

Proposed Ayung Dam Site

The site is located 28 km far from the river mouth and EL280m. The proposed dam is concrete gravity dam, 66m height and 239m length at the dam top.



Rafting

There are many rafting courses in Ayung river and Unda river where river flow is rich even in the dry season. Rafting is one of tourism spots in Bali.



Badung River

Badung river is urban river passing through the Denpasar city. JICA Study proposed the river course improvement of 5.7km length, from the Buagang weir to Maruti street.



Mati River

Mati river passes the tourism zone of Kuta area in the downstream reaches. JICA Study proposed the river course improvement of 2.1km length, from the Ulun Tanjung weir to Umaduwi weir.



Workshops

In Workshops, JICA Study, Water master Plan and Priority Projects were explained to be open to the public, exchanging the opinions among the stakeholders and citizens of Bali.

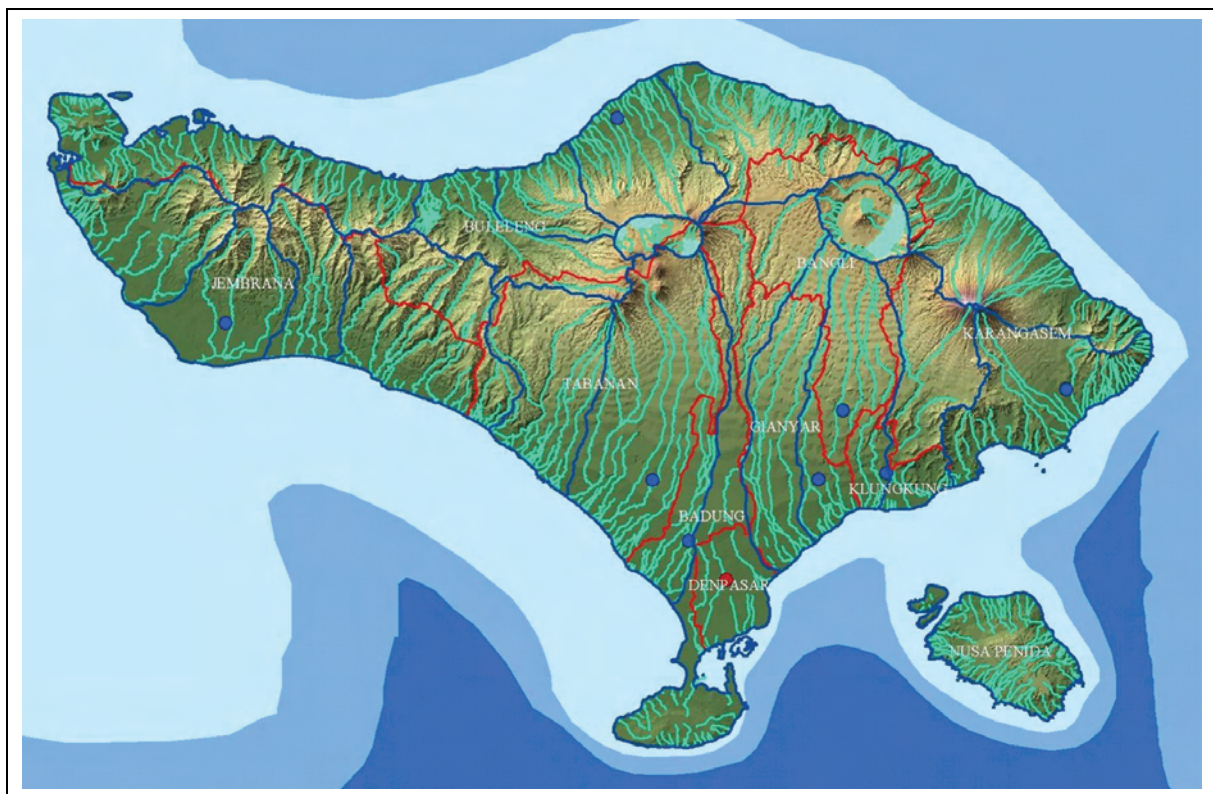


Stakeholder Meetings

In the meetings, many stakeholders regarding water resources development and management expressed their opinions on the Water Master Plan and the Priority Projects.



Location Map of Indonesia and Bali Island



Study Area (Bali Province)

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- C. HYDROGEOLOGY AND GROUNDWATER.....
- D. HYDROLOGY
- E. WATER QUALITY AND ENVIRONMENT
- F. AGRICULTURE AND IRRIGATION.....
- G. DEMAND PROJECTION FOR WATER SUPPLY
- H. WATER SUPPLY
- I. INSTITUTION.....
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- K. COST ESTIMATE
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- M. ECONOMIC ANALYSIS (ECONOMIC, FINANCIAL AND SOCIAL)
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LIST OF ABBREVIATION & TERMINOLOGY

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
AMDAL	Analisis Mengenai Dampak Lingkungan	Environmental Impact Assessment	環境影響評価
APBD-KAB (or APBD II).	Anggaran Pendapatan dan Belanja Daerah Kabupaten	Regency Revenue and Expenditure Budget (District Budget)	県・予算
APBD-PROP (or APBD I).	Anggaran Pendapatan dan Belanja Daerah Propinsi	Provincial Revenue and Expenditure Budget (Provincial Budget)	州・予算
APBN	Anggaran Pendapatan dan Belanja Nasional	National Revenue and Expenditure Budget (National Budget)	国家・予算
AWLR	Pos Duga Air Otomatis	Automatic Water Level Recorder	自記水位計
BAKOSURTANAL	Badan Koordinasi Survei dan Pemetaan Nasional	National Coordination Agency for Surveys and Mapping	国家測地調整局
Balai PSDA	Balai Pengelolaan Sumber Daya Air	Water Resources Management Unit	水資源管理ユニット
BANJAR	Unit Administrasi di bawah Desa: unit tradisional masyarakat organisasi sosial berdasar daerah dan/atau keturunan. Banjar adalah unit kegiatan bersama dan saling menguntungkan. Setiap pria yang menikah yang berada di dalam daerah tsb diharapkan untuk menjadi anggota.	Administrative Unit under Desa: A traditional Balinese unit of social organization based on the territory and/or genealogy. It is a unit of communal activities and mutual aid. Each married man within a particular area is expected to become a member.	村の下の共同体 (バンジャール): 地縁、血縁に基づくバリの伝統的社会的組織。社会活動及び相互扶助の基礎単位である。一定地域に居住する既婚男性が構成員となる。
BAPEDALDA	Badan Pengendalian Dampak Lingkungan Daerah	Regional Environmental Control Agency	地域環境管理局
BAPPEDA-PROP.	Badan Perencanaan Pembangunan Daerah - Propinsi	Provincial Regional Development Planning Agency	州・地域開発計画局
BAPPEDA-KAB.	Badan Perencanaan Pembangunan Daerah - Kabupaten	Regency Regional Development Planning Agency	県・地域開発計画局
BAPPENAS	Badan Perencanaan Pembangunan Nasional	National Development Planning Agency	国家・地域開発計画局
B/C	<u>Ratio Biaya Keuntungan</u> : Dihasilkan dari Nilai keuntungan yang ditampilkan dibagi dengan biaya yang ditampilkan. Jika rasio biaya keuntungan menjadi lebih besar dari pada 1,0, maka proyek dianggap layak.	<u>Benefit Cost Ratio</u> : “Benefit Cost Ratio” that is obtained from “Present Benefit Value divided by Present Cost Value”. If B/C ratio becomes bigger than 1.0, the project is judged feasible.	便益・費用比率: 資本の機会費用で割り引いた、便益の現在価値総計と費用の現在価値総計の比率。比率が1以上であれば妥当と判断される。
BKPM-PROP.	Badan Koordinasi Penanaman Modal Daerah Propinsi	Provincial Regional Investment Coordination Agency	州・地域投資調整局
BMG	Badan Meteorologi dan Geofisika	Meteorological and Geophysical Agency	気象・地球物理局
BPDAS	Balai Pengelolaan Daerah Aliran Sungai	River Basin Management Agency	流域管理局
BPS-PROP.	Biro Pusat Statistik Propinsi	Provincial Central Bureau of Statistics	州・統計局
BPS-KAB.	Biro Pusat Statistik Kabupaten	Regency Central Bureau of Statistics	県・統計局
BRLKT	Balai Rehabilitasi Lahan dan Konservasi Tanah	Land Rehabilitation and Soil Conservation Agency, Ministry of Forestry	森林省・土地復興土壌保全局
BULOG	Badan Logistik	National Logistic Agency	国家ロジスティクス局
BUPATI	Kepala Kabupaten	Head of Regency	県知事
CAMAT	Kepala Kecamatan	Head of District	郡長
CDM	<u>Mekanisme Pengembangan Kebersihan</u> : Mekanisme pengurangan emisi CO ₂ oleh Kyoto Protocol, demi melawan perubahan iklim.	<u>Clean Development Mechanism</u> : CO ₂ emission reduction mechanism enacted by Kyoto Protocol against climate change.	CDM: 京都議定書で制定。地球温暖化防止のための二酸化炭素排出削減制度
CIDA	Badan Pengembang Internasional	Canadian International	カナダ国際開発機構

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
	Kanada	Development Agency	
Conversion Factor	<u>Faktor Konversi:</u> Koefisien untuk mengubah harga lokal untuk barang2 yang tidak diperdagangkan dengan harga yg telah ditentukan untuk tujuan standarisasi semua harga ekonomi pada batas yang ditentukan.	<u>Conversion Factor:</u> Coefficient to convert local price of non-tradable goods to border price for the purpose of standardizing all economic price at border level	<u>変換係数:</u> 経済価格を国境レベルで統一するため、非貿易財を国境価格レベルに変換するための係数。
DAK	Dana Alokasi Khusus	Special Allocation Fund	特別割当金
DAU	Dana Alokasi Umum	General Allocation Fund	一般割当金
DBH	Dana Bagi Hasil	Revenue Sharing Fund	歳入配分金
DEP. PE	Departemen Pertambangan dan Energi	Ministry of Mining and Energy	鉱山エネルギー省
DEPDAGRI	Departemen Dalam Negeri	Ministry of Home Affairs	内務省
DEPERINDAG	Departemen Perindustrian dan Perdagangan	Ministry of Industry and Trade	産業通産省
DEPHUT	Departemen Kehutanan	Ministry of Forestry	森林省
DEPKEU	Departemen Keuangan	Ministry of Finance	財務省
DEPTAN	Departemen Pertanian	Ministry of Agriculture	農業省
DEPPU	Departemen Pekerjaan Umum	Ministry of Public Work	公共事業省
DESA	<u>Unit Administrasi di bawah Kecamatan:</u> sebuah desa administrasi yang diperkenalkan di seluruh Indonesia dengan UU No. 5/1979 ttg Desa Administrasi.	<u>Administrative Unit under District:</u> An administrative village introduced across Indonesia by the Law No.5/1979 on Village Administration.	郡の下の村 (デサ): 村落行政に関する 1979 年 5 号法によって定められた行政単位。
DESA ADAT	Desa Tradisional yang terdiri dari 2 atau lebih Banjar. Sampai sekarang, Desa Adat sering mewakili dasar kuat dari sosial kebersamaan bersama melebihi Desa	A traditional village comprised of two or more Banjars. Still today, Desa Adat often presents a stronger basis of social and communal cohesion than Desa.	<u>伝統的村落:</u> 2 つ以上のバンジャールから構成される伝統的村落。現在もなお、行政的村落であるデサより強い結束力を持つものも多い。
Dinas PU-PROP	Dinas Pekerjaan Umum Propinsi	Provincial Public Works Service Office	州・公共事業局
Dinas PSDA	Dinas Pengelolaan Sumber Daya Air	Water Resources Management Service Office	水資源管理局
DISPENDA	Dinas Pendapatan Daerah	Provincial Revenue Service Office	州・歳入局
DIPERTA-PROP.	Dinas Pertanian Tanaman Pangan	Provincial Food Crops Agriculture Service Office	州・農業局
DJSDA.	Direktorat Jenderal Sumber Daya Air	Directorate General of Water Resources	水資源総局 (公共事業省)
Dit. Bintek	Direktorat Bina Teknik	Director of Technical Guidance	技術局 (公共事業省)
Dit. PSDA	Direktorat Pendayagunaan Sumber Daya Air	Director of Water Resources Utilization	水資源利用局 (公共事業省)
Dit. SDA Wiltim	Direktorat Pelaksanaan Wilayah Timur	Director of Water Resources Eastern Region	東部実施局 (公共事業省)
Ditjen. SDA	Direktorat Jenderal Sumber Daya Air	Directorate General of Water Resources	水資源総局長 (公共事業省)
DIKANLA-PROP.	Dinas Perikanan dan Kelautan Propinsi	Provincial Fishery and Marine Resources Service Office	州・漁業水産資源局
DPR	Dewan Perwakilan Rakyat	House of Representatives	議会
DPRD Kabupaten	Dewan Perwakilan Rakyat Daerah Kabupaten	Regency Parliament	県議会
DPRD Propinsi	Dewan Perwakilan Rakyat Daerah Propinsi	Provincial Parliament	州議会
DPU-Propinsi	Dinas Pekerjaan Umum Propinsi	Province Public Works Service Office	州・公共事業局
DSDP	Proyek Pengembangan Saluran Limbah Denpasar	Denpasar Sewerage Development Project	デンパサル下水開発事業
EIA	Penilaian Mengenai Dampak Lingkungan	Environmental Impact Assessment	環境影響評価

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
EIRR	<u>Pengembalian Tingkat Internal Ekonomi</u> : Tingkat pemotongan yang menyamakan jumlah dari nilai keuntungan yang ditampilkan dengan jumlah dari biaya yang ditampilkan. Jika Pengembalian tingkat ekonomi internal lebih besar daripada biaya peluang modal, maka proyek dianggap layak.	<u>Economic Internal Rate of Return</u> : Economic Internal Rate of Return means a discount rate that equalizes sum of present benefit value with sum of present cost value. If EIRR becomes larger than opportunity cost of capital, the project is judged feasible	経済内部収益率: 便益と費用の現在価値の合計が等しくなるような割引率。資本の機会費用より大きければ妥当と判断される。
GBHN	Garis – Garis Besar Haluan Negara	National Policy Guidelines	国家政策指針
GIS	Sistem Informasi Geografi	Geographic Information System	地理情報システム
GOI	Pemerintah Indonesia	Government of Indonesia	インドネシア国
GOJ	Pemerintah Jepang	Government of Japan	日本国
GUBERNUR	Kepala Daerah Propinsi	Governor (Head of Province)	州知事
HAS	Hutan Suaka Alam dan Hutan Wisata	National Forest Reserve and Recreation Forest	国家森林保護
HKTI	Himpunan Kerukunan Tani Indonesia	Farmers Association	農業組合
ICOLD	Komite Internasional untuk Dam-Dam Besar	International Committee on Large Dams	国際大ダム会議
IEE	Pemeriksaan Lingkungan Awal	Initial Environmental Examination	初期環境評価
IKK	Ibu Kota Kecamatan	Central Government Administrator of Region	県庁所在地
INPRES	Instruksi Presiden	Presidential Instruction	大統領指令
IPAIR	Iuran Pelayanan Irigasi	Irrigation Service Fee	灌漑料金
IPEDA	Iuran Pembangunan Daerah	Regional Development Fee	地域開発料金
JBIC	<i>Japan Bank</i> untuk Kerjasama Internasional	Japan Bank for International Cooperation	国際協力銀行
JICA	Badan Kerjasama Internasional Jepang	Japan International Cooperation Agency	国際協力機構
KADES / LURAH	Kepala Desa	Head of Desa	村長 (デサの長)
KELIAN DINAS	Kepala Banjar	Head of Banjar	バンジャールの長
KELIAN SUBAK	Kepala Subak	Head of Subak	スバクの長
KEPMEN	Keputusan Menteri	Ministerial Decree	大臣令
KEPPRES	Keputusan Presiden	Presidential Decree	大統領令
KIMPRASWIL	Departemen Pemukiman dan Prasarana Wilayah	Ministry of Settlement and Regional Infrastructure	居住・地域インフラ省
KUD	Koperasi Unit Desa	Village Cooperative Unit	デサ共同体
LKMD	Lembaga Ketahanan Masyarakat Desa	Village Social Activities Group, Village Welfare	デサ社会福祉組織
LSM	Lembaga Swadaya Masyarakat	Non Governmental Organization (NGO)	非政府組織
Meneg.LH	Kementerian Negara Lingkungan Hidup	State Ministry of Environment	国務環境省
Menko EKUIN	Menteri Koordinator Ekonomi, Keuangan dan Industri	Coordinating Minister for Economy, Finance and Industry	経済・財務・産業調整大臣
MPR	Majelis Permusyawaratan Rakyat	People Consultative Assembly	人民諮問機関
NPV	<u>Nilai Bersih yang Ditampilkan</u> : Selisih antara nilai keuntungan dengan nilai biaya yang secara berturut-turut dipotong oleh biaya peluang modal. Jika Nilai bersih yang didapat lebih besar dari nol, proyek dianggap layak.	<u>Net Present Value</u> : Net Present Value means the difference between present benefit value and present cost value respectively discounted by opportunity cost of capita. If NPV becomes larger than zero, the project is judged feasible.	純経済価値: 資本の機会費用で割り引いた、便益の現在価値総計と費用の現在価値総計の差。純経済価値がゼロより大きければ妥当と判断される。
NWQS	Standar Kualitas Air Nasional	National Water Quality Standards	国家水質基準
NWRC	Dewan Sumber Daya Air Nasional	National Water Resources Council	国家水資源評議会
P.T	Perseroan Terbatas	Limited Company	有限会社
P2AT	Proyek Pengembangan Air Tanah	Groundwater Development Project	地下水開発事業

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
P3A, HIPPA	Asosiasi Petani Pemakai Air, Himpunan Petani Pemakai Air	Water User's Association (WUA)/ Group of WUAs	水利用者協会
PAB	Proyek Pengembangan Pengadaan Air Baku	Raw Water Supply Development Project	水供給原水開発事業
PAD	Pendapatan Asli Daerah	Own-Source Revenue	自己財源
PALAWIJA, POLOWIJO	Tanaman pangan kedua setelah padi, antara lain jagung, singkong, kentang, kacang-kacangan dan lain sebagainya.	Second food crops other than paddy such as corn, casaba, potatoes and beans and so on.	パラウイジャ、二次作物(稲作以外): インドネシアの固有の表現で、とうもろこし、キャッサバ、芋、豆類等の米以外の主食作物として定義される。
PDAM	Perusahaan Daerah Air Minum	Drinking Water Supply Company	飲料水供給公社
PERDA	Peraturan Daerah	Regional Regulation	地方令
PEMDA	Pemerintahan Daerah	Regional Government	地方政府
PERDA Kabupaten	Peraturan Daerah Kabupaten	Regency Regulation	県令
PERDA Propinsi	Peraturan Daerah Propinsi	Provincial Regulation	州令
PERMEN	Peraturan Menteri	Ministerial Regulation	省令
PERUM	Perusahaan Umum	Public Corporation	公共体
PERUM PERHUTANI	Perusahaan Umum Perhutanan Indonesia	State Owner Indonesian Forestry Company	インドネシア森林公団
PIB	Proyek Irigasi Bali	Bali Irrigation Project	バリ灌漑事業
PID	Proyek Irigasi Desa	Village Irrigation Project	村落灌漑事業
PIK	Penyerahan Irigasi Kecil	Small Irrigation Handover /Transfer Project	小規模灌漑移転事業
PJM	Perencanaan Jangka Menengah (Perencanaan 5 Tahunan)	Mid Term Development Planning (5-Yrs Planning)	中期開発計画 (5カ年計画)
PJP	Perencanaan Jangka Panjang (Perencanaan 20 Tahunan)	Long Term National Development Planning (20-Yrs Planning)	長期開発計画 (20カ年計画)
PJT	Perum Jasa Tirta	State Owned Company on Water Resources Management	水資源管理公社
PLN	Perusahaan Listrik Negara	National Electricity Limited Company	国家電力会社
PP	Peraturan Pemerintah	National Government Regulation	国家令
PPA	Perlindungan Pelestarian Alam	Protected Conservation Forest	保護保全林
PPTPA	Panitia Pelaksanaan Tata Pengaturan Air	River Basin Water Resources Management Committee	流域水資源委員会
Proyek PBPP	Proyek Pengendalian Banjir dan Pengamanan Pantai	Bali Flood Control and Coastal Protection Project,	バリ洪水対策海岸保全事業
Proyek PKSA-Bali	Proyek Pengembangan dan Konservasi Sumber Air Bali	Bali Water Resources Management and Conservation Project,	バリ水資源管理・保全事業
Proyek PPSA-Bali	Proyek Pengembangan dan Pengelolaan Sumber Air Bali	Bali Water Resources Development and Management Project,	バリ水資源開発・管理事業
PROKASIH	Program Kali Bersih	River Clean Water Program	河川浄化計画
PROPENAS	Program Pembangunan Nasional	National Development Programs	国家開発計画
PROPENAS TRANSISI	Program Pembangunan Nasional Transisi	Transition National Development Programs	過渡的国家開発計画
PROPERDA	Program Pembangunan Daerah	Regional Development Programs	地方開発計画
Proyek PB-PP	Proyek Pengendalian Banjir dan Pengamanan Pantai	Bali Flood Control and Coastal Prevention Project	バリ洪水対策・海岸保全事業
PTPA	Panitia Tata Pengaturan Air	Provincial Water Resources Coordination Committee	州水資源評議会
PT. TB	PT. Tirtaartha Buanamulia	-	TB 社(水道会社名)
RENSTRA	Rencana Strategis (Rincian Program Tahunan Selama 5 Tahun)	Strategic Plan (Annual Breakdown of 5-Yrs Plan)	戦略計画(5カ年計画の年次内訳)

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
RUTRW	Rencana Umum Tata Ruang Wilayah	Regional Spatial Planning	地方空間計画
PWRCC	Badan Koordi	Provincial Water Resources Coordination Council	州水資源調整評議会
SARBAGITA	Denpasar, Badung, Gianyar dan Tabanan	Denpasar, Badung, Gianyar and Tabanan	5地区略称(デンパサル、パドゥン、ギアニャール、タバナン)
SARBAGITAKU	Denpasar, Badung, Gianyar, Tabanan dan Klungkung	Denpasar, Badung, Gianyar, Tabanan and Klungkung	6地区略称(デンパサル、パドゥン、ギアニャール、タバナン、クルンクン)
SEDAHAN AGUNG	Dulu, Sedahan Agung sebagai perantara antara raja dan petani, menagih pajak dari petani, mengatur upacara keagamaan atas nama raja dan mengawasi air irigasi. Selama pendudukan Belanda, mereka ditunjuk sebagai petugas penagih pajak, sementara itu tetap bertanggung jawab thdp alokasi air. Sedahan Agung masih ada sampai saat ini walaupun kebanyakan kabupaten meniadakan posisi itu dalam proses desentralisasi.	In old times, Sedahan Agung was an intermediary between the king and farmers, collecting taxes in kind from farmers, organizing ceremonies for them on behalf of the king, and controlling irrigation water. During the Dutch administration, they were appointed as official tax collectors, while continued the responsibility for water allocation. Sedahan Agung continued to exist until recently, when most of the regencies abolished the position in the wake of decentralization.	スダハンアグン: 王国時代に統治者とスバックを仲介し、農民に対する徴税、王族に代わっての儀式の開催、灌漑用水の調整などを行った役職。オランダ統治時代にも徴税及び灌漑用水の配分の責を負った。近年まで存在したが、地方分権化の進展により廃止されてきている。
SGS	Stasiun Pengamat Arus Air	Stream Gauging Station	河川水位観測所
SK-Bupati	Surat Keputusan-Bupati	Regency Head Decision	県知事決定
SK-Gub.	Surat Keputusan-Gubernur	Governor Decision	州知事決定
SUBAK	Kelompok Petani	Farmers Association	スバック: (バリの)農業者組合
SUBAK-AGUNG	Federasi dari Subak Gede, seperti yang telah dibentuk di dua tempat yaitu di Tabanan dan Buleleng	A federation of subak-gedes, having been formed in two places, Tabanan and Buleleng.	スバックアグン: スバック連合の更なる連合組織。タバナン県とブレレン県に一箇所ずつ組織されている。
SUBAK-GEDE	Federasi dari Subak. Perubahan fisik pada sistem irigasi membawa proyek irigasi dimulai dari tahun 1970an yang menciptakan situasi yang membantu subak di hulu sungai. Kebutuhan untuk negosiasi alokasi air diantara subak dalam sistem irigasi memacu pembentukan federasi irigasi yang didukung oleh perantara luar yang dikepalai oleh Universitas Udayana Bali. Saat ini, ada 41 subak gede di Bali, kebanyakan dari mereka berlokasi di Tabanan, Klungkung, Buleleng dan Gianyar.	A federation of subaks, physical changes in the irrigation systems brought by irrigation projects started in 1970s created situations favorable to upstream subaks. The need to negotiate water allocation among subaks within an irrigation system prompted the formation of irrigation federations supported by external facilitators led by Udayana University of Bali. At the moment there are a total of 41 subak-gedes across Bali, many of them being located in Tabanan, Klungkung, Buleleng and Gianyar.	スバックグディ: スバックの連合組織。1970年代に始まった灌漑システム改善事業により、上流側のスバックとの連携が必要になり組織されるようになった。現在、タバナン県、クルンクン県、ブレレン県、ギアニャール県を中心に41のスバック連合が存在する。
Sub-Dinas SDAPP	Sub Dinas Sumber Daya Air dan Prasarana Perdesaan	Water Resources and Rural Infrastructure Sub-Service Office	水資源・地方インフラ部
Sub-Dinas TRP	Sub-Dinas Tata Ruang Dan Permukiman	Spatial Planning and Settlement Sub-Service Office	都市計画・居住部
SWS	Satuan Wilayah Sungai	River Basin Unit (Consist of 1 or more than 1 river basin)	河川流域単位
UPTD	Unit Pelaksana Teknis Dinas	Technical Implementation Unit	Dinas の技術実施単位
UU	Undang – Undang	National Law	インドネシアの法律
UUD Republik	Undang – Undang Dasar Republik Indonesia	National Constitution	インドネシアの憲法
WALIKOTA	Walikota	City Mayor	市長

Abbreviation & Technical Term	Indonesian	English	Japanese (日本語)
WATSAL	Pinjaman Penyesuaian Sektor Air	Water Sector Adjustment Loan	水セクター調整ローン
WISMP	Proyek Pengelolaan Sektor Irigasi dan Sumber Daya Air	Water Resources and Irrigation Sector Management Project	水資源・灌漑セクター管理事業
WLGS	Stasiun Pengamat Muka Air	Water Level Gauging Station	水位観測所
WR	Sumber Daya Air	Water Resources	水資源
Zero ΔQ Policy	Meningkatnya aliran permukaan karena perkembangan penduduk dsb., harus dikontrol pada wilayah untuk tidak meningkatkan debit air pada jalur/aliran sungai.	Increased runoff due to resident development etc., shall be controlled in the area not to increase discharge in river course	流出増分ゼロ方針: 流出増分を起こす宅地開発等では、河川流量を増加させないように、流出増分は開発地内で処理する。