

DESIGNING LOCAL FRAMEWORK OF INTEGRATED WATER RESOURCES MANAGEMENT

Water users empowerment for better irrigation water management

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Methods: Action research

- Baseline survey using PRA approach, Focus group discussions and deep interviews
- Monitoring and Evaluation by instruments measurement for indicators
- Analysis in basin scale using remote sensing data

Related Law and Regulations



In 1997, when Indonesia enter to a new era, called reformation era, the government conducted reformation in water resources sector. With several policies to reform the institutional in the water resources sector, of which government has been faced some obstacle.

- 1999 the government has been published the President Instruction (Inpres Nomor 3/1999) as the beginning of the water resources reform,
- 2001 with the PP No.77 /2001 (Government Regulation) about the sustainable Irrigation.
- **2004, Law on Water Resources No. 7 /2004,**
- 2006 Government Regulation PP No. 20 /2006) on Irrigation
- 2007 Minister Decree No. 33/2007 (Decision of Ministry of Public Work), about guidance for development and management system for participatory approach to optimize the benefit of water in irrigation conducted by the Water User Association (Union of WUA) for the efficiency and effective use of water for sustainability by empowering the WUA

Local Government Regulations



- South Sulawesi Government Provincial Regulation No. 12 of 2003 on irrigation
(based on PP no.77 of 2001)
- Provincial regulation No. 3 of 2009
(Based on PP No. 20 of 2006)

Water Management Related Projects in South Sulawesi



- HPSIS (High Performance *Sederhana Irrigation System*) 1984 – 1986
- PIK (*Small Scale Hand Over Project*) 1987-1991
- SSIMP (Small Scale Irrigation Management Project) 1990-2013
- FMIS (Farmed Management Irrigation System). 1997 – 2005
- IWIRIP (Indonesian Water Resources and Irrigation Reform Implementation Program) 1999 -2004
- WISMP (Water Resources and Irrigation Sector Project (Phase I, 2006 – 2010),
- Participatory Irrigation Sector Project (PISP) Tahun 2006 – 2011

Summary activities of SSIMP-DISIMP in South Sulawesi:



- **SSIMP-I 1990 – 1994** Construction work of weir and the irrigation system of AWO Empowering WUA by cooperation of the USAID and Government of Indonesia
- **SSIMP-II 1995 – 1998** Construction work of irrigation system of AWO II, construction work of dam and irrigation system of Salomekko, and empowering WUA by cooperation OECF Japan and Government of Indonesia Government of Indonesia
- **SSIMP-III 1998 – 2003** Construction work of Irrigation system of AWO III, rehabilitation of AWO IV drainage system, rehabilitation of Kelara Karaloe, Kiru-kiru lanrea, Kalamisu & Saddang stage I Rehabilitation of Palu weir, Construction work of ground water irrigation system in Bantaeng Rural Development in Gowa and Bantaeng District Empowering the WUA. (Cooperation between JBIC and GOI)
- **DISIMP 2003 – 2009** Construction work of irrigation system of Ponre-ponre Rehabilitation of Tabo-tabo, Lamasi, and Saddang Stage II Rehabilitastion of Kanjiro weir and the irrigation system. Rehabilitation of Kalamisu Irrigation system (result of Flood) Rehabilitation of weir dam and grounsill at Jeneberang Empowering WUA Try out the SRI (System Rice Intensive) pattern Implementation of Ground water irrigation system in Wajo (Cooperation between *JBIC* and GOI)
- **DISIMP-II 2009 – 2013** Rehabilitation of Saddang Irrigation system Stage 3-4 Rehabilitation of right Lamasi irrigation system Construction work of Bajo weir and rehabilitation of bajo irrigation system Construction work of weir and irrigation system of Tomo (West Sulawesi) Soft Component including: Empowering WUA and strengthening the government institution Water management on-farm level Asset management

Background



- Community Empowerment was once deemed superior solution which can simultaneously solve the problems of poverty. But after a series of project and program implementation experiences in various countries seems to various weaknesses also appear. Impacts on poverty alleviation is very dependent on the strategies that have to be really precise.
- In Indonesia, at the beginning, community empowerment is often misinterpreted by submitting a direct implementation or disburse micro-credit financing directly to community groups. But this led to the mushrooming of various community groups and NGOs which are formed only for receiving funds.
- These experiences derived a conclusion that the funds related to poverty reduction should be channeled in infrastructure improvement program. But this is also endangering the empowerment aspect. By studying the various strengths and weaknesses of the Community Empowerment program implementation experience gave birth to a concept program that empowers community in maximizing existing locally available infrastructure

History of the Bili-bili Dam Development



- 1978** F/S of Lower Jeneberang River Flood Control Project by JICA
- 1981** F/S of Jeneberang River Flood Control Project, Phase II by JICA: propose the Bili-Bili Multipurpose
- 1983-93** Detailed Design (83-84) and Construction (88-93) of the Lower Jeneberang River Urgent Flood Control Works by JBIC.
- 1986-99** Detailed Design (86-88) and Construction (91- 99) of Bili-Bili Multipurpose Dam by JBIC, impounded from Nov. 1997.
- 1995-01** Other Related Projects:
 - Raw Water Transmission Main & Somba-Opu Water Treatment Plant (1999);
 - Rubber Dam (1997);
 - Environmental Improvement Works for Bili-Bili Dam and Pampang River Improvement Project (2001).
- 2001-2005** Bili-Bili Irrigation Project and Bili-Bili Hydropower Plant

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Bili-Bili Multipurpose Dam



[Project Map](#)

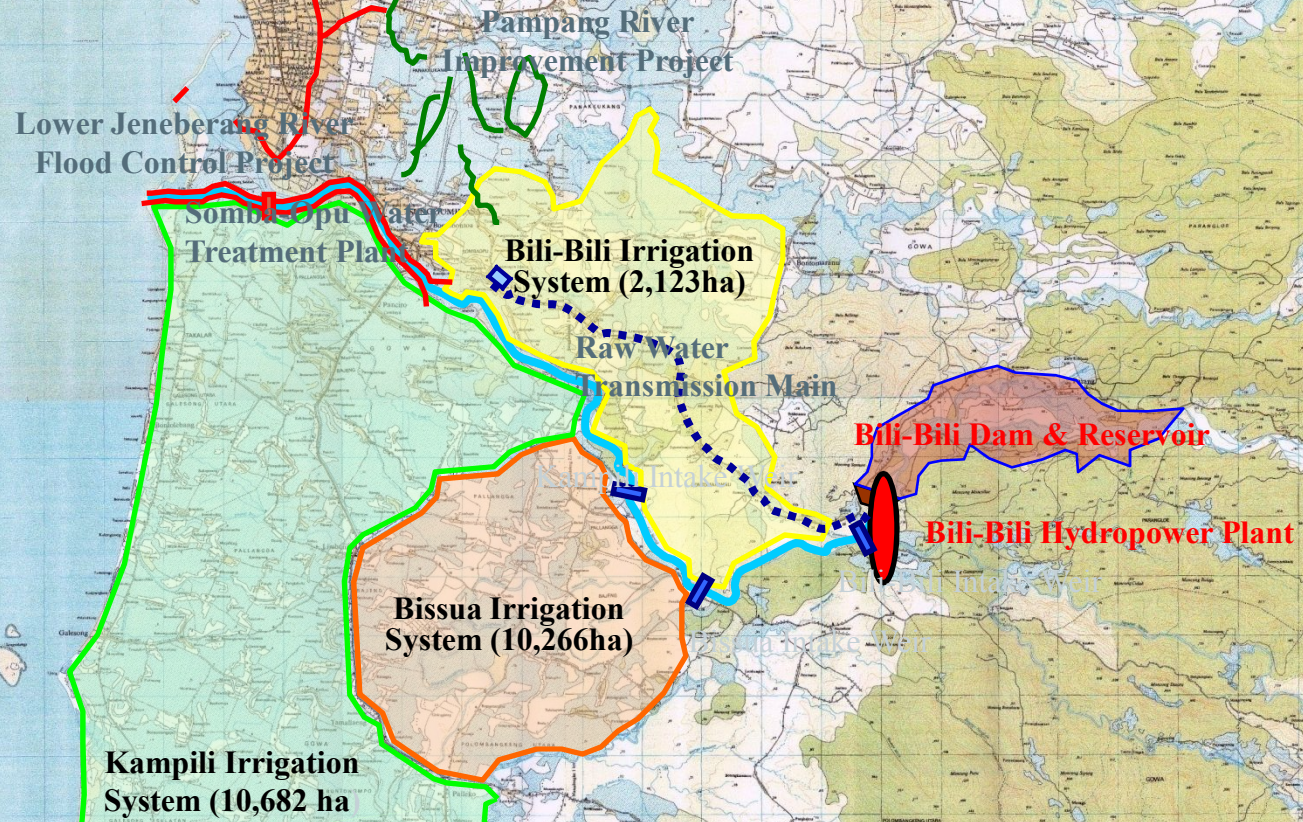
Technical functions



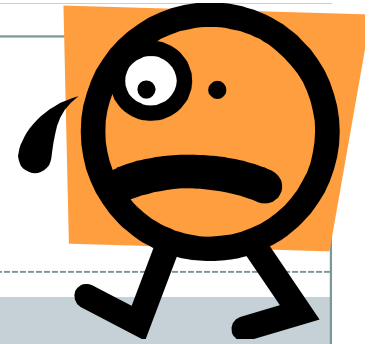
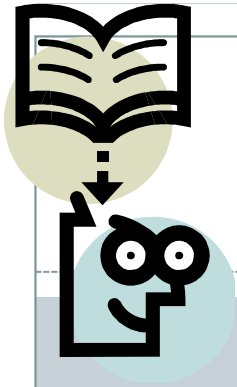
- **Mitigation of flood**
- **Water supply for domestic water use**
- **Water supply for irrigation**
- **Hydropower electric supply**



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Project Area Bili-Bili Irrigation



Problems

1. Responsible government institution are diverted
 - ✦ Ministry of Public Works
 - ✦ Ministry of Agriculture
 - ✦ According to the Law : Development of tertiary channels is farmers”responsibility
2. New developed irrigation area
 - Farmers have no experience, knowledge and skill for developing and maintenance of irrigation channels
 - farmers have no experience in establishing water users association (members based on paddy field location)
 - Limited budget for developing and maintenance of tertiary channels

Objective:

Federation of Water Users Association (FWUA)
able to manage water distribution and able to
coordinate with local government

Location: Bili-bili Irrigation Area (total area 24600ha)

Target group:

FWUA Sirannuang (including 18 WUA members; land size
800 ha)

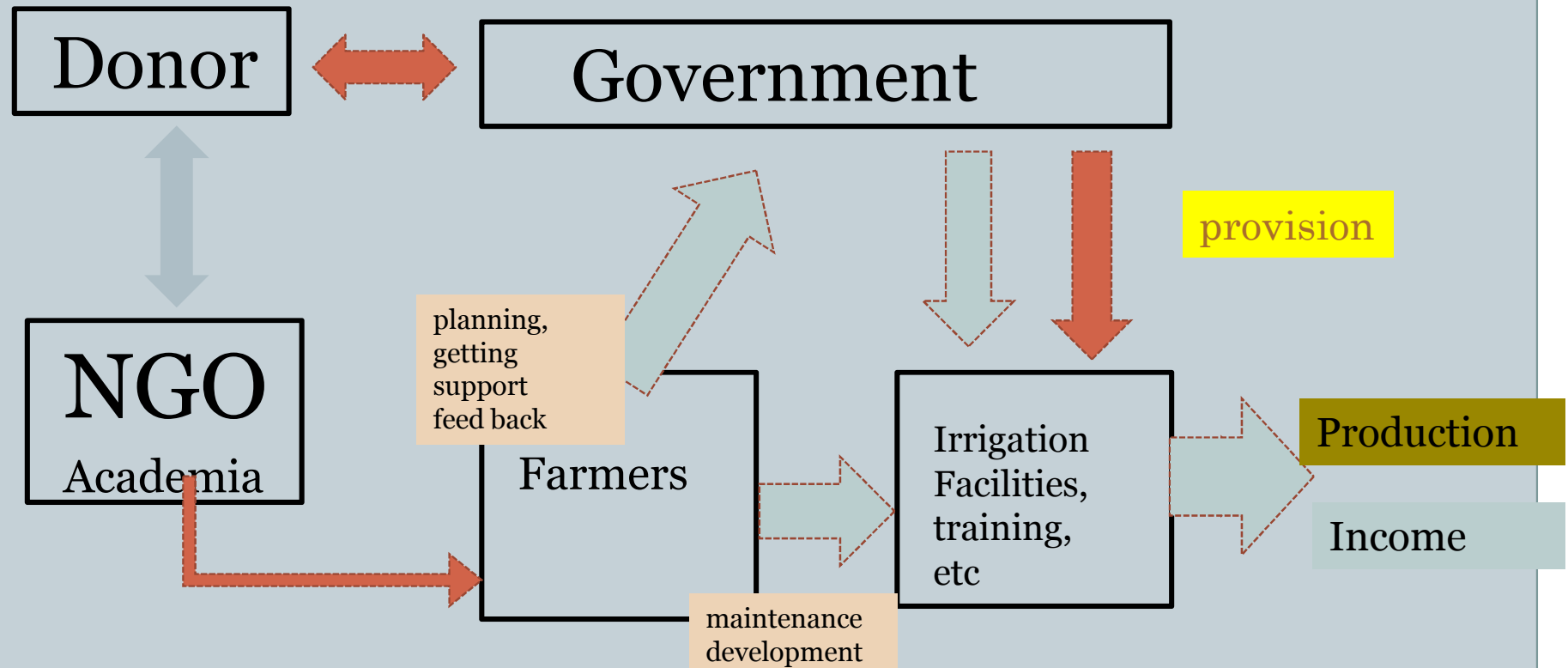
Method : ACTION RESEARCH

Water users Association



- Formation based on hydrological area
- Primary and secondary channels under government management
- Development and maintenance of tertiary channels by farmers

concept of empowerment



Steps of empowerment activity

Supports in

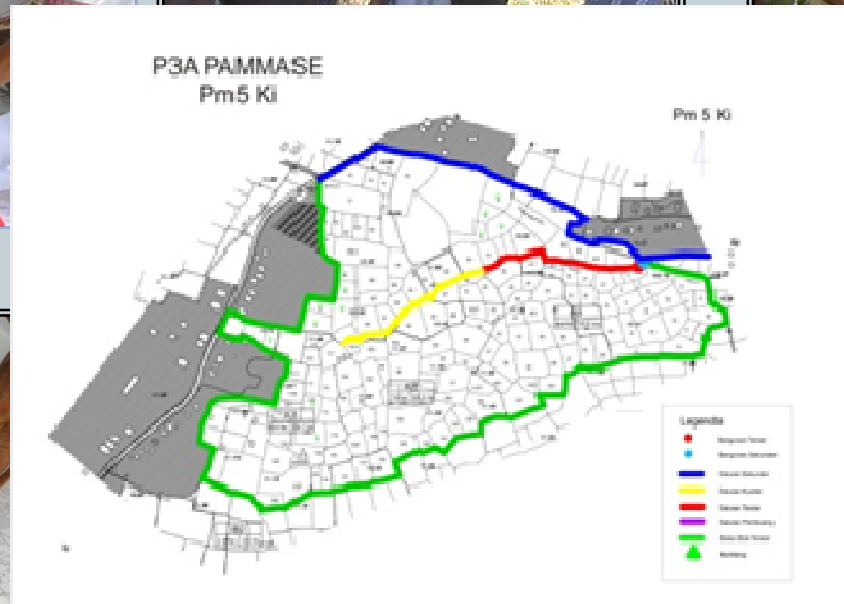
- 1. recognizing farmers own potency: members, land size, production**
- 2. Identifying issues: flooding, unirrigated land**
- 3. Analyzing the causes**
- 4. Discussing solution**
- 5. Take action based on agreement**
- 6. Learning Process**
- 7. Getting support from government**



1.

**Recognizing own potency:
members, land size, production of
each WUA under FWUA
Sirannuang**

Participatory mapping



Recording activities and financial report



Survey on production rate and cropping pattern



PROFILE of FWUA SIRANNUANG

No	Nama P3A	Jumlah anggota	Luas Tanam (ha)	Jumlah Pengurus (orang)	Fasilitas Irigasi							
					Nama Unit Tersier	Panjang saluran tersier (m)	Panjang Saluran Tanah Tersier	Jumlah Box tersier / kwarter	Jumlah Blok kwarter	Panjang saluran kwarter (m)	Lebar Pintu Sadap (cm)	
1	Campaga	138	15	5	Mg1Ki,	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	0	5	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	50	
			38,9		Mg1Ka		153,25	1	3		50	
2	Batang Kaluku	95	35	4	Mg2Ki		119,8	1	2		50	
3	Sappaya	95	28,2	5	Mg3Ki		783,38	1	3		50	
4	Lompo Batua	104	27,6	4	Mg3Ka,		386,7	3	4	373,6	50	
			21,6		Mg5Ka	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	0	3	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	50	
5	Kolasa	86	27,4	11	Mg4Ki						50	
6	Tangkeballa	169	42,6	9	Mg4Ki		993	180	5	5	50	
7	Juluerota	215	61,3	5	Mg7Ki (Hilir)	1135,17	88,4	2	5	1374,56	50	
8	Romangbone				Mg7Ki Hulu						50	
9	Bontosunggu	165	41,7	5	Mg6Ki (hilir),	814,73	0	1	6	417,11	50	
					6						Mg6Ki (Hulu)	50
10	Bontoa	187	56,8		Mg7Tgh (Hulu)	152,06	837,13	1	6		50	
11	Bajipamai	164	51,9	5	Mg7Ka			1	4	109,06	50	
Saluran Sekunder Majannang (3.000 m)		1.418	448	64		4265,04	1924,43	16	46	2274,33	100	
12	Tunikamaseang	107	16,1	5	Pm1Ka		122,1	207,3	2	2	225,6	50
			8,4	Pm2Ki	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	0	1	LANGSUNG DARI SALURAN SEKUNDER DENGAN MENGGUNAKAN PIPA	50		
13	Borongunti	164	46,6	5	Pm3Ki		595,06	231,5	4	6	552	75
14	Tunirannuang	207	50,4	11	Pm4Ki		520	800	4	4		50
15	Sipakainga	63	7,1	4	Pm4Ka				0	1	220,13	50
16	Pammase	120	25,2	4	Pm5Ki			320,36	1	3	308,8	50
17	Binabbasa	153	56,5	11	Pm6Ki		960	247	5	11		50
18	Renggang	355	88,5	11	Pm6Ka		196	1735,5	7	11		50
Saluran Sekunder Pammase (2.833 m)		1.169	298,8	51		2393,16	3541,66	23	39	1306,53	100	
Total		2.587	746,8	115		6658,2	5466,09	39	85	3580,86		

OUTPUT 1: Meningkatkan Pengelolaan Organisasi FWUA di dalam Wilayah Kerja FWUA Sirannuang (KELEMBAGAAN)



2.

**Identifying issues:
flood , unirrigated land etc**

long channels





3.

Analyzing the causes

- analyzing causes by field check





4.

Discussing solutions



Find solutions by discussions





5.
Take action based on agreement



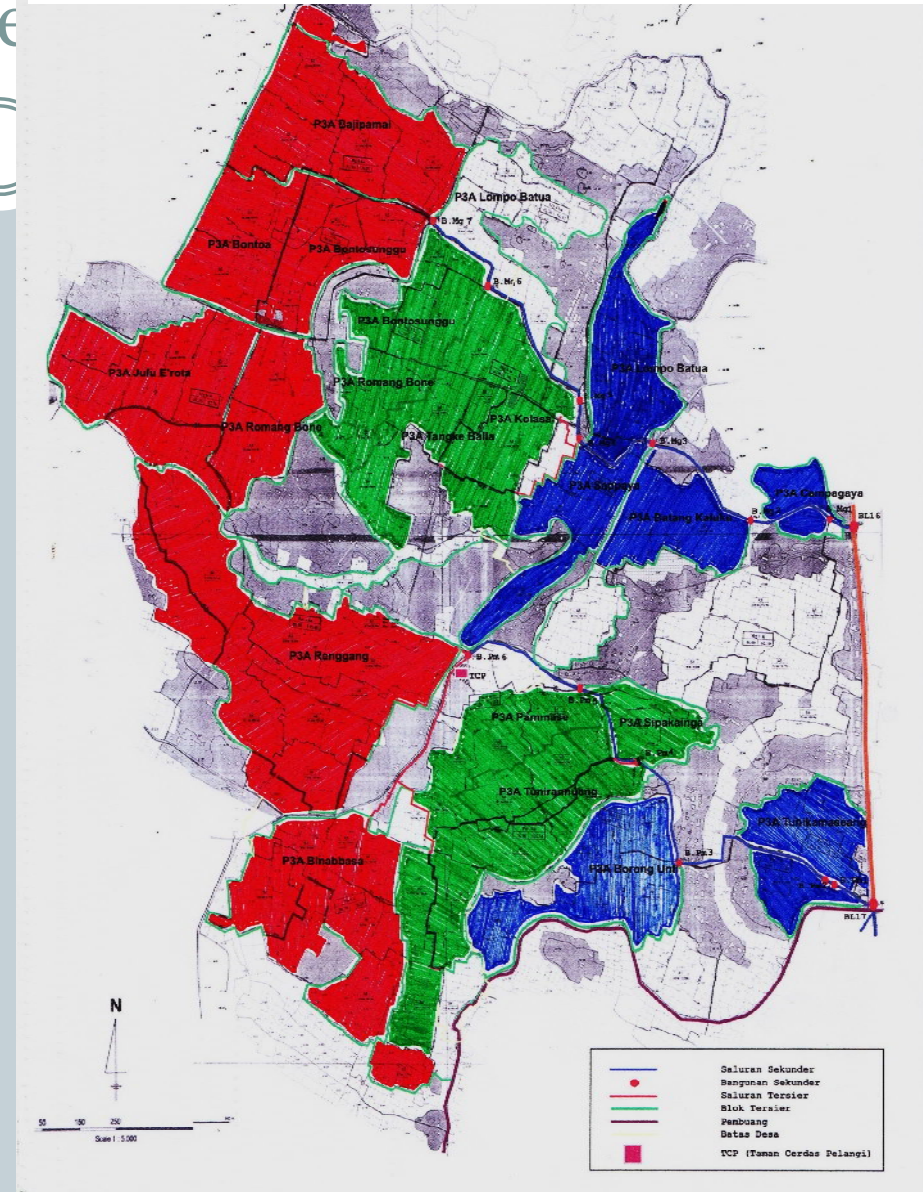


FWUA Sirannuang mampu mengidentifikasi, merencanakan dan mengkoordinasikan perbaikan, pemeliharaan dan rencana pengembangan jaringan irigasi (FASILITAS JARINGAN).



FWUA SIRANNUANG AREA

Water Distribution schedule



Hasil kesepakatan :



6

Learning Process

Scheduling and doing routine monitoring





Trainings on water distribution and management



Estimate volume of water necessary for each tertiary channels and converted into



Learning new knowledgge and skills



Visit Subak Bali and FGD on application of Bali experiences





7

Getting support from government



Results

- The FWUA (Gabungan Petani Pemakai Air) already identified their potency (members and land size , cropping pattern and production)
- FWUA able to identify issues, able to decide the solution and able to work out the solution
- FWUA able to cooperate with government in rehabilitation and development of irrigation channels
- Flooding areas are reduced and planting area increasing in rainy season
- Unirrigated area reduced and irrigated area increasing in dry season
- In general the production are increasing mainly due to increasing of planting area and also by increase production rate/ha

SHARING WATER MEANS

SHARING PROSPERITY

Increasing planting area in dry season by 20% from 78.7 to 98.9 %

Inceasing of planting area in rainy seasonby 2.5% from 96.7% to 98.2%

165 ha x 6 ton/ha x Rp.
3000/kg
=Rp. 2.970.000.000
= 2970万円

					addy
					a
					10
					a)
					2.4
					15.0
					25,3
					.5
4	Sappaya Mg3Ki	21	21	21	16,6
5	Tangkeballa	34,4	28,1	34,4	34,4
6	Kolasa	16,2	11,9	16,2	16,2
7	Bontosunggu Mg6Ki	14,6	8,7	14,6	13,9
8	Romang Bone Mg6Ki	13,6	9,9	13,6	12,6
9	Baji Pamai Mg7Ka	51,6	41,4	48,59	48,8
10	Bontosunggu Mg7Tgh	26	24,91	25,8	23,9
11	Bontoa Mg7Tgh	25,4	2,8	25,4	24,3
12	Julu Erota Mg7Ki	37,5	0	37,5	37,5
13	Romang Bone Mg7Ki	22,7	1,5	22,5	22,3
	Sub.Total	342,5	216,91	336,89	342,5
	Tunikamseang Pm1Ka	9,7	8,1	9,7	
14	Pm2Ki	7,6	5,2	7,6	9.77.6
15	Borongunti	40,4	36	40,4	40,4
16	Sipakainga Pm4Ka	8	5,3	8	4,8
17	Tunirannuang Pm4Ki	74,6	72,4	74,6	74,6
18	Pammase Pm5Ki	23	22,5	23	20,4
19	Renggang Pm6Ka	78,3	71,76	76,9	78,3
20	Binabbasa Pm6Ki	38,2	51,3	38,2	38,2
	Sub.Total	279,8	272,56	278,4	259
	Total	622,3	489,47	615,29	601,5
	Percentage (%)		78,7	98,9	96,7
					98,2

Creating capable leaders and active farmers



Dg. Sitaba now pro-actively assisting other WUAs. He has many things to share.

Lessons Learned



- WUA is a group which formed based on mutual needs, sustainability is high
- Irrigation channels is locally available infrastructure (resource)
- Board members must have better knowledge (scientific) and experiences than other members
- Activities must be derived or initiate by WUA board members
- Active Involvement of many or all stakeholders in activities especially in meetings and discussions is a key factor
- This type of empowerment has direct impact to the income of farmers in project area and possibly to surrounding areas too.

conclusions

- Provision of facilities will be more effective and sustainable if the empowerment program is done in parallel
- Accordingly, social and cultural approaches are needed to develop farmers organizations that manage irrigation and enable them to further develop
- It is important to provide legal communication bridge between farmers and local government
- Empowerment farmers need to aim for Strengthening bargaining position of farmers association toward government
- Supporting of scientific-quantitative findings is also necessary for empowerment program

ACTION RESEARCH IS A *KEY* to
empowerment program

because farmers or community need scientific (simple)
experiences and information to develop their living
condition

Local Wisdom in water management



SUB PROJECT: INDONESIA; BILI-BILI IRRIGATION AREA

Problems

target area do not receive
(enough) water

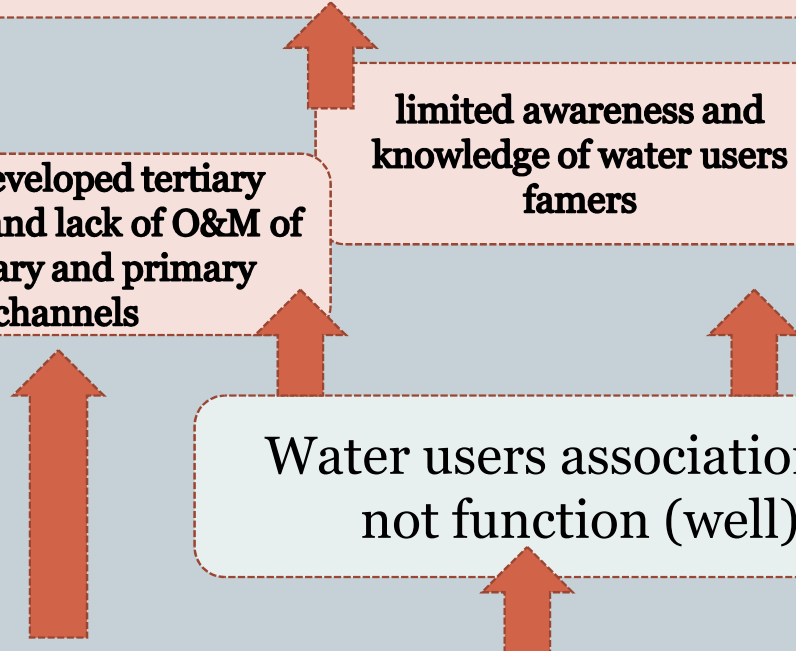
inefficient use of irrigation water

limited awareness and
knowledge of water users
farmers

underdeveloped tertiary
channels and lack of O&M of
secondary and primary
channels

Water users association do
not function (well)

inappropriate government strategy on
irrigation



Internalization



- Finding traditional values in irrigation management :
 - gotong royong
 - inclusion and development of roles of mandor jene (water master)
 - basically he was elected by villagers : now appointed by Leader of WUA
 - basically he worked alone within small area now area is bigger and water channels are longer
 - he received ase mandor (rice inkind) as fee from farmers now he must share the fee with WUA
 - rules and norms
 - learning from traditional subak

Water Master



Key person of WUA

Roles:

Traditionally distribute water

- wisdom in distribute water in shortage
priority and negotiation
- service fee
- how he get the position
- difference of roles before and after formulation of
WUA


Activities



- Derived Local wisdom of water master (Dec 2011- Mar 2012)
- Designed appropriate empowerment program for WUA (Apr – Sep 2012)
- Prepare Manual (June- Sep 2010)
- Implement empowerment program (2012-2014)
- Measuring indicators (physical and organizational) (2012-2015)
- Data Analysis (2012-2015)

Notes : baseline data survey is important for evaluation
trace back the development of irrigation area by using remote sensing data



 **SENDANG : KAMPILI**
MENSAIRI : 10.545 ha
DIREHABILITASI : Th.2004

THANK YOU VERY MUCH

Kampili diversion weir for irrigation (down stream of Jeneberang river, related to Bili-bili reservoir)