

Stories from Ciliwung, Citarum & Bengawan Solo River Banks in Indonesia

Community Flood Resilience



In partnership with



International Federation
of Red Cross and Red Crescent Societies

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Publisher

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resilience /rɪˈzɪljəns/ *n* **1** The capacity to recover quickly from difficulties; toughness; **2** The ability of a substance or object to spring back into shape; elasticity.

<https://en.oxforddictionaries.com>

Assalammu'alaikum Warahmatullahi Wabarakatuh,

Praise for Allah, that has blessed us so that this Community Flood Resilience (CFR) program success story book is finally finished.

CFR program has been implemented since 2013 in three major river systems in Java (Bengawan Solo, Ciliwung, and Citarum). The program tries to increase the community's tenacity and resilience in facing the impacts of flood through holistic intervention by using the resilience framework, based on five capitals (human, financial, natural, physical, & social).

It is actually the first time for Indonesian Red Cross Society (PMI) to collaborate with Zurich Insurance. A global insurance company that not only provided funding, but Zurich Insurance through Zurich Indonesia and IFRC also totally got involved in the whole process of implementing the program.

Armed with trust for each other, also strong partnership and very high commitment, the program has been completed well and successfully, also getting maximum results. The success of the program's implementation

are as follows. First, the increase of knowledge and community tenacity and resilience mechanism towards the impacts of flood. Second, the increase of effectiveness of disaster risk reduction solutions. Third, the availability of policies and regulations that support the efforts to build a flood resilient community innovatively and give sustainable solutions.

We are proud that even though the program is a global initiative, but the implementation has been very much bottom up. The program places PMI's SIBAT (or CBAT, Community Based Action Team) and the community as the prime actors with very strategic roles. SIBAT has been able to take the role as key actor that coordinates and builds awareness, concern, and real action on flood disaster risks and impacts.

Numerous evidence of the program's achievement have been enjoyed by the community and government, thanks to the efforts and

hard work of all the parties involved. The program's innovations have been proven and tested, providing real solution, which has been replicated in other villages and urban villages, sustainably.

This book presents the success stories of the CFR program, in whole and chronological, with testimonies from the parties involved and the community beneficiaries.

On behalf of the Central Committee of the Indonesian Red Cross Society (PMI), we thank and highly appreciate Zurich Foundation, Zurich Indonesia, and the IFRC for their financial and technical support, so the program can be successfully completed.

We also thank and highly appreciate the governors, regents, mayors,

also heads of villages and urban villages in all pilot program areas for their technical guidance and direction for the program implementors as well as SIBAT teams, so the program can achieve its goal as expected according to the framework and right on target.

To the writer who has been dutifully working hard in documenting the CFR program success stories, we also deliver our gratitude and appreciation.

It is our hope that this book can be a source of inspiration and a reference of learning for all to build resilience in the family, community, country, and nation.

*Wassalamualaikum Warohmatullahi
Wabarakatuh. ---*



Lt. Gen. (Retired) Sumarsono, S.H.

Chief of the Disaster Management Division
Indonesian Red Cross (PMI)

As the world's largest humanitarian network, the International Federation of Red Cross and Red Crescent Societies (IFRC) reaches annually more than 150 million people through the network of 191 National Societies and 169,000 local offices and branches rooted in the communities across the world. The IFRC partners with Governments, other humanitarian agencies, the private sector and the academia to supports the most vulnerable to be better prepared against adversities and disasters, and become more resilient.

Floods play a major role worldwide to erode the advances of community development. Given the scale of impact of floods globally, IFRC and Zurich Insurance joined scientists and practitioners from world leading institutions to better understand floods and develop community based innovative solutions to reduce their negative impact.

Indonesia is one of the countries that has spearheaded the partnership contributing to a wealth of learning and giving way to advocacy for better risk reduction policies and action at the national and international levels. The joint work of Palang Merah Indonesia (Indonesian Red Cross),

Zurich Indonesia and IFRC brought together complementary organizational skills and knowledge on community programming and humanitarian services, risk analysis and business solutions to provide effective solutions to flood prone communities.

The impact of the resulting activities is evident in 21 large communities along three main river systems (Ciliwung, Citarum & Bengawan Solo) in Java Island recurrently affected by major floods. Through tree plantation along river bank to prevent soil erosion, absorption wells and bio pore holes to facilitate quick absorption of flood water, evacuation centers to enable people to shelter safely in

time of flood, installation of safe water facilities, increasing community preparedness, setting up command post, radio and early warning system, the programme has contributed to increase community resilience.

The programme opened a window on innovation in flood resilience in Indonesia, showing a wealth of ideas and innovative approaches that were surfaced at the first ever innovation challenge for the IFRC; some of the best ideas have since been incubated. Let me also put the spotlight onto the innovative Flood Early Warning Early Action System (FEWEAS), a state of the art and highly accurate early warning system available for decision-makers and community members alike that

is proving successful to reduce the impact of floods on two main rivers, Citarum and Bengawan Solo, whose population in riverside communities rounds the 37 million.

This book is a testimony of the excellent partnership and the shared vision of PMI, Zurich and IFRC to contribute to better life conditions for part of the vulnerable population in Indonesia. It is an insight in the devotion and commitment of volunteers, staff, technical experts alike, and a renewed commitment to continue sparing no efforts in the future to build a more resilient Indonesia in a more resilient world. I look forward to the next challenges with hope, inspiration and renewed enthusiasm. ---



Giorgio Ferrario

Head of Country Cluster Support Team for Indonesia and Timor-Leste and Representative to ASEAN
International Federation of Red Cross and Red Crescent Societies

Five years have already passed since Zurich Insurance Indonesia (Zurich Indonesia) started the partnership with the Indonesian Red Cross Society (PMI) and the IFRC in implementing the Community Flood Resilience (CFR) program.

The partnership has been successful in carrying out community activities and giving satisfying impact to the community, as well as getting supports from various parties, such as the government, private sector, academia, also the community itself.

Zurich Indonesia, which is a general insurance company with expertise and experience in risk management, has also given its commitment to help the community in facing flood disaster, in line with Zurich's mission to help the community to understand and protect themselves from various risks.

In the partnership with PMI and IFRC, Zurich Indonesia is actively involved in implementing the program by contributing employees' time according to their expertises, knowledges, and experiences.

With the completion of the program implementation, the book is arranged with a goal to deliver the stories of the program implementation, starting from the beginning of establishing partnership in global and local levels, the roles of each partners and external parties, activities in the community, to the impact of the program to the community.

We hope the book can be a reference for all, especially private sector, to cooperate and collaborate in implementing disaster management program, especially flood disaster.

By unity, the community is resilient! ---



Wirahadi Suryana

Director of PT Zurich Insurance Indonesia



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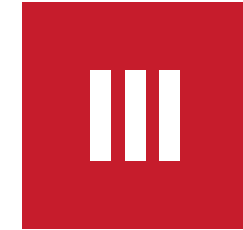
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Being Aware of Disaster

Alerting the Community

“If flooding is not resolved in the next 50 years, why not build houses on stilts and prepare boats?”

Seno Gumira Ajidarma in *Affair: Obrolan tentang Jakarta*, 2004

From time to time, flooding has become more complex. Almost every rainy season, there is news that flooding has inundated numerous areas in Indonesia. In some regions, there is an annual flood pattern, so during specific months communities prepare to encounter it. At Citeureup Village, Dayeuhkolot District, Bandung Regency, people partition their houses vertically (they call it “floor 1½”) to make room to store electronics when Citarum River overflows, which happens at least three times a year. At Tulungrejo Village, Trucuk District, Bojonegoro Regency, farmers are encouraged to delay rice planting so it will not be inundated by the overflowing Bengawan Solo, which occurs between December and March.

Flooding seems to be a routine disaster, so affected communities already have their own ways to deal with it. However, the measures they take are generally still a response to disaster, not yet a mitigation, prevention, or risk reduction. It is also still at the private level, not comprehensive nor well directed. After saving their own goods, residents usually just passively wait for donations from a number of institutions, both government and

private benefactors. Even when it comes, aid is sometimes unevenly distributed, so there are areas still untouched by donors, while others get such an abundance that the aid often gets wasted or sold.

Thus the irony: Flooding has happened time and time again, but is still not optimally anticipated whenever it happens. There are still obstacles, from bureaucracy, coordination, communication, to access to the affected areas. Problems related to flooding are also getting more and more complex. Other than that it is more widespread (areas previously not inundated are now affected), the flooding itself has worsened. The causes of which include high rainfall, unpredictable weather due to climate change, shift of absorption land function, to pollution, erosion, and siltations that disrupt the capacity and flow of the river. The impact of flooding has also become more complex, due to the growing population and many residents reluctant to be evacuated as the flooding occurs, or relocated from flood prone areas.

Besides flooding, Indonesia is actually prone to many disasters. It sits on a strategic position, located between two continents and flanked by two oceans. However, Indonesia is

Level 1½ — A resident in Bandung Regency divides the room in his house vertically to avoid the often occurring floods.

“We have been lulled for so long, that we live in country with rich resources and fertile soil. We were stunned when the tsunami hit Aceh in 2004. We only found out that we are living on the confluence of two plates, so we are prone to disasters.”

Lt. Gen (Ret.) Sumarsono, S.H., Chief of the Disaster Management Division of the Indonesian Red Cross (PMI)



also at the confluence of two active Earth plates, so although it is fertile, Indonesia’s land is not stable. From 2005 to 2014, there were 141 major disasters causing losses of US\$ 11 billion (Rp 150 trillion)¹. “We have been lulled for so long, that we live in country with rich resources and fertile soil. We were stunned when the tsunami hit Aceh in 2004. We only found out that we are living on the confluence of two plates, so we are prone to disasters. Indonesia is a disaster supermarket, we have all kinds of it,” said Lt. Gen. (Retired) Sumarsono, S.H., Chief of the Disaster Management Division of the Indonesian Red Cross (PMI).

It was in the midst of such a situation that the PMI implemented the program Community Flood Resilience (CFR), with support from the IFRC and Zurich Insurance Group (Zurich). The program seeks to build and improve community resilience in encountering disasters, especially floods, so as to reduce the risks and losses incurred.

The CFR program was implemented in seven regencies flowed by three rivers in Java, covering upstream, midstream, and

¹ <http://www.rcrc-resilience-southeastasia.org/community-flood-resilience-project-a-partnership-of-palang-merah-indonesia-ifrc-and-zurich-insurance/>



Location of
Community
Flood
Resilience
in Indonesia

downstream areas, namely Bogor Regency and South Jakarta City (Ciliwung River), Bandung and Karawang Regencies (Citarum River), Wonogiri Regency, Surakarta City, and Bojonegoro Regency (Bengawan Solo). These seven regencies are spread out among Jakarta Province (South Jakarta), West Java (Bogor, Bandung, and Karawang), Central Java (Wonogiri and Surakarta), and East Java (Bojonegoro). In each regency, PMI with Zurich Insurance Indonesia and IFRC Indonesia selected three villages to be assisted by the program.

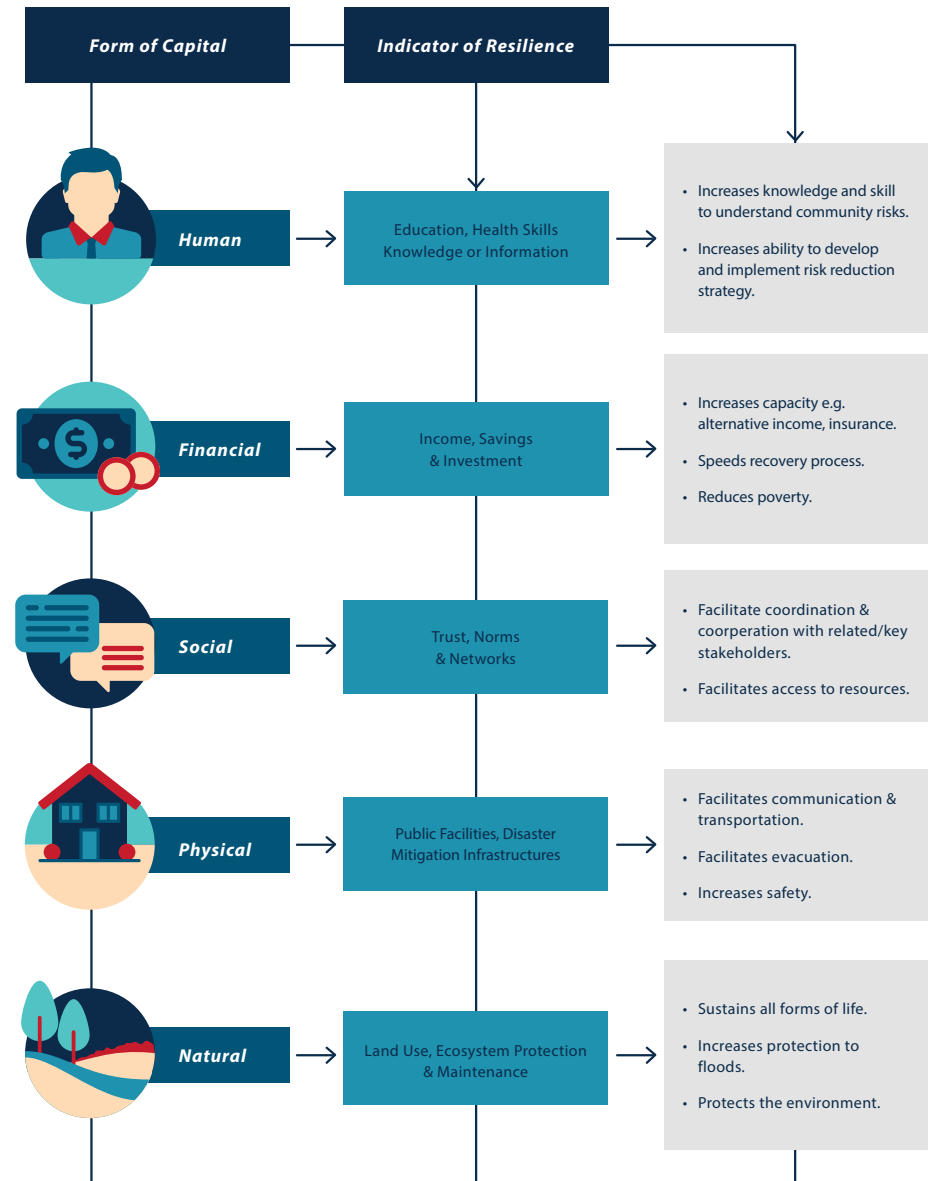
The main purpose of CFR is not to eliminate the flooding, but rather to strengthen the community's resilience. The program was implemented for approximately three years in each area, increasing the communities' understanding of and resilience towards floods, improving the effectiveness of disaster risk reduction solutions, and influencing policy makers and donors to make disaster risk reduction policies. To achieve its goals, CFR seeks to make a comprehensive intervention to improve the communities' resilience using the five capitals approach, namely human resources (education, skills, health), social (network, access to information, norms), natural

resources (land use, river ecosystem protection and maintenance), physical (public facilities, disaster mitigation infrastructure), and financial (income, saving, investment).

With emphasis on community, the main milestone of the program is the involvement of the community itself as volunteers. Initially PMI formed SIBAT (Community Based Action Team) with 30 members who are representatives of various elements within the community, like village administrators (RT and RW), organization activists (Karang Taruna, PKK, etc.), as well as other community figures. After undertaking trainings, while continually assisted by PMI, SIBAT volunteers then run the activities outlined in the program, from baseline survey, risk mapping, vulnerability and capacity assessment, planning and implementing flood risk reduction activities, to endline survey.

Results from risk mapping, baseline survey, and vulnerability and capacity assessment serve as a reference for the preparation of flood risk reduction activities, while also considering input from and the needs of the community. Therefore, in addition to aid packages in the form of public kitchen utensils, evacuation signage and equipment, and a command post with equipment

5 Capital Based Resilience Framework



“The main purpose of CFR is not to eliminate the flooding, but rather to strengthen the community’s resilience.”

to support SIBAT volunteers’ activities in all assisted regions, the implementation of the program in each region is not the same. For example, urban midstream or downstream areas like South Jakarta and Surakarta hold hydroponic or vertical planting because of each region’s limited land availability for reforestation. Such planting methods are not necessary in the rural upstream areas like Bogor and Wonogiri, as land is not scarce there. Moreover, hydroponic does not help with land conservation and erosion prevention, which are bigger issues there.

To ensure the long term sustainability of the program, since the beginning PMI has cooperated and coordinated with related institutions such as the local government in each village, district, and regency, as well as with the regional disaster management agency (BPBD), river management body (BBWS), local environment protection agency (BLH), and universities. Results from the program, like the SIBAT team, temporary shelter houses, clean water facilities, evacuation equipment, and public kitchen utensils are handed over to each of the community and village governments. Thus, even when the program period has ended, the activities outlined in the program will not be in disarray, but can instead continue to progress and be developed, according to the needs of the community.

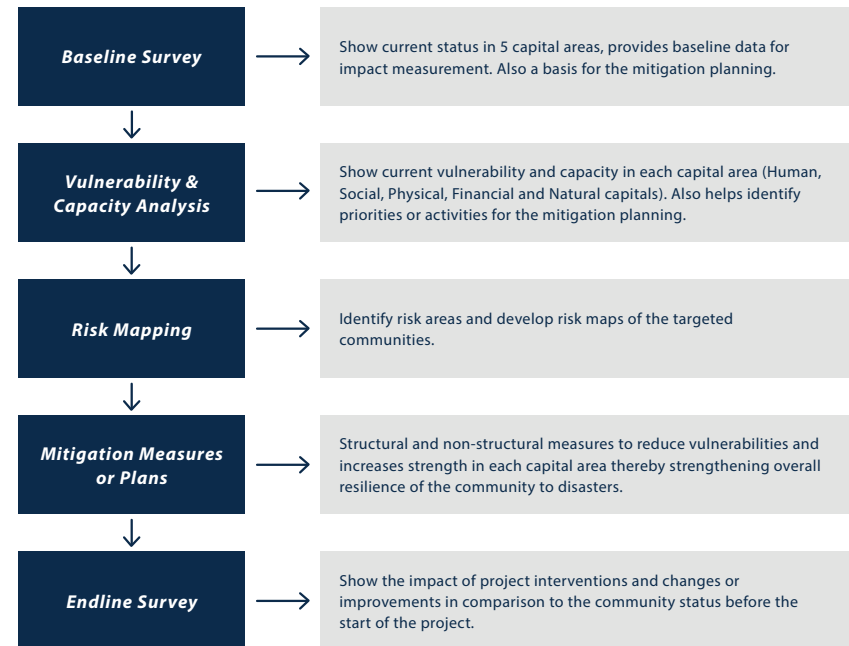
Community Based Action Team

Disaster events cannot be avoided. What can be done to anticipate them is to reduce the risks as much as possible, be it the reduction of victims, injury and life, as well as material loss. “Disaster mitigation is the responsibility of the government

through BNPB. We have good infrastructure, good human resource, Satgana, Tagana, Basarnas, among others. Communities are then rather forgotten. This program is working on the community,” Sumarsono explained.

H. Muhammad Muas, S.H., Chief of the Volunteer Division of PMI, added that in the CFR program PMI conducts a comprehensive approach with the community. SIBAT recruitment is a manifestation of the involvement of all community elements, even the lowest level, which

Community Assessments



A SIBAT volunteer marks the flood water level.

“Changing attitudes is not easy, because PMI does not have funding. Our approach is not by carrying an amount of cash, not by bringing something incredible, but with confidence.”



H. Muhammad Muas, S.H.,
Chief of the Volunteer Division
of PMI

in time will be returned to the government to be developed further. “But all those without convincing the community to work together selflessly as the foundation will not be easy,” said Muas. “Changing attitudes is not easy, because PMI does not have funding. Our approach is not by carrying an amount of cash, not by bringing something incredible, but with confidence. Let us together build something that is already in a concerning state. Because people feel left behind and abandoned.”

Surakarta City Secretary, Budi Yulistianto, also wants to change the community’s attitude. “Before there was SIBAT, we also had formed river clean-up groups, and so on. It is a pioneering effort to change



the community’s attitude, we start with that. The municipal government hopes that the SIBAT teams which are already formed in these three villages can be replicated in other villages, by utilizing volunteers who have similar concerns. It is our hope that with the formation of SIBAT teams they can respond early, not just wait for disasters to happen.”

PMI has volunteers with different specialties. For the CFR program, PMI wants to recruit volunteers with corresponding capability, in order to build the community’s resilience. SIBAT volunteers are recruited from the community and mostly are older adults, considering that they have influence in their community. This consideration is important to en-

“The municipal government hopes that the SIBAT teams which are already formed in these three villages can be replicated in other villages, by utilizing volunteers who have similar concerns.”



Budi Yulistianto, Surakarta
City Secretary



SIBAT volunteers are prepared, concerned, and resilient.

“During a real time disaster, the first to be able to respond and save the community is the community itself.”

sure the sustainability of the program and of SIBAT itself. “We chose those who, at least, have the capital to mobilize the community, can link to the development of the local village,” said Arifin M. Hadi, Head of the Disaster Management Division of PMI.

Chief Executive of BPBD Central Java Province, Sarwa Pramana, also stresses the importance of mobilizing the community and synchronizing with other institutions. Related to disaster preparedness, PMI has the SIBAT program, while BPBD has

the Resilient Village program and Social Services agency has the Alert Village program. The three programs are expected to go hand in hand. In accordance with the mandate of the state law UU No. 24/2007 about Disaster Management, BPBD is an authorized institution to coordinate the implementation of disaster management in a planned, integrated, and comprehensive manner, assisted by all communities and volunteers, including PMI’s SIBAT. “During a real time disaster, the first to be able to respond

and save the community is the community itself,” he said.

The community’s acceptance is also important. Members of the community are expected to get involved voluntarily for the common good, not because they feel compelled by the program. With this voluntary foundation, SIBAT members are recruited by involving all elements of the community. The SIBAT team is indeed not expected to act on its own, whether in implementing the activities related to the program or in emergency response in the event of a disaster, but rather to take on the role of a booster to enable the community to become resilient, through partnership with other institutions.



Sarwa Pramana, Chief Executive of BPBD Central Java Province

Establishing Partnership

Building Resilience

On a higher level, the CFR program is implemented from PMI's partnership with IFRC and Zurich. Zurich is the initiator and funder of this program, which at the same time also gets involved in actively contributing its expertise in risk management, as an insurance company whose mission is to help its customers to understand and protect themselves from various risks, including of flood disaster.

However, Zurich does not have the capacity to reach out to the community, which is why Zurich connects with IFRC. With influence on a global scale, IFRC is considered capable of reaching out to the community, even the most vulnerable. IFRC becomes an international coordinator which links Zurich with local implementing partner, such as with PMI in Indonesia.

PMI is embraced, apart from being a member organization of the IFRC, because it is considered reliable, with good organization and good capabilities, and a good network across Indonesia. Surendra Kumar Regmi, Disaster Risk Reduction Flood Resilience Delegate from IFRC, stated, "When it comes to disaster response, PMI has all the required resources to mobilize the community, also good social acceptance."

The CFR program actually kickstarted in March 2013, but it took up to 18 months to conduct all the necessary research and build trust among the parties involved. Surendra said that one of the difficulties that arose is a difference in perception, which comes from the different nature of each involved organization. Zurich is a private company running a business, while the IFRC and PMI are

nonprofit humanitarian organizations. Other challenges are bureaucracy and formalities among different institutions, which often take quite a while in each step of the program implementation.

In addition to the IFRC and PMI, Zurich also embraces three other parties to contribute their research to be used as a guidance to the program. The first is Practical Action, an international NGO based in Warwickshire, UK, which focuses on the use of technology to solve poverty problems in developing countries. Practical Action gives technical innovation advice to understand the impact of climate change on floods and to improve the livelihood of the poor. Help provided by Practical Action includes measures in anticipating flooding, including early warning systems, flood-resistant housing and well, efforts to reduce river erosion, and livelihood diversification so that the community still has income during a flood.

The second is Wharton Risk Management and Decision Processes Center, University of Pennsylvania, US, which uses basic and applied research to influence company and public policy in dealing with natural and man-made disasters. The third, International Institute for Applied Systems Analysis (IIASA), a scientific

research institution formed in 1972 in Austria, is policy-oriented and focuses on global problems too large or too complex for a single country or a single discipline to deal with. Wharton and IIASA conduct research and action modeling to increase understanding about floods.

This interorganization and international cooperation to build resilience in encountering floods is not only implemented in Indonesia, but also in Mexico, Peru, and Nepal. David Nash, Z Zurich Foundation Manager, reveals that Indonesia was selected as one of the countries as-

sisted in the program because it is one of the most heavily impacted by flooding. On the other hand, Indonesia has an interesting environment, both in terms of landscape and community. Zurich, through Zurich Insurance Indonesia is well-established in the country and is committed to being actively involved in contributing to the community in this CFR program.

Densely populated area on the banks of Ciliwunt River, South Jakarta, is one of the areas impacted by floods.



Zurich Insurance Group

Zurich is a leading insurance provider serving customers in local and global markets, which was established in 1872 in Zurich, Switzerland. With approximately 53,000 employees, Zurich provides a range of insurance services and products, covering general and life insurance in over 120 countries and territories. Zurich's customers include individuals, small businesses, medium and large companies, as well as multinational corporations. To help customers understand and protect themselves from risks, Zurich identifies the risks to understand the emerging risk and help customers avoid or minimize it.

With the increasing occurrence of severe flooding worldwide, which is estimated to affect up to 250 million people every year, the world, including Zurich, gives greater attention to the effort to find practical

steps for flood risk management. The CFR program aims to increase understanding, build expertise, and devise executable strategy to help communities in developed and developing countries strengthen their resilience in encountering flood risks. To achieve this, an approach that links scientific insights with the skills and knowledge of the humanitarian sector, by establishing long-term cooperation between the public and private sectors, humanitarian organizations, NGOs, and academia, is needed.

For Zurich, flooding is the biggest issue in risk management because it is a natural hazard that causes the biggest destruction and affects the most people, compared to other natural hazards. "Through this program, we intend to look at community level, how they deal with disaster and how we can convert

the negative impacts of floods into something positive. By increasing community resilience, the community is better able to manage the flood impacts and continue to thrive," said David.

As a global insurance company, Zurich has developed a resilience model with innovative pre-disaster mitigation measures to help less fortunate communities protect themselves from flood impact. Zurich emphasises pre-disaster mitigation, because until now disaster management has always focused more on emergency response after the event has taken place. "Building resilience is more effective than disaster response," said David.

International Federation of Red Cross and Red Crescent Societies

IFRC is a network of humanitarian organizations with the largest volunteer base in the world, reaching 150 million people every year through its 189 National Society members. Together, the federation that was established in 1919 in Geneva, Switzerland, acts before, during, and after disasters and health emergency situations, to meet the needs and improve the livelihood of the vulnerable

people. Upholding neutrality, IFRC does not have race, gender, nationality, religious belief, social class, or political opinion preferences.

IFRC's work covers four main areas: promoting humanitarian values, disaster response, disaster preparedness, as well as health and community services. In the CFR program initiated by Zurich, IFRC, with its deep expertise in disaster preparedness, will help to achieve significant impact towards communities of flood risks, and help reduce devastating effects and optimize community impact towards the program.

IFRC takes the role as the global connector in implementing the program among communities, bringing together Zurich, which has expertise in risk management, and PMI, which has expertise in community development by going directly to the community. Surendra said, "The key thing in this program is utilizing the best expertise of each organization and producing the biggest impact."

For IFRC, the CFR program is not only about increasing the resilience of communities in disaster prone areas, but also influencing policy makers. After running

"Building resilience is more effective than disaster response."

David Nash, Manager of Z Zurich Foundation



“The key thing in this program is utilizing the best expertise of each organization and producing the biggest impact.”



Surendra Kumar Regmi,
Disaster Risk Reduction
Delegate, IFRC

for five years, from preparation, research, to its implementation in 21 assisted villages, handing over the program to the local government has been planned since early on as an exit strategy. Surendra added, “As an NGO, we cannot do much here. Basically, our main target is to influence the government or private sector to take over our project or to replicate the program in other places.”

Indonesian Red Cross Society

The Indonesian Red Cross Society (Palang Merah Indonesia/PMI) was founded on 17 September 1945, although its preceding organization, Nederlandsche Rode Kruis, afdeling Indië, had been established in 1873 by the Dutch colonial government. Formed in the midst of turmoil in Indonesia’s revolution for independence, PMI’s first task was to help Indonesian war victims, as well as return victims and prisoners of war both from the Allied and Japanese forces. PMI has gained international recognition since 1950 and up until now its network has spread in 34 provinces and 408 cities and regencies across Indonesia.

PMI has four main duties, namely disaster aid and mitigation preparedness, first aid training for volunteers, community health and welfare service, and blood transfusion service. In carrying out its tasks, PMI upholds the seven fundamental principles of the Red Cross and Red Crescent movements, which are humanity, voluntary service, neutrality, impartiality, independence, unity, and universality. PMI has been widely acknowledged as a humanitarian organization capable of providing effective and efficient Red Cross services, especially

to those who need them most, with the spirit of neutrality and independence.

Although it is more popular with its blood donation service, PMI is also concerned with disaster. “Perhaps we lack in socialization. The media also rarely publishes [our activities]. PMI actually has worked in disaster for a long time. People know PMI only serves blood transfusion, or they may now know that we respond to disaster, too. But PMI is also active in in pre-disaster mitigation and post-disaster rehabilitation. Currently in Pidie, Aceh, for instance, we are still working [on post-2004 tsunami rehabilitation]. Other organizations have left, only PMI, by itself, remains,” said Sumarsono. “In pre-disaster mitigation, we give trainings, develop our organization, and train volunteers, so when a disaster strikes, we can all be ready.”

In strengthening the community’s capabilities in encountering floods, which is the CFR program’s main activity, PMI encourages the formation of SIBAT on the village level and formulates village regulations that support mitigation efforts and training for local community. David considers SIBAT a good idea that is key in strengthening the community’s capacity. This social

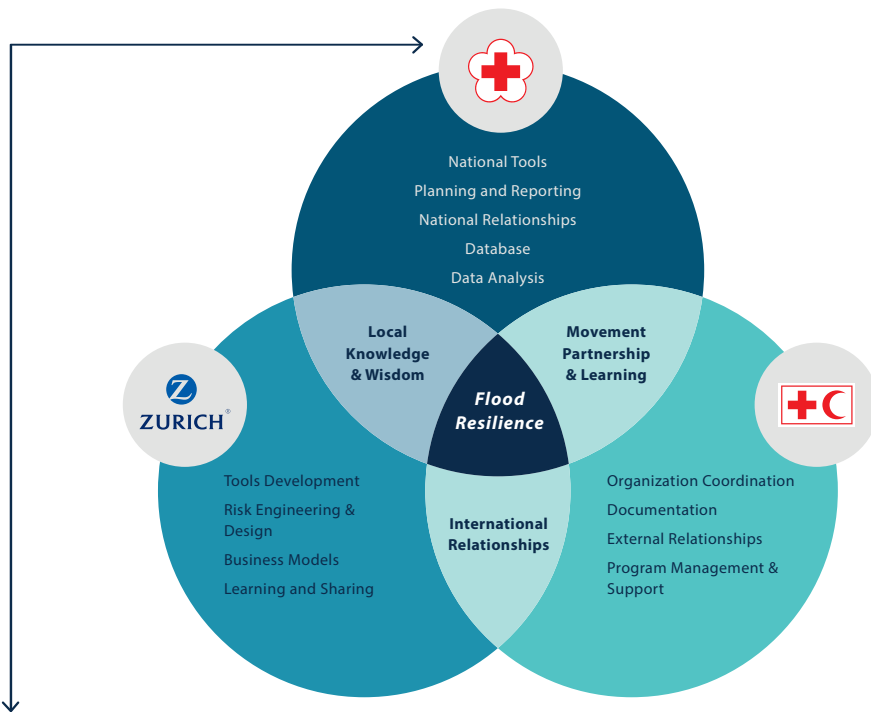
capital is SIBAT and PMI’s power in building community awareness towards disaster through advocacy with a level of sensitivity impossible for foreign agencies to achieve. It is not surprising that SIBAT works well everywhere.

CFR Program Design

The CFR program was initiated by Zurich Insurance Group. During the 2012 meeting of the Global Alliance for Disaster Risk Reduction in Geneva, Switzerland, Zurich expressed its intent to contribute to establishing international best practices cooperation that can be adopted in other countries. IFRC, which was part of the global alliance that was previously formed during World Disaster Reduction Day 2007, at that time was appointed as an intermediary. “The Federation, which is the parent organization of PMI, is expected to bring good examples that are applicable to other parties,” said Arifin.

Arifin explained, there are numerous goals that the program tries to address. Besides building interorganizational partnerships, PMI is also conducting evidence-based studies that serve as a reference in planning the program and, through

3 Organizations Partnership



Cooperation with External Parties



Bandung Institute of Technology (ITB)



Government



Bogor Agricultural University (IPB)



Plastic factory & water company

the aforementioned partnership, implementing the program to reduce the impact of flooding, including utilizing innovation based on local knowledge in contributing to effective solutions.

In its implementation, the program is expected to become an advocacy material to influence policy makers, both at the regency level and national level. “PMI has done it, from our studies in these three rivers, we can influence the public works agency, the river management agency, and the water management agency to create an app, FEWEAS. Nationally, we hope this can at least be a model that can be replicated in other river systems. We are hoping to share the results from this five-year program to other countries,” said Arifin.

The established partnership is also rather unique. According to Arifin, donors usually only give money to PMI, then PMI runs the program. In the CFR program, Zurich, as funder, also participates in monitoring and even gets involved in field work. In implementing the program, Zurich Insurance Indonesia deploys a risk engineering team consisting of expert engineers who assist PMI with innovations.

The program has a technical team, consisting of Arifin Muhammad Hadi as Head of Disaster Management Division and Teguh Wibowo as Project Manager from PMI, Arfik Triwahyudi as Project Coordinator from Zurich Insurance Indonesia, also Surendra Kumar Regmi and Rizaldi Ilyas from IFRC. The team acts together to give technical support for PMI branches in the assisted regencies and cities. “It is actually bottom up. The central committee only provides technical support. The decision comes from below and not one thing comes suddenly. The manifestation is not up to us. Everything is planned at the bottom level. We approve as far as it is good for each local environment,” said Arifin.

Arifin mentions that the palm planting in Wonogiri resulted from the risk assessment conducted by local university, UNS. Insofar as it can reduce erosion and generate income for the affected community, the technical team will approve. The technical team will then give input about the innovations that can be done at community level and require intervention from the central committee. “We are working with the national level partnership because we coordinate what is ongoing at

“It is actually bottom up. The central committee only provides technical support. The decision comes from below and not one thing comes suddenly. The manifestation is not up to us. Everything is planned at the bottom level.”



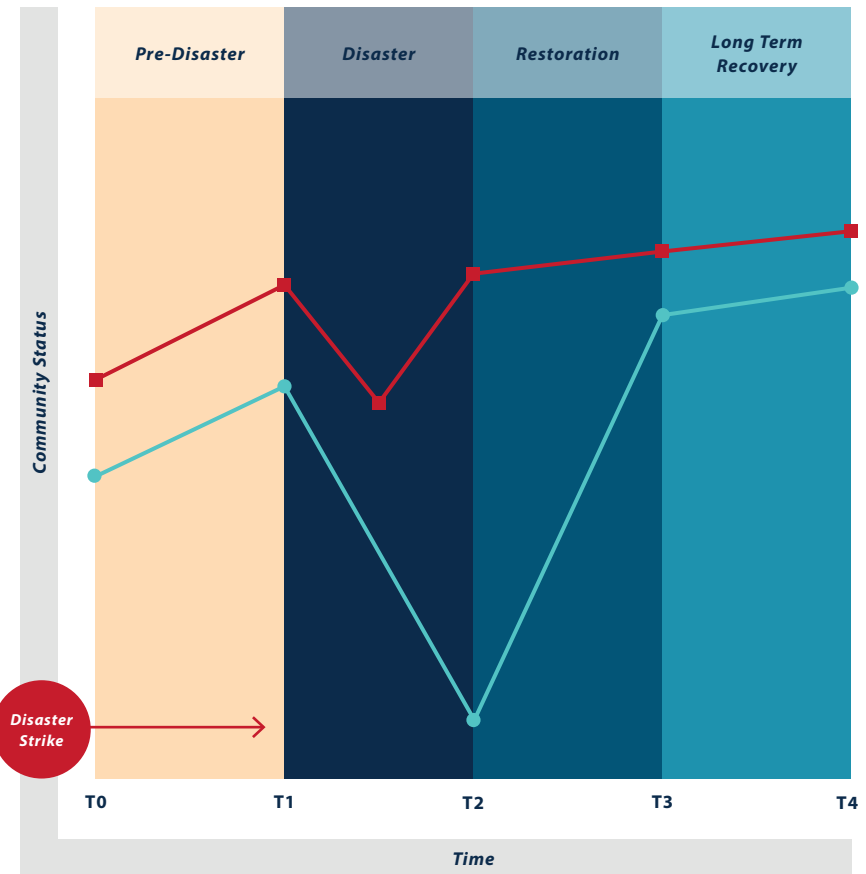
Arifin M. Hadi, Head of Disaster Management Division of PMI

the bottom to national level, we bring the issue to National Disaster Response Agency. To connect with the national level regulation, we invite the Ministry of Health, we also invite Ministry of Internal Affairs, so the village heads can facilitate the program under their authority. Also the Ministry of Public Works and the Ministry of Human Development, and others,” he added.

The government is involved in risk assessment because it is responsible to its people, including the lowest level government. The village head is the main driving force as well as the facilitator of SIBAT. At the regency level, PMI also coordinates with the regency government, the regional development planning agency, the social services agency, the health agency, and so on. Risk management assessment should cover three things, namely disaster risk reduction, climate change adaptation, and sustainable development goals. All three need to be done with three key aspects, which are partnership, innovation, and solutions. “We will advocate the results into policy at all levels so it will all be completed,” said Arifin. “The program is not just about the three villages in each regency, but we are considered successful if we can advocate or provoke the government. Local government will develop further and nurture more innovations. We expect that to be sustainable,” Sumarsono added.

So perhaps now we can answer the question posed by Seno at the beginning of this chapter, that we are indeed preparing ‘houses on stilts’ and ‘boats’ in dealing with and getting accustomed to the flooding that often hits. Community flood resilience is our ‘houses on stilts’ and ‘boats.’ ---

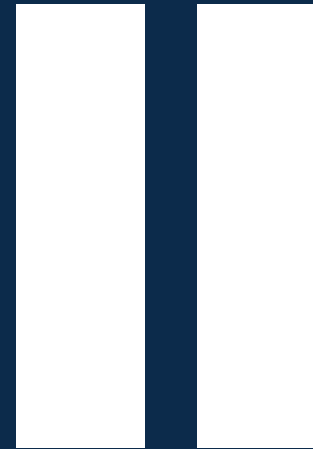
A Resilient Community



Resilient Community
Less Resilient Community

Community resilience is the capacity or ability of a community to anticipate, prepare for, respond to, and recover quickly from impacts of disaster.

Source: Adopted from the “Basic Frameworks for Understanding Disaster Risks and Community Resilience” a conceptual guideline prepared by Surendra Regmi, October 2014.



Bogor Regency

Upstream Ciliwung

Aldi Al Fauzi, a 20-year-old graduate of hospitality vocational school, is a garbage collector in Tugu Utara Village, Cisarua District, Bogor Regency.

Every Monday, Aldi and some of his friends go to the houses and villas around the Puncak area to pick up the trash. They then sort the garbage; plastic waste is separated to sell to collectors, while wet waste is piled at a temporary dump. Garbage trucks from the public works agency pick up the wet waste twice a week and transport it to Galuga landfill.

The garbage collecting service was initiated by local youths about five years ago, while Aldi has been doing it for the last three years. “Since when we were at school, we often asked ourselves what to do with the trash in a tourist location like this. So, young people here started to collect the trash,” says Aldi. For the services they provide, the youths collect voluntary contributions from the residents, from which they pay the Rp 500,000–1,000,000 fee for the public works agency every two weeks, depending on the amount of waste they transport. “We then share equally whatever remains of that money,” adds Aldi.

The amount of money they get is only around Rp 20,000–50,000 per person each month. To make ends meet, they have other jobs. Some work as construction workers, some do odd jobs. Aldi is a DJ, who has been invited a few times to play the turntable at some venues or events in Puncak and surrounding areas. The most he gets from performing is Rp 500,000, but that is not fixed. Meanwhile, Hari Hidayat, 22, is a rafting guide. He takes every Monday off so he can collect garbages with Aldi.

Other than being garbage collectors, Aldi and Hari are also SIBAT volunteers in Tugu Utara.

“Since when we were at school, we often asked ourselves what to do with the trash in a tourist location like this. So, young people here started to collect the trash.”



Aldi Al Fauzi (20) & **Hari Hidayat** (22), garbage collectors and also SIBAT volunteers in Tugu Utara.



They were recruited in 2016, a little more than a year after the team was formed at the end of 2014, as part of the implementation of the CFR program, run by PMI in collaboration with IFRC and Zurich Insurance Indonesia. In Bogor Regency, the program has been implemented in three villages located on the upstream of the Ciliwung River, which are Tugu Utara Village in Cisarua District, and Cipayung Village and Pasir Angin Village in Megamendung District. In its implementation, garbage management has become a prominent activity in Tugu Utara.

A Ciliwung That Is Free of Garbage

In addition to the routine schedule of collecting residents' garbage, Aldi and Hari, along with other SIBAT volunteers, also have weekly duty roster at the Waste Processing Unit (UPS) Tugu Utara Village, at Sukatani kampong, not far from the springs of the Ciliwung. The land where the UPS is built belongs to a member of SIBAT who lives next door, so he can also guard the UPS as there was a theft once. Here at the UPS, plastic waste is minced using a chopping machine. "We usually just clean the place, since the machine is



only turned on when we have enough plastic bottles to be chopped," says Hari.

The UPS building and plastic chopping machine, also the motorcycle cart that Aldi and Hari use to pick up trash, are supports from the CFR program in Tugu Utara. "Before we got the motorcycle cart, we used to pick up the trash with our own



motorcycle. Every round we could only take two or three trashbags, so we needed to make up to twenty rounds. With the motorcycle cart, we can take 15 trashbags every round, so we only need to make three rounds, from the upper area, middle area, and lower area. More practical and time saving," says Aldi.

That kind of support did not just come, but was based on a proposal from the community. After it was formed and given training, SIBAT made a survey and mapping in order to determine suitable activities in implementing the program. Besides taking into account the vulnerability and capacity of the village based on the assessment, opinions and input from the community were also heard and taken into consideration.

Issues of waste surfaced. Waste accumulation once clogged the water channel, causing flooding during heavy rain in Tugu Utara and Pasir Angin. The Puncak area, having many hills and a cool breeze, has long been known as a popular tourist destination, particularly by residents from the capital Jakarta. The large number of tourists who visit and stay in the numerous villas scattered around the area has caused waste, especially plastic, to accumulate, especially on weekends.

Even so, inspiring the community's awareness to keep clean and manage their waste is not as easy as

Activities at waste processing unit, Tugu Utara (upper left-right). Volunteers collect the garbage using motorcycle cart supported by CFR program (lower left). A handcraft made from plastic waste (lower right).

turning the palm of the hand. “It is very difficult to change the mindset of the people. In the beginning they told me, why bother, there are many scavengers and garbage collectors anyway,” says Winda Nurhayati, 49, a SIBAT member who pioneered waste processing activity in Tugu Utara. Before there was waste counseling, many residents threw their garbage carelessly, even into the river.

“The Puncak area has long been considered a garbage sender and cause of flooding. Deep in my heart, I feel angry, so I want my village to be clean of garbage. Personally I already sort and process my garbage, but maybe our neighbors and our friends do not do the same. I want to change people’s mindset about garbage and how to throw it away, that garbage can be processed into something that has worth economically,” says Winda, who had been active in community service for more than a dozen years prior to joining SIBAT.

Seeing the amount of plastic waste in her neighborhood, Winda proposed a waste management activity to the head of SIBAT at Tugu Utara. Given the green light, Winda asked her friends and neighbors to join her. Although declined in the beginning, Winda kept trying to approach and persuade the

community. At home, Winda sells daily necessities and fried rice. Her sales leave plenty of plastic packaging from instant coffee powder, which she collects and transforms into many kinds of crafts. She showed the resulting crafts to her neighbors, who gradually became interested and followed her steps.

After running for about a year, two neighborhoods in Tugu Utara have joined in sorting their garbage, with the activity managed by SIBAT volunteers. “Plastic packaging from instant coffee, instant noodles, and cooking oil can be used to make flowers, carpets, rugs, and bags, among others. Then, old newspapers can be used to make flowerpots and trays. Some are for sale, some are used by the residents as collection,” Winda explains. Harder plastics, like water bottles and cups, are chopped using the chopping machine, then the flakes are dried and sold to collectors. Sales proceeds are then saved and used for social and community activities, such as National Day celebration and charity for elderly residents.

Inter-institutional Cooperation

Tugu Utara, Cipayung, and Pasir Angin have been chosen to be assisted

“I want to change people’s mindset about garbage and how to throw it away, that garbage can be processed into something that has worth economically.”



Winda Nurhayati (49), a member of Tugu Utara SIBAT

by the program, aside from their vulnerability to floods and landslides, also considering the acceptance of the village authority and the community towards what the program has to offer. Other considerations include the characteristics of the community, taking into account the village profile and recommendations from the district authority. “There were other villages that have also been considered, but the residents’ time availability was not possible [for the program]. Most of the residents work outside their home, so they would not be able to be involved in the program, such as community participation and socialization, so we did not choose those villages,” says Muhtadin, 27, CFR Field Coordinator for Bogor Regency.

The role of each neighborhood and hamlet administration is also reviewed as an indicator in village selection. “Even with support from the village authority and good acceptance from the community, if the neighborhood and hamlet administration do not cooperate, the program can go nowhere,” says Muhtadin. “The sustainability of the program has also been discussed since early in the beginning with the village authority: that the program is planned to run for three years and, after that, would be transferred to the village head to continue, with a strategy and system that we have also discussed together.”

From the beginning of the program, all information related to CFR is presented as clearly as possible to the village and community. Baseline survey, risk mapping, and vulnerability and capacity assessments are described in each of their phases, functions, objectives, and benefits. By analyzing mapping results, action and mitigation plans are

“The sustainability of the program has also been discussed since early in the beginning with the village authority: that the program is planned to run for three years and, after that, would be transferred to the village head to continue, ...”



Muhtadin (27), CFR Field Coordinator for Bogor Regency

made, which are then discussed again with the village authority, so the plans do not overlap with the village development plans. For instance, if the village has planned to make absorption wells, PMI will not mitigate to make absorption wells. PMI would make other disaster risk reduction innovations to complement the village program.

To harmonize inter-institutional coordination so as not to overlap, PMI has drafted a contingency plan. Should a disaster take place, which institutions should take roles and what roles each should take. For example, SIBAT will handle healthcare issues, while Satgana (disaster response task force) will handle evacuation, and so on. Afterwards, PMI also suggests that policy makers recognize SIBAT as an official village-level institution through a village decree. Muhtadin says that, in principal, the village cannot refuse, as it has a budget for it and is responsible for cadre regeneration in its area, such as in disaster and healthcare issues, which are part of SIBAT’s activities.

Muhtadin explains, the recruitment of SIBAT in each of the three assisted villages intentionally involves various existing elements, namely village officials along with hamlet and neighborhood administrators; members of village-level organizations like BPD, LPM, PKK, Karang Taruna, Linmas, even Pemuda Pancasila; as well as other community figures. The recruitment of cadres is expected to help the acceptance of SIBAT and other activities outlined in the CFR program by the community, while also strengthening the social capital that knows and is known by the community. The wives of the Cipayung Village head and the



Pasir Angin Village head are also involved as chief and treasurer in each village’s SIBAT, respectively.

In addition to disaster-related activities, SIBAT also participates in village activities. SIBAT members were ready on the sidelines of the field when Tugu Utara held a village soccer competition in January 2018. Armed with trainings provided by PMI, they were ready to provide first aid should an accident happen in the middle of the match. Nur Aisyah or Rere, 40, a member of SIBAT in Tugu Utara, adds, “SIBAT also takes part in community work to clean the Ciliwung River on the fifth of every month, along with the hamlet and neighborhood community, and the eco village community.

In Tugu Utara, SIBAT volunteers planted 1,500 lemon, guava, mahogany, and kadam trees, which in addition to preventing landslides, can also

Creating biopore infiltration holes with employees of Zurich Indonesia in Tugu Utara (above). Tree planting by SIBAT in Tugu Utara (below).



be harvested by the community. SIBAT members also made 500 biopore infiltration holes on roads and homes, which can help increase water catchment to prevent flooding and help turn organic waste into compost. Village authorities facilitate SIBAT with a command post on each village administration complex, while PMI supports them with radio communication devices in the form of

five handheld transceivers and one rig for each village.

Resilient SIBAT

After running for three years, some activities outlined in the CFR program have shown good results in the community. The waste sorting and processing program, for instance, which was started by Winda

Nurhayati is now done by people in two neighborhoods. Two neighborhoods may not mean much, the sale proceeds are not much as well, but to get there, Winda's patience, persistence, and tenacity have really been put to the test, both personally and as a member of SIBAT.

Winda admits, "At first there were negative comments as well. Economically, I'm not really unfortunate. So

many people asked me, why bother collecting garbage. Even my ex-husband at that time also asked me, why are you scavenging garbage. But that's fine, I just go along. *Alhamdulillah* I wasn't embarrassed, there's no reason for that anyway. After all, the community can also benefit from it. If our intentions are good, Allah will give way."



Radio – SIBAT members using communication radio (left). Communication radio supported by CFR program at SIBAT command post in Pasir Angin (right).



“SIBAT also takes part in community work to clean the Ciliwung River on the fifth of every month, along with the hamlet and neighborhood community, and the eco village community.”

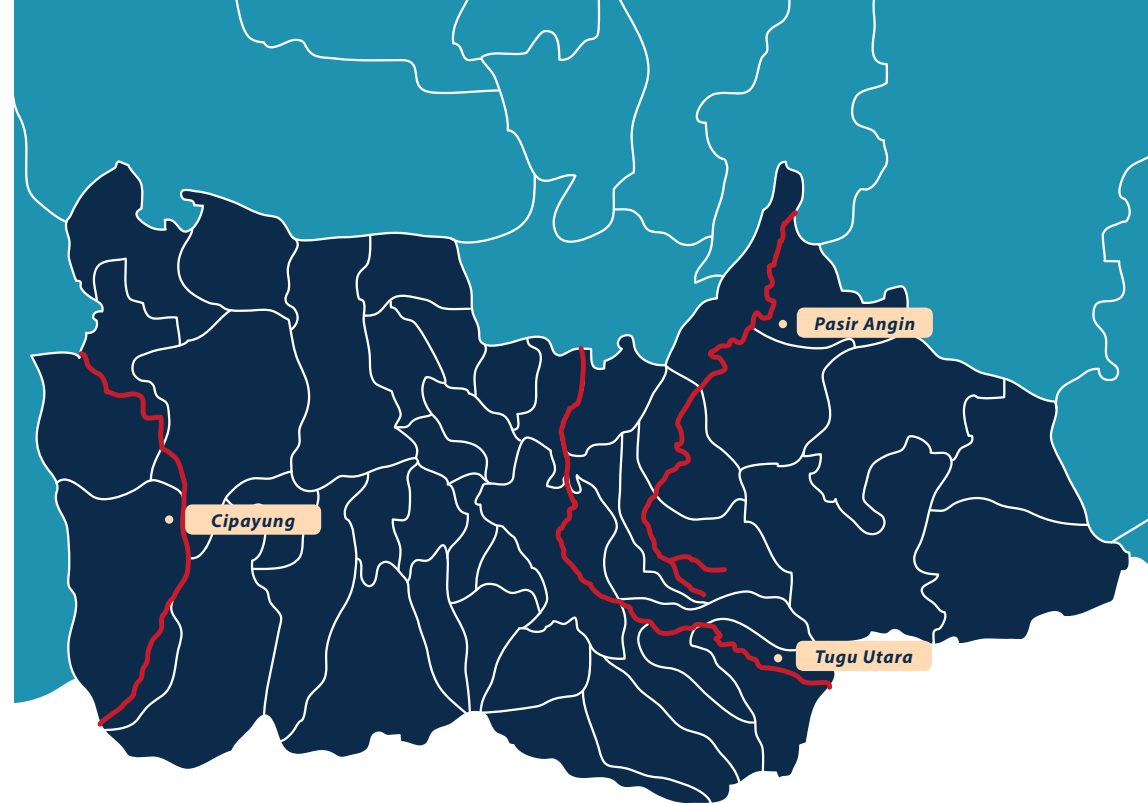


Nur Aisyah (Rere) (40), a member of Tugu Utara SIBAT

Negative comments were once also addressed to Aldi, who has known Red Cross activities since he joined Teen Red Cross in his vocational school. “Many people asked me why I joined SIBAT. There is no money, it is better for me to work instead. I said to them, it’s my choice. It’s my calling. I want to work in a social [field].” He does not feel ashamed as well, working as a garbage collector even though he has a good education and works as a DJ. “There is no reason to be embarrassed. Alhamdulillah my girlfriend is also not embarrassed. She often hangs out here with us, and sees what I do. My family also supports me. It is beneficial for the community, and is done by local youth.”

Rere also shares her reason for joining SIBAT, “I once had a relative who was giving birth, as the baby was delivered, the birth chord was left inside the womb. She lost a lot of blood, that we took her to three hospitals. It was really difficult to find blood, so I went directly to PMI. Three bags of blood were then transfused, but it kept coming out again, eventually she passed away because of blood deficiency. So when PMI came [with the CFR program], I thought it would do no harm to join the team. So that I can learn more about blood donation, also health and humanitarian issues. So that I can share with other people. It never crossed my mind to ask to be paid.”

“It’s not that I was needed by the community, but I felt it was my calling. I want my time to not be wasted. *Inshaallah* as long as I am given health, I will keep sharing with SIBAT,” said Winda with a smile on her face. ---



Bogor

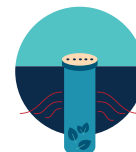
Ciliwung River



1 waste management centre set up



Emergency response and preparedness training



1000 biopori or absorption holes



Tree plantation



Flood disaster and health training



Create evacuation signs

South Jakarta City

Downstream Ciliwung

Upon seeing the successful efforts by the urban village head of Pengadegan, Muhammad Mursid, S.I.P., M.M, in greening his territory, one of which was through a hydroponic village program, Pancoran District Head, Herry Gunara, called it a pilot project and encouraged other urban villages in his territory to also green their areas.

“It is not the success of the urban village head of Pengadegan. It all began from PMI and SIBAT members. I simply facilitated PMI, SIBAT members, with the neighborhoods and hamlets, and the community,” says Mursid, refusing the praise addressed to him. “These SIBAT members act on their own with no budget nor payroll from the urban village. It is a social work, purely social. I am a mere facilitator.”

In addition to greening his area, Mursid also uses the empty space behind the urban village office to plant rice, beans, chili, eggplant, water spinach, and tomato, both with hydroponic and conventional planting. In the small garden intended to be a pilot laboratory for residents, he also keeps eels and fish in small quantities. “I had parrot fish and catfish, but the pond is now being emptied, the fishes had all collapsed. Everyone fed them, so they ate too much. Later I will appoint someone responsible to feed them, so it will be regulated,” he says.

In Pengadegan, hydroponic planting has so far been done in hamlets 01, 03, 07, and 08 since August 2017, while other hamlets are currently in the process of making the planting installations. At first,

60 sets of hydroponic installations were placed in a number of land and residents’ yards who could take care of the plants. In order not to disrupt traffic, the PVC pipe installations were placed above the roadside drains. At some spots, residents made small ponds under the installations and keep catfish, parrot fish, or pomfret.

Hydroponic, a means of planting that does not use soil as medium, is chosen as a way to green urban areas which have limited land to plant. Residents grow various kinds of vegetables that can be used by the community, such as mustard, water spinach, spinach, lettuce, chili, tomato, celery, and leek. The seeds are supported by Panah Merah, a seed company based in Purwakarta, West Java. The planting method is taught with assistance by the Food Security, Maritime, and Agriculture (KPKP) agency.

Hydroponic planting is managed by SIBAT members of Pengadegan, while the maintenance is done by the community, especially those whose land or yard is used for, or near, the installations. Up to January 2018, the plants have been harvested seven times. The harvest is for the residents’ own consumption; but some are willing to pay even more than



Ciliwung River (above) and the densely populated Bukit Duri, South Jakarta (below). SIBAT South Jakarta in action when flood occurs (right).



“It is not the success of the urban village head of Pengadegan. It all began from PMI and SIBAT members. I simply facilitated PMI, SIBAT members, with the neighborhoods and hamlets, and the community.”

the average market price. The sale proceeds are then used to buy more seeds and nutrients.

The hydroponic planting activity is part of the Community Flood Resilience program implemented by PMI in collaboration with IFRC and Zurich Insurance Indonesia. In South Jakarta Administrative City, CFR is run in Pengadegan urban village in Pancoran District, as well as Bukit Duri urban village and Kebon Baru

urban village in Tebet District. Not only used to green the villages and help strengthen the community’s economy, hydroponic in Pengadegan also serves as a way to encourage the community to keep their village clean. “If the village is already green, people will eventually realize for themselves not to litter,” says urban village head Mursid.

The CFR program also supports the making of 500 biopore

infiltration holes, to accelerate water absorption into the ground so as to reduce inundation during heavy rains or when the Ciliwung River overflows. The making of the biopore infiltration holes was done by SIBAT volunteers assisted by PPSU [workers] Pengadegan, with an emphasis on flood-prone areas such as Pengadegan Timur and Pengadegan Utara, which are right on the side of the river.



Muhammad Mursid, Head of Pengadegan Urban Village, observes hydroponic installations in his area (top), then tastes the water spinach cooked by residents, picked from the hydroponic planting (below).



Small garden behind Pengadegan urban village office.

Other than annual flooding, Pengadegan has long also been overshadowed by a number of economic and social problems. According to Mursid, this view has made the urban village become one of the less favoured areas among urban village heads. Without underestimating the problem, Mursid tries to look at it from a different angle. “I admit that Pengadegan is a slum and a poor area. That’s why I try to change that image. I want Pengadegan, however it takes, even though economically difficult, to be able to radiate and be green,” says Mursid, who graduated from IPB’s Agribusiness Management Master Program.

Being in the same direction with Mursid’s vision gets the hydroponic program support from the urban village authority. “This program is

also in sync with the Mayor’s program to make South Jakarta green, one part of which is through hydroponic. That’s why I say in Pengadegan we can really go easy. Everything we do seems to find its way. We have this program, it gets accepted very well, and it turns out to be synergistic with other programs run by other institutions,” says Guthfan Satatsa or Ogut, 37, CFR Field Coordinator for South Jakarta. “Everything is in sync, so the program can also grow.”

Strengthening SIBAT

PMI actually formed SIBAT in the three assisted urban villages years before the CFR program was implemented. However, since assistance from PMI has not been intensive, these SIBAT teams have been inactive for some time. The old

SIBAT volunteers have now mostly grown older and are busy with other activities. For regeneration, PMI now recruits more younger people as new members of SIBAT for CFR. The program, implemented in Pengadegan, Bukit Duri, and Kebon Baru since 2015, according to Ogut, is more about reinforcing SIBAT.

In each urban village, 30 new SIBAT members are recruited and given trainings by PMI in emergency response, especially related to floods, command post management, and so on. Along the way, SIBAT members are also involved in activities and trainings by other institutions, even though not directly related to the program. Densely populated urban areas like Jakarta are not only prone to flooding, but also vulnerable to social friction and susceptible to fire hazard, so SIBAT members are also included in social conflict handling socialization from the Police Department, as well as fire hazard prevention training from the Fire Department.

Meanwhile, flood risks that threaten every year are continually attempted to be tamed by policy makers, at local, regional, and national levels. In 2017, in Bukit Duri, the Jakarta Provincial Government evicted and relocated the community that lived along the Ciliwung River banks, and built a new levee there. The eviction did not go smoothly and caused tension among the community. Some affected residents even sued the governor in the court of law, though the community itself also benefited from the normalization of the river.

“After the eviction and levee construction in Bukit Duri, now the area can be considered relatively safe from floods. Not as bad as it used to be. Residents

“We have this program, it gets accepted very well, and it turns out to be synergistic with other programs run by other institutions.”



Residents of Pengadegan
making hydroponic installations.



Guthfan Salatsa, CFR Field
Coordinator for South Jakarta
City

used to evacuate up to a week, even sometimes a month. Now the water recedes within a day or two. So it's no longer 'flooded', merely 'inundated'," says Ogut while emphasising the different terms used.

The social condition of urban communities which is sometimes tinged with tension, has complicated the process of surveying and mapping done by SIBAT volunteers at the beginning of the program implementation. Suspicions against outsiders made some residents tend to be guarded and refuse to be surveyed. "There were ones who upon seeing us coming, quickly closed their doors and didn't respond to us. Someone once even said, 'What do you want, do you want to steal or what?' We came in uniforms, we also had letter of assignment, which we already sent to the neighborhood and hamlet administrators. They said, 'What's the point, we are still affected by flooding. What do people from the administration know, what do they care?' It was pretty tough, just to survey," remembers Laylatil Q. or Ella, 24, one of SIBAT's new recruits in Pengadegan.

Not giving up, SIBAT members sometimes asked for assistance from the neighborhood and hamlet administrators in revisiting those

houses. They hoped that the community administrators could help explain to the residents that the survey and mapping are done for the benefit of the people. If the residents still did not wish to care, their very last resort was to ask for the data required for the survey from the neighboring houses.

However, after they saw and felt what SIBAT volunteers did in the community, the residents who were once rather impertinent slowly became gentler. "During the flood, that was said to be just inundation, which lasted only for one to two days, they just wanted us to be there. We showed up, they could share their feelings and complaints, they were already relieved, because they got us to listen to them. Actually, sometimes indeed they only need to be listened to," says Ella.

Hand in Hand

By getting involved in SIBAT activities, the volunteers, especially the younger ones, feel some benefits, among others is that they can get to know the community closer and better. It is not really the case with the older volunteers, as prior to joining SIBAT they had already been active in the community through

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Laylatil Q. (Ella) (24), a member of Pengadegan SIBAT

various other village-level institutions. Some are neighborhood administrators, another is a member of a village representative body, some are active in Karang Taruna, while others are PPSU employees, and so forth. All elements of the community are involved in SIBAT.

The various elements are involved so that the CFR program and SIBAT activities can be synchronized with the urban village development plans. In addition to turning the village green, CFR also tries to overcome the flooding with waste management through waste bank activity. The waste bank itself has been operating in Pengadegan since a few years earlier, so in its realization, SIBAT volunteers are only reactivating it.

At first, SIBAT members actively socialized about and persuaded residents to join the waste bank activity. In supporting the efforts, urban village head Mursid also used various opportunities to convince people to take part. The number of residents who became waste bank customers highly increased during the period of Mursid's leadership. "Now the community is enthusiastic, it is us who are overwhelmed in collecting their garbage, because we are lacking manpower and we don't have carts. It is currently nonactive," says Ella. "In the future, the waste bank will be taken over by the urban village authority."

Since the beginning of his tenure, Mursid has always tried to embrace the community. Unlike the type of officials we often picture in our minds, who are bureaucratic, condescending, and almost untouchable, Mursid often comes down to the community and exchanges words with them.

He gives full support to positive and beneficial activities, including SIBAT. “For me, the potential of this community is important to develop,” says Mursid. “Don’t ever try to submit proposals that only ask. I’ll rip them. To SIBAT, Karang Taruna, to all, I demand them to give something to the community, not ask.”

Mursid also tries to change the negative image that for so long has been attached to some of his citizens. Some of the younger SIBAT volun-

teers still remember, a few years ago police teams were often seen waiting at some schools during school hours to capture students who were using and even dealing drugs. “Those who are proven using drugs, I will chase them away. Don’t reside here any longer,” says Mursid firmly. “That’s why I encourage young people here to actively do things and get involved in organizations. Instead of just hanging out while drinking [liquor], playing cards, and gambling at the posts, it’s

better that I give them something to do, contributing to the community.”

When residents requested more hydroponic installations to plant after seeing the success of the initial planting from CFR support, Mursid directed them to build their own installations in each of their own neighborhood. Residents are encouraged to take a more active role, while PMI is still involved to provide assistance. Planting and caring methods are then taught and trained

by SIBAT members. That way, both youth and unproductive land potential in and around Pengadegan are being optimized.

Moving on

Optimal involvement of all elements in the community is a key to build a sense of ownership towards the implemented program. However, a sense of ownership alone is barely enough to ensure its sustainability. It needs inter-institutional coordination so that the planned steps will not be overlapping with each other’s, whether on the same level (urban village) or on different levels (district or higher). An example of miscoordination is the loss of biopore infiltration holes made with support from the CFR program in numerous spots in Pengadegan, due to asphalt work by the public works agency.

CFR also coordinates with Environmental Agency in South Jakarta through the program Climate Kampong. The program has been developed by the Ministry of Environment by emphasizing strengthening sustainable local



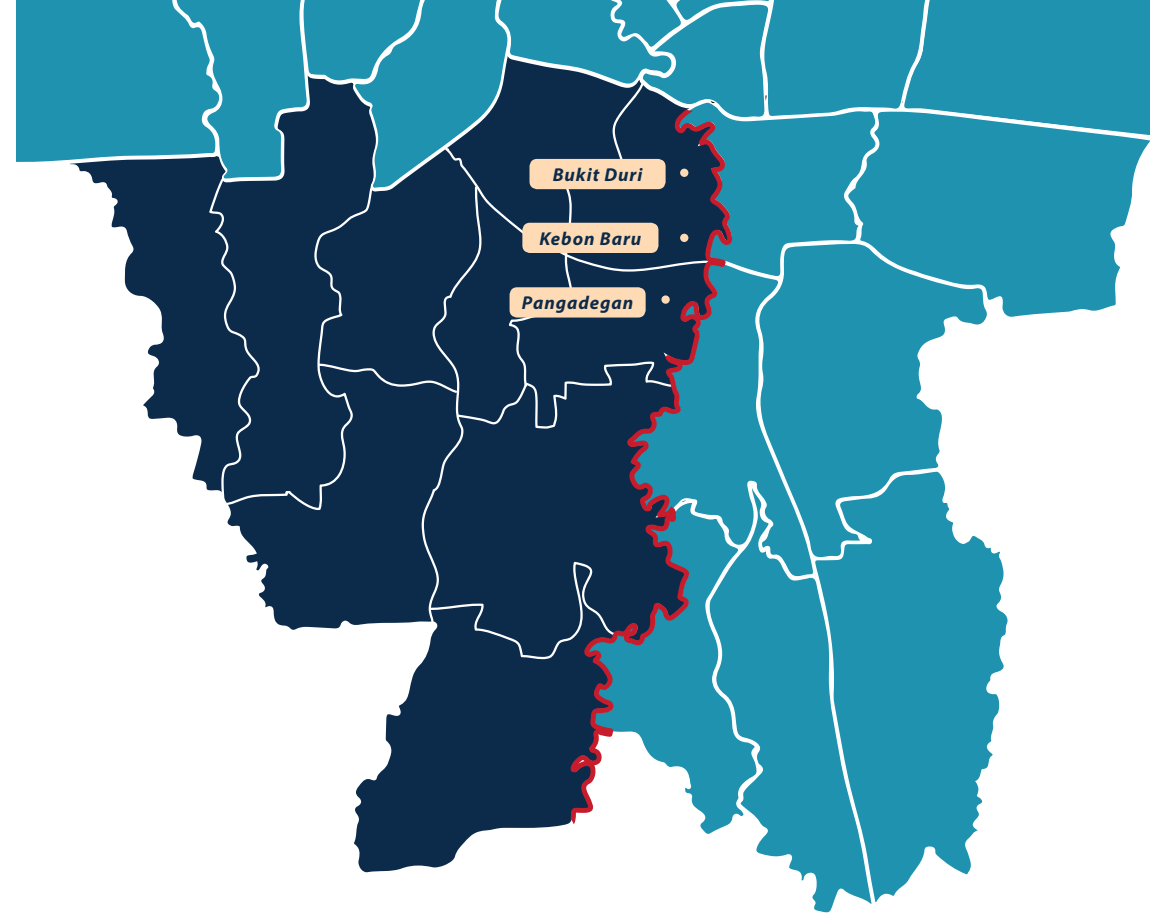
Evacuation signage in Bukit Duri, South Jakarta.

actions, to increase community resilience to climate change impacts. The adaptation and mitigation measures outlined in the Climate Kampong program are ,among others ,flood control, improved food security, garbage and waste management (solid and liquid), agriculture, and so on. “The indicators are the same as the CFR program, so Pengadegan can just directly be appointed by the Mayor as a Climate Kampong,” says Ogut.

After the CFR program period has ended, hydroponic installations supported by PMI will be handed over as assets of the urban village. Management of the hydroponic program’s future activity will also be handed over to Karang Taruna, so that SIBAT can move on to other programs, especially with more focus on disaster mitigation and response. SIBAT’s existence has also been officially recognized with Village Regulation. A command post facility provided on the upper floor of the Pengadegan urban village office will also be discussed further, whether it will be SIBAT’s own command post or together with other institutions and organizations.

Related to youth activities in his village, Mursid has his own point of view. As a first step, SIBAT member recruitment did involve various elements from other organizations, but later on, he will limit membership of each organization. “I will drive them to focus more on one organization only. Not two. So they can be more active and engaged with each organization’s activities, be it Karang Taruna, SIBAT, or another,” says Mursid.

PMI will not just abandon SIBAT after the CFR program period has ended. PMI will continue to assist them, considering SIBAT wears PMI’s logo. “It is really not that hard to maintain the program’s sustainability. The environmental agency and the food security agency have agreed to provide future assistance. Panah Merah is also willing to support with their seeds. So, it is all in sync. The community has also developed a hobby to plant, and it eventually gets incorporated into the neighborhood and hamlet administration program. Alright then, each has found its way, the program can keep running,” says Ogut relieved. ---



South Jakarta

Ciliwung River



Create & install 90 evacuation signs



Water rescue training for flood preparedness



Provide one clean water purifier or treatment



Disaster information & education



Flood disaster preparedness & health training



Hydroponic socialization & training

Bandung Regency

Upstream Citarum

“The weather could be nice here, the rain could fall in Bandung City or in Majalaya, but it is here that is flooded,” says Lina Irawati, 45, a volunteer of SIBAT in Bojongsoang Village, explaining the nature of the flood risk that continuously threatens her village. “If it rains heavily there, just wait four hours later. The water level here will rise.”

Bojongsoang is at the confluence of the Cikapundung River, which carries rain overflow from Bandung City, and the Citarum River, which carries rain overflow from Majalaya. Bojongsoang and its surrounding area is lowland (basin), so it is like a giant bowl that contains the overflow of the two rivers flanking its west and south side. As it recedes, the flood leaves piles of garbage and mud that were also carried by the overflow.

“Flooding has happened here since a long time ago, but never this big. It is more often now, and longer,” says Eman Gunawan, 45, also a member of SIBAT in Bojongsoang. Back then, the flood receded in four days, while now it can ebb and flow for two to three weeks. During the 2016 flood event, within only a half hour, the water level had gone up high. Eman’s house in Cijagra hamlet was one of the most severely inundated by the flooding, which could reach more than two meters high. “So, I am a member of SIBAT and at the same time a survivor,” Eman says with a smile.

Flooding in Bojongsoang happens at least three times a year during the rainy season, and can even happen as often as 10–15 times. So often that the residents make platforms to raise their

goods and furniture, like mattresses, chairs, sofas, shoe racks, cabinets, and sewing machines. “Here, chairs are not seated, but sitting,” says Eman, who even puts his refrigerator above the water tub in his bathroom, putting it away from the flood.

Many residents raised the floor of their houses to prevent the flood from entering. Some residents partitioned their rooms vertically with permanent construction. The lower level is for daily activities when it’s not flooding, while “level 1½”, as the residents call it, is used for sleeping and putting goods, especially electronics, when the Citarum overflows.

The largest and longest river in West Java, the Citarum flows from its upstream in Bandung Regency, through 12 regencies and cities, as far as 270 kilometers, emptying into the Java Sea at the northern tip of Karawang Regency. The Citarum is also the source of drinking water for 28 million residents in West Java and Jakarta. Ironically, entering the 21st century, the Citarum has become known as one of the most polluted rivers in the world, due to the high level of household garbage and industrial waste, including dangerous chemical substances, that is dumped into its stream.



“Flooding has happened here since a long time ago, but never this big. It is more often now, and longer.”

Eman Gunawan, a member of Bojongsong SIBAT



In order to avoid the frequent floods, Eman puts his refrigerator above his tub in the bathroom (left) and SIBAT in action during flood events (above & right).

SIBAT in action, helping residents to evacuate during a flood using boat supported by CFR program.



“In the training we learned about flooding, but in the field we practiced evacuating dead bodies,”...



Hendra Setiawan (56), Chief of Bojongsoang SIBAT

The Actions of SIBAT

SIBAT members like Lina and Eman were recruited as part of the Community Flood Resilience program, implemented by PMI in collaboration with IFRC and Zurich Insurance Indonesia. Bojongsoang District and the neighboring Dayeuhkolot District are among the most vulnerable to flooding in Bandung Regency. Therefore PMI selected three villages there to be assisted by the program: Citeureup Village and Dayeuhkolot Village in Dayeuhkolot District, also Bojongsoang Village in Bojongsoang District.

SIBAT was formed in early 2015, as the first and main step in implementing the program. Thirty people were gathered from each village, involving various elements like village administrators, organization members, and community figures, to optimize the already existing social capacity. After being equipped with a series of trainings, SIBAT volunteers were then deployed back to the community to carry out the next step of the program, which was baseline survey, risk mapping, and vulnerability and capacity assessment, the results of which were used as the basis for planning program activities in each village.

The community generally responded positively, although there were some residents who questioned the presence of SIBAT and PMI. Some people did not feel the need for SIBAT, as floods are frequent and they have been accustomed to deal with it in their own ways. Some others thought that SIBAT, who were wearing PMI logo, came to supply aid and donations. Slowly, the misunderstanding was cleared, after the community saw and felt for themselves the actions of SIBAT volunteers when the Citarum overflowed and inundated their houses again.

The volunteers of SIBAT in Bojongsoang have even took part in disaster relief action outside their village. They were deployed by PMI Bandung Regency as disaster response when there was a landslide in Cibitung, Pengalengan District, in May 2015, not long after they completed their training. “In the training we learned about flooding, but in the field we practiced evacuating dead bodies,” remembers Hendra Setiawan, 56, Bojongsoang SIBAT chief. “I was a bit shocked, but it was fine. We could learn about disaster management,” adds Lina, who often calls herself Bunda.

Humanity and calling from the heart encourage SIBAT volunteers, including Bunda, to continue to play active roles in the community. “Before I joined SIBAT, it turns out that I had already taken part. As I was a hamlet administrator, I often helped to distribute aid during disaster events. After I became a SIBAT member, I realized that the things I used to do were called baseline survey, assessment, and so on,” says the housewife, who is the head of the Posyandu healthcare unit in her community at Kompleks Griya Bandung Asri 1.

SIBAT activities are not merely about disaster preparedness. Changing the habits of the community to not throw garbage into the river is also carried out by Bunda, who won third place in the National SIBAT Ambassador female category during the 2nd National SIBAT Meeting in Bogor, September 2017. Living by the river, there is a huge temptation to just throw garbage into the river through the window. “We are two different areas living on the side of one river. We in Bojongsoang have slowly begun to clean up, while Dayeuhkolot and Citeureup have not. If we were to scold them, well, it is not really our position to do so, while



they don't seem to do anything about it themselves," says Bunda.

A Familial Approach

Although near each other, the characteristics of the three villages are different. In Dayeuhkolot, the village authority, the residents, and the volunteers welcome the program, but it is rather difficult to bring together the village authority and the volunteers. In Citeureup, let alone bring together, it is difficult just to

embrace the community. Many of the volunteers there do not have a steady job, so it takes an extra effort to give them an understanding of social activities. The village authority is also seen as too bureaucratic and hard to approach. "It is more relaxed in Bojongsoang. It is very easy to bring together the village authority and the community, because there is already a very good relationship," explains Lala Jalaludin, 40, Disaster Response staff of PMI Bandung Regency, who is the appointed Field Coordinator of the program there.

River clean up by the community and employees of Zurich.

"We are not only implementing the program, but we are also establishing a sense of familiarity. A familial approach to the community is very important, so there will be a change of character."



Lala Jalaludin, CFR Field Coordinator for Bandung Regency

"When I was inaugurated as village head in 2013, that very afternoon we were 'rewarded' with a flood. At that time, it was us who managed the disaster response. Even though it is not the village authority's job to manage disasters, it is community service," says Acep Syahrul Mulyaman, S.T., Village Head of Bojongsoang. Therefore, Acep welcomed it when PMI recruited and trained SIBAT volunteers. Before there was SIBAT, the community opened a public kitchen with borrowed kitchen utensils when there was a flood. Without proper coordination, it was not in order. Now, disaster mitigation, evacuation, and the public kitchen are all managed by SIBAT.

SIBAT has a big role in the implementation of CFR. PMI facilitates, while all activities are run by SIBAT members. "PMI could have implemented the program themselves, but the output would not be sustainable. The involvement of the community through SIBAT is important, because it is not merely an object of the program," says Lala. "We are not only implementing the program, but we are also establishing a sense of familiarity. A familial approach to the community is very important, so there will be a change of character. That's more important than building or physical support."

This approach is important to build a sense of familiarity, so the community can work together as one. The solidarity is not only felt among SIBAT members and the community, but also by the village head. "Our village head is not a member of SIBAT, but he has a SIBAT soul in him. In the event of a disaster, he gets his hands dirty as a 'new SIBAT member'," says Bunda. "When we have to open a public kitchen, while we have no preparation, mister

The community cooperates in building clean water reservoir (right). Clean water installation supported by CFR program in Cijagra hamlet, Bojongsoang Village (far right).

“When we have to open a public kitchen, while we have no preparation, mister and mistress Village Head intervene. So we get ashamed ourselves if we are only relaxing while the village head is working.”



Lina Irawati (Bunda) (45), a member of Bojongsoang SIBAT



and mistress Village Head intervene. So we get ashamed ourselves if we are only relaxing while the village head is working.”

“The village head acts as the person in charge and adviser of SIBAT. All disaster-related activities are now fully our responsibility. The village head need no longer give orders or ask, I will report directly to him about what we have done. His mobile phone is also always active, so we can reach him any time,” says Hendra. “On one side, we work freely because we are trusted, but on the other side, we are also burdened with the responsibility to keep that trust.”

“Before there was SIBAT in Bojongsoang, we also often coordinated for disaster-related matters

with the village authority, such as the Community Welfare Section Head, and with the authorities of Bandung Regency, such as the Social Services Agency and Disaster Response Agency, so we already have a solid and harmonious relationship,” Bunda adds. “Because we have often done that, it doesn’t become a burden anymore, even if we have to stand by during a disaster event at midnight, we are ready.”

The presence of SIBAT makes the community more relaxed in the midst of disaster. Floods often come

at midnight, while aid and relief from outside only comes after three days. Before, almost every hamlet opened their own post to collect aid in fear of being missed out, they even seemed to compete with each other. Now, SIBAT manages data collection as well as aid collection and distribution in a fair manner.

Of the 18 hamlets in Bojongsoang Village, five have been annual aid donors during flood events. It is also SIBAT who directs the kind of aid and its amount and distribution according to the need. Residents who are still at home have different needs from those who have evacuated to the shelter, not to mention special needs like baby diapers and sanitary napkins. “We are also trying to reduce instant noodles, whenever possible we ask to change it with canned sardines or eggs or vegetables,” says Bunda.

Before SIBAT, PMI was overwhelmed to prepare 7,500 packs of food every meal time for several villages. Some residents had to wait until 9 pm for dinner, which should have been ready at 7 pm, causing a lot of protest. After SIBAT, by empowering the existing volunteers, public kitchens now can be opened at several points without the need for PMI to intervene. “In the past, in the event of a flood, we were given rice boxes. Now,

it is us who are distributing them,” says Eman with a proud smile.

Lala says that the community-based capacity building model implemented by PMI through SIBAT has been considered by the Disaster Response Agency (BPBD). Disaster management becomes more effective and efficient, both in financing and resources. PMI no longer needs to deploy their limited resources or recruit new volunteers every time a disaster occurs, but simply utilize and support the already existing volunteers at the site. Such a model also reduces the possibility for problems to take place between the relief organization and the community, as the volunteers are also part of the community, who are more familiar with the circumstances and character of their community than outside agencies.

Mitigation

“Long ago the Citarum was clean, the water was clear, you could swim there. Now who dares to do so,” Hendra reminisces. His statement can easily be proven with a few minutes walk down the stream of the confluence of the Cikapundung and the Citarum. Garbage and waste of various materials, shapes, and sizes appear as

far as the eye can see, piling at some points or drifting along in the stream. The water is dark-colored and smells terrible.

There is a water pump near the confluence of the Cikapundung and the Citarum. On its mouth a sock is mounted, serving to filter the water. Neighboring residents use the water only to bathe, they dare not to use it for consumption. They are afraid, as the water changes color when it is cooked.

To help residents obtain clean water, especially during floods and dry seasons, the CFR program creates submersible wells, each equipped with a 2,000-liter water reservoir placed on a tower. The wells can be used even during the floods without the fear of contamination, as their source is deep ground water with a depth of 60–80 meters.

Floods that tend to last long cause the residents to need a temporary shelter as their homes are inundated. The government of Bandung Regency once built a shelter house, but it is now unlivable. After finishing the building, the government did not hand it over to the village authority. The village was reluctant to take care of it as it did not feel entrusted to do so. Even to use the building



Evacuation building, supported by CFR program in Dayeuhkolot Village.

“Long ago the Citarum was clean, the water was clear, you could swim there. Now who dares to do so”

Hendra Setiawan (56), Chief of Bojongsoang SIBAT

they needed to get permission from the regency’s department of assets. Until this day, the building has never been used and is now damaged.

Learning from this event, CFR has worked together with the Dayeuhkolot Village authority to build a two-story temporary shelter on village-owned land, behind the village office. It has been handed over to the village authority to manage and maintain. The village is free to use the building when it is not flooding, such as renting it for community events. “The important thing is that when it floods, the building can be used by the residents to evacuate,” says Lala.

PMI also supports the CFR-assisted villages with a communication radio, public kitchen utensils, and evacuation equipment including life jackets and

boats. “In the past, I have several times proposed evacuation equipment to the government through the development planning meeting, but it has not been realized. Through PMI, within only months, the aid can be realized. It is very necessary for the residents,” adds Acep.

The Citarum That Is Free from Flooding

Another problem is the siltation of the river. Sedimentation at the bottom of the Citarum makes the river surface continually rise, so the level of flooding in Bojongsoang District and Dayeuhkolot District also rises every year. As the residents remember it, in the mid-1990’s the surface of the Citarum could reach 10–15 meters from the bridge, while now it is only 5–6 meters. For years, the central and regional governments have spent trillions of rupiah to fund numerous projects to normalize the Citarum, but floods still occur.

One of the most recent government projects is the creation of a retention pond in Cieunteung. Residents of the hamlet, which is across the river from Citeureup, will be relo-

cated as the government will destroy and inundate the hamlet to contain the overflow of the Citarum. The development of the retention pond is funded by the central government, while the relocation of the residents is paid for by the governments of West Java Province and Bandung Regency.

The 8.7 hectare retention pond is said to reduce the area of flooding around Dayeuhkolot District and Bojongsoang District from 342 hectares to only 41 hectares, while also lowering the inundation by about one meter. “The government promises that areas previously inundated as high as two meters will be lowered to one meter. While areas previously inundated as high as one meter will be inundated no more,” says Acep.

“I appeal to the members of SIBAT, do not plan to make a public kitchen. Do not open a command post here again. You may still open command posts elsewhere, though. That is, I hope there won’t be disasters anymore here, so we will only need to help others. Let the evacuation boats be monuments, that there was flooding here once,” says the Head of Bojongsoang Village. ---



Bandung

Citarum River



Constructing 6 deep well or water infrastructure



Clean environment activity



Training for flood disaster preparedness and management



Disaster information and education



Constructing evacuation building



Providing fiber boats and life vests

Karawang Regency

Downstream Citarum

Karawang Regency is a city that is marked with a rather striking gap, between an agricultural area that's become one of the nation's food reserves and an industrial area that aspires to become a new megapolitan.¹

1) <https://kumparan.com/wiji-nurhayat/mimpi-karawang-jadi-kota-megapolitan-di-masa-depan>

As one of the capital city Jakarta's buffer zones, Karawang has the largest industrial area in Indonesia, even in Southeast Asia.² Karawang's industry absorbs a third of West Java's investment, both by domestic and foreign investors.³ For the past few years, Karawang has had the highest minimum regional wage in Indonesia.⁴

Lately, news has been circulated that there will be a new airport in Karawang, which, despite being delayed once, is included in the development masterplan for the next 10–15 years.⁵ The airport will serve to support the busy Soekarno-Hatta Airport, which will reach saturation point due to overcapacity. The new airport will also be supported by toll road access and the Jakarta–Bandung fast track railway. These industrial and transportation development prospects have attracted large scale businesses and property developers to splash more colors to the city with residential areas.

2) <https://adv.kompas.id/2017/01/24/karawang-pusat-ekonomi-baru/>

3) <https://ekbis.sindonews.com/read/1251688/34/investasi-di-karawang-tertinggi-se-jawa-barat-1508943030>

4) <http://bisnis.liputan6.com/read/3172460/2018-umk-karawang-masih-tertinggi-nasional>

5) <https://kumparan.com/angga-sukmawijaya/bandara-karawang-ditargetkan-dibangun-tahun-2027>

Meanwhile, with rice fields of about 100,000 hectares and dry grain harvests reaching 1.5 million tons per year, Karawang holds the second place as the largest rice producer in Indonesia, after Indramayu Regency.⁶ As many as tens of thousands of hectares of rice fields are threatened by the flooding that inundates Karawang every year, especially from the overflow of the Citarum River and the Cibeet River. Flowing from south of Karawang, the Cibeet merges into the Citarum right at the north of Purwadana Village, Telukjambe Timur District, making the village one of the most severely flooded areas.

Purwadana Village is shaped almost like a triangle, flanked by the Citarum that streams along its right foot and the Cibeet on its left foot. “This village is flooded as often as twice or three times a year. The water level is uncertain, but can sometimes reach one to two meters,” says Zul Karnoen, a neighborhood chief at Sumedangan hamlet, Purwadana Village. “This whole hamlet is inundated. There are about 500 families, more or less 1,000 people, who are impacted. The flood recedes in about a week or ten days.”

6) <https://kumparan.com/wiji-nurhayat/karawang-jadi-kota-megapolitan-bagaimana-nasib-lumbang-padi-nasional>

“This whole hamlet is inundated. There are about 500 families, more or less 1,000 people, who are impacted. The flood recedes in about a week or ten days.”



Zul Karnaeen, a member of Purwadana SIBAT and also a neighborhood chief at Sumedangan hamlet.

During the flood, the residents' economic activities are ceased, except for some people who earn impromptu income by offering flood crossing service using rafts. The economic losses can reach more than one million rupiah for each family, as a result of loss of and damage to properties, as well as delayed income. “I make pisang ijo snacks at home myself, to be sold by street vendors. When it's flood-



Sunset in Purwadana, a child rides her bicycle bathed by warm greens and yellows of rice fields.

ing I cannot make them, so I have no income,” Zul says.

In addition to Purwadana Village in Telukjambe Timur District, Parungsari Village in Telukjambe Barat District and Tanjungpura Urban Village in Karawang Barat District are also areas most prone to flood in Karawang every rainy season. Although each is located in

different districts, the three areas are adjacent. Tanjungpura is on the east of Purwadana, separated by the Citarum River, while Parungsari is on the west of Purwadana, both are on the banks of the Cibet

River. Due to their vulnerability, the three were chosen to be assisted by the Community Flood Resilience program, run by PMI in collaboration with IFRC and Zurich Insurance Indonesia.

Low Human Resources

Entering Karawang from Jakarta, one can see the view of a typical transit city, with stores and restaurants lining both sides of the road. Other than cars and motorcycles, the streets are also packed with buses and trucks of various sizes, making the road bumpy, even with cracks and potholes here and there. Not far ahead, magnificent shopping centers and hotels immediately greet visitors. The large and seemingly luxurious buildings are very well hiding rice fields and residential areas of the lower middle class behind them.

An atmosphere of transition can really be felt, as an area which once was bathed with warm greens and yellows of rice fields, but is now shaded with cold greys of iron, concrete, and glass. Here, urbanization occurs not by the migration of people from rural areas to urban areas, but through societal change from one with rural features into one with more urban features. The residents, who



“We now know the basics of disaster management. When it flooded, we used to panic and only save our own goods.”

mostly work as farmers or merchants, now need to mingle with newcomers who work at construction projects, factories, and offices built there.

Residents of the three villages assisted by CFR in Karawang on average have a low education level. Based on the survey conducted at the beginning of the program period, communities in the three villages are equally prone to horizontal conflicts. Simple and trivial matters, such as brushing during an entertainment event to commemorate the national day, dissatisfaction with a sporting event outcome, or disagreement about something, can end up in a fight, even sparking a brawl among residents.

Most of the residents have a low level of income, so education is generally unattainable. There are some who have attended higher education now, but many residents only graduated from junior high school or vocational school. The lack of knowledge makes residents' awareness about cleanliness and sanitation fairly low. Many residents throw garbage carelessly as there is no dump spot. Not all residents have enclosed toilets.

Due to economic difficulties, the residents also prefer to just stay and deal with the flood. Almost all of the affected residents have lived there for a long time. They have known about the flooding even before they experienced it themselves, from stories told by their parents and elders. They did not move out because they could not afford it. If offered for sale, their often flooded land interests no buyers. “Even if it is sold, the proceeds won't be enough for us to buy a new house, so we're not moving out,” Zul explains.



Deden Supriyatna (22), a member of Parungsari SIBAT

The existing village-level organizations have small roles in the community. One whose presence and benefits are truly felt by the community is the community welfare organization (PKK), which has delivered health information and empowered housewives. The youth organization (Karang Taruna) is well known by the residents, although their actions have not been seen as beneficial to the community. Others, like Tagana and Linmas, are so far still considered distanced from the community. Nevertheless, the community admits that those institutions play their role well in the event of a disaster, though less than optimal.

“Previously, no aid found its way here. Even if there was aid, the distribution was not efficient nor even. Now disaster aid is coordinated by SIBAT, so it is more evenly distributed. Since the formation of SIBAT, the residents have felt its benefits. So, the community accepts SIBAT very well,” says Zul, who has been a member of SIBAT since it was formed by PMI to implement the CFR program.

A similar experience is told by Deden Supriyatna, 22, a member of SIBAT in Parungsari. A graduate of a machinery vocational school, he says

that the trainings he got as a SIBAT member is very useful. “We now know the basics of disaster management. When it flooded, we used to panic and only save our own goods. There was no early information as well, so we only knew that it was raining heavily and suddenly there was a flood. Now we get information from the WhatsApp group about the water level, about the flood alert. So we are more prepared,” he says.

Mitigation and Aid

SIBAT was formed in Parungsari, Tanjungpura, and Purwadana in 2015, as part of the implementation of the CFR program in each village. In its development, besides recruiting SIBAT members, the CFR program also supports physical assistance. In Purwadana, CFR helped build two submersible wells to ensure the availability of clean water for the community. The wells use deep ground water from a depth of up to 80 meters, so they will not be affected by and can still be used during floods. Both wells are equipped with towers and 2,000-liter water reservoirs.

The wells were made as a response to the residents' difficulty in getting clean water. They still depended on regular wells to get water for bathing,

washing, and consumption. When the river overflowed, the wells were submerged and became unusable. “After the flood recedes, we usually wait for a week, until the mud that was carried by the flood settles, then we can use the water from the well again,” says Zul. “But the water from wells here is actually a bit yellowish, that’s why we asked PMI to support us with clean water.”

Ali Akmal, 23, a volunteer with PMI who was recruited by the CFR program financial staff in Karawang, explains that although the characteristics of the three villages are similar, the different conditions and vulnerabilities faced by each village made the mitigations different. “In Tanjungpura, the mitigation that came up on the action plan as a result from risks and vulnerability mapping was a water pump. The village is located on lowland, so the area is like a giant bowl, when it is flooded, the water just stays there. They need the pump to suck out the water.”

It is not that the government of Karawang Regency has not done anything in encountering the annual flooding of the Citarum. Realizing that one of causes of flooding is the silting of the river, the government has several times tried to normalize the river by dredging.



Clean water installations with deep wells, supported by CFR program in Purwadana, first location and second location.

“Before normalization, we could get flooded three times a year. After normalization it is not as often,” says Karnadi, a former hamlet chief who is now a member of SIBAT in Purwadana. “In 2016 we were flooded twice. Last year we were safe, no flood,” he adds.

To save people whose houses were inundated, the government built a temporary shelter. However, the community considered the shelter site misplaced, as it was blocked by flooding so it could not be reached.

Residents were reluctant to evacuate there, so the building was unused.

The CFR program then provided the community with a new shelter building. Finished in December 2016, the building erected on village-owned land behind Parungsari Village administration office was then handed over to the village in January 2017. The two-story building is also SIBAT’s command post, which is managed and maintained by SIBAT members of Parungsari through voluntary contribution and roster duty. When there is no disaster event, the building can be used for community events, such as gathering or mass praying. “We usually ask only for an electricity contribution, the amount of which is not set and is

“Before normalization, we could get flooded three times a year. After normalization it is not as often, ...”



Karnadi, a former hamlet chief who is now a member of SIBAT in Purwadana.

Evacuation building supported by CFR program, located behind the administration office of Parungsari Village.

up to the residents who are using it,” says Deden.

Prepared to Encounter Flooding

Flooding in Karawang is really not a new thing. The residents have experienced flooding for a long time, though it is now more often. A resident of Purwadana mentions that his parents once told him that flooding due to Citarum overflow happened only once in a few years, while it now happens several times a year.

Since it happens annually, the community has started to recognize a pattern in the flood period. As the beginning of the rainy season, residents set aside some of their money for savings, to prepare if the flood hits. Some residents also raised their floor level so the flood cannot enter the house. Some other residents prepare by setting up a non-permanent platform in their house to keep their goods, especially electronics. The platform will be dismantled once the flood recedes.

The CFR program also supports a communication radio for the assisted



villages, each with five handheld transceivers and one rig, so disaster response information and alerts can be distributed more easily. As a neighborhood administrator, Zul is entrusted to keep a handheld transceiver unit, which he only turns on during disaster alert periods or when it is instructed by PMI. “Before we had this radio support, it was difficult to communicate with other villages. Sometimes we didn’t have enough credit [on our cellphones] to respond. If something happened, someone would come here and tell us to get prepared, usually from Tagana. He would tell us about the water level, so the community was expected to be

on alert for flooding. Now it is easier with radio, and faster too,” says Zul.

Zul adds that flooding in Purwadana has several times caused the loss of lives, as people were carried away by the currents. To reduce the potential of more casualties, he asked PMI to support them with an evacuation boat, and if possible, not just one. “We also need a power generator. During a flood, we used to have no electricity for a week in the evacuation center. PMI has supported us with a power generator, but it is not enough for us all as it is only one. We need more,” he says.

The Ups and Downs of Becoming SIBAT Volunteers

SIBAT’s actions in running the program have ebbs and flows. In Purwadana, out of 30 people required, at first there were only three people who joined SIBAT. “In the beginning people were afraid that the trainings would be difficult and hard. After they tried and joined, it turned out that they felt comfortable. We have good communication with PMI, there are no bosses or subordinates. After seeing SIBAT in action, many residents now wonder when there will be another training, because they also want to join SIBAT,” says Zul.

“After seeing SIBAT in action, many residents now wonder when there will be another training, because they also want to join SIBAT.”

Zul Karnaan, a member of Purwadana SIBAT and also a neighborhood chief at Sumedangan hamlet.

Zul himself joined SIBAT to defend his community. He realizes that SIBAT activities are social in nature and its membership is based on volunteerism. “I don’t mind not getting paid, as long as I can help the community in the event of a flood,” he says while adding that most neighborhood administrators in Purwadana are also SIBAT members.

SIBAT is also welcomed in Parungsari because the community considers it helpful, especially during a disaster. However, there were some residents who were dissatisfied. “In the event of a flood, relief is first collected at the village office, only then is it distributed to those impacted by the flood. But there are residents who aren’t impacted but still ask to get the relief. ‘If they get it, why don’t we,’ that’s what they ask, saying that we’re unfair,” says Deden.

“We respond to it casually, because SIBAT members have been prepared by PMI in our trainings, that the situations in the field could go like this or like this. During the distribution of aid, there are often people who get envious when not given the aid. So we are not so surprised anymore in dealing with it,” says the SIBAT member who once joined Karang Taruna. “Personally I am hurt to hear that, but that’s fine, we will keep on doing our best to help them.”

Deden adds that computer mastery is still seen as an obstacle by many members of SIBAT in Parungsari. “We can type, but if it takes more than that, we really don’t know how,” he says. “In the future, I hope all SIBAT members can be more solid and more active.” ---



Karawang

Citarum River



Constructing 2 deep well or water infrastructure



Procurement of evacuation equipment



Constructing evacuation building



Flood disaster preparedness training

Community-Based Riparian Rehabilitation & Protection in The Citarum River Area

The Citarum, the longest and largest river in West Java, flows over 270 km with an average annual rainfall of 2,358 mm. The Citarum river area reaches 12,000 square km, covering 12 regencies and cities. The water is used for raw water source, irrigation, fisheries, industry, and power plants. Known as one of the most polluted rivers in the world, the Citarum has been damaged from upstream to downstream. Conservation and rehabilitation efforts are barely adequate to balance the population growth and socio-economic development around the river area. Talking about the Citarum then is not only about its water and pollution, but it is also necessary to see it as a social space created through natural changes and human actions.

This is the background for CFR to commission IPB (Bogor Agricultural University) to conduct research on social dynamics that take place among communities around the Citarum River. Through this study, CFR tries to restore the river's quality that has declined sharply, from being the center of the Tarumanegara Kingdom civilization in the fifth century to now being considered no more than a source of disaster. CFR seeks to find existing social capital in the community and to develop it, to bridge the gap

between the ideal face of the river and its current actual state. This research is part of a multidisciplinary solution to enhance the resilience of the community around the Citarum which is prone to disaster, in ecological, biological, social, and financial terms, with a focus on two villages assisted by the CFR program, namely Bojongsoang Village in Bandung Regency and Purwadana Village in Karawang Regency.

From the results of the study, CFR proposes a rehabilitation with an integrated approach, which covers socio-culture-economic capacities, ecological sustainability, and flood mitigation to protect the community, in order to create a flood resilient community. CFR proposes

a landscape design plan with a waterpark theme, by rehabilitating river basin area and turning it into a space for public activities and recreation, both in times of flooding or no flooding. The park will be divided into three areas: a welcome area, where there will be the gate and management office; a conservation area, where replanting will be done for conservation; and a recreation area, which will have a viewing platform, an amphitheatre, stores, and a retention pond.

Both Bojongsoang and Purwadana need to set up a village-level socio-economic institution, which consists of social clusters, economic clusters, and a credit institution. The economic clusters consist of dry waste processing business, culinary, urban farming,

and tourism. Potential direct income from the economy unit is estimated at Rp 16 billion a year for each village, while potential indirect income is estimated to reach Rp 4 billion in Bojongsoang and Rp 7 billion in Purwadana. Potential income for raw material and service suppliers from outside the region is estimated at Rp 2.7 billion for both villages.

Equally important is capacity building efforts for all relevant stakeholders, such as the government, potential financial donors, the community, and the to-be-established area management agency. The planned activities include socialization, counseling, and workshops, as well as training and mentoring, particularly on proposed alternative livelihoods (such as business development, food processing and packaging, eco tourism, aquaculture, etc.), waste management and processing, institutional development, and riparian ecosystem rehabilitation.

In December 2017, the proposal from the study results was submitted to the Citarum management agency and the West Java Provincial Government to be used as a reference in future policy making. The proposed rehabilitation concept has turned out to be in accordance with some plans that are currently being and will be undertaken by the policy makers. ---

“From the results of the study, CFR proposes a rehabilitation with an integrated approach, which covers socio-culture-economic capacities, ecological sustainability, and flood mitigation to protect the community, ...”



Citarum River in upstream area Purwadana, Karawang (left). 3D landscape design with water park theme.

Wonogiri Regency

Upstream Bengawan Solo

On the walls of the small library that occupies the old Javanese-style house are posted dozens of large sheets containing tables, each about 80×100 centimeters.

The tables show information on the circumstances of the local people and environment, such as Economic Trend Analysis, Environmental and Social Trend Analysis, Disaster Event History, Calendar of Disaster and Disease, Calendar of Season and Community Activities, Daily Routine Schedule, Gender-Based Environmental and Social Problem Handling, as well as Institutional Diagram. It is a bit difficult to find a connection between those tables and the library, or with the books displayed, most of which are school textbooks, general knowledge, and stories for children.

The tables were made on 21 December 2015 by the SIBAT team of Gumiwang Lor, from the results of a local baseline survey, risk mapping, and a vulnerability and capacity assessment. It was a part of the implementation of the Community Flood Resilience program, run by PMI in collaboration with IFRC and Zurich Insurance Indonesia. In Wonogiri Regency, the program is implemented in Gedong Village in Ngadirojo District, Ngadipiro Village in Nguntoronadi District, and Gumiwang Lor Village in Wuryantoro District. The three villages are located around the banks of the Gajah Mungkur Reservoir,

built to dam the upstream of the Bengawan Solo in 1976.

The CFR program begins with the recruitment of SIBAT members, who then take active roles in carrying out various activities in the community, including the survey and mapping. In the development, the roles and functions of SIBAT widen, not only limited to within the program, but also adapting to the needs of its local community. As the instance in Gumiwang Lor, SIBAT initiates the opening of libraries for children that occupy SIBAT's command post.

The idea for the library, named Rumah Baca Akar SIBAT (SIBAT Root House of Reading), came from Dita Maya Winandarum, 24, a member of SIBAT in Gumiwang Lor. Recently graduated from Yogyakarta State University and working as Planning and General Affairs Section Head at Gumiwang Lor Village administration office, she sees that there are many children in the community, while there aren't many activities for them. Together with other volunteers of SIBAT, some of them young local teachers, Dita also observes that the children's interest in reading is fairly low. That is how the idea for opening the library came about.



“The name is Akar SIBAT, since reading is the root (*akar*) of knowledge.”

Winandarum (24), a member of Gumiwang Lor SIBAT

“The name is Akar SIBAT, since reading is the root (*akar*) of knowledge. SIBAT because we are SIBAT members. The books are initially collected from SIBAT members’ contributions,” Dita says. For the place, they chose to occupy SIBAT’s command post as its location is not far from the village administration office and schools. When there is an event, the post is accessible from all corners as it is in the middle of the village. “So SIBAT members who are on roster duty at the post can also read, so they won’t get bored. Aside from specifically

focusing on children, the house of reading is open for all,” Dita adds.

The idea for Rumah Baca Akar SIBAT was first developed in November 2017 to get the children and community in Gumiwang Lor used to reading. In January 2018, PMI donated books for them. The District Head of Wuryantoro granted old furniture from the district office, including shelves and bookcases. The library was officiated in the following month. The SIBAT command post in Gumiwang Lor itself is the only one that is active 24 hours nonstop, with SIBAT members taking turns on

roster duty. The opening of the library is expected to enliven the post and build a sense of belonging in the community and among SIBAT members.

Unlike SIBAT command posts in Gedong and Ngadipiro, which are facilitated at each village office complex, SIBAT in Gumiwang Lor borrowed a resident’s house as their command post because the village office has no extra space. Meanwhile, Gumiwang Lor’s village head’s given land is quite far from the village center. Coincidentally, a resident sold his house, which was then bought by another resident but not inhabited, so it was lent to SIBAT to be used as the command post.

Warjo, 50, PMI Wonogiri Regency Chief of Headquarters who is also CFR Field Coordinator in Wonogiri, adds that the opening of the library

Tables made by SIBAT team in Gumiwang Lor from local baseline survey, risk mapping, and vulnerability and capacity assessment results.



cannot be separated from the objective of the program, which is to strengthen community resilience in encountering disaster risks. By opening a library, it is expected that children can feel more comfortable coming to the post, so that understanding about health, disaster preparedness, and community knowledge can be transferred to the younger generation. “From reading, the community can update their information and knowledge regularly, especially about disaster or program-related activities,” he says.

SIBAT Experiences

PMI came to Wonogiri for CFR socialization in April 2015, when the rice planting season was underway. The residents, who are mostly farmers, were busy cultivating their lands. The head of Gedong Village was worried that the residents would not be able to join the program, due to unfortunate timing. In fact, residents showed their enthusiasm, from the recruitment of SIBAT members until the survey and mapping.

“The neighborhood administrators intentionally chose residents who supposedly have more free time, or as we call it ‘enthengan’,” says Sarmo, 52, a farmer who was appointed as

the chief of SIBAT in Gedong Village. “Whenever there is a SIBAT event, while we are already working at our fields, we will temporarily leave our work. Or sometimes we even have to pay another person to do our work. Becoming a volunteer does require us to allocate our time and to be handy.”

The residents in general respond well to PMI and the CFR program, so the baseline survey, risk mapping, and vulnerability and capacity assessment went well. One minor obstacle was the mastery of technology. SIBAT volunteers in Gedong are more used to cultivating their lands or fishing in the reservoir than collecting data using Android smartphones and GPS devices.

To overcome this obstacle, other than providing training on the use of the devices, PMI paired younger SIBAT members with the older ones during the survey. The younger ones were more accustomed to using the devices, while some of the older SIBAT members were not even familiar with Androids before, thus could not operate them smoothly. “We paired older members with younger ones because the younger can use the device and the technology better, while the older know the

neighborhood and the community better,” says Warjo.

In a different way, communication technology also became an obstacle in implementing the CFR program in Ngadipiro Village. The cellular service provider’s signal is not well received due to the location of the village, which is hilly. Information delivery cannot solely rely on WhatsApp groups or SMS, but often times has to be done door to door.

Thanks to the trainings provided by PMI, SIBAT members have been able to perform first aid and evacuation, including socializing about disaster preparedness and health information. On one side, such skills are very useful for the community, especially in areas prone to disaster and far from the reach of health care centers. On the other side, such community empowerment also helps health care providers, like PMI itself and community health care centers (puskesmas).

Tri Subekti Ernawati, 42, a village midwife in Gumiwang Lor who also joined SIBAT, feels her duty to be lighter since the formation of SIBAT. “Now I have a team that is always ready to help,” says Erna, who has been a midwife since 1995. The woman, who encourages her

“Friends at SIBAT can help perform first aid, so not all cases are passed to me or directly to puskesmas.”



Tri Subekti Ernawati (42), a village midwife in Gumiwang Lor who also joined SIBAT

children to join teen red cross activity at school, adds, “My activities are quite far reaching, from pregnancy, child delivery, breastfeeding, school children, to the elderly. Friends at SIBAT can help perform first aid, so not all cases are passed to me or directly to puskesmas. They also help me during vaccination procedures. In terms of disaster preparedness, they also help channel information to the disaster team at puskesmas.”

Land Conservation

“When it comes to disaster, Wonogiri is unpredictable. Throughout 2017, there were 156 villages in 23 districts that experienced landslides and floods. The head of the National Disaster Response Agency (BNPB) came here three times because he couldn’t believe it. Based on their mapping and all, Wonogiri is not included as a flood prone area, but it happened,” says Warjo. “The flood was rather small, but a lot of people died of drowning.”

According to Warjo, there were numerous factors that caused the extraordinary incident in Wonogiri. On the one hand, people now tend to cover the soil in development, with asphalt and concrete, among others, so water cannot seep into the ground and continues to flow. On the other hand, the level of rainfall and water volume in 2017 was relatively high, so rivers and the reservoir could not contain the overflow.

“In November 2017, Gajah Mungkur reservoir under normal conditions takes two months to fill. But at that time, according to Jasa Tirta, it was full after high intensity rain for six hours. In total, the rain poured for two days and one night, but the heaviest period, counted by Jasa Tirta, was six hours,” says Warjo.

Aren palm as green belt, planted along the banks of Gajah Mungkur Dam.



“We need plants whose roots can bind the soil to prevent erosion.”

Warjo (50), Head of PMI Wonogiri Regency who is also CFR Field Coordinator in Wonogiri.

“As a result, many bridges and houses were lost in the currents. That’s why the head of BNPB came three times, because he was confused. It is a mountainous area, but it was flooded and houses were inundated.”

With maximum inundation coverage of 88,000 hectares, Gajah Mungkur reservoir was designed to work for up to 100 years. The reservoir, which accommodates overflow from six rivers, namely the Keduang, the Tirtomoyo, the Parangjoho, the Temon, the Posong, and the Bengawan Solo,

has experienced rapid siltation due to mud deposits. The estimated life time is only 10–15 years more. Of the seven districts on the sides of the reservoir, namely Wonogiri, Nguntoronadi, Baturetno, Giriwoyo, Eromoko, Wuryantoro, and Ngadirojo, Gedong Village in Ngadirojo, through which the Keduang River flows, is one of the largest contributors of mud deposits.

To reduce sedimentation and reservoir siltation, CFR conducts planting activities in the three assisted villages to counteract erosion.

“Wonogiri or Bogor do not conduct aquaponic like in Jakarta or Solo, because for upstream areas, it is of no use, from a land conservation point of view. We need plants whose roots can bind the soil to prevent erosion,” says Warjo.

Aren Palm Nursery

To implement the planting activity, PMI agreed to create the nursery of SIBAT in Wonogiri Regency at Ngadipiro Village. The seedling is not done in each village because

only the head of Ngadipiro Village is committed to lend his given land to be used as a nursery. The types of plants to be developed include pepper, 'sengon' (*Albizia chinensis*), and coffee, but the main concentration is to plant aren palm (*Arenga pinnata*).

Aren palm is one of the most difficult and time-consuming plants to seed. "Other plants can sprout after a month, while aren palm needs five to six months. In order to be planted, it still needs to wait about a year," says Hartanto, 52, the head of Dungwot and Brangkal hamlets, also a member of SIBAT in Ngadipiro. "When it is ready to be planted, it's just like other plants, no need for special treatment. Residents here are mostly farmers, so they have gotten used to caring for plants."

Even so, aren palm is still chosen for planting activity in CFR program because of several considerations. From a land conservation point of view, aren palm roots can interlace and strongly bind the soil. Moreover, aren palm trees are not attractive to cut down, so they can last and benefit longer. "Sengon or teak, for example, in five years people must have already wanted to cut it down, so we would fail in the conservation effort," says Warjo.



In terms of use value, almost all parts of an aren palm can be used as economic sources. After three to four years, its gomuti can be used as a fiber broom as well as a medium for vine planting, such as pepper and betel. The trunk, when aged enough, can be processed to make sago. The leaf stick can be used to make a hard broom. The leaves can be used as durian wrap. The fruit can be processed to make kolang-kaling snacks. The 'manggar' (flower) produces 'nira' (sap), which can be processed into aren palm sugar.

Aren palms are actually not a new thing in Wonogiri, but for a long time they have only been cut down

Aren palm seedlings to be planted at the banks of Gajah Mungkur Dam (above). Results from aren palm processing, gomuti and aren palm sugar (below left and center). SIBAT seedling garden in Gedong Village, Ngadipiro, and Gumiwang Lor (below right).

because they have never been used by the community. Therefore, aren palm processing is still a rather new thing for the community. In the future, CFR hopes to develop aren palm sugar into a home industry in every village. However, it still needs another 8–10 years for the CFR Wonogiri aren palm plantation to be productive. Meanwhile, in the short term, CFR Wonogiri will develop pepper planting, which can produce in only one year, so it can also strengthen the economy of the residents.

For Our Children and Grandchildren

While the aren palm seeding is done in Ngadipiro, the processing of its produce is for now centered in Gumiwang Lor. The women SIBAT members in Gumiwang Lor process aren palm into kolang-kaling and aren palm sugar, which have promising economical prospects. Kolang-kaling can be processed into various foods and snacks, while aren palm sugar has numerous health properties, such as normalizing cholesterol and is safe for

diabetics as its glycemic index is lower than cane sugar.

Nevertheless, the challenges ahead need to be watched out for, so they will not become obstacles. Some SIBAT volunteers complain about the unwillingness of the younger generation to continue in their steps. “Here, young people aged under 30 are reluctant to become farmers,” says Sarmo. Such complaints not only raise concerns about the future of agriculture and food availability, but also the sustainability of reforestation

activity that is being done through planting.

Wiwik, 50, a member of SIBAT in Gumiwang Lor, was at first hesitant to take part when PMI came and was recruiting SIBAT members. “I thought to just let the younger people take part, but nobody wanted to, so I did. I encouraged my own son to join SIBAT, but he also didn’t want to, so be it, I didn’t want to force him,” says the woman who is also involved in many other village-level activities, such as KB (planned parenthood),

Organic waste processing unit in Gedong Village and Ngadipiro Village, Wonogiri.



“As the process takes a long time, since the beginning I have said that the aren palm we plant now is for our children and grandchildren, not for ourselves.”



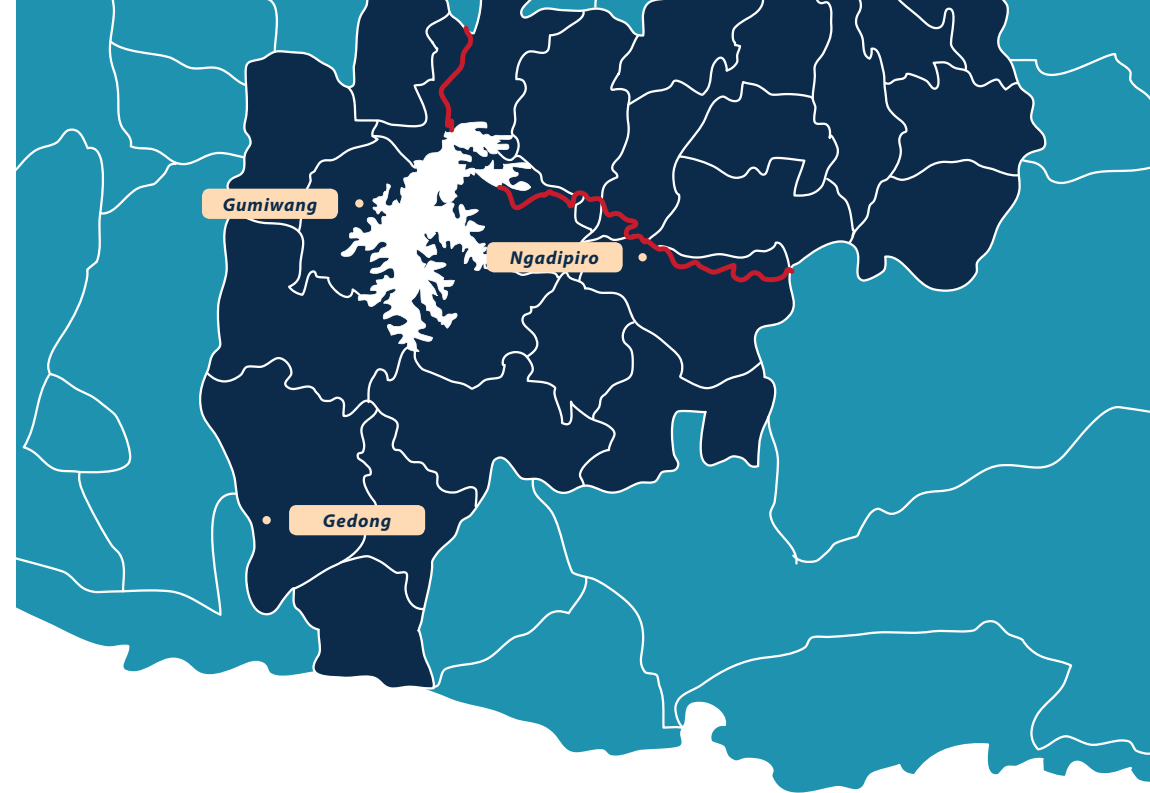
Warjo (50), Head of PMI Wonogiri Regency who is also CFR Field Coordinator in Wonogiri.

Kader Gizi, PNPM, and so on. “Before becoming a SIBAT member, I also have often helped people who got into accidents next to my house. It is right by the main road. There are often accidents, crashes, a lot of them,” Wiwik adds.

The implementation of the CFR program in Wonogiri is not limited to only flood and landslide prevention or only strengthening community resilience, but also erosion prevention and long term economic improvement. “Another goal for this program to achieve is to strengthen the green belt along the banks of the reservoir, covering seven districts. In the future, it will all be planted with aren palm,” says Warjo.

“We have discussed it with the regent, we reported to him our difficulties, about the seeding that takes a long time and not all nurseries can do it. As for planting, we can mobilize as much manpower as needed. Local residents are also mostly farmers. So we have huge interest, huge potential to develop, but the seeds to plant are limited,” adds Warjo.

“As the process takes a long time, since the beginning I have said that the aren palm we plant now is for our children and grandchildren, not for ourselves,” says Warjo. ---



Wonogiri

Bengawan Solo River

-  First aid training
-  6000 tree plantation (*arenga pinata*) in 3 communities
-  Providing garbage management unit
-  School disaster preparedness training in 3 communities
-  Installing local EWS system (sirene) in 1 community
-  Water rescue training in 3 communities
-  Socialization UPRB and PHBS in community and at schools

Surakarta City

Midstream Bengawan Solo

S.M. Budi Utomo, 42, a volunteer of SIBAT in Sewu urban village, thought at first that the arrival of the CFR program in 2015 would only be like other programs that had previously been implemented in his village.

Sewu urban village is one of the areas most impacted by flooding when the Bengawan Solo overflows. Time and time again, various institutions, government and private, come and go to the densely populated village offering various programs and aid.

“I thought it would only be training in Tawangmangu, followed by planting something and that was it. I thought it would be just like other programs, only training for two or three days, a month at most, and that was it, nothing more. It used to be like that. Even when I was appointed as SIBAT chief I didn’t imagine it would go on for more than two years like this,” he says.

SIBAT volunteer recruitment is one of the steps in implementing the Community Flood Resilience program, which is run by PMI in collaboration with IFRC and Zurich Insurance Indonesia. In Surakarta City, the program is implemented in Sewu urban village in Jebres District, as well as Sangkrah urban village and Semanggi urban village in Pasar Kliwon District. The three were selected from seven urban villages through which the Bengawan Solo flows in Surakarta because they are

the most impacted each time the Bengawan Solo overflows.

SIBAT member recruitment was done by the urban village authority. PMI asked for the various existing elements in the village to be involved. As a new organization, SIBAT needed support from people who have influence in the community. At the institutional level, PMI Surakarta City also established communication and coordination with the Environment Agency (BLH), BPBD, BBWS Bengawan Solo, and LPPM Universitas Sebelas Maret.

Through this program, PMI wants to conduct a comprehensive improvement by approaching the five capitals existing in the community, namely human resources, social resources, natural resources, physical resources, and financial resources. “Especially our target is to build the community’s human resources. If the human resources are good, hopefully other aspects can be strengthened more easily. If we build the financial resources without putting the human resources in mind, it would be useless,” says Wanto, a staff member of PMI Surakarta City who was appointed as CFR Field Coordinator in Surakarta.

“With SIBAT, there is always training, as if it never stops.”



S.M. Budi Utomo (42), a volunteer of SIBAT in Sewu urban village, who won first place in the National SIBAT Ambassador men category.

“With SIBAT, there is always training, as if it never stops,” says Budi. “Government programs were often only formed but then let go. Recently the government formed the River Working Group, in which I am also appointed as chief. After the formation of the organizers, we were just left behind, for months there was no meeting invitation whatsoever.”

Ever since he was a little boy, Budi has lived on the banks of the Bengawan Solo and has experienced floods as the river overflows. Land acquisition by the government for levee construction in 1990 took a big part of his father’s land. “At that time 1,000 square meters of my father’s land was taken, with compensation of Rp 5 million. Rp 5,000 per square meter. At that time my pocket money for school was Rp 300,” says Budi, who is also a neighborhood administrator. “I still live on the river bank, but now inside the levee.”

Living on the river bank, little Budi often saw SAR team’s activities at the Bengawan Solo, like evacuating flood victims, helping drowning people, and paddling races. The experience evoked his interest to do similar activities one day. His heart was moved when a huge flood hit a number of areas along the Bengawan Solo, including Surakarta in 2007, an event that is still freshly remembered by many residents.

The event which occurred last decade was the second largest flood to hit the longest river in Java, after the 1966 incident¹. Three quarters of Surakarta City were submerged in 1966. In some areas the water level reached six meters high, such

1) <http://etd.repository.ugm.ac.id/downloadfile/89070/potongan/S1-2015-299456-introduction.pdf>

as in Sangkrah and Pasar Kliwon.² The water entered the city and rose rapidly, before inundating the city for seven days. President Suharto declared the event a national disaster. To prevent it from happening again, the government built Gajah Mungkur reservoir to stem the upstream area of the Bengawan Solo in Wonogiri in 1976.

Sure enough, the construction of the reservoir which was expected to withhold the overflowing water for as long as 100 years, would not magically eradicate flooding from the Bengawan Solo. Major flooding that inundated Surakarta for two weeks in 2007 has shown how the reservoir was overwhelmed. Still, every rainy season, the Bengawan Solo always overflows and inundates Surakarta City as many as three to four times with water levels reaching 50–300 cm.

Floods due to the overflow of the Bengawan Solo have occurred even before Surakarta was founded by Pakubuwana II as the Mataram Kingdom’s new capital, after moving from Kartasura in 1745. After the Mataram Kingdom was divided through the Giyanti Treaty in 1755, one of which became Kasunanan Surakarta, Pakubuwana III built an

2) <http://etd.repository.ugm.ac.id/downloadfile/89070/potongan/S1-2015-299456-conclusion.pdf>

embankment at Sangkrah. In 1900, a dike was built around Surakarta City which was jointly funded by Pakubuwana X, Mangkunegara VI, and the Dutch colonial government. Still, the new dike could not stop flooding, which again inundated Surakarta in 1915.

From the beginning, Surakarta City was established in a swamp area flowed by several rivers. Surakarta is a lowland surrounded by the Wonogiri hills in the south, Merapi Volcano in the west, the Kendeng hills in the north, and Lawu Mountain in the east. The basin area contains water overflows every rainy season. Land conversion, erosion and siltation, along with population growth have also influenced the Bengawan Solo’s capacity, besides a number of other factors.

The Successful and the Unsuccessful

Ester Murtiningsih, 50, a volunteer of SIBAT in Sewu, just like Budi, is a former resident of the Bengawan Solo river bank area. Since she was little, Ester has experienced floods of various heights, from an adult’s knee high to one that submerged her house. “In 2014 I got evicted, I used the relocation compensation to

buy this house,” Ester says. “That’s why I want to join SIBAT. I was also impacted. I felt how difficult it was to be a flood victim. I want to help my fellow villagers, especially those who still live on the river bank.”

Since she still lived on the river bank, Ester liked to grow vegetables. After she moved, she encountered new obstacle, limited land. Ester tried to plant vegetables with aquaponic, a planting method on limited land that combines a vertical installation planting system with fish cultivation placed underneath. Ester started it by making one aquaponic installation.

When the CFR program was introduced not long after that, PMI considered aquaponic as an existing potential that could be developed, not only in Sewu but also in Sangkrah and Semanggi. “Aquaponic is the meeting point of two things that this program wants to achieve, greening and economy empowerment. Conventional planting on the ground is prone to flood; once hit by a flood all will die. Aquaponic is not affected by flooding, because of its raised position. In urban areas like Solo, it is difficult to find land for planting,” says Wanto.

“We socialized the program to the community with examples. If we



only invite them without showing any examples, people don’t see the results, they won’t be interested. Moreover I am a newcomer here. Coincidentally, hydroponic and aquaponic were trending at the time. The residents reacted positively, many were interested. But as with other programs, people usually were enthusiastic at first, but they’d lose interest afterwards. Hence, we chose people who already liked planting first, so it is well maintained until now. There are one or two that haven’t continued, not that they’re stopping, but perhaps they lack understanding in providing nutrients or in coping against pests,” says

“That’s why I want to join SIBAT. I was also impacted. I felt how difficult it was to be a flood victim.”



Ester Murtiningsih (50), a member of Sewu SIBAT

Bengawan Solo – Flood due to the river overflow has happened even before the city of Surakarta was established by Pakubuwana II as the new capital of Mataram Kingdom.

Ester, who became the coordinator for aquaponic activities in the three urban villages assisted by CFR.

In implementing the aquaponic, the residents grow some types of short-lived vegetables, such as water spinach, mustard, lettuce, celery, and mint, as well as cultivate parrot fish and catfish. Many residents became interested and made their own planting installations, even reaching outside the program assisted villages. They are now incorporated in Solo SIBAT Farmers Group, which is a development from Sewu SIBAT Farmers Group. The crops are still consumed by themselves, bartered with others’ crops, and some are sold. Sales proceeds are used to buy seeds. “We are currently in the process of establishing a cooperative, so the aquaponic activity can be better managed and more beneficial for all,” says Ester.

CFR also tries to develop the use of absorption wells. This program was initiated by the Surakarta Environment Agency, which requires the creation of at least one absorption well in each urban village office



Relax – Residents of Sangkrah relax in front of aquaponic installation.

“Aquaponic is the meeting point of two things that this program wants to achieve, greening and economy empowerment.”

Wanto, a staff member of PMI Surakarta City who was appointed as CFR Field Coordinator in Surakarta.



in Surakarta. The initiative was adopted by CFR and implemented in numerous points in and around the assisted urban villages, one of which is at Ester's house. "Before there was an absorption well, when it rained there was usually a puddle, but now there isn't anymore. The water immediately seeped. For two dry seasons in the past, my well went dry. The water from the water company is not very good, so I need to use my well. Now after there is an absorption well, my well still had water during the last dry season," explains Ester, who won first place in the National SIBAT Ambassador women category at the second National SIBAT Meeting in Bogor, September 2017.

Erosion on the river banks that causes siltation in the Bengawan Solo is also handled by CFR through planting to bind the soil. In the beginning of the program period in September 2015, at the request of the residents and the PMI Central Committee to hold a planting activity in Surakarta immediately, the CFR program planted mango trees on the river banks. Through coordination with LPPM UNS and the River Management Agency (BBWS), it was later found out that solid plants are not recommended to be planted on the river banks as they inhibit the



Absorption wells around areas assisted by CFR program.

water current. Garbage drifting along the river can get stuck there, thus further inhibiting the flow of the river. The risk of tree logs to get carried away by the current is also quite high, endangering the downstream area and potentially damaging the dam. The mango trees could not even grow optimally, because the land is not suitable.

"LPPM UNS and BBWS then recommended to us that a plants that can bind soil well and not inhibit the flow of the river is vetiver. The plant is strong, it doesn't die easily if flooded. Its root strongly bind the soil, reaching the depth of one meter. The municipal government is also willing to develop vetiver, hopefully it can be planted along the banks of the Bengawan Solo," says Wanto. From the planting activities that have been done, only vetiver in Semanggi urban village remains. "In Sewu, the vetiver field was actually three times the size of that in Semanggi, but it has been cleared to make way for parapet construction. It is now being replanted."

Another activity outlined in the CFR program that was unsuccessful was garbage management. Garbage in Surakarta has actually been handled through a government program. In 2016, Surakarta Mayor,

E.X. Hadi Rudyatmo abolished all temporary dumps and turned them into parks, to preserve ground water from waste residues. The government supported garbage trucks for each urban village to take care of their own garbage.

"What we wanted to develop is the sorting of organic and non-organic waste. The obstacle was that there was no proper location. The place that we proposed, after further study, turned out to be unfeasible, because organic waste causes an odor due to decomposition, and the place was too close to residential areas," says Wanto.

SIBAT and Community

As a native resident of Sewu, Budi believes that Bengawan Solo flooding is now more frequent in comparison to that of when he was a child. According to Budi, it is because water catchment areas are diminishing and siltation of the river continues to occur. "People now like to cover gutters with concrete, so water cannot seep into the ground. Sewers are now made using concrete molds, there's no hole on its right- and left-hand side, also the bottom side. So water can only flow. This makes the burden of the river greater."

“... a plants that can bind soil well and not inhibit the flow of the river is vetiver. The plant is strong, it doesn’t die easily if flooded.”

Wanto, a staff member of PMI Surakarta City who was appointed as CFR Field Coordinator in Surakarta.

The government has tried to relocate the residents in the river banks in an effort to normalize the river flow and the function of the river banks. This effort does not always work. Even when it does, new problem often emerges such as the cleared river bank is quickly turned into a dump by irresponsible residents. On the other side, many residents still refuse to be relocated and insist on staying on the river banks for various reasons, even with the risk of being closed off from access as parapets are then built there.

The residents on the river banks have actually been relatively ready to deal with the floods that often happen. “When the flood comes, people can still laugh here,” says Budi. “It’s just that they are less coordinated. Before there was SIBAT, the



residents just evacuated and that was that, because they didn’t know the coordination path with PMI, BPBD, or others. So they only waited for the aid to come. Even when it comes, the distribution is often uneven, some receive the aid, some others don’t receive it.”

SIBAT actively conducts socialization to the community, so the community has become more aware of environmental and health issues. SIBAT’s actions in the three urban villages assisted by the program are felt useful and appreciated by the community, so other residents have asked PMI

to also form SIBAT in their urban villages. “SIBAT teams along the Bengawan Solo have all been linked, upstream to downstream. Every re-gency flowed by the river has formed SIBAT. They communicate with each other, informing if something is coming up. They are incorporated in the Bengawan Solo SIBAT Forum, whose chief is also Budi,” says Wanto.

The presence of SIBAT supported by the CFR program in the community has also once caused jealousy. The funding from Zurich for the CFR program, amounting to Rp 500 million for each village, is quite a large sum of money. Some residents thought that SIBAT members were being paid and would gain huge profits from the implementation of the program. In fact, the basis of SIBAT involvement is volunteerism. “I try to explain to the community, that we are not getting paid. So if there’s anything, I report it all to the community through social media, through Facebook. So everything is transparent,” says Budi.

Budi himself feels more compelled to continue to engage in social activities. “I want to dedicate myself full time, to humanity, disaster, and the river. I do a screen printing business at home, currently I’m looking for someone to handle the business, so I



Vetiver at the banks of Bengawan Solo, Semanggi urban village (left). Handicrafts made from vetiver and waste materials (right).



Dok. PMI Surakarta

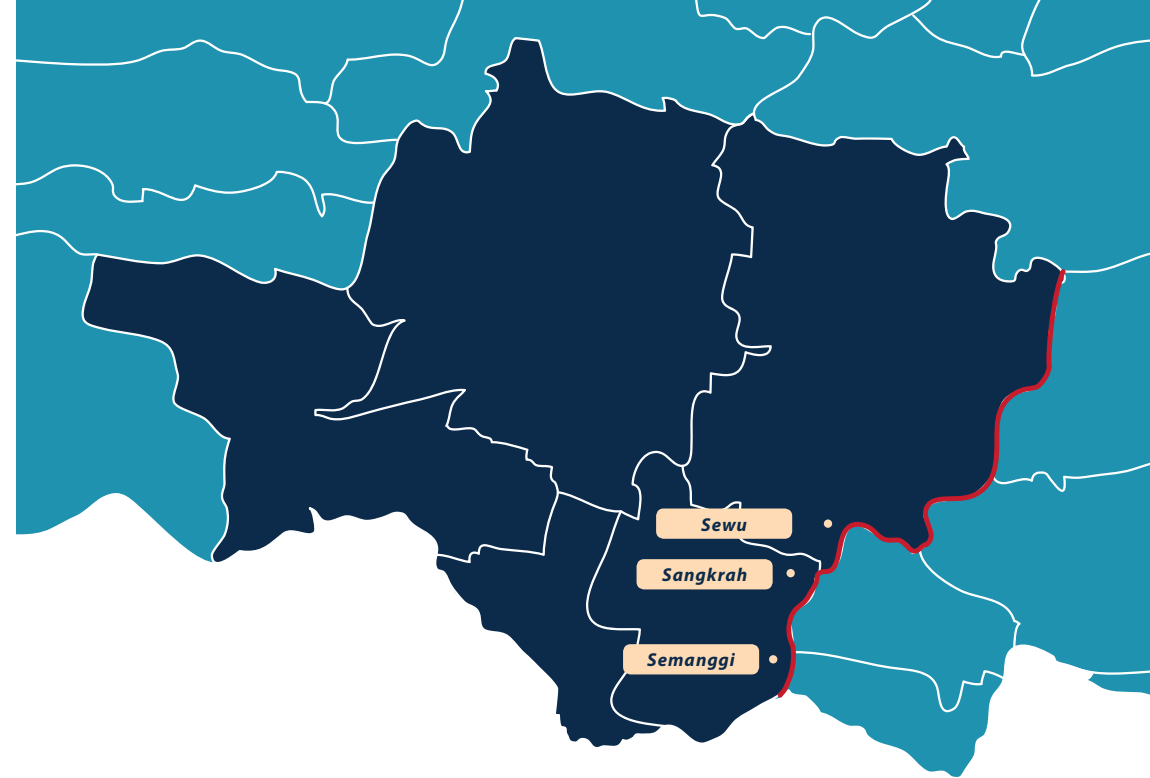
Guests from Mexican Red Cross visiting Semanggi urban village to learn about flood handling in the banks of Bengawan Solo.

can be more focused in social activities. It is now in a mess, if I work in social activities, my printing work at home would be in disorder.” As he submerges himself in social activities, Budi never worries about his economy. “From what I’ve been practicing, when we help others, fortune will come our way,” says Budi.

What remains an obstacle is some people’s belief to throw certain things into the river. Many residents throw baby diapers and sanitary napkins into the river. If thrown to a dump and later burnt, they fear their skin or

their baby’s skin would get itchy and inflamed, as if it was also burnt. Some other residents throw away property of the deceased into the river, so as not to be used by others. Budi tries to debunk such ancient beliefs through social media.

“What I found amusing is there is a resident, also a member of SIBAT, who works to clean the river. The other day, when his father died, he came here to ask for my permission to throw his late father’s mattress and clothes into the river. Though his job is to clean the river,” says Budi, who won first place in the National SIBAT Ambassador men category, laughing.



Surakarta

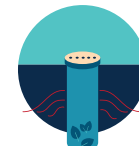
Bengawan Solo River



Greenbelt development plantation (*akar wangi*) for soil erosion control > 3000 in 3 communities



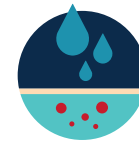
Disaster and emergency response training



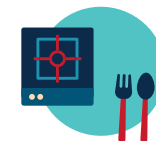
Biopore > 3200 in 3 communities



Socialization UPRB and PHBS in community and at schools



68 absorbing well in 3 communities



Public kitchen management training



Installing signboard for evacuation routes



Vertimina > 200 in 3 communities

Bojonegoro Regency

Downstream Bengawan Solo

On the sidelines of cultivating his lands, Mashuri, 49, and his wife clean, cut, fold, and interlace plastic packets of instant coffee powder to turn them into bags, purses, tissue boxes, tablecloths, mats, and hats, among other items.

The husband and wife pay attention to the details of the pictures on the coffee packets, so when woven they can make a certain pattern. They get the coffee packets for free from nearby stalls, for which they exchange a small bag or purse that they make. In addition, they also sell the handicrafts with affordable prices, although so far the marketing is still limited to neighbors and acquaintances, while the production depends on orders.

Mashuri does not use other powder drink packets as they are too small, making them difficult to fold and weave. “Only powder coffee packets are large enough. And I only use plastic, interwoven to each other, no stitches,” says the Community Protection (Linmas) member who is also a gardener, while stretching one of his bags, showing off its strength. “You can use it to carry durian,” he says. Mashuri recently started to add an inner cloth layer in response to customers’ requests.

The husband and wife are members of SIBAT in Tulungrejo Village, Trucuk District. Together with other volunteers of SIBAT in Tulungrejo, they received training in processing plastic waste from instant powder drink packets into various handicrafts from the Community Flood



Mashuri, 49, and his wife, SIBAT members in Tulungrejo, show bags they made from plastic waste.

Resilience program. Other than their village, in Bojonegoro Regency the program has also been implemented since 2015 in Trucuk Village and Sumbangtimun Village, Trucuk District. The program is implemented by PMI in collaboration with IFRC and Zurich Insurance Indonesia. Currently, there are only a few people still doing the plastic waste processing into handicrafts, including Mashuri and wife. “Folding them is rather difficult, not everyone has the willingness to painstakingly do it,” says Mashuri.

Garbage, especially plastic, has become one of the CFR program’s attentions in Bojonegoro. The three assisted villages have similar characteristics, with education and economic levels still quite low in



Flood in Bojonegoro in December 2016.

“In the beginning, the CFR program was mocked by the community, laughed at, because they felt that they were already used to being flood victims. But we were not acting in victim relief. We were more concerned with disaster management.”

Sukohawidodo, Head of PMI Bojonegoro Regency

general. This makes the residents’ understanding about garbage and the environment also fairly low. “In Trucuk, people still use boats for transportation. There are platforms from where they get into the boat to get across. Every time they go to work or to the market, or elsewhere, they carry a plastic bag full of garbage. While they’re crossing, they throw the plastic bag into the river,” explains M. Nur Hamid, Human Resource Section Head at PMI Bojonegoro

Regency, who is the Field Coordinator for the CFR program there.

The three assisted villages are located along the Bengawan Solo. Trucuk Village is next to Tulungrejo Village, while Sumbangtimun Village is located a bit farther away to the west, although the three are still in the same district. Trucuk District was selected to be assisted by the program because it is located on the oxbow of the river, so every year almost

the entire district is inundated by the overflow of the Bengawan Solo, which flows as far as 600 km from Wonogiri in Central Java to Gresik in East Java.

When major flooding occurs along the Bengawan Solo, such as in 2007, about three quarters of the area in 12 villages in Trucuk District can be submerged as high as the roof, while the annual flooding can inundate as high as 17–100 cm. “If



it's only one meter, the residents are still reluctant to evacuate. They usually make 'umpak' or floor 1½ to keep their goods and themselves dry, that's it. When the flood recedes, they will dismantle the umpak," says Nur.

"In the beginning, the CFR program was mocked by the community, laughed at, because they felt that they were already used to being flood victims. But we were not acting in victim relief. We were more concerned with disaster management. For instance, public kitchen management. If we were to cook, they would laugh at us, because they're already experts in cooking," says Sukohawidodo, Head of PMI Headquarters in Bojonegoro Regency.

"We approached them through management, so for example if we have this number of refugees, we will need this much rice, this many vegetables, then where we can access aid and relief, so they got interested. If we only talk about flood problems, they've already outsmarted us, they've been there since they were little. They were born there, grew up there, got old there," says Suko.

"We also teach children about cleanliness and garbage. We try to give them understanding, if there are 1,000 families in this village,



then every day if each house throws one plastic bag [of garbage], that's already 1,000. That's just one day. Over time, the river will be full of garbage. If we only tell them not to throw garbage carelessly, that doesn't work anymore. That's why we also teach the children, so they can 'scold' their parents," Suko adds.

Approach to the Community

Most of the residents in the three assisted villages are farmers, merchants in the market, and construction workers. The education

level is relatively low for elder residents, while most of the younger people have at least finished the nine-year basic education. The majority of the residents in the three villages are of middle to lower income. For so long they have experienced and been familiar with the annual flooding caused by the overflow of the Bengawan Solo, but their understanding of disaster preparedness is fairly low.

In an interview, the Regent of Bojonegoro, Kang Yoto, once expressed his surprise, as there are children who died from drowning in a

Since early children are introduced to disaster risk reduction efforts also clean and healthy lifestyle.

"If we only tell them not to throw garbage carelessly, that doesn't work anymore. That's why we also teach the children, so they can 'scold' their parents."

Sukohawidodo, Head of PMI Bojonegoro Regency

flood because they could not swim, or there are farmers who kept planting during flood season, while flooding occurs every year during those certain months.¹ The government of the regency has issued an appeal for the residents to delay planting during the flood season, which usually occurs between December and March. It takes a slow approach to evoke awareness among residents in risk reduction efforts in the event of disasters, whether financial or even life.

1) <https://news.detik.com/berita/3179175/kang-yoto-warga-bojonegoro-hidup-harmonis-dengan-banjir>

“Now, after we were given understanding by PMI about asset safety, even since the dry season we have already secured our documents and letters, so when the flood comes we can bring them along to evacuate.”



Dwi Pujo Wuriyanto (44), chief of SIBAT in Tulungrejo Village

Not only the government, the CFR program also tries to approach the impacted community to provide awareness about asset management. “We start with simple things, when the flooding comes, what should they bring. That’s for a start. The most important thing is to secure our legal documents. We taught them so, so gradually they got more interested. Not the act of evacuating itself, because they’re already experienced, with that” says Suko.

Dwi Pujo Wuriyanto, 44, the chief of SIBAT in Tulungrejo Village, agrees with Suko. “Before the program was introduced, when the flooding came we only knew to save our family, and then to save our cattle. Now, after we were given understanding by PMI about asset safety, even since the dry season we have already secured our documents and letters, so when the flood comes we can bring them along to evacuate,” he says. “In our experience during the 2007 flood event, almost all of the residents lost their important documents. From vehicle ownership letters (BPKB), school diplomas, even marriage certificates, many were lost.”

PMI’s approach through the CFR program was not easy. The Tulungrejo community at first responded coldly to the survey and mapping conducted by SIBAT volunteers. “They said, what is the questioning for, a flood is a flood, what kind of relief can you give, and so on. After we slowly explained what our goal was and we asked them about their actual conditions during a flood, only then did they begin to reveal their distresses and complaints, which became a reference for our program,” Dwi remembers.



Public kitchen management training for SIBAT and community in Trucuk, October 2016.

Some of the complaints that were often raised by many were transportation difficulty as they had no boats; the lack of basic necessities such as food, clothing, and medicine; difficulty in fulfilling their necessities, especially for the elderly and children; the need for access to information that is fast and reliable, because news about the flood from television and radio were often just information from a few days earlier that kept being repeated; and difficulty in evacuation coordination, because the residents often just thought to save themselves without telling anyone else, so officers or neighbors also did not know whether the person concerned was still inside the house or had already evacuated.

Relief and Mitigation

In Trucuk District, the government has built a shelter for evacuation that is named EBAGA, whose development was funded by the central government, while the land procurement was paid by the government of Bojonegoro Regency. Erected on one hectare of land at Sumberejo Village, the building can hold 300 evacuees with proper facilities, including bathrooms and communal kitchens. However, the



SIBAT command post in Trucuk Village (left). Temporary shelter in Tulungrejo Village (center). Residents of Tulungrejo installing evacuation signage (right).



community is reluctant to evacuate to the building, which is worth Rp 1.5 billion and was officiated by the head of the national disaster response agency (BNPB) in November 2013, because it is quite far. Residents of Tulungrejo for instance, if they are to evacuate there, must cross four villages through the flood.

Responding to the needs of the community, the CFR program provides several supports. In addition to helping establish a SIBAT command post and providing its equipment in each assisted village, CFR helped to construct a temporary gathering point in Tulungrejo. Located next to the village administration office, the

temporary gathering point is a field raised 1.5 meter above the ground used as a gathering point in the event of a flood, thus securing the residents from inundation before being picked up by officers to evacuate to EBAGA or elsewhere. Such a contingency plan has also been coordinated with other institutions related to disaster and community, such as the local disaster response agency (BPBD) and the police department, so they can also mobilize the residents during an emergency.

The recruitment of SIBAT members has also from the beginning tried to involve various elements in the village, from activists of organizations

like Karang Taruna and PKK, to community figures like neighborhood and hamlet administrators. Other than to make coordination easier, it was also done so that SIBAT could be accepted more easily by the community. As many as 30 SIBAT volunteers from each village were then equipped with various trainings by PMI in 2015, from disaster preparedness to survey and mapping preparation using Android and GPS devices.

“Some, including myself, didn’t know how to use an Android device before. If I didn’t have it, I’d be left behind, but if I forced myself to buy it, it wasn’t really cheap either,” says Dwi. “Many of our members are

construction workers, farmers, so sorry to say, whose income is rather low. Buying an Android device is indeed burdensome, but ultimately we feel that it is also necessary, so almost all of our members now have our own Android smartphones.” Not only for surveying and mapping, the Android-based gadget is also used to maintain coordination and communication.

“At first it was a headache [to learn to use the Android], but eventually we feel it is also important, that the Android is not only for Facebook. The members of SIBAT can now also coordinate and communicate easier through WhatsApp groups. We

can also share water level or disaster information with colleagues in other regions also flowed by the Bengawan Solo through the Bengawan Solo SIBAT Forum group. Almost all members of SIBAT now use Androids, including to learn about the app FEWEAS, which is useful to monitor the condition of the Bengawan Solo, so we can be more vigilant,” says Dwi.

Bengawan Solo Green Belt

Although Bojonegoro is located in the downstream area of the Bengawan Solo, the siltation of the river due to erosion and sedimentation has also become a problem that is highlighted by the CFR program. The stream of the Bengawan Solo, especially in Trucuk District, is quite swift, so it often erodes the land on the river



banks. To counteract the siltation, CFR conducts planting activities on the river banks to reduce erosion while also making ‘awir’. ‘Awir’ are bamboo stakes installed on the banks of the river to prevent landslides while capturing garbage and mud carried by the current.

In the 1980’s, the Trucuk area was once known as a producer of a unique guava, which is smaller and sweeter than guavas grown in other areas. Its popularity faded after there was an outbreak of caterpillar attacks.² This guava that was much sought after as a gift was widely cultivated in Tulungrejo, so it came to be called tulung guava. Considering its economic value as well as restoring its popularity, PMI chose red guava to be planted along the banks of Bengawan Solo in the erosion control program. Other than red guava, bamboo and aren palm are also planted in Tulungrejo Village and Trucuk Village as part of a green belt.

In December 2016, the Bengawan Solo overflowed again and swept away the aren palm, bamboo, and guava that had just been planted, along with the ‘awir’ that had been installed. The plants that were only a few months old were swept away because their young roots were not strong enough to grasp the ground. “Let alone the ‘awir’ that is made of bamboo, even the ‘bronjong’ that is made of river stone and iron wire, which was installed by the government, was washed away by the flood,” says Nur.

In Sumbangtimun Village, another method of planting that is not affected by flooding was also done, that is hydroponic. However, the planting

2) <https://www.kanalbojonegoro.com/kecamatan-trucuk-kembalikan-pamor-jambu-tulung/>

Red guava planted along the banks of Bengawan Solo to prevent erosion.

“Almost all members of SIBAT now use Androids, including to learn about the app FEWEAS, which is useful to monitor the condition of the Bengawan Solo, so we can be more vigilant.”

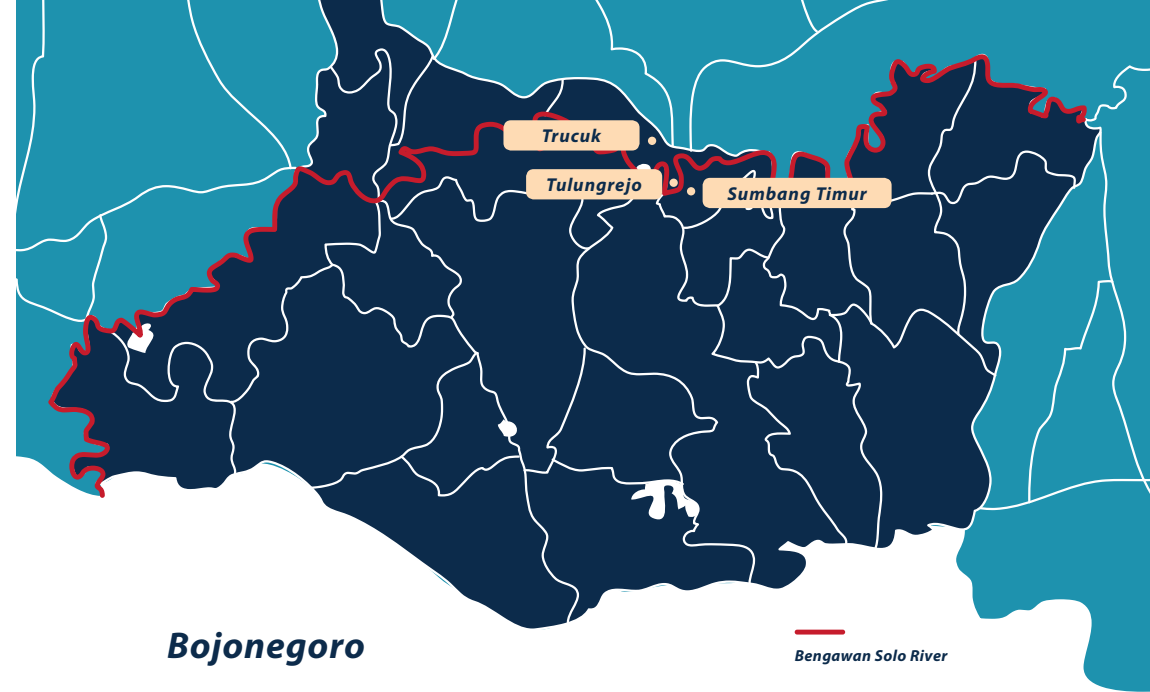
Dwi Pujo Wuriyanto (44), chief of SIBAT in Tulungrejo Village

of mustard and onions that had been tried could not be carried on. According to Kuliyadi, the chief of SIBAT in Sumbangtimun, the water pump used to irrigate the hydroponic installation had been stolen, while the planting medium that must be bought was considered burdensome by the residents. The PVC pipe installation now just sits in front of the SIBAT command post, which is located next to the Sumbangtimun Village administration office. The hydroponic planting will be reactivated by seeding that has been promised by the village authority to be included in the 2018 budget.

Trucuk Village will also include SIBAT activities in the village budget for this year. In addition to reserve funds in the event of disaster, SIBAT operational funds are also budgeted for command post and inventory maintenance. SIBAT can be included in the village budget because it has been officially tied with Village Regulation since its

formation in 2015. This ensures the sustainability of SIBAT as a group and organization in each of the three villages, while also demanding the sincerity of its members to continue taking active roles in the community and to regenerate if necessary, also from PMI to keep providing them with assistance and trainings.

Up to this point, SIBAT teams in villages assisted by the program have recruited new members during refresh meetings conducted to review the trainings that have been given. Other than to add personnel, recruitment was also done to replace older members who have become inactive due to other activities outside of SIBAT. The regeneration in the three villages has not been difficult, as the actions of SIBAT so far have been considered positive by the community, so young people are interested to also empower themselves, by volunteering with SIBAT and in turn to empower the community through the program and activities of SIBAT. ---



Bojonegoro

Bengawan Solo River

	Providing 6 flood transportation (boats) in 2 communities		Disaster public/field kitchen management training in 2 communities
	Providing 60 signboards for evacuation routes in 3 communities		Constructing garbage place (garbage disposal) in 1 community
	1000 tree planting along the riverbank (arena & bamboo) in 1 community		Garbage recycle training in 2 communities
	School disaster preparedness training		Greenbelt development (1000 trees) in 1 community
	Installing bamboo fence/poles (awir) for riverbank protection in 1 community		Construct a place for productive plantation and nursery in 1 community

Flood Early Warning & Early Action System

FEWEAS

Problems related to flooding have become more complicated, making communities no longer able to anticipate flooding in their customary ways. A shift in season patterns and extreme weather, for example, has made flood season predictions sometimes miss. Environmental damage makes the flooding higher and more widespread. In order to reduce disaster risks, disaster mitigation and long-term adaptation efforts towards flooding need to be effective, well-planned, and take into account accurate estimates of flood potential. Facing such a shift, communities need to utilize science and technology to determine the right mitigation measures.

It is at this point that CFR feels the need to embrace academia in running the program, one example of which is ITB (Bandung Institute of Technology), which was invited to develop a flood early warning system. Through a partnership with the CFR program, the team, lead by Dr. Armi Susandi, M.T., Head of Meteorology Study Program at ITB, has developed the application Flood Early Warning and Early Action System (FEWEAS), which is accessible

through a website, and via Android and iOS smartphones. The app, developed by ten ITB graduates and two professionals, gives updates on the state of the river and flood potential with high resolution and high accuracy, in real time as well as future estimates. The information is processed from data observed by Perum Jasa Tirta, which uses automatic water level and rainfall recorders at several points along the river.

From this data, combined with data from NOAA's satellite, the FEWEAS team created weather, climate, and flood potential predictions modeling, such as ITB's own Smart Climate Models. The data and models are processed to create 10-day weather and rainfall forecasts; alert status, water level, and inundation predictions; hourly flood potential predictions for up to two days (short period) and 10-day predictions for up to the next five years (long period); also a village-level warning system, as well as early adaptation and action.

Through the provided information, FEWEAS helps decision makers and communities reduce the risk of flooding through the right measures. It is hoped



“It is the greatest app we have, with high resolution and some new feature, ...”

Armi Susandi, Leader of FEWEAS development team

that FEWEAS can strengthen communities' disaster preparedness and adaptability in encountering floods. FEWEAS's interface is designed to be informative and simple, so anyone can use it. “We developed the app since February 2017. It is the second generation after last year's FEWEAS Bengawan Solo. It is the greatest app we have, with high resolution and some new features,” said Armi during the FEWEAS Citarum app's launch in December 2017.¹

Before FEWEAS, Perum Jasa Tirta I, which manages the Bengawan Solo, and Jasa Tirta II, which manages the Citarum, already had an early warning system, though it only depended on real time rainfall and water level records from observation stations in addition to sensors and recording devices along the river. FEWEAS enhances the already established system by building weather forecasting models to predict flood potential.

Other than information around the state of the river and weather, the FEWEAS app also has an adaptation proposal feature to reduce communities' vulnerability to flooding. The proposed adaptation consists

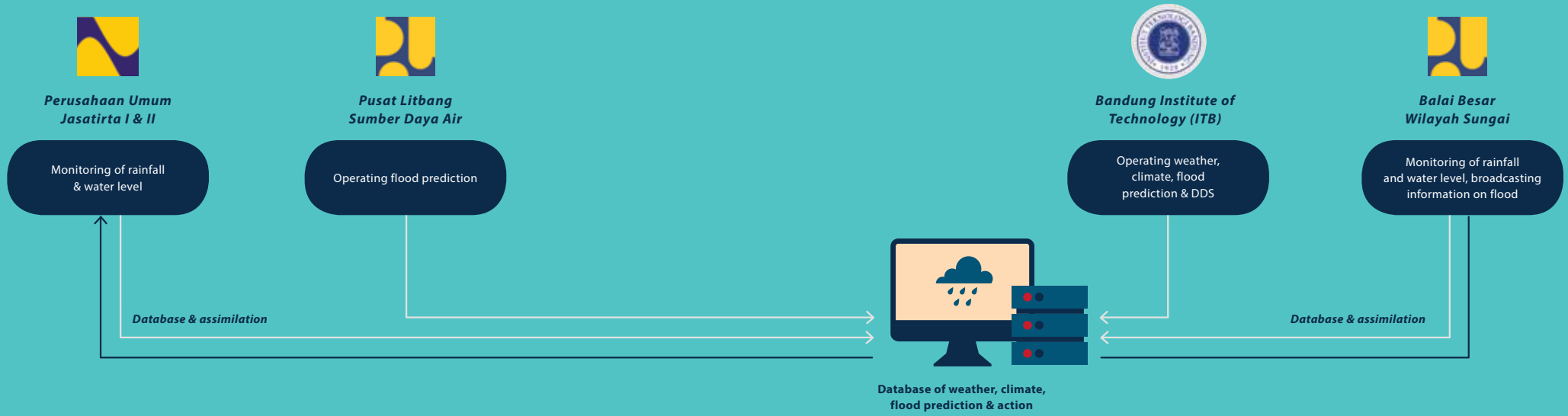
of three parts, which are rehabilitation and conservation, advice on efficient use of natural resources, and water resource damage control such as erosion. As for early warning, FEWEAS uses a disaster warning messaging format that is simple and easily understood by the community, to speed up the disaster warning process, simplify the flow of information, and standardize related institutions' disaster warnings.

Other than disaster, weather forecast information provided by FEWEAS can also be used to plan agricultural activities. Farmers can utilize the information on rainfall prediction to determine the correct period for cultivating the land, seeding, planting, fertilizing, and harvesting. “It is highly reliable. In Indramayu, for example, it's had 90 percent success,” said Armi.² ---

1) <http://jabar.tribunnews.com/2017/12/11/hindari-cuaca-ekstrem-dan-risiko-banjir-sungai-citarum-dengan-aplikasi-gratis-feweas>

2) <http://nasional.republika.co.id/berita/nasional/daerah/17/12/11/p0sb26328-aplikasi-peringatan-banjir-akan-digunakan-di-citarum>

FEWEAS



Homescreen

In early page, user has to login with their identity. User can make their own identity by enter to the "create account" menu.

Prediction

This feature includes about meteorology and flood potential prediction for 3 days ahead with high resolution and accuracy and climatology with 10-days prediction.

Observation

This feature includes about the realtime data of rainfall and water level that is gotten from instruments such as AWS (Automatic Weather Station) and AWLR (Automatic Water Level Record).

Warning Status

This feature contains flood hazard warning based on flood prediction in Citarum or Bengawan Solo River Basin.



Common Alert Protocol

In this feature, user can input the information about the condition around the user. User can put the location, severity level, description about location. This data will be automatically sent to the local government as a consideration before release the warning.

Your Information

This feature shows all information with hashtag #citarum #bengawansolo that the user send to the social media such as twitter.



Epilogue

“Building resilience is a journey of a thousand steps, and it is about taking one step each day, little by little.”

Francisco Ianni, Senior Officer, Floods Resilience, IFRC

There seems to be a kind of restrained relief in the stories about the CFR program collected from the people involved in the field, both from the assisted communities as well as from PMI as the facilitator. Relieved, because the program has been running well and making good results. Restrained, because the completion of the program period does not necessarily mean the end of the implemented activities to achieve the outlined goals. Moreover, CFR is not implemented with the purpose of eliminating flooding, but rather to build the resilience of the impacted community, by increasing their resistance in facing flood risks. Resilience also implies preparedness and alertness, actively taking risk reduction measures, not only passively waiting for disasters to happen as a cue for response.

From a historical point of view, flooding has happened for centuries. Jakarta, for instance, was a swampy lowland at the edge of alluvial plains, formed because of accumulation of mud sediments from a volcanic mountain in the south carried by tropical rains.¹ Since the era of the Tarumanegara Kingdom in the fifth century, overflow from the Ciliwung

1) <http://news.liputan6.com/read/2869714/banjir-jakarta-dari-letusan-gunung-salak-hingga-kilang-tebu>

River has repeatedly inundated it. The condition stayed that way because of incorrect city planning by settlers who later inhabit it. Since its arrival in the 17th century, the Dutch East India Company (VOC) built a city literally next to the Ciliwung, while also clearing the forests on the river banks to turn into sugar cane plantations. Once processed into sugar, the bagasse was just dumped into the river. The unhealthy ecosystem of the Ciliwung is evident in its incapacity to retain water; it is virtually waterless during dry season, and overflows during rainy season.

Such conditions can commonly be found in other watersheds. As factors that cause and problems caused by flooding have become more complicated, countermeasures cannot rely only on one side. Unfortunately, the impacted people are often not considered as an important element, as if they are merely objects. Empowerment needs to be done to re-humanize them, to position them back as subjects. The community is not merely a victim, as they also have ecological and sociological roles in overcoming flooding. It is this role that is trying to be reactivated through the Community Flood Resilience program initiative.



Young SIBAT members in Tugu Utara, Bogor (left to right) Indri Safitri, 20, Risma Wati, 18, Siti Mujibah, 19, and young SIBAT members in Cipayung, Bogor.

In addition to developing human resources, CFR also works on other capitals that work within the system. Humans are not a solitary being, but live in a social network. A social network affects and is affected by its local environment, natural and structural. Economic and financial aspects, as support systems for our modern life, are also taken into account. Such a comprehensive approach is essential to ensure the program's sustainability, as each aspect is connected to another in developing and empowering the community.

Equally important is building community self-reliance in handling

their own problems, both in facing disaster and in determining the mitigation measures. This approach is evident in the CFR program through an emphasis on establishing and strengthening the community-based volunteer group, SIBAT. In its development, the SIBAT program can be considered a smart breakthrough that benefits all parties. On the one hand, the community becomes resilient and empowered in encountering disasters; on the other hand, the community's self-reliance and resilience makes other related stakeholders' tasks easier.

“The formation of SIBAT actually has great impacts and advantages for PMI. PMI also benefits. SIBAT is

essentially PMI volunteer in the community. They know exactly about their environment. So should anything happens, we only need to give support to them,” said Wanto, CFR Field Coordinator in Surakarta. “In the past, when there was a flood, we went to assess the affected areas and rushed to set up a public kitchen at our office. Now, our friends at SIBAT can act on their own. They assess their own areas and set up their own public kitchen.”

In order to encourage community self-reliance, the CFR program helps provide disaster response necessities. Each assisted village is provided with evacuation signage and equipments, such as rescue boats and life jackets, among others, so that the community can quickly save themselves in the event of a disaster, without having to wait for help or instructions from officers. Public kitchen utensils are also supplied so the community can provide their own meals during an emergency response period.

“SIBAT is essentially PMI volunteer in the community. They know exactly about their environment.”

Wanto, a staff member of PMI Surakarta City who was appointed as CFR Field Coordinator in Surakarta.

Planting trees and cleaning the environment by SIBAT in Bogor are small habits that are expected to create social awareness.

“The change won't happen in a sudden. We want to build a little habit that creates social consciousness.”



Francisco Ianni, Senior Officer, Floods Resilience, IFRC

The responsibility for implementing emergency response and the use of those equipments and utensils are delegated to SIBAT, which has been provided with trainings in disaster response and management. Wanto added, “If there is support from PMI or other institutions, we forward them to SIBAT. Other institutions also benefit. In the event of an emergency situation, SIBAT is already there in the field. The core of SIBAT activities is community-based disaster risk reduction.”

After knowing the actions and benefits of SIBAT, many people from neighbouring villages ask PMI to also provide trainings and form SIBAT in their villages. Local government is also committed to develop SIBAT, as is evident in Surakarta. “SIBAT has been pioneered in the three assisted villages, which are impacted by disaster every year, so to speak. The municipal government, the mayor himself, hopes that this [SIBAT] can be replicated and multiplied in other villages. We clearly support this, because however nice we build the city, disaster keeps destroying it. We have to be able to overcome this with disaster response,” said Budi Yulistianto, Surakarta City Secretary.

One Long Journey, One Step at A Time

The most important thing from SIBAT is molding volunteerism, because it is the very foundation to build community-based disaster preparedness. Volunteerism is key to transforming social concerns and calling from the heart into real actions. What can be a challenge then is that those volunteers are also impacted by the disaster that hits their community. They need to be resilient first, able to



overcome themselves, before they can take on the role to support and help others.

“It is not easy to become a member of SIBAT team. They are very special. If someone else is in an emergency, they are willing to act and help. Many people, when there is an emergency over there, they look away. SIBAT, if there is an emergency over there, they are going there. So it is difficult; only special people can do it,” said Francisco Ianni, Disaster Risk Reduction Delegate from IFRC.

“The change won't happen in a sudden. We want to build a little



habit that creates social consciousness. As human beings, we are losing our symbiotic relationship with mother nature. Anything that is organic will go back to the Earth and be recycled as part of our natural cycle. Anything that is not organic will remain on the surface, create flooding, kill animals, create a lot of problems,” he added. “Sometimes you need a substitute when you are tired. But you need to make sure that you score and set goals.”

To change perceptions and get to action, Francisco said there is a need to take two initial steps.



“One is awareness. People need to understand, because many people do not know that they are at risk. Number two is agreement with two key questions you have to ask: do you think this issue is important and can you do something about it.”

In relation to the implementation of CFR in Indonesia, Francisco sees a lot of excellence in comparisons with similar programs implemented in other countries. “Mexico also has community based response team, like SIBAT in Indonesia. The difference is that SIBAT members in Indonesia have formal recognition

by local government. The program closely partners not only with their local Red Cross branch, but also with local government and other key stakeholders. I think that is the key difference that we should aim to try to replicate in other countries in other programs. We need to have broader stakeholders to support the local community disaster response team over the long term.”

PMI also emphasises cooperation among different stakeholders in building and strengthening sustainable disaster preparedness. “There are three steps in disaster:

pre-disaster, disaster or emergency, and post-disaster or recovery. It is a cycle that keeps turning, so that during the period before a disaster hits, we work on what is called risk reduction. Integrated community-based risk reduction or ICBRR. So it is integrated, not each one on its own. Therefore with the implementation of CFR, we support NGOs that provide training and education, and so on, including Zurich and IFRC this time,” said Lt. Gen. (Retired) Sumarsono, S.H., Chief of Disaster Management Division of PMI.

Regarding the coordination of the CFR program with the government, Sumarsono added, “We are hoping that all of these programs can be adopted into government programs. For instance, in Bandung, with FEWEAS and so on. We can only work in some spots, so we hope the program can be copied in other villages. My point is, how we involve the community to have concerns in disaster risk reduction measures.”

Community social concerns have slowly been formed, as seen in the areas assisted by the program. In Bandung Regency and Karawang Regency, submersible wells aided by the CFR program are built on residents’ land, considering the choice of location to be near and accessible from the community who needs them. Maintenance and operational expenses, such as cost of electricity for the pump or cost of repairing a damaged faucet, are borne with contributions from the community. SIBAT members in various villages all express that they are ready to serve the community, leaving whatever they are doing should an emergency situation occur. After undertaking trainings in disaster management and health service, SIBAT

CFR program (2015–2017) handover to the municipal government of Surakarta City, 1 February 2018.

“We are hoping that all of these programs can be adopted into government programs.”

Lt. Gen (Retired) Sumarsono, S.H., Chief of Disaster Management Division of PMI

volunteers in Bojonegoro Regency have actively engaged and counseled the community, reaching thousands of residents. It is all because they care.

“From our findings, the program has different kinds of results,” said Surendra Kumar Regmi, Disaster Risk Reduction Flood Resilience Delegate of IFRC. “Community

projects have two distinct parts. One is building community capacity and increasing community preparedness. Another part is providing them some risk reduction solutions. Not all areas have good results in both parts as we thought in the beginning. In terms of risk reduction solutions maybe in some communities we

are not successful, but in terms of preparedness and community capacity building we are equally good.”

“Our role actually was to develop workable effective solutions, set an example for the community and stakeholders, that this can work. Then it is up to the public, government,

Visit by Zurich Foundation, IFRC, and PMI during the end of CFR program period. Sangkrah Urban Village, Surakarta, 1 February 2018.



“It is very positive, good, effective, and efficient. Of course the government of Wonogiri Regency will respond to this and have an obligation to follow up this program.”




Edy Santosa, S.H., Vice Regent of Wonogiri

and authority to expand and replicate with the private sector and NGOs. In that sense, even though the scale of this program is not that big, if something we have done is good and accepted by the community that for me is a big success. I have confidence in this program,” said Surendra. Edy Santosa, S.H., Vice Regent of Wonogiri, also expressed his support, “It is very positive, good, effective, and efficient. Of course the government of Wonogiri Regency will respond to this and have an obligation to follow up this program.”

The involvement of various parties to develop the program is also

thought to be important by Zurich. “Up to this point, Zurich is the sole funder. We will continue to work with PMI and IFRC, so we will need more partners,” said David Nash, Z Zurich Foundation Manager.

The second phase of the program, according to David, will cover influencing community practitioners to adopt the methodology of the program and replicate it, and influence the community to manage their assets and investments in smarter ways, especially in relation to flood risks. “Just because you are insured, does not mean you are resilient,” said David. ---



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