Evaluacion de Efectos Acumulativos
Estudios de Caso
Sector Hidroeléctrico

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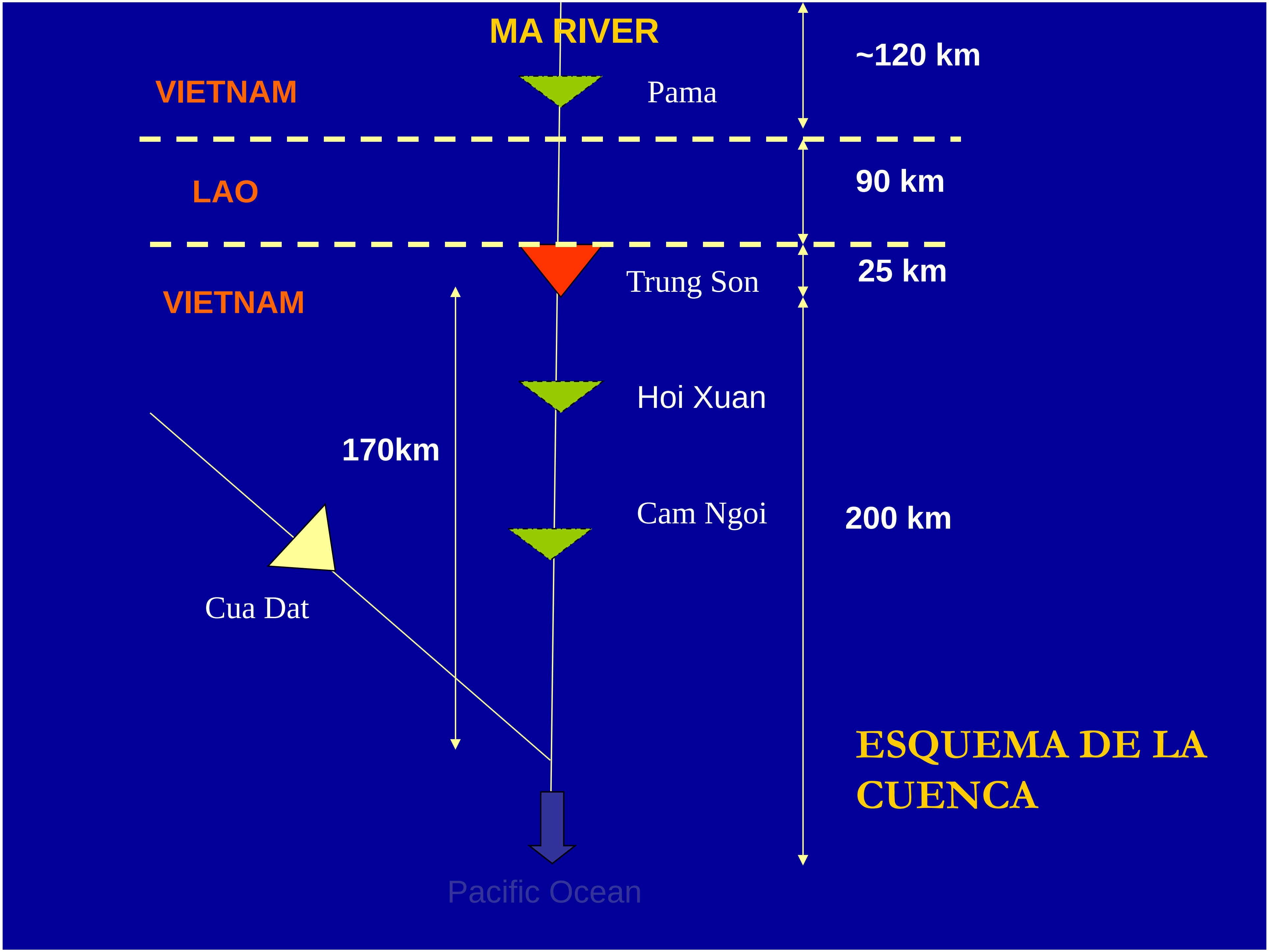
Seminario Internacional
"HACIA LA INSTITUCIONALIZACIÓN Y APLICACIÓN DE LA EAE EN EL PERU"
Lima, Octubre 22 y 23, 2013

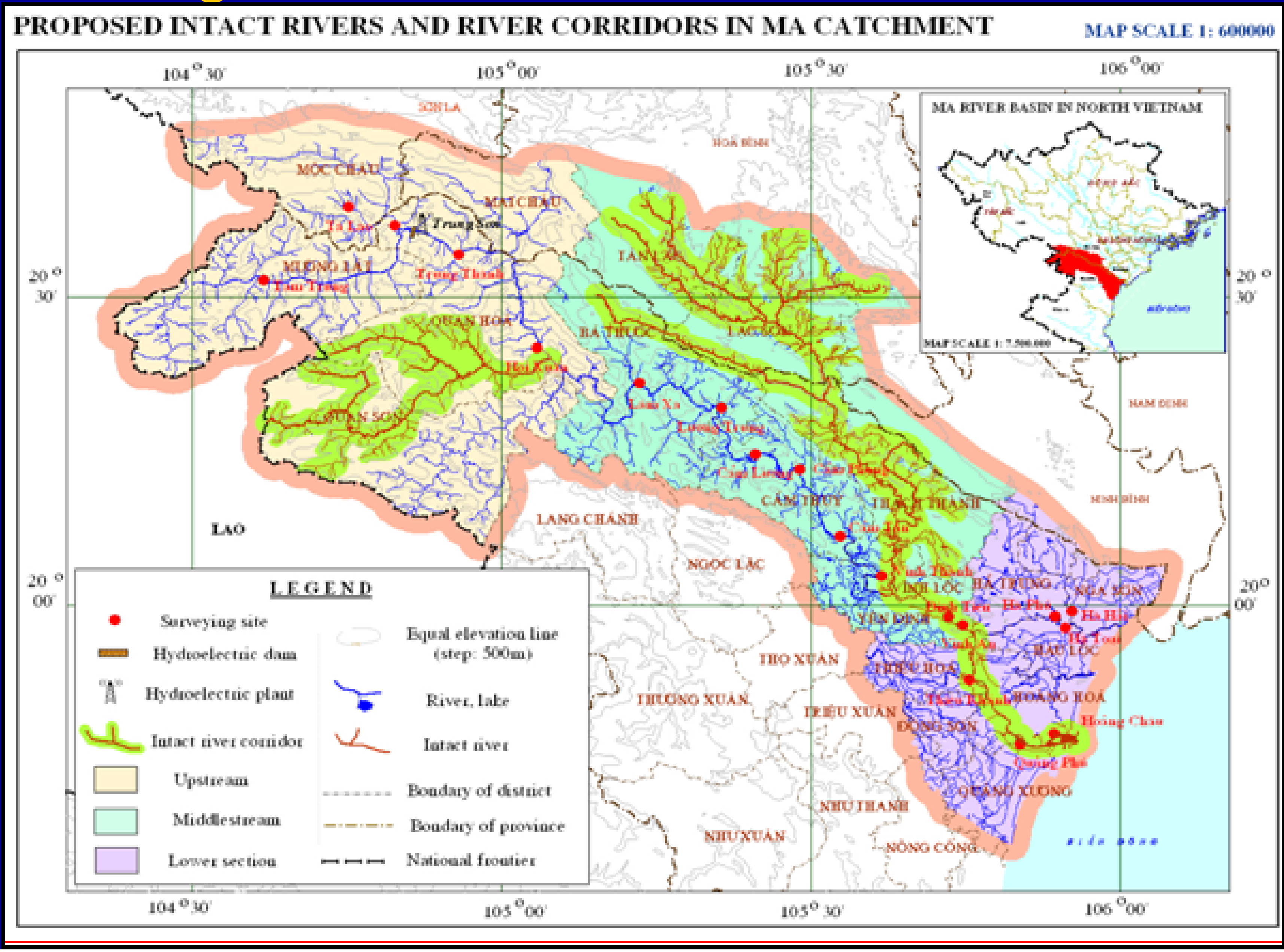
VIETNAM: PROYECTO HIDROELECTRICO TRUNG SON

Efectos Acumulativos



MA RIVER
VIETNAM
Pama
~120 km
LAO
90 km
Trung Son
25 km
VIETNAM
Hoi Xuan
170km
Cam Ngoi
200 km
Cua Dat
ESQUEMA DE LA CUENCA
Pacific Ocean

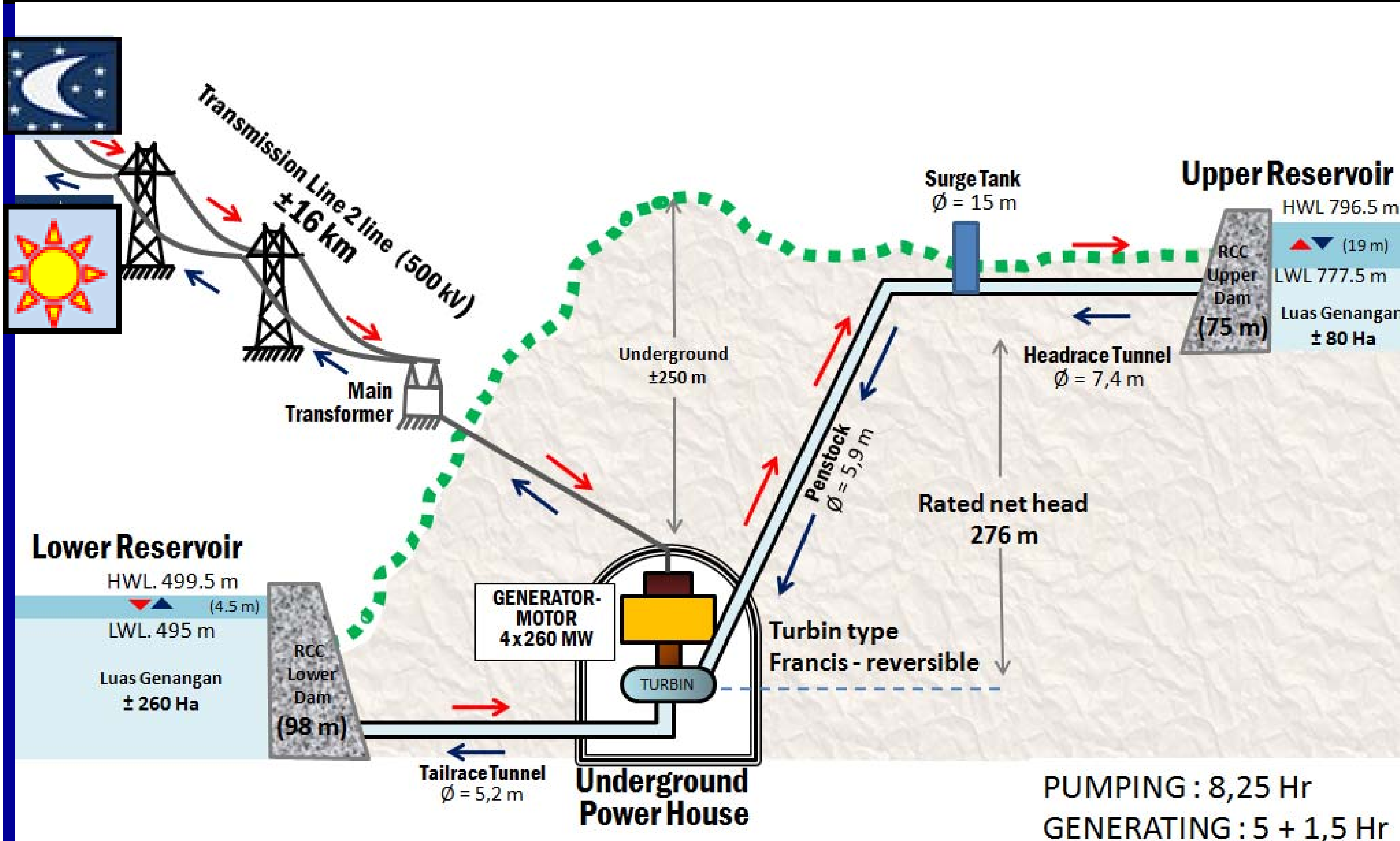
Programa de sub-cuencas intactas



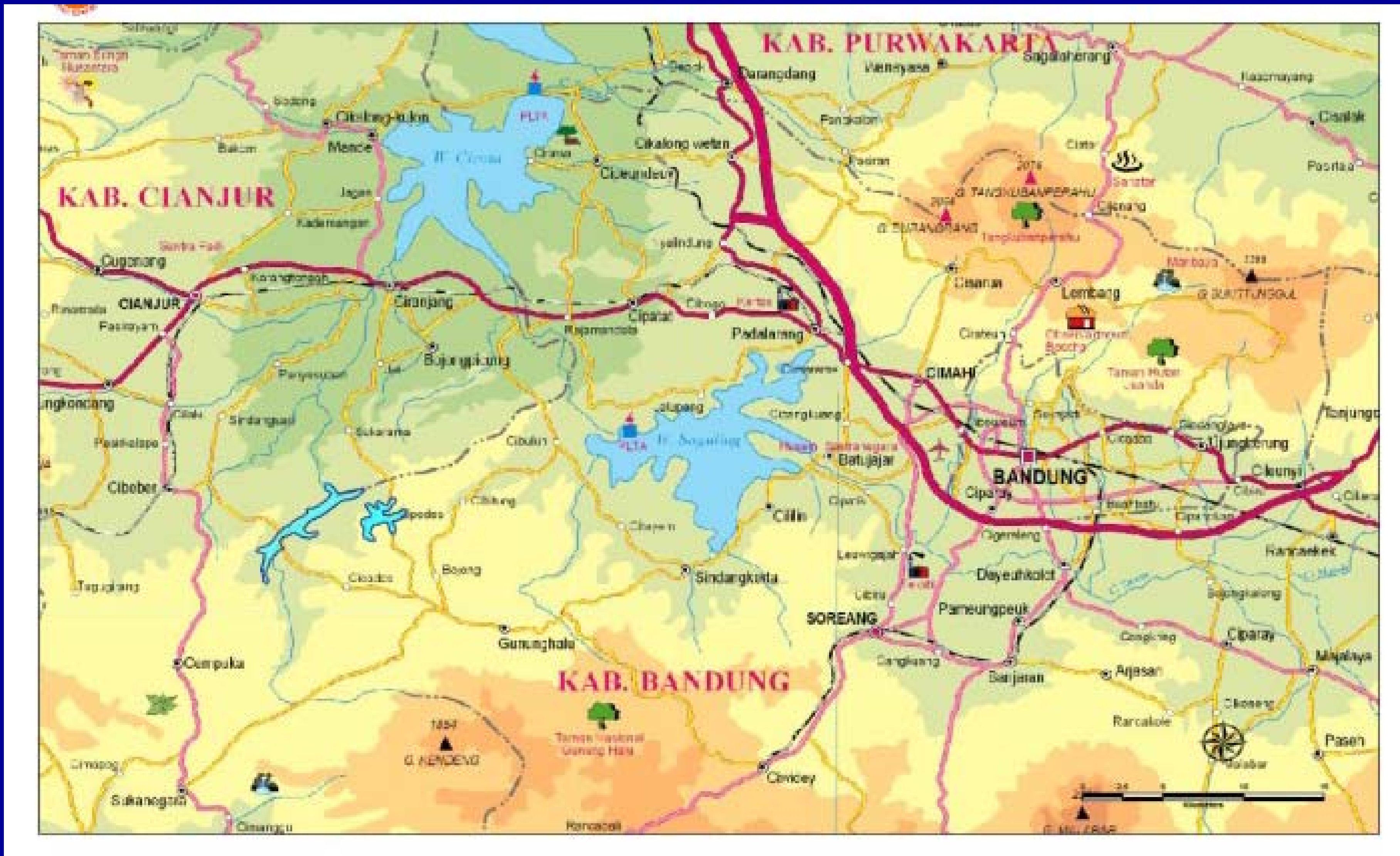
Indonesia Upper Cisokan Pumped Storage Hydropower Project (1,040 MW)

Efectos acumulativos

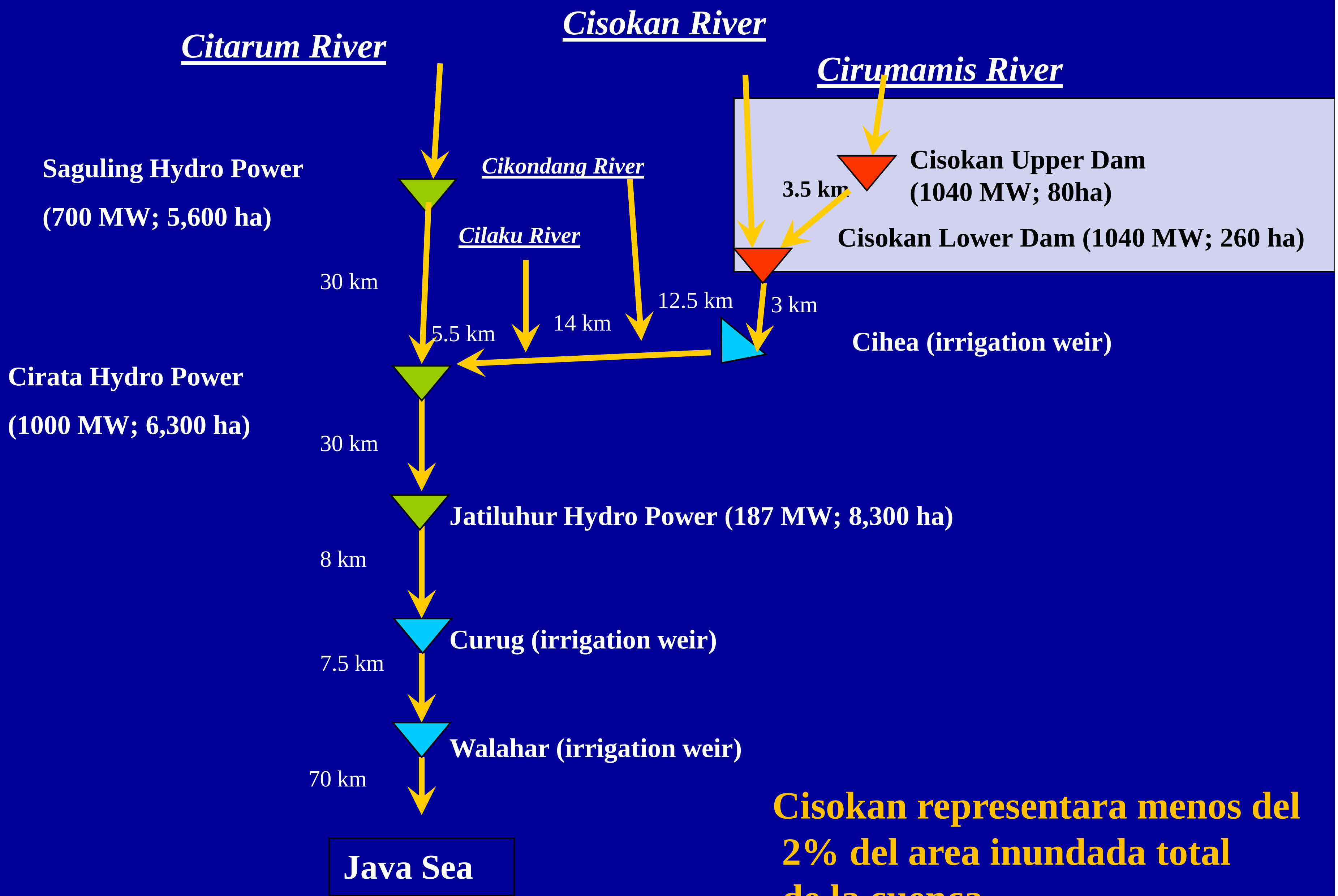
Diseño del Proyecto



Project Location



Esquema de la Cuenca



Cisokan representara menos del 2% del area inundada total de la cuenca

Comparacion del balance de agua : antes y despues

Figure 5.1 Initial Water Balance of Cisokan Water Basin

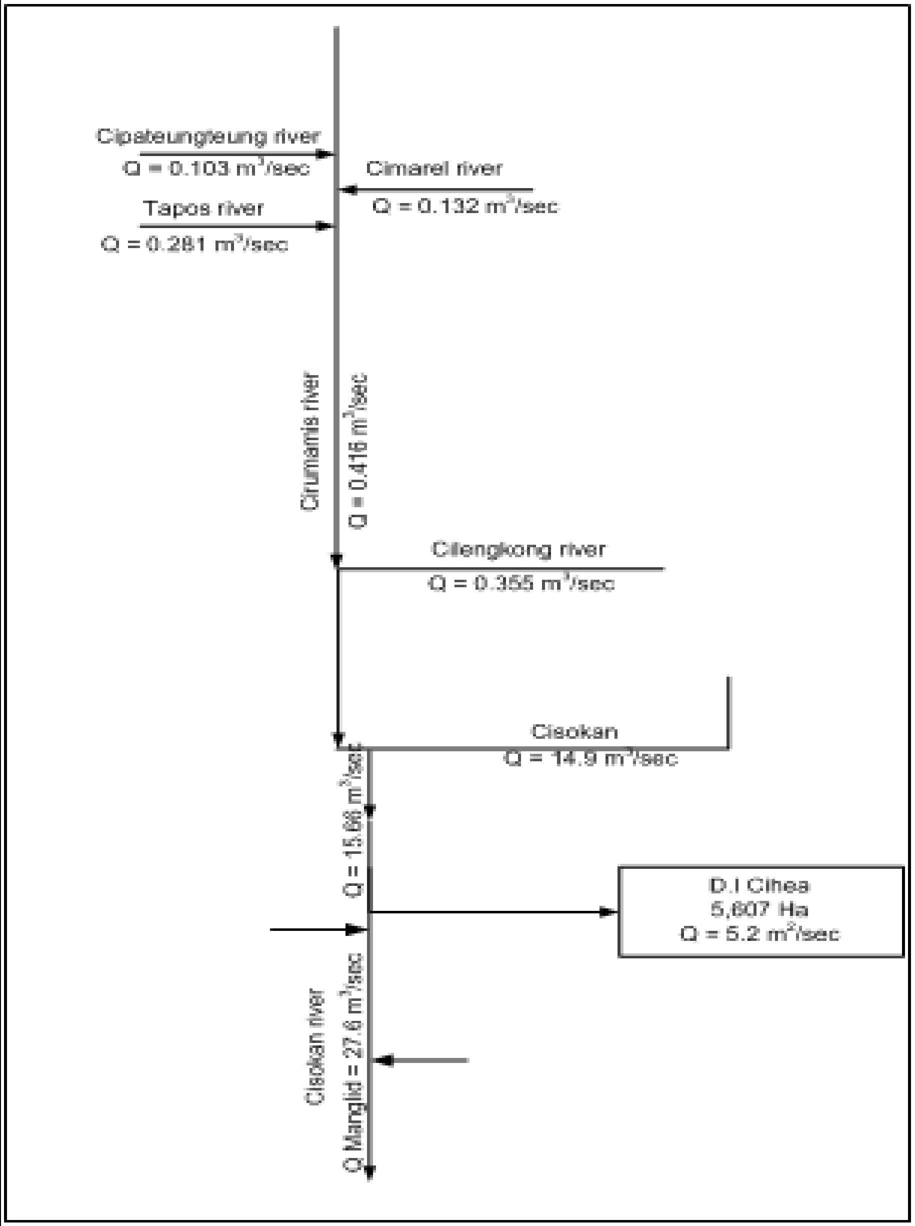
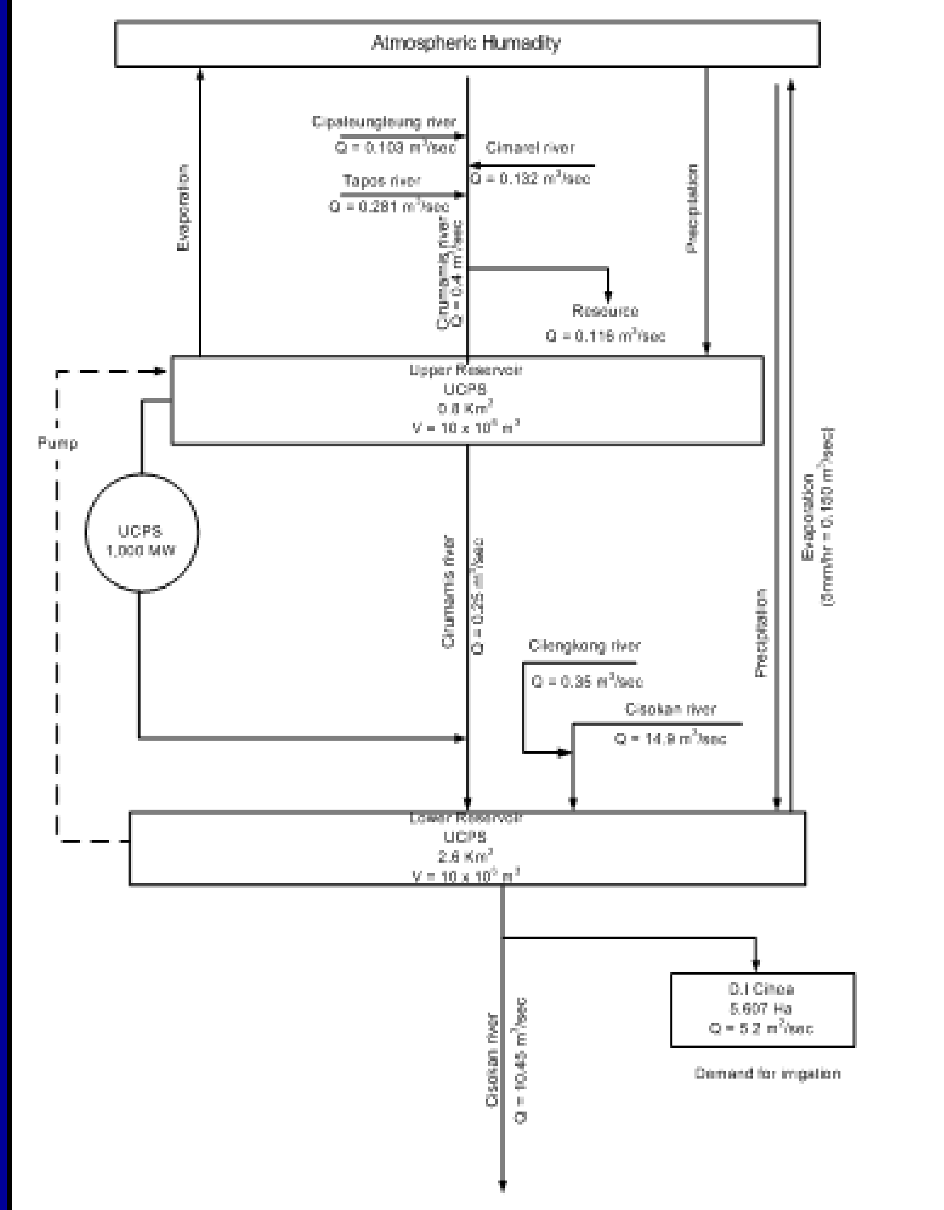
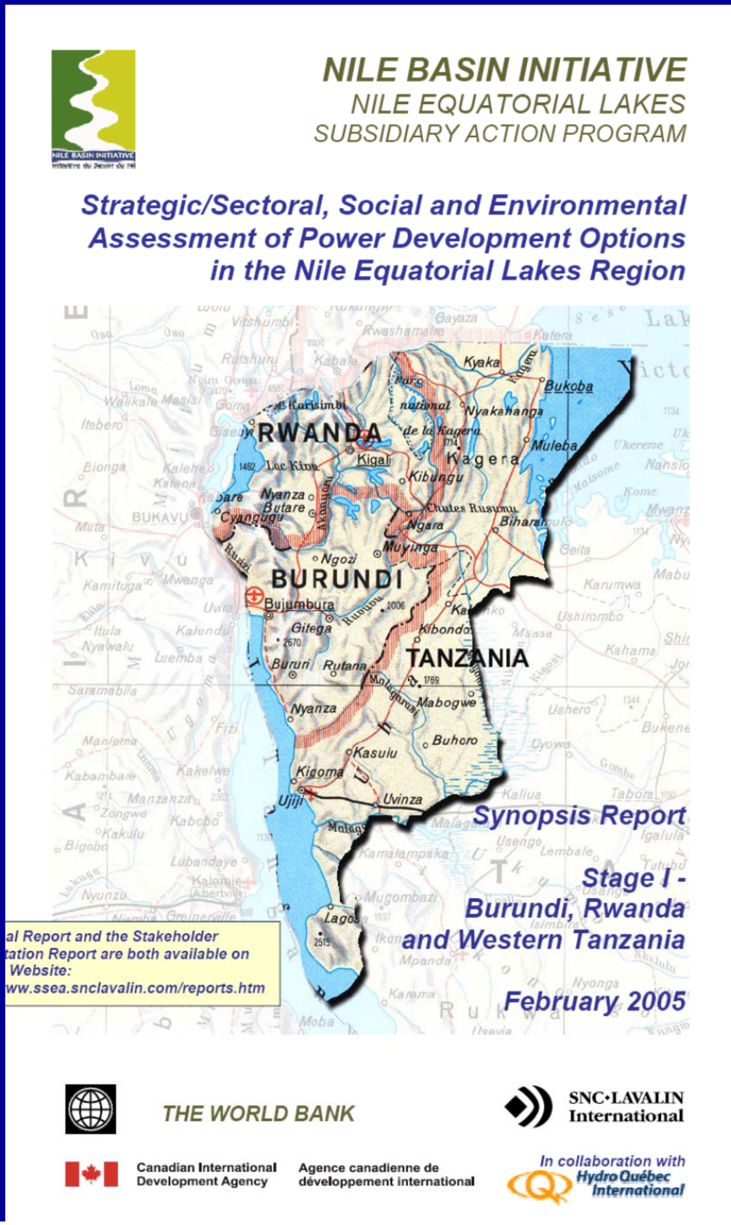


Figure 5.3 Water Balance of Cisokan Water Basin during Operation



Strategic Social and Environmental Assessment of Power Development Option in the Nile Equatorial Lakes Region


NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES
SUBSIDIARY ACTION PROGRAM

Strategic/Sectoral, Social and Environmental Assessment of Power Development Options in the Nile Equatorial Lakes Region

Synopsis Report

Stage I - Burundi, Rwanda and Western Tanzania

February 2005

al Report and the Stakeholder
tation Report are both available on
Website:
ww.ssea.snclavalin.com/reports.htm

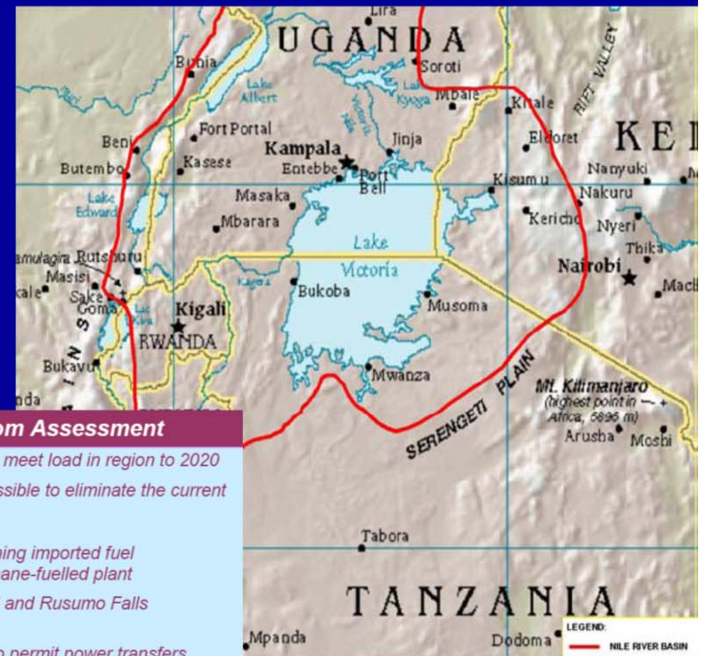
THE WORLD BANK

SNC·LAVALIN International

Canadian International Development Agency

Agence canadienne de développement international

In collaboration with Hydro Québec International

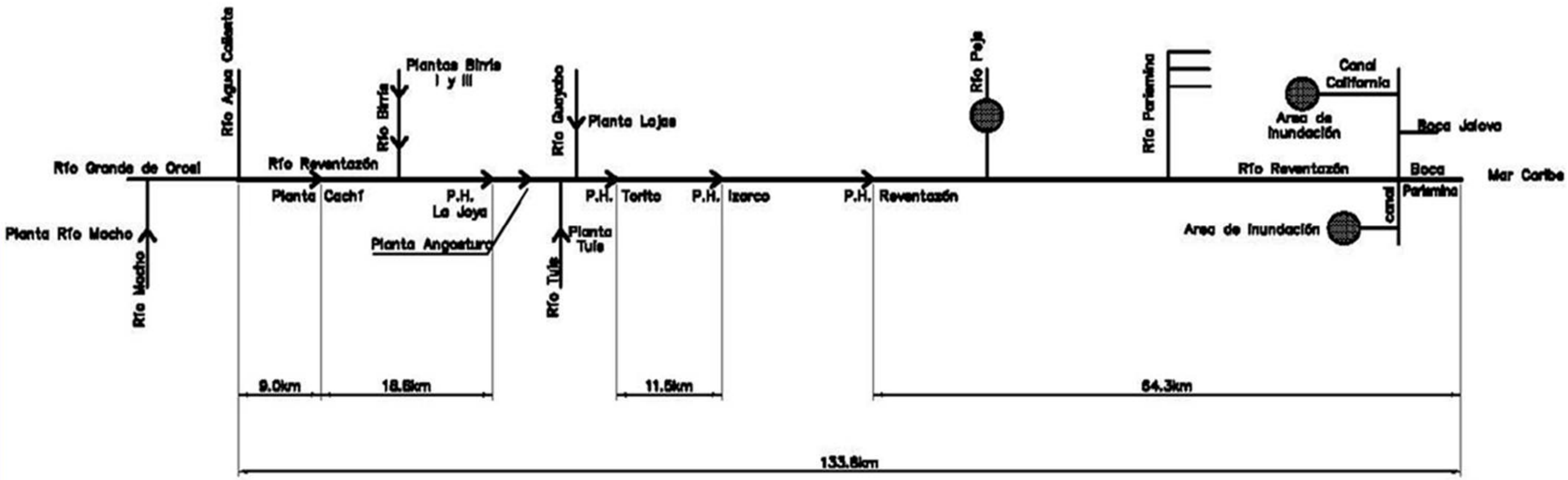


Final Recommendations from Assessment

- 370 MW additional capacity needed to meet load in region to 2020
- Build following plants as quickly as possible to eliminate the current power deficit in the region:
  - Rehabilitate Ruzizi I
  - Add 40 MW of diesel units burning imported fuel
  - First module of Lake Kivu methane-fuelled plant
- Commit to the construction of Kabu 16 and Rusumo Falls Hydropower Projects
- Build backbone transmission system to permit power transfers within region
- Revise the existing legal and regulatory frameworks in each country to facilitate regional electricity trades
- Carry out a strategy of using indigenous resources while diversifying technologies and plant locations
  - Use methane produced in Lake Kivu to generate power from diesel-like engines
  - Use hydro resources
    - Rusumo Falls and Kabu 16, Kakono, and Ruzizi III
    - Mule 34 and Nyabarongo
    - Each group in the order shown; within each group, the order of their development to be determined through more detailed studies
  - Consider imports when available
    - Ensure legal and administrative framework is in place on all three countries to facilitate such transfers

Proyecto Hidroelectrico El Costa Rica

Desarrollo Hidroelectrico en Cascada



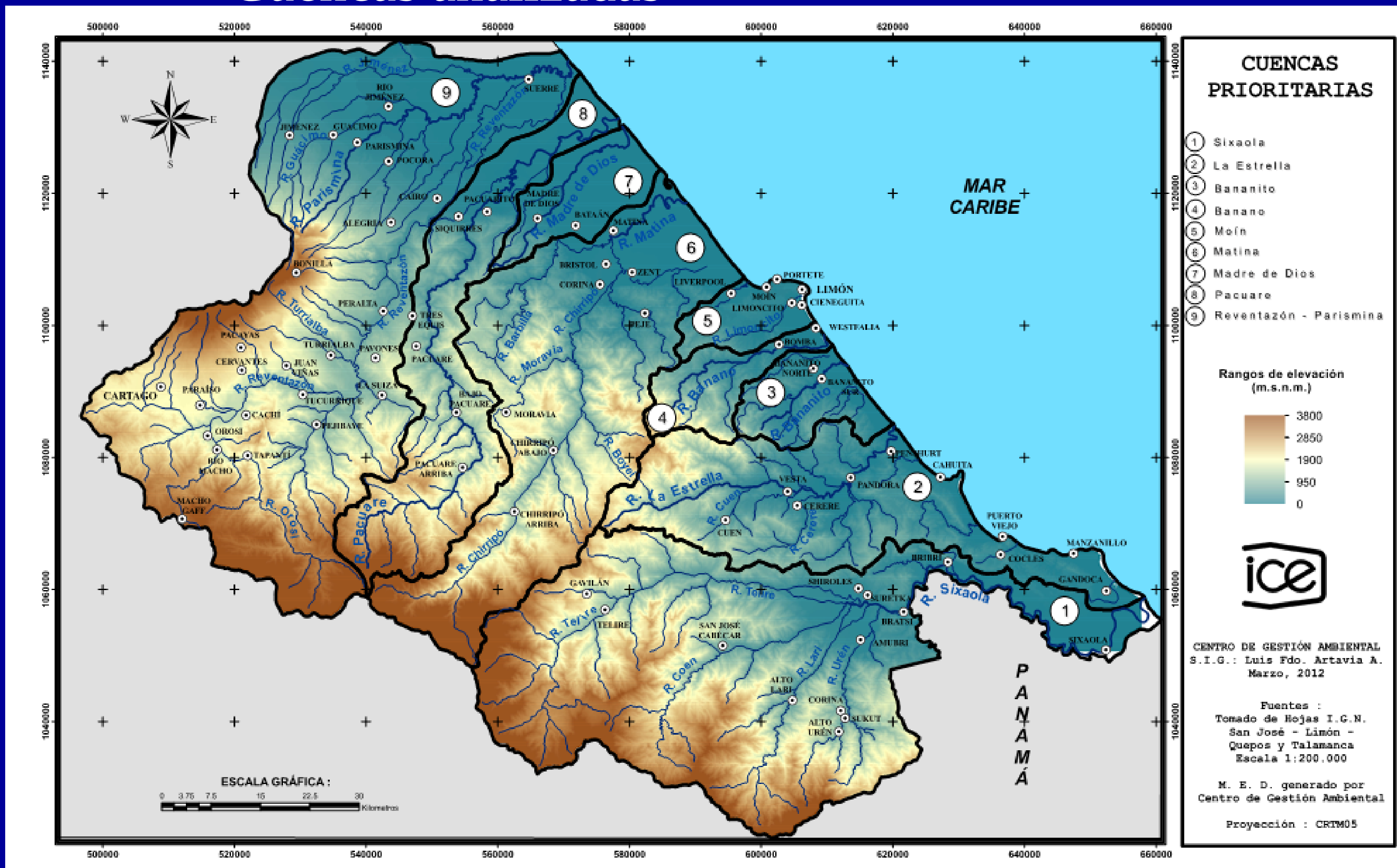
Tramo critico	Distancia (km)
Presa Cachi - C.M. Cachi	11.0
Toma La Joya - C.M. La Joya	7.8
Presa Angostura - C.M. Angostura	9.5
Toma P.H. Torito - C.M. P.H. Torito	3.3
Toma P.H. Izarco - C.M. P.H. Izarco	8.1
Presa P.H. Recentazón - C.M.P.H. Reventazón	4.0
Total	43.8

Proyectos	Entrada	Capacidad (MW)
Torito	2013	50
Reventazón	2015	305
Izarco	Sin datos	140

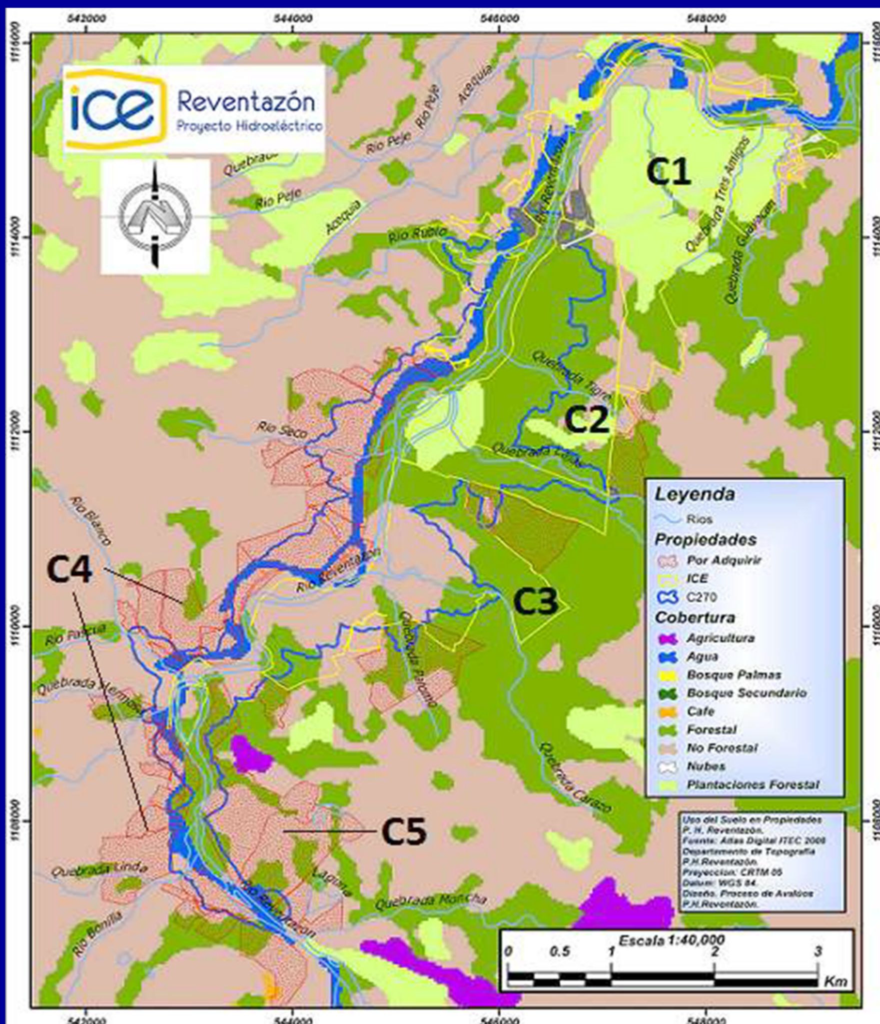
Plantas en operación	Entrada	Capacidad (MW)	Caudal (m^3/s)	Embalse (km^2)
Cachi	1978	108	54	3.24
Angostura	2000	177	160	2.56
La Joya	2005	50	54	Sin datos

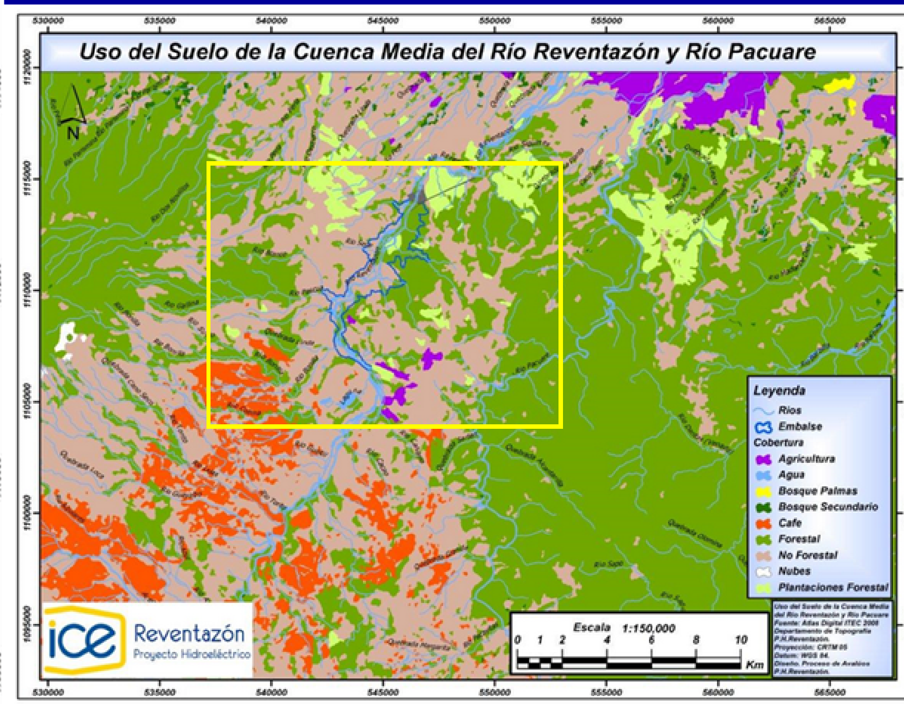
Desarrollo de un offfset fluvial

Cuencas analizadas

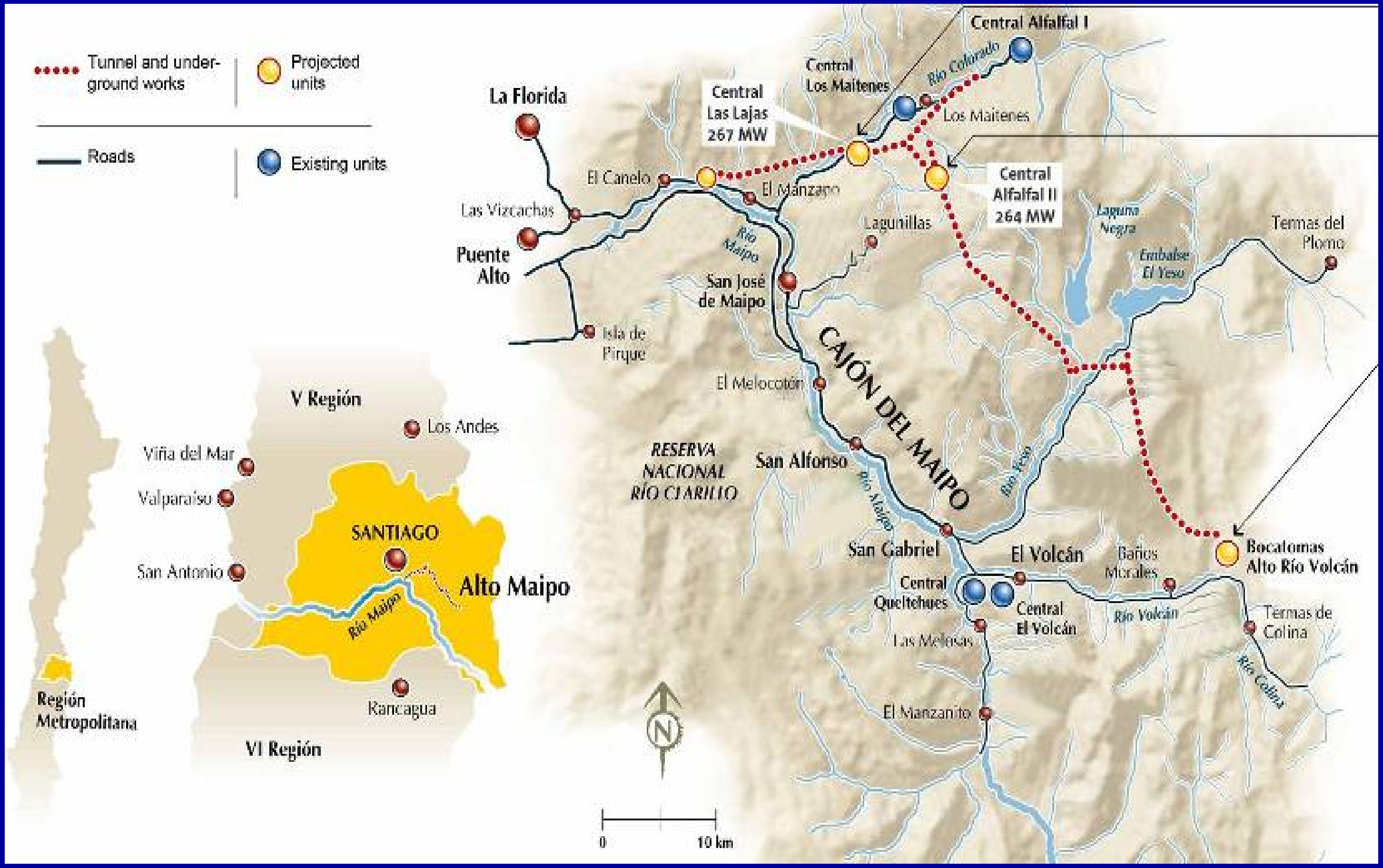


Corredor de biodiversidad





Chile:Proyecto Hidroeléctrico Alto Maipo
Evaluación de Efectos Acumulativos



LECCIONES APRENDIDAS 1

- **Limites espaciales y temporales realistas con información disponible. Una clara descripción de las tendencias del pasado y actuales es indispensable..**
- **Screening y definición del alcance al principio, con consultas de actores, son pasos claves para definir los VECS relevantes. La selección de los VEC es quizás el paso mas importante Identifique indicadores apropiados para describir la evolución de los VECs en el tiempo.**
- **Evite el uso de herramientas demasiado sofisticadas o que requieran generación excesiva de datos primarios. Una combinación de herramientas cualitativas y cuantitativas es mucho mas efectiva**

LECCIONES APRENDIDAS 2

- **No incluya todo y de todo o pretenda evaluar u alto numero de impactos en la CEA. La selección cuidadosa de los VECs, concentrándose en un numero reducido produce una CEA mas significativa que enfoques holísticos que evalúan una gama amplia de VECS.**
- **Mantener humildad sobre la predicción de impactos acumulativos futuros.**

Sistema Integrado de Gestion Ambiental en el Sector Hidroelctrico

Level	Planning Tool	Environmental Issues	Instrument	Linkages
National	National water Resources Plan	Water efficiency Inter basin transfer Allocation priorities “No development basins	SEA	Macro projects
National	National 10-yr Hydroelectric plan	Environmental conflicts Priority projects	SEA	Selected projects
Watershed	Strategic Water Resources Planning in Watershed	Water use conflicts Environmental flows	SEA	Water availability for hydro-development
Watershed	Hydroelectric Development Program in Watershed	Cumulative impacts -Water quality Biodiversity Downstream impacts Regional programs for mitigation and compensation	Cumulative Impacts Assessment	License for selected projects i watershed
Project	Hydroelectric Development Project	Site specific issues: -Resettlement -Natural habitats -Water quality -Etc.	EIA EMP	Construction license

Gracias por su atencion!!!

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