brahmaputra waters. All the countries involved would benefit by creating a comprehensive river basic plan to defend their interests, while controlling the environmental, social and political impact of their hydroelectric projects. There is a need to set up mutual scientific and technological partnership to optimize environmental protection, water efficiency and conservation strategies. China, India and Bangladesh should jointly study the benefit deriving from multipurpose-shared projects to improve the water resources, monitor climate change, produce hydropower, and cope with flood and natural disaster. Working together on the different options in undertaking joint activities could broaden the benefit both for upstream and downstream countries. Such cooperation is a daunting tasks, but necessary to avoid the exacerbation of a conflict between the two Asian neighbors, based on transparency, information sharing, dispute settlement mechanism and mutual commitment. However, at the moment, the water relations amongst these riparian states are dominated by political realism and a 'zerosum game' attitude, which is deepening the region instability, while not reaching a viable solution for the water crisis. Participation in water-sharing agreements remains optional, and if China would continue to avoid entering into agreements, China would have no way to force the most powerful neighbors to do so. As a consequence of this, inter country institutions would be needed to implement international norms of water utilization, to help building bridges on dialogue and structured cooperation. Considering the water crisis and the many lives that are at stake, the issue could be raised at the UN Security Council to push for grater cooperation.

Until such a system will be put into effects, China would continue to be free in proceeding with dam building as much as it desire. In such a power vacuum the main force leading relations about transboundary rivers is hegemony. In such hegemonic context, the relationships between nation states are guided by power asymmetry. The hegemon state can

manage the watercourse as its preference and its ability to make deals reflect the power imbalances between the water competitors.

Conclusions

The world we are living is increasingly experiencing a scarcity in natural resources. The most vulnerable, scanty and delicate of all them is water. All forms of life utterly depend on this irreplaceable yet precious resource. Nevertheless pollution, industrialization, modernization as well as population and consumption growth have placed an unprecedented stress on this fundamental element. Our planet is now inhabited by about 7,4 billion people and the population will continue to grow until overtaking 9 billion units around 2050. Half of the population is already located in Asia, the fastest-transforming continent, which has experienced the most dramatic water crisis in the last decades. The ecological balance of this region has been disrupted, as people have left the countryside to settle into the heavily-populated metropolis of the continent. This astounding human migration has highlighted the poor water efficiency and productivity of the Asian countries, which rank at the lowest levels of the whole world. Water pressure is particularly felt in the international rivers that sprout from the Himalayan plateau. These rivers have constituted the lifeline of some of the main societies that developed on the banks of these watercourses. More than half of the world population is currently living in the drainage basin of the Indus, the Yarlong Tsampo / Brahmaputra, the Ganges, the Salween, the Mekong, the Yangtze and the Yellow river. These waters hold nowadays a strategic geopolitical importance at the light of this dooming water crisis. As the rivers flows through disputed political boundaries, the problem of competition amongst countries arises. A new geopolitics of water is developing, as cross-boarder issues are emerging, based on the control of water resources.

For most of the Asian countries, getting access to water resources translates into acquiring the means to maintain each country's economy development. These rivers have come under great pressure from industrial development, urbanization, population growth and environmental pollution. Climate change has exacerbated the situation, as increasing extreme weather phenomena and water-related disasters such as floods and droughts are becoming more and more frequent, pushing countries towards more competition than cooperation. Rivers can no longer be viewed as soft components of a country's foreign policy. Rather, they are intricately linked to the development goals and domestic needs that impact bilateral relations. There is little perception of water as a 'shared challenge'. Rather, sentiments towards other riparians are filtered through nationalist standpoints, focusing on past injustice or perceived hostile intentions. In the current scenario, by having taken control of Tibet with the military campaign of the People's Liberation Army in 1951, China has established itself as the water-hegemon country in the region. All the major regional international watercourses, but the Ganges, originate in the China-controlled Tibet Autonomous region. In

most of these rivers, China holds the strategic position of upper riparian state. According to current international law, China is acting according with the appropriation doctrine that legitimize the “first in time, first in right” approach. Due to its incredible growth, and the ill-fated allocation of its water resources, China is quickly exploiting this strategic position to cope with a dire water crisis, as vast stretches of its rivers and lakes are extremely polluted and about three million of its people are lacking access to proper safe drinking water. To handle this complexity, China has implemented the ‘south to north diversion project’, in order to divert the water of its southern rivers to the industrial and heavily inhabited cities of the north. The project consists in three different diversion paths, with the third one holding heavy international implications because of its impact on water-scarce lower riparian states such as India and Bangladesh. The western route of the ‘south to north diversion project’ has been forcibly debated, owing to political and strategic outcomes for China’s riparian neighbors, particularly over the Yarlong Tsampo-Brahamaputra, but also on the Mekong, Salween and Sutlej rivers. This last project carries resonant social and political implications, as dam building is perceived as an action of “water grabbing” by the lower riparian states. Water grabbing is defined as a situation where powerful actors can take control or reallocate to their own benefits, water resources already used by local communities. The form of water grabbing process currently taking place in Asia is related to the generation of hydropower. Mainly in China, but also in India, a copious series of dams have been constructed to make use of the Himalayan waters. Many of these projects are not intended for benefiting the local population and are generally accompanied by the privatization of the energy provisions. Because of its non-substitutable essence, water privatization has received lot of attentions and criticisms in international development circles. International institutions such as the World Bank, which has considered water as an economic good, have promoted water privatisation and dam building projects across the world. Most of the hydroelectric projects are in the hands and at the benefit of large transnational companies. Their impacts are not always easy to measure and analyze. There are many cases when diversion, depletion and pollution of local water sources, which often feed into larger water systems, affect natural drainage patterns, disrupt ecological flows and affects the lives of local people. Governments around the world responded in different ways to the growing concerns over land and water grabbing, without succeeding to inverse the phenomena. No integrated and holistic approach over water governance has been developed so far. The Convention on the Law of the Non-Navigational Uses of International Watercourses, which entered into force in 2013, is the most ambitious attempt to establish a flexible and overarching global legal framework. The Convention establishes basic standards and rules for cooperation between inter-river states on the use, management and protection of the shared rivers. Vietnam is the only country, which receives waters from the Himalaya, to

have ratified the convention. China was one of the three countries that voted against the Convention. The obligation not to cause significant harm, and the principle of equitable and reasonable utilization promoted by the Convention, seriously harm Beijing's interests. The issue of the Yarlong Tsampo / Brahmaputra is the most evident example of the Chinese current attitude of preferring rivalry over partnership in regards with water issues. In the last decade, the Chinese government has developed several hydroelectric projects on the river in order to exploit its energy potential. The construction of a massive dam at the Great Bend and the diversion of the watercourse northward menace the interests of India and Bangladesh. Both countries will have to cope with the decreased availability of water and with the disruption of the river natural's flood. Despite New Delhi's diplomatic attempts to reach a solution with Beijing, China showed no intention in drafting an agreement with India, nor to sell hydrological data on the transboundary rivers shared by the two countries. By so doing, China is not only dismissing the possibility of engaging in a water-sharing pact with its most important neighbor, but also threatening the development of peaceful and harmonious relations amongst riparian states in the region. Unlike China, India has engaged in water sharing agreements with Pakistan and Bangladesh over the Indus and the Ganges rivers respectively. China is adopting a realist approach in the use of transboundary rivers, maximizing its benefits by exploiting its position of upper riparian state. From its strategic geographic position, the country can control Asia's waters without prior consultation with other countries. So far, the status of dependency that co-riparian states have, guarantee Beijing the 'soft power' required to attain 'bargaining' power to be leveraged without resorting to hard power, distancing a possible conflictual scenario. However, with the Convention becoming more and more binding, China should try to turn its hegemony into a positive leadership, by negotiating water-sharing agreements that are generally welcome by all riparians. All the countries involved would benefit by the creation of a comprehensive river basic plan to defend their common interests. There is a desperate need to set up mutual scientific and technological partnership to optimize environmental protection, water efficiency and conservation strategies in the region. Co-riparian states should jointly study the benefits deriving from multipurpose-shared projects to improve water resources, monitor climate change, produce hydropower, and cope with flood and natural disaster. Such cooperation is a daunting task, but necessary to avoid the rise of conflicts between countries, especially between the two biggest neighbors India and China. At the moment, however, water relations amongst riparian states are still dominated by political realism and a 'zerosum game' approach, which is deepening the region instability, while not reaching a viable solution for the water crisis. Participation in water-sharing agreements remains optional and if China would continue to avoid dealing with conventions and bilateral agreements, there would have no way to force other neighbors to do so. Inter-country institutions would be

needed to implement international norms of water utilization, to help building bridges on dialogue and structured cooperation. Until such a system will be put into force, China can continue to be free in proceeding with dam building as much as it desires, using its hegemonic position to gain benefits over its neighbors and pushing other countries to follow the same approach.

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