

## Episode 266—R. Bong Vergara: Running a Social Enterprise as a Professional Social Worker

[00:00:08] Welcome to inSocialWork, the podcast series of the University at Buffalo School of Social Work at [www.inSocialWork.org](http://www.inSocialWork.org). We're glad you could join us today. The purpose of inSocialWork is to engage practitioners and researchers in lifelong learning and to promote research to practice and practice to research. We educate. We connect. We care. We're inSocialWork.

[00:00:37] Hi from Buffalo! June in Buffalo is highlighted by one of Buffalo's own social enterprise success stories, The First Ward's neighborhood transformation led by the Valley Community Association. The VCA hosts Buffalo Riverfest, a celebration highlighted by three days of events, music and a regatta along our downtown river corridor, further enhancing the improved quality of life of the Buffalo River communities, individuals and families. I'm Peter Sobota. I dare you to listen to this discussion and not marvel and be inspired by the activity of innovative social worker's approaches to macro social work. In this episode our guest, R. Bong Vergara MSW describes his work attempting in his words to disrupt conventional thinking related to global problems and poverty. Originally inspired by three typhoons and Facebook, he explains how he began a journey to integrate technology to address global issues and especially poverty through a for-profit enterprise. He will discuss how he utilizes innovation and social enterprise to build sustainable social impact and build wealth for marginalized communities. He weaves social and physical science's perspectives to challenge conventional approaches and invites both social workers and citizens alike to move from being tech consumers to tech innovators. R. Bong Vergara MSW is adjunct assistant professor at the University of Southern California's Suzanne Dworak-Peck School of Social Work. He was interviewed in February of 2019 by our own Dr. Gokul Mandayam, clinical associate professor here at the UB School of Social Work.

[00:02:20] Hello. this is Gokul Mandayam, clinical associate professor with the University at Buffalo School of Social Work. I am speaking with Professor Vergara, adjunct faculty member at Suzanne Dworak-Peck School of Social Work at the University of Southern California. Welcome Professor Vergara. So, my first question to you is, could you tell us a little bit about your background and what led you to start your social enterprise?

[00:02:48] Sure, and, first of all, thanks again, Professor Mandayam, for this opportunity to share my story. I'm an adjunct assistant professor at USC Suzanne Dworak-Peck School of Social Work. I currently teach foundation and concentration courses in policy practice and research.

What motivated my career has been and continues to be poverty; my career has developed along with me over the years but the unifying spirit behind that remains anti-poverty work. Currently, I link social equity and social protection with the fields of technology transfer and technology incubation to solve problems in the overlap between human and planetary health, especially where water and energy systems interact to cause insecurity in the nexus of food, energy, and water systems. I'm focused on enabling resource-poor communities to have access to fresh food, clean water, and clean energy as we transition to a low-carbon economy in which food, energy, and water are basic services that are made without fossil fuels.

I am a co-founder of a for-profit LLC that delivers water treatment and renewable energy solutions to Small Island Developing States and coastal communities, and we're most excited about our pilot project in American Samoa, so, I'm hoping I'll have an opportunity to make some reference to that pilot project in a little bit. I'm also the founder of a nonprofit that incubates technology tools for the

grand challenges of Social Work. We're most excited about building a social stock exchange for technology tools in social work, and as that work moves forward, I hope I'll have a chance to tell you more about it. I'm quite excited about the potential for a technology practice in social work, which this social stock exchange is designed to help define and establish.

Now, as far as what led me to start a social enterprise, that can best be answered with a brief story on three super typhoons and Facebook. Three super typhoons that ravaged the Philippines in 2009 impacted me deeply because they struck the northern-most island where I was born and raised. For several weeks, I was glued to the TV and my computer screen so that I could be current on the latest news and YouTube videos on what was happening. I knew that I could be useful in disaster relief by sending disaster relief goods like medicine, clothes, shoes, blankets and food. So, I used my Facebook account to ask UCLA and UC Berkeley alumni for disaster relief goods and worked with Special Service for Groups-Pacific Asian and Alcohol Drug Program, a nonprofit in Los Angeles, to send close to three dozen 3x3 boxes of relief goods to three provinces.

That 2009 experience demonstrated to me, in a very personal way, one practical use of technology in disaster relief, in particular, and social work, in general. It made me integrate technology into my social work career and made me think seriously about social enterprise as a means for sustaining it and doing it over time.

Social enterprise -- a business that pairs wealth-building with social and environmental impact -- continues to make sense for me and my career because of how it solves the requirement of scale to achieve social impact. With few exceptions, many if not most community-based organizations never make it to the right scale that enables them to make broad social impact because they rely on a traditional fundraising model. Asking for philanthropic support and donations does not reward risk -- does not incentivize serious financial investment -- because it's just simply philanthropy. A social enterprise model, on the other hand, where both investors and target beneficiaries get financial and social impact reward, enables the necessary scale, ensures that what we build is fit for purpose. It is the best suited model for the tech-enabled career I dream of having.

So, in late 2009 I founded a nonprofit organization focused on cultivating CleanTech innovation at the intersection of food, energy, and water systems. So far, three cohorts of students from China, Kenya and the U.S. have been inspired to become innovators in integrating technology into food production, irrigation management and water desalination. As a macro social work practitioner, what I consider a highlight so far is having the California Governor's Office of Planning and Research ask me in 2015 to share how I would link social equity with the clean energy adoption in low income communities. Because of that nudge by that partner, my team and I hosted an interagency dialogue in 2016 at the Los Angeles Cleantech Incubator campus in Downtown L.A., during which we showcased four idea-stage CleanTech solutions to food insecurity, drought, and sanitation. The innovators were youth from Kisumu County, Kenya; Shanghai, China and San Marcos, California.

In 2017 I co-founded a for-profit technology firm to widen grassroots access to food, energy, water technology solutions. What we do is we take existing technology on water treatment and desalination used in U.S. Navy ships, link solar and wind power generators to them and make them available as small-scale solutions to local communities. Our clients are Small Island Developing States and coastal communities, particularly in the Asia Pacific and Caribbean regions. Much of our work is aligned with that of the Asia Low Emission Development Strategies Partnership and the United Nations

Science Technology Innovation network. Like these stakeholder groups, we look for and deploy technology solutions for sustainable development. We engage in match-making technology innovation with grassroots level needs for food, energy and water resources and transferring much needed technology solutions for smart sustainable urban development.

[00:09:19] Thank you Professor Vergara. Just for the benefit of the audience I would like to elaborate the two acronyms UCLA stands for University of California Los Angeles and UC Berkeley stands for University of California Berkeley. Before we move on to the next question, I thought the term "social stock exchange" that you alluded to is a very interesting term. And if you do not mind me asking this, could you please explain briefly what exactly that refers to?

[00:09:47] Sure. Social stock exchange, in a nutshell, is just like a regular stock exchange where you have stocks from companies being traded between the owners of the stock and investors.

What the 'social' is in social stock exchange is that the companies include not just for-profit companies but also nonprofit entities. And in our model how we're planning to build this is convert social work solutions into investment assets by integrating technology, which can be commercialized, which could be commodified and therefore traded, integrating technology components into those social work solutions.

There are four social stock exchanges currently operational around the world. There's one, the oldest one is in South Africa, the other three are in Singapore, Canada and the UK. And my team and I are doing a deep dive and each of them to take the best parts of their models and integrate them into our own.

[00:10:51] Thank you Professor Vergara for that very clear explanation of that term. Moving on, my next question to you is what inspired you to get your Master's in Social Work and how has that affected your work as an innovator and entrepreneur.

[00:11:06] Sure. What led me to social work is, without a doubt, a faculty mentor by the name of Dr. Pauline Agbayani, one of my colleagues and friends at UCLA when I was an undergraduate and also a graduate student there. I credit her for linking me and my desire to fight poverty to a profession, in this case social work. Dr. Agbayani taught me that fighting poverty is *the elemental focus* of social work so, it was a no brainer for me to enter the field, given that I was so motivated to fighting poverty.

As an undergrad I took part in the UCLA Undergraduate Research Training Program under the supervision of Dr. Diego Vigil and that training experience led me to increase my interest in poverty as a research topic, which led to a small paper in a working paper series for the UCLA Center for the Study of Urban Poverty in the mid-1990s. As a graduate student, my thesis was a practice framework for immigrant poverty that paired objective life status with subjective life satisfaction.

In the years that ensued after graduating from UCLA, especially in the lead up to the passage of health reform in 2010, developing innovative social and health programs for clinics that appealed to public and private funders deepened my appreciation for the practical use of evidence, especially from non-allied fields, like computer science and technology transfer, which then drove home the linkages among science, policy, and technology as sources for antipoverty practice innovation. As you can tell, my interest in tech entrepreneurship stems directly from the appeal and complexity of anti-poverty work, especially in the era of climate change.

Working on poverty reduction has taught me a few things. That gender, racial, and other forms of inequality distort who gets to access adequate material resources and meaningful opportunity, that the socioeconomic system that perpetuates poverty is multi-dimensional, and that an effective anti-poverty effort needs to have these specifications: generate money and provide opportunities for subordinated groups, ameliorate inequality through empowerment and not be limited by single disciplinary frames for solution-making. Based on these lessons, a technology social enterprise with a social mission is the enterprise that makes sense because it creates investment assets that attract and generate wealth, provides high reward opportunities for subordinated groups like women and minorities, it can scale ideas that disrupt the established order in any given industry and thrives from cross-disciplinary and innovative problem-solving.

[00:13:58] Thank you. Moving on to the next question. Given that your work is centered around innovation and entrepreneurship it would really help the audience to know how you define the term "innovation."

[00:14:11] Sure. My working definition is that innovation is complex problem-solving that disrupts conventional thinking. It is both a process and an outcome. Problems like how to irrigate a farm efficiently in heat wave and drought conditions and cost effectively amid rising energy costs requires a problem-solving process that takes into account the complex interaction of food, energy and water systems. The solution not only solves the local problem but also provides a template solution for others and, in the process, disrupting how those others think about how to problem solve.

To explain more clearly, I'll tell two stories, those of Jessica and Salvador, two of our idea stage innovators in 2014.

When I met Jessica in 2014, she was a student in her mid-20s motivated by a deep responsibility to be a role model for her niece. A self-identified military brat, Jessica's precarious sense of belonging spilled over into the classroom, placing her at risk of dropping out. She was creative and curious about being a maker, but she viewed her professional and academic prospects as being limited. She once told a group that she saw herself working at the local broom factory like many in her neighborhood. Then we challenged Jessica to use her own community's experience with heat waves as an opportunity to solve a small-scale neighborhood problem. She picked drought as the problem and wasteful use of water in farms as the specific dimension she would tackle. We had her build and lead a team which she called The Droughtinators, and they ideated a mobile application networked with sensors that were planted on the ground to detect and broadcast to the farmer the dryness of a given parcel of land so that irrigation water would be efficiently used. She and her team, they had zero engineering or computer science background. All they had was an intimate understanding of the problem they were trying to solve. To make a long story short, her team, The Droughtinators, they won first place on demo day. With Jessica's help I gained access to a community of independent graphics performance and music artists that continues to influence my appreciation of creativity as a practical tool for innovation and cross disciplinary problem solving.

Her teammate, Salvador, had a story even more moving that it has remained with me all these years. Salvador was a part-time college student and a full-time farm worker. Both his parents were unauthorized immigrants, and especially in Ventura County, their work opportunities were limited to farm labor. As a result, the household's ability to earn adequate income depended on how many in his family could work in the farm. Whenever Salvador would go to school it would come as a sacrifice for his

family, a sacrifice willingly made because to the family a college degree meant a way out of their subsistence-level quality of life. They worked for a farm that cultivated lawn grass and after five consecutive bouts of extreme and increasingly year-round heat waves in Southern California, business for lawn grass considerably shrunk. What struck me about Salvador was his eloquence in telling his family's experience with heat waves. He told of reduced opportunities for farm labor as land that could be farmed in Ventura County shrunk and there was less work for farm laborers like him and his parents. And his family's experience with heat wave, it really inspired the innovation that Jessica and their team came up with.

So, these two stories by these two innovators, they drive home to me the genius of ordinary people to engage in innovation, which I think is something that all social workers should be able to identify with.

[00:18:23] Thank you for the wonderful story of the two individuals from Southern California. Moving on to the next question. Both social enterprise and climate change are often misunderstood. How do you explain your work to people who might not have much background on these two topics or might even find it to be controversial?

[00:18:45] I explain my work by sharing lessons about innovation and stories of real people we've inspired. From our work with rural and farm worker students in the U.S., China and Kenya, we've learned that having a direct experience with climate change -- for example, having a direct experience with a heat wave, flooding and extreme rainfall -- inspires practical climate mitigation and adaptation solutions. We learned that grass-root solutions that emerge from practical household- and community-level needs *can be* disruptive. They can be disruptive not just because they are primed at the outset for social innovation, but also because they shift the identity of the tech consumer into that of a tech innovator.

That shift in identity -- that social piece -- that is what drives me to keep going in this work. In the end, fine tuning that social piece, making sure that we know how to shift the identity of tech consumers into that of a tech innovator, will be what's the key to engaging and empowering local communities in the Information Age.

As mentioned earlier, my team and I have worked with three cohorts of youth with idea-stage innovations that address the impact of climate change on food, energy, and water systems because they live in communities that routinely must problem-solve the overlap of food, energy, and water system problems. So, when you ask, 'What is social entrepreneurship and how is it social work?', the answer to me is that social entrepreneurship is a wealth-building activity designed to also make social impact. With social entrepreneurship, we can deliver empowerment and material adequacy to individual clients at the micro level, capacity-building and long-term sustainability to organizational clients at the mezzo level, and development and system change to community clients at the macro level. In the era of less -- less philanthropy, shrinking public funding -- social entrepreneurship is a reasonable strategy for social service delivery.

As for why climate change is and why should it be a social work issue, I think the best way to answer both parts of the question is to discuss the physical science and the social science perspectives separately and then harmonizing them in the end.

So, from the physical sciences we've come to learn that climate change refers to a dramatic change in Earth's climate and Earth's usual long-term temperature. Climate change impacts where and how rain and snow usually fall in a given place in a year. It impacts a place's usual temperature. An example is what we've been going through recently not just in your region, Professor Mandayam, but also in my region. Just yesterday, there was news coverage on how it currently snows in Los Angeles, making a lot of the Southern Californians amused, confused and alarmed all at the same time. The physical sciences teaches us that what causes climate change are heat-trapping gases, or greenhouse gases, namely carbon dioxide, methane, nitrous oxide, and fluorinated gases, like hydrofluorocarbons, for example, that are produced by both natural processes, like volcanic eruptions and the breathing of living organisms, and, equally importantly, human activity, like deforestation and the burning of fossil fuels.

According to the Intergovernmental Panel on Climate Change, or IPCC, the group of scientists at the U.N. that gives scientific advice on climate change to governments, the Earth's temperature, on average, is warming. As a result, we are seeing more abnormal and record-breaking high temperatures than abnormal low temperatures. Heat wave and wildfire conditions are more intense and are lasting longer. In California, for example, temperatures have risen steadily over the past century, such that eight of the 10 hottest Julys on record have occurred since 1996, and four of the top 10, since 2013. Around the globe, over the past decade we are also seeing more record-breaking storms, droughts, coral bleaching, extreme rainfall, and floods, with just one degree Celsius of global warming increase.

If we do not significantly limit our use of fossil fuels, and, on top of that, we don't find a way to lower the level of heat-trapping gases already released in Earth's atmosphere, the scientific consensus is that we could cause a 2 degree Celsius global warming, which could lead to, one could imagine, stronger storms, longer heat waves, rising sea level and large-scale conflict due to forced migration and heightened competition for resources, like food and water.

This is the physical science perspective; it is important, and we need to be aware of the practical responses it is urging us all to do.

From the social sciences, climate change is about human vulnerability increasingly becoming more linked with ecosystem vulnerability. More communities find their previously dependable local ecosystem less suitable for support that used to be reliable for generations. Coastal communities are being swallowed up by sea level rise, inundated with more frequent storms and flooding, are seeing their cultures and way of life upended. The biopsychosocial impacts of climate change are quite troubling. I'd like to break them up into pieces.

I'm going to start with the biological impacts. Research shows that prolonged exposure to solar UV radiation from more frequent heat waves is a risk factor for the eye, the skin, the human immune and the human metabolic systems. It's been linked to increased frequency of cataracts, ocular melanoma, and macular degeneration. It's been found to increase risk for melanoma and basal cell carcinoma. It's been found to suppress the human immune function, leading to allergies, autoimmune diseases, and exposure to infection. And prolonged exposure to UV radiation has even been found to increase risk for heat stroke. Finally, given that gut microbiota has a role in the regulation of signaling axes that connect the gut, liver, and brain, climate change impacts on food and water resources also affect the human immune system and brain health.

With regard to the psychological impacts, research shows a psychological dimension with three classes of human impact. Direct impact, for example, traumatic effects of extreme weather events; indirect impact, for example, threats to emotional well-being due to present and the future risks; and psychosocial impact, for example, chronic social effects of extreme weather, conflict and disasters. The populations most severely affected by climate change are those with reduced mobility, like children, elderly, and people with disabilities, those with pre-existing mental health problems, and those living in communities reliant on the natural environment, like farming and fishing communities. *Solastalgia*, S-O-L-A-S-T-A-L-G-I-A, a condition defined by nostalgia and solace derived from field research in Australia, is an emotional distress faced by those facing rapid environmental change. It is a form of melancholia most pronounced in farming and indigenous communities with strong attachment to the land. It is particularly pronounced with a heat wave and has been found associated with increased incidence of depression and aggressive behavior. A recent drought in Australia is documented to have contributed to higher than expected incidences of anxiety, depression, and suicide. While older Australian farmers faced the same drought-related issues as younger farmers, the individual and social issues of aging, when paired with rapid environmental change, were found to contribute to acute emotional distress and a pervasive sense of loss, and that case study led in formulating this environmentally-induced solastalgia.

With regard to social impacts, research on the modern causes of conflict and social political instability finds that rapid environmental change could lead to serious intra- and inter-group tension on resource allocation, which, in turn, could trigger violence as much as cooperation. It turns out that the higher the ambient temperature is, the more likely it is that people will exhibit violent behavior, both in experimental and natural-experimental settings. It's also been found that for each one standard deviation change in climate toward warmer temperature, the frequency of interpersonal violence rises four percent and intergroup conflict rises 14 percent.

Regardless of which of these perspectives you choose to look at -- the practical perspective from the physical sciences or the biopsychosocial perspective from the social sciences -- climate change, like social work, climate change is a serious issue that our field must work on. We're a field for the biopsychosocial and the practical dimensions of life, after all. Social workers can and ought to work on the transition to a low carbon economy to ensure that *that* transition is a just and an equitable one -- one that is done for everyone's benefit and not at the expense of any community. In the process of enabling all communities to reap the economic and ecological rewards of a low carbon economy, we can also disrupt social work into becoming a proving ground for technology-enabled social work solutions that build wealth and drive social change, that reduce poverty and promote sustainable development -- at the same time -- especially in the least-developed places.

[00:29:42] Thank you for the wonderful physical science and social science perspectives on climate change. Just for the benefit of the audience, I just wanted to elaborate the term UV radiation in reference to ultraviolet radiation. I am really fascinated by your organization's focus on grassroots innovation and complement the efforts that you and your team are into. Moving along, the next question would be given the various models of social entrepreneurship mix of for profit and non-profit identities targeting different populations, why did you choose a for-profit approach to address climate change issues?

[00:30:26] Both my for-profit and non-profit teams chose an approach that builds wealth and social impact to justify, incentivize, and exploit risk-taking. The potential for a high return on investment is

important for our partners in the technology transfer innovation and impact investing communities. I'll talk about how my for-profit does business since that is more straightforward.

We are in the business of widening local access to food, energy and water technology solutions. These solutions are often prohibitively expensive. We reduce the cost in a few ways. We take existing technology on water treatment and desalination used in U.S. Navy ships, link them to solar and wind power generators and then make them light enough for a helicopter to transport to local communities. So just from that short sequence I described we've significantly reduced the cost of technology transfer and deployment because we've cut costs from building brand new units from scratch. We've reduced the cost of electricity because we're using solar and wind and we're not paying for local freight transporters to move our systems since we're using a helicopter to transport them. We facilitate the transfer of much needed technology solutions for smart sustainable urban development, which is one of the 17 U.N. Sustainable Development Goals, or SDGs. Our clients are Small Island Developing States and coastal communities, particularly in the Asia-Pacific and Caribbean regions. The core of our work is aligned with that of the California Energy Commission, the Asia Low Emission Development Strategies Partnership, and the United Nations Science Technology Innovation network.

[00:32:23] Thank you. My next question to you is in simple terms, could you explain what is social work about your enterprise? In other words, how do you see your tech-based solution as a social work intervention?

[00:32:39] Our social enterprise is social work because fundamentally we engage in the three central objectives of macro social work practice. These are local development, for example building the capacity of organizations, engaging citizens and analyzing, planning and resolving community-based issues, and implementing those solutions that they would come up with. So that's one, local development. We also engage in social planning activities, like social research to address social problems, the use of evidence and data in program development, conducting community level assessments and conducting program evaluation to ensure that there is continuous improvement in programming. And lastly, we also engage in social action, for example, activities that empower marginalized groups to change local conditions that disempower them and the technology incubation in our work, the workforce development training for the social components of our work, they all are linked and wrapped up into that social action component.

In my for-profit we engage in local development by working with Small Island Developing States to improve access to food, energy, and water. We engage in social planning by working with think tanks and universities on community assessment, program planning, program evaluation and workforce training. And we support social action by providing local communities with technology tools that they could use to overcome access barriers to food, energy, and water, which are all basic services that ought to be equitably distributed in society, especially in the Information Age and in the era of climate change. We work with local communities, integrate social equity into local development to ensure that there are no stranded communities as we all transition to a zero-emission economy.

[00:34:46] Thank you. I could very well see that it's a really multiple stakeholder endeavor in this situation. Moving along, from your perspective why do you think environmental sustainability is an important issue for social work?



[00:34:59] Environmental sustainability is important for social work because it improves human health and planetary health at the same time, and it pushes us to pay attention to the overlap between human and planetary health, also. In order to have healthy communities we need clean air, natural resources, and non-toxic environment. At least two of the American Academy of Social Work and Social Welfare Grand Challenges -- Grand Challenge 7, the grand challenge focused on creating social innovation in a changing environment, and Grand Challenge 8, the one focused on harnessing technology for social good -- tackle environmental sustainability and the technology and social innovation that enable it.

I view Grand Challenge 7 as pushing social work to innovate on climate change, adaptation and mitigation. I view Grand Challenge 8 as pushing the field to embrace technology so that in all three levels of practice -- micro, mezzo and macro practice -- we respond appropriately with practice techniques and client-provider relations rooted in the Information Age. One important implication of the overlap between Grand Challenge 7 and Grand Challenge 8 is the use of technology in ensuring that resource-poor communities get the technology they need for the transition to a low emission economy.

Finally, environmental sustainability is a social work issue because it's an idea whose history is rooted in anti-poverty work, and we all know that anti-poverty work is the elemental focus in social work. Before there were the UN Sustainable Development Goals, or SDGs, as they are widely known, there were the UN Millennium Development Goals, or MDGs, as they were also widely known in the early 2000s. The MDGs were focused on reducing poverty through rapid urbanization and rapid economic development. Between 2000 and 2015, when the MDGs were in effect, they were effective in reducing poverty around the globe. But the net results were uneven. And in many parts of the world, especially in the developing world, rapid industrialization and rapid urbanization seriously degraded the environment, such that it led to out of control pollution that adversely impacted human health, air and water quality, sanitation, and agriculture. As a result, policymakers and development stakeholders gained a better appreciation of the value of a clean and safe environment, which ultimately then led to the SDGs that now advocate for sustainable development, a form of people-centered economic development that also values environmental sustainability.

That environmental sustainability is rooted in socioeconomic development indicates that it is key to the elemental issue in social work, which is poverty alleviation. Environmental sustainability, therefore, is socioeconomic development with an environmental justice and a social welfare policy frame.

[00:38:27] In terms of the Sustainable Development Goals, SDGs, all 17 of them as laid out by the United Nations, how do you see your solution for climate change being viewed as an innovative one to address the challenges of poverty among vulnerable population groups around the world?

[00:38:47] Of the 17 SDGs we're focused on one: SDG 11. SDG 11 promotes smart sustainable and resilient cities. With cities responsible for consuming over 60 percent of global energy resources, generating 70 percent of global economic activity and contributing 70 percent of global greenhouse gas emissions, SDG 11 is right to focus on the development of sustainable cities and human settlements.

Over 50 percent of humankind lived in urban areas in 2008, for the first time. By 2050 it is projected that close to 70 percent of the global population will be in urban areas. With that rapid pace of urbanization, especially in developing and least developed nations, highlights the outsized role of cities in sustainable development.

Our work providing technology solutions to food, energy and water problems to resource poor communities is related to sustainable development because whether you view food, energy and water systems as silos or as interlocking systems that depend on each other, these three basic resources are building blocks for sustainable development. Any city that wants to engage in sustainable development needs to optimally use its food, energy, and water resources and, more importantly, they need to address problems in the overlap of those three systems.

To illustrate, I'll share the experience of American Samoa on the overlap of energy and water systems. Our first project, our pilot project is planned there, and we already have site control of the project site, so I'm a little bit familiar with the broad issues.

American Samoa is a U.S. territory and a tropical island chain between Hawaii and New Zealand. American Samoa's ground water supply is recharged primarily by rainfall, making it highly vulnerable to drought and heat wave conditions. Nearly 80 percent of American Samoa residents are at risk of not having safe fresh water due, in large part, to overlapping water and energy insecurity issues that result from prevailing weather and rainfall conditions in the region. These conditions make American Samoa so prone to recurring water-related natural hazards that efforts to secure safe drinking water for American Samoans are frequently hindered by tropical cyclones and storm surges that destroy water storage and management facilities and worsen floods and saltwater intrusion. Water is so contaminated in American Samoa that in order for it to be even used for showering it must be boiled first.

American Samoa sources, buys, its bottled water from Hawaii, so you can imagine how expensive drinking water is. To make matters worse, aging water pipes in American Samoa lead to high levels of lead in the water and it's been found that up to 60 percent of water that runs through those old pipes disappear through leakage. In addition, freshwater and marine environments in heavily developed areas in American Samoa have elevated bacterial levels caused by improper disposal of solid waste mainly from piggeries, especially when rainwater washes pig manure away and straight into the water supply.

As for the connection with energy, American Samoa is dependent on imported fossil fuels, primarily diesel for almost all of its energy needs, including power for transportation, power for electrifying buildings and also power for water treatment. Nearly all of American Samoa's electricity come from generators that burn diesel fuel. A significant amount of the generated electricity is used to pump and treat drinking water and to collect, pump, and treat wastewater.

Given these interlocking problems in energy and water insecurity, our work is a multi-year project focused on integrating how to problem solve water and energy security with workforce development and economic development in American Samoa, especially as American Samoa works to transition to a low carbon economy. There are plans in place for American Samoa to source 50 percent of its energy from renewable resources by 2025, and 100 percent of its energy generated from renewable sources by 2040. The goal of our project is to support American Samoa's low carbon transition by engaging local communities in planning and implementing social and technology solutions for water and energy security.

One of our measurable objectives is to generate over 900 thousand gallons of drinking water per day using 20 off grid reverse osmosis water treatment units that have been in use by the U.S. Navy now for over two decades. These units, they don't cost much to operate because what we're doing that's

different is we're linking them to solar and wind power generators so that our power costs go down to nearly zero. The four phases of our planned work include assessment planning and site control, which is phase one, targeted water purification and fresh water generation in up to 20 sites, that's phase two, and system upgrades and repurposing of byproducts from the fresh water generation so that it could lead to social businesses in partnership with members of the local community, that's phase three, and then integrating the work that we're doing into the educational system, the social welfare system, the workforce development system, that would be phase four.

What we want to learn from this pilot project in American Samoa is how to successfully operate a project in a coastal community so that we can have a process to replicate in other places.

[00:45:33] Thank you for the details with the American Samoa example. Moving along, what implications does your work have for social work education, research and practice?

[00:45:46] The implications are left to be seen, from my perspective. And for me, the most important one is, that I'm paying attention [to] for its potential implication, is how our work could plug social work research and macro practice into climate change mitigation.

As you know, our field is very prominent when it comes to climate change adaptation. For example, in disaster relief we're in the front lines as far as delivering relevant services. But in climate change mitigation -- in reducing the use of fossil fuels in improving the capacity of communities to engage in innovating their energy resources -- we're not quite as prominent in that work yet, so we're excited to see how our work might impact our ability as a profession to engage in mitigation work. We think that being able to demonstrate how social workers could repurpose local development, social planning and social action toward low emission development could be an exciting chapter for our field.

As the human impacts of climate change become increasingly apparent, social and behavioral interventions are increasingly gaining recognition as being key to our capacity to respond to current and future challenges. Social work has much to say about how to strengthen individual family and community resilience; social work has a lot to say on how to build adaptive and sustainable ecological and social systems; we have a lot to say on how to enhance disaster preparedness and responses and we are experts on how to reduce social and economic inequalities -- all of which we could leverage into understanding how to help all communities make that transition to a low carbon economy.

Currently, social work as a field exerts little influence in climate change mitigation, so growing our field's role in decarbonization -- or that transition to a low- or even zero-emission economy, particularly the social sector's potential and clean energy innovation -- could lead to innovations that improve our influence as a profession, not to mention result in new lines of social work research, practice and new ways of thinking about social work education and what might be important to social work education as we would need social workers competent in decarbonization and this transition to a low carbon economy. As smart sustainable communities play an outsized role in decarbonization, the social sector has a vital role to play, especially in Small Island Developing States.

[00:48:35] Thank you. That's truly inspiring to hear your story. So, my final question to you is what's next for you?

[00:48:42] I'm very focused on strengthening my support system, namely better mobilizing impact investment partners so that the work we're doing has the financial support it requires. And I'm also focused on building my tribe of social workers who are focused on decarbonization as I am.

I'm working on how best to competently mobilize impact investing, including how to best partner would finance professionals so that not only could we fundraise more effectively but we would know how to comply with regulatory requirements for impact investing.

As for building my tribe, the pool of social workers interested in technology remains a small group, but it's gaining ground at least in my very small network in Southern California. And I'm optimistic that from that small pool we'll get to meet new communities of social workers also interested in the work that we're trying to do.

And that's why I'm extremely thankful for the opportunity to have had this podcast interview with you, Professor Mandayam, because I think that this podcast and my ability to have shared the work we're in the early days of implementing would do magic and connecting us to all these other communities of like-minded social workers. So, thank you very much for the opportunity to share my story.

[00:50:04] Thank you for your time, Professor Vergara. It's been a fascinating interview to hear about all the accomplishments with the work that you do. Thank you again.

[00:50:13] Thank you.

[00:50:14] You've been listening to R. Bong Vergara discuss running a social enterprise as a professional social worker on inSocialWork.

[00:50:31] Hi I'm Nancy Smyth, Professor and Dean of the University at Buffalo School of Social Work. Thanks for listening to our podcast. We look forward to your continued support of the series. For more information about who we are as a school, our history, our online and on the ground degree and continuing education programs, we invite you to visit our website at [www.socialwork.buffalo.edu](http://www.socialwork.buffalo.edu). And while you're there check out our technology and social work resource center. You'll find it under the Community Resources menu.