



UNIVERSAL WISER
PUBLISHER

Environment Improvement: How Individual Efforts Lead to Community Participation

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Abstract: The paper presents three case studies aimed at examining the factors relating to individual efforts within real life context in order to improve the sustainability of their environment, with the help of multiple case study methodology. These case studies investigate an ecological transformation within real-life context through the efforts of certain individuals. These individuals act as social-environmental initiators and conceive, believe and act upon an opportunity that others in the community either fail to see, believe in; or lack courage to pursue. Their actions and behavior were contrary to what the community behavior exhibited. This aspect is supported by the SES model that pointed out that the initiator of the activity generally takes the first step long before the community, and the Government. The initiator also acts as a) role model for the community, b) encourages community participation, and c) acts as go between the community and the providers viz. Government, large NGOs and corporations. These case studies act as exemplars and (and are not exhaustive) identified the individual efforts for environment and social development. This is an original research which depends upon secondary sources present in both digital and traditional media.

Keywords: individual effort, community participation, behavior change, interpersonal communication

1. Introduction

Although ecology and human development have a reciprocal influence on each other, its only during the past few decades that sensitivity for the ecological causes has grown exponentially, resulting in a growing effort for socio-ecology integration. Additionally there is an increasing recognition of the value that ecosystems have in human welfare and a realization regarding the manipulation of the co-systems by human actions. These effects manifest in the form of *air and water pollution (such as sulfur dioxide emissions, ground-level ozone, and eutrophication), but also climate change, global changes in the nitrogen cycle, deforestation, loss of wetlands, and reductions in biodiversity* (Millennium Ecosystem Assessment 2005)^[1]. There is an urgent need to review and tackle the social and ecological problems by integrating social sciences, especially ecology and economics, as part of an exercise to safeguard the ecological processes from thoughtless human activities to ensure a robust ecosystem for the survival of the present and future generations.

Through many decades, humans are making increasing inroads into the biophysical processes, and creating many environmental problems. An ideal response can be to understand these processes and undo the harm in order to reduce the uncertainty of survival that decision-makers face today. Today the ecology is threatened by many challenges, like merging of the complicated social-ecological systems (SESSs) into interconnected frameworks which develop around human habitations. This is a difficult task, which forces the thought -“how individuals take upon themselves to make social-ecological systems (SESSs) robust”. Lackadaisical attitude towards the environment, ‘use and throw culture’ in cities, lack, and the absence of the will to alleviate the problems pertaining to environment, total dependence upon the government authorities and zero involvement in activities regarding their surroundings, push certain individuals to take it upon themselves to take actions to improve their surroundings, environment and eco systems. Such individuals pained by the laxity of the villager, urban citizens and or the couldn’t care attitude of municipal authorities towards their surroundings, take the first step which sometimes result in transforming the socio-ecological systems for all round betterment.

It is against this back drop that an attempt is made to bring forth few three instances of individual effort through three small case studies. This paper reflects upon their efforts and resultant transformation in the environment of the community that they had set out to improve. The paper is divide into three sections 1. Literature review, 2. Case studies, 3. Discussion and conclusion.

The work on environment improvement is exhaustive hence the author has limited herself to three individual efforts so as to maintain focus on environment consciousness that these cases have brought within their societies. The chosen case studies further highlight a strong connection between the ecological and social aspects of these approaches taken by these

individuals to regain the lost balance within their environment.

2. Objective

This paper proposes to study elements related to individual efforts within real life context, in three settings in order to understand the role and motivations of individuals to improve their environment.

(1) Identification of the problem in the environment by an individual and taking lead.

a. to identify consistent patterns of behavior and to uncover identical themes relating to environment protection.

i. to identify an individual's actions taken to protect environment (by selecting a sample),

ii. create cases and collect information about their efforts to positively modify their environment (collecting data),

iii. identify characteristics that make them stand out (discuss and analyze).

3. Literature review

3.1 Definition of an initiator

According to various opinions culled from a) national and international newspapers (NYT, 2011 and TOI, 2012) ^[2], b) the reports/articles of UN environment programmes's 'Civil Society Unit at UN Environment', and C) Cleveland and Jacobs (1999) ^[3] it can be definitely stated that "Initiators are persons who have come across new opportunities to initiate behavior change via activities of growth. They also consciously express the subconscious urge of their community. An initiator is essentially a conscious individual, viz. a visionary from the same community or an outsider, an intellectual, a political leader, an entrepreneur, artist or a spiritual leader who inspires the collective consciousness of a community to achieve their aspirations. Their actions give expression to a collective endorsement, imitation, and support, to systematically initiate a collective action during times of emergencies viz. draught and famine, war, social conflicts, etc. These initiators build the strategic ability and harness professional skills of the community into effective action. Strategic advocacy of initiators help to direct the community strength towards triggering effective change. The momentum of change also overcomes the resistance of conservative forces in society, to accept and embrace new growth activities. A community in throes of a downhill slide is subconsciously prepared to perish, at such times an initiator is one such person who stops the downhill slide of the community. Initiatives of single individual willing to break out from the existing mold to attempt something new."

The social-environmental initiator conceives, believes and acts upon an opportunity that others fail to see or believe in; or lack courage to pursue it. The initiator exhibits an understanding, attitude, and behavior different from what is prevalent in the community at the time adversity.

They also exhibit the following characteristics:

(1) They understand the social and economic worlds of people living within the community.

(2) They have the ability to engage the entire range of community members of all ages, backgrounds, affiliations, and economic sectors.

(3) They have the aptitude to develop inter-societal linkages.

(4) They have the power to persuade community members to affect change.

(5) They can develop change agents among the community by convincing them about the change agent role to increase efficiency.

They have the ability to understand the need for action plan, follow-ups, and remedial actions with the providers.

Individuals sensitive to their environment are often known to emerge from within the community to develop plan, for taking action for improvement of the local environment. Exhibiting the characteristics of community organizers these people are aware and have exposure to education, city life and facilities which they wish to replicate within their community. Such people serve as important interfaces and take specific lead on (a) Building relationships with key stakeholders and (b) catalyzing specific intervention processes for system change within the community ^[4,5] These initiators play a crucial role in shaping a collaborative network by reaching out to people within the community. They help in identifying those members who can assist in pinpointing resources-both existing and required-for the purpose of developing mid-stream connections within the context of the community for the purpose of value creation.

The Gap exists between Resource (Environment and Human Resources) and Resource users, wherein an initiator from the community uses all his/her persuasive powers to start development process within the village community. The initiator co-ordinates both with public infrastructure providers viz. government, industry or individual and with the human resources within the community to create the desired infrastructure for the village like, water tanks, wells, or buildings.

The author therefore proposes to give due credit to individuals who, have consciously invested in various resources and infrastructure to manage diverse problems, since very little is mentioned about individual efforts in the vast literature pertaining to participation and community efforts.

These Initiators work to

- (1) Mobilize community and building stakeholder expectations.
- (2) Encourage stakeholder involvement.
- (3) Guide stakeholder empowerment through finance generation.
- (4) Expand stakeholder influence externally.
- (5) Initiate cost recovery activity via stakeholders.

Individual efforts in India: Owing to the emergent consumerist way of living in India, citizens of India have disrupted the balance of nature leading to mass internal migration and man and environment conflict. Conversely, various grass root environmental movements were initiated against activities that endangered the environment leading change in popular mindset in favour of environment protection. Individuals (the list is not exhaustive) as listed below (see table 1) have time and again taken lead in starting social movements for protecting the environment.

Table 1. Grassroot environment movements initiated by individuals in India

Name of the Individuals	Name of the Movement
Sunderlal Bahuguna and Chandi Prasad Bhatt (1973)	Chipko Movement
Collective efforts of two scholars initiated mass mobilization of the community across India (1978).	Silent Valley Movement
Pandurang Hegde (1983)	Appiko Movement
Vandana Shiva (1982)	Navdanya Movement
Medha Patkar (1985)	Narmada Bacho Aandolan, etc.

As listed in the table above these efforts created focused environmental movements that involved individuals, groups and coalitions with a common interest in environmental protection to change grass root mindset and practices. Later, Tong (2005)^[6] pointed out that environmental movements are also an example of social movements.

According to Dhanawade (2013)^[7], dynamic interactions between three factors influence the emergence and development of social movements viz.

- (1) Emergence of broader political limit and outlook exclusive to the national context.
- (2) Availability of organizational resources, both informal as well as formal manner, to rally people into collective action and also supports a social movement.
- (3) The collective process of construal, ascription, and social interpretation connotes meaning and value to a collective action.

Environmental movements are therefore range from being diverse and extremely complex to being concerned about a single issue. Almeida, Paul and Linda Brewster Stearns in 1998^[8], identified: three levels of collective action.

- (1) The local grassroots movement level-these movements are specific to a geographical region and are limited in their goals, which usually look for solutions to local issues.
- (2) The social movement level: it comprises of formal organizations/and or a federation of loosely affiliated networks. They are usually directed towards a wide range of objective aimed at fundamental social and political reforms.
- (3) Cycle of protest: It is never indefinite and has a specific period of intense protest. It is a coalition of different social movements and is spread across various geographical areas and sectors of society.

In addition to the above reasons a few other environmental initiatives as discussed by Sharma, (2007)^[9], occurred because of reasons such as i) need to control over natural resources, ii) faulty development policies of the government, iii) socioeconomic reasons of the affected populace, iv) environmental degradation/destruction and, v) increasing spread of environmental awareness and media. (Sharma, 2007)^[9].

What is a Social-Ecological-System (SES)?-It can be defined as a and intricate system linked with and affected by one or more social systems (Anderies, Janssen, & Ostrom; 2004)^[10]. While Merriam-Webster Online Dictionary 2004^[11] defines an ecological system as an interdependent system of organisms or biological units. Social means to form a cooperative and interdependent relationship with other people. Social systems can be defined as interdependent systems of plants and animals, which are made up of units that are not only interdependent, but may also consist of interactive subsystems.

The concept of Social -Ecological Systems (SES) was first introduced by Elinor Ostrom in her book 'Governing the Commons' (1990)^[12]. She and a few of her co-researchers developed a SES framework to explain the theory of common

resources and collective self-governance. Her research explains how people manage common-pool resources i.e land and water to guarantee sustainable yields from the nature. In her field studies she focused on pasture management, irrigation networks, besides documenting the creation of various institutional mechanisms to manage environmental assets to prevent the collapse of ecosystem.

The conceptual model of the Social-ecological system as put forward by Ostrom in (1990)^[12] puts for the following elements:

- (1)Resources
- (2)Resource users
- (3)Public Infrastructure providers
- (4)Public Infrastructure

3.2 Resources

It is the cause which creates a benefit and has some utility. They can be classified based upon their accessibility into a) renewable-wind, solar energy, gas, water, soil, air, etc. and b) non-renewable resources-like minerals, oil, coal, etc. Resources can also be classified as potential and concrete based on-a) their degree, frequency and intensity of their use, b) on the basis of origin they can be classified as a) biotic and b) abiotic, and on the basis of their distribution, a) as ubiquitous and b) localized. The local resources can be in the form of individual and community-owned resource. They can also be national resources or international resources. Any object-natural or otherwise can become a resource at any time given the status of developing technology, e.g rare earth mineral have become important resources after the development of nuclear technology. In brief resources can be defined as energy, service, human resources, materials, information/ knowledge, or such blessings that can be converted into value for humanity at large.

Resource User: Any organism, individual, company, industry, government that utilizes available natural wealth for any reason is called a resource user

Public Infrastructure provider(s): It is the government which provides, owns and operate systems, structures, facilities and services with the help of government servants or through the government contractors. These include-a)infrastructural facilities for the general public to use. Additionally all the systems and facilities meant to enhance the performance the country's day-to-day activities and improve the standard of living of the citizens viz. the civic infrastructure like transport and roads, water and sanitation, electricity supply, telecommunications, etc.

Public Infrastructure: They are the government facilities, payment systems, taxation systems, and physical structures like buildings meant for public use, parks, roads, etc. that are owned and operated by funds collected through taxes, fines, fees, etc. collected from people by the government.

Berkes et al. (1994)^[13], identified four elements that can describe social-ecological system, its characteristics and links.

- (1)Ecosystems
- (2)Local knowledge
- (3)People and technology
- (4)Property rights institutions

They also emphasized the importance of the legacy knowledge within the communities of a village. Under ideal conditions, learning is an ongoing dynamic process in SES which emerges within the confines of a community or organizations. Needless to say, that the communities within the village's socio-ecological system possess the relevant knowledge about the eco-management practices. However, given the current situation of a) pervasive environmental change and destruction, and b) increasing dependence on the urban employment opportunities, governance of traditional village 'way of life'(i.e. new technology, clear land rights) and ecology have to be reworked through new thought processes and through anew perspective on the land utilization.

Social-ecological systems display a host of advantages and exhibit a variety of complex behaviour (Westley et al. 2002)^[14] and not simply a 'social plus ecological systems'. Their key components besides people are a) organisms in the environment, and b) Soil fertility, water quality/quantity, and social forestry.

Ecology and Society, a well-known open-access journal defines-socioecological systems as a multi-scale pattern of resource use around which humans have organized themselves in a particular social structure viz. division and allocation of people, managing resources, utilization of resources and related rules and guidelines(Anderies, et al (2004)^[15]. SES thus may refer to the subset of social systems where a few symbiotic associations amongst humans are facilitated via their relations with biophysical and non-human biological units, e.g. when the activities of industrial fishing trawlers destroy the catch of small fisher men through the interplay between the biophysical and non-human biological units which is the fish

stock in the sea.

The relationship of stakeholders in the SES model is a complex interplay between ecological factors and socio-ecological guidelines, because they are often sandwiched between the politics and governance systems and the bottom-up nature of population growth, and ecological change, with controls playing the puppet master (Norberg and Cumming 2008)^[16].

In short the SES theory, according to Levin 1999^[17], Berkes et al. 2003^[18], Gunderson and Holling 2002^[19], Norberg and Cumming 2008^[20]-integrates concepts of theories on reliance, sustainability, robustness, and vulnerability of social ecology. SES is also affected by the dynamics and attributes, besides working upon the entire range of discipline-specificities of these theories, like animal foraging, bio-geographies or the micro-economic impact of a policy on a particular area. Additionally, Ostrom (1990)^[21], Reidlinger, et.al (2001)^[22] and Anderies et al. (2004)^[23], Westley et al. (2013)^[24] and Norberg and Cumming (2008)^[25], explain extensively about the connection of the society, local knowledge, environment. The understanding gained so far from the literature review clearly shows that the above authors have discussed individual efforts in terms of community and not in terms of 'an individual initiative' for the social-environment systemic transformation in and around agriculture land.

Community Participation in Eco-conservation can be defined as an active involvement of the rural/ urban community in deciding the issues concerning their welfare through-a) active participation in needs identification, b) solution planning and c) implementation. This type of involvement requires the community to-a) identify with the movement, b) be mentally involved in thinking, planning, deciding, acting and evaluation and, c) be focused on socio-economic development. Such an involvement needs to be both a mental as well as a physical. Sustainable Development is enhancing quality of human life within the carrying capacity of the supporting eco-system (Agugu, 2008)^[26]. Sustainability is creation of recurring benefits to rural/urban people even after the closure of programmes/organizations which stimulated those benefits in the first place (Oni, 2005)^[27]. Development involves changes, in the attitudes and actions of people who voluntarily become participants either individually or in groups in the process of development itself. Participation of a few local individuals in a development process is distinct from the participation of the entire community in an organized manner. The word "Community" means a social entity organized around a thought and purpose however loose and informal, having a sense of identity, these can be residents of a locality/village or a motley group of concerned citizens.

4. Methodology

At the onset the author wishes to clarify that multiple case study methodology has been used to successfully to understand the situation/ phenomenon, so that a comprehensive insight can be reached regarding the man made outcomes/ events under study.

This article summarizes the application of the multiple-case studies design, with the help of literal replication strategy, which is used to identify consistent patterns of behavior and to uncover identical themes relating to environment protection. The paper seeks to-a) understand an individual's actions taken to protect environment (by selecting a case sample), b) by collecting information about individual efforts to positively modify their environment (collecting secondary data), c) identify characteristics that make them stand out (discussing and analyzing).

The evidence is historic and secondary in nature and is based on the information collected from sources such as a) news and articles, b) research papers, c) ecological journals, d) podcasts and e) the National geographic, Discovery channel and Sony BBC Earth channel.

Sample Information: These samples are taken from three different areas of India- The sample information is secondary in nature. This information is readily available in print and on the internet. The reason why these case studies were selected-1. They are well known with India, 2. They are taught as part of the Development Communication course in various universities of India and, 3 Western media is slowly picking up these cases as an example of how individuals can make a positive impact on the local ecology.

Case study no. 1 represents a drought prone rural area-Rale Gaon Siddhi in Parner; Ahmednagar District, State of Maharashtra in Western India. It is located at a distance of 87km from Pune. The village has an area of 982.31 ha as in 1991. In 2001, the village had 394 households with a total population of 2306 (1265 males and 1041 females).

The case study deals with the issue of recurring droughts, watershed management, migration of the villagers, creating employment opportunities and regenerating the devastated ecology of the area.

Case no. 2 is from Majoli Island in the Indian State of Assam in eastern India and it deals with regeneration of forest cover, animal protection and the struggle to save the sand bar islands on the mighty Brahmaputra river from being washed away. These are a collection of Islands occupying an area of 52 km² (136 sq mi) with an approx population of 167,304

people and is in the State: Assam, India

Case no. 3 is from the Metropolitan city of Mumbai on the sea shore of the Arabian sea and it pertains to choking of vast stretches of the sea shore and Versova beach with plastic and urban/human waste, destruction of aquatic life near the beaches.

An attempt has been made to explain each of these cases under the aegis of SES theory put forth by Andreas, et al (2004)^[28]. This theory utilizes McKelvey's (1979)^[29] chaos theorem to assert that the unpredictability of group preferences can be strategically be manipulated by a smart agenda-setter such as Hazzare, Payeng and Shah to further their ecological goals. Given below is the process of academically analysing the case studies: The following steps were followed to analyse the Case Studies:

a.to identify consistent patterns of individual actions and to uncover identical themes relating to environment protection.

b.to identify the motivation to-

i.understand an individual's actions taken to protect environment (Hazare, Payeng and Afroz Shah) ,

ii. Identify their efforts,

iii. identify characteristics that make them stand out (discuss and analyze).

Case study-1. The Power of Water (1975-till date) RaleGaon Siddhi (Anna Hazzare)

Back ground

Ralegha Siddhi is a small village in Maharashtra state of India. It is situated in a drought-prone and rain-shadowed area, here temperatures can reach 111 degrees Fahrenheit in peak summer months. It receives only around 17.5-25.5 inches of water annually. The abuse of natural resources coupled with poverty and hopelessness, soil degradation made this village of 2,500 people, un-farmable. Additionally water runoff during sparse rain ensured that every well less than 400m deep dried out. People had to struggle to find drinking water during a large part of the year. They could neither grow fodder for the livestock nor raise the livestock, this added to their struggle. 70% of the households living below the poverty line borrowed money for food. This situation led to a number of secondary problems like- ill health, migration of people from the village in search of employment, alcohol addiction and alcohol production, sharp rise in vandalism, theft, domestic violence and violence among groups of villagers. The village exhibited low farm productivity due to land degradation. Each day saw fresh cases of violence especially against women. Repeated re-use of scarce water led to water contamination and water born diseases. Village children did not go to school and local government corruption was at an all time high.

In 1975, Anna Hazare, freshly retired from Indian army, returned to the village, in midst of mass migration, hopelessness and immense environmental degradation. He wanted to work in his small field, which he shared with his brothers. However, he realized that farming could not be possible since there were no resources in the village and there was no water for farming. After pondering over this problem for many days he decided to look for solution for the problems facing the village. He started to interact with the people in the village community and began to talk about his ideas about water conservation and agriculture, with the hope that the villagers would participate in the activities to revive the village. He looked towards the young men of the village and tried to convince them to form a team of young men to initiate development activities for the village. It was at this juncture that he began to speak out against alcoholism and eventually eliminated alcohol consumption in the village. Anna Hazare inspired the villagers to come together and help each other in the fight against poverty. Anna, had observed the need of conserving water and therefore he started to mobilize village opinion in the favor of water conservation. This was a difficult task to undertake because the villagers had seen the government effort to build water body in the village fail earlier. So keeping in mind the limitations of extremely poor villagers, he used extremely low cost, local resources to manage rain-water run-offs through watershed development. Anna had seen his family struggle to make ends meet and therefore understood the financial limitations of the villagers, he therefore decided to talk and encourage the villagers to work for preventing soil erosion and increase forest cover through social forestry. Anna used his army pension to procure simple resources for farming. Seeing this act of generosity, the villagers soon began to pay attention to Anna, gradually total productivity increased within the village, as the villagers could now see improvement all round themselves as days went by. Working together ensured a sense of belonging, and resulted in self-sufficiency in food grains and fulfilled the desire of the villagers to not leave the village for earning money. Meanwhile informal discussions with villagers resulted in the construction of infrastructures and community wealth like the Gramsabha building (village community centre) for discussions and conflict resolution, high school for village children, administrative block for panchayat work and for coordinating with government officials, community hall for functions, dam for water storage in rainy season for summer months, temple for religious functions and spiritual growth and museum

which showcases village achievements.

Together with villagers, Anna, was also instrumental in developing societal guidelines for the smooth functioning and environmental preservation:

- (1) ban on open grazing;
- (2) ban on tree felling;
- (3) ban on dowry;
- (4) ban on consumption of liquor;
- (5) family planning;
- (6) donation of labour.

Anna was aware that the Government had many projects for village development like watershed development, improved agricultural practices, use of renewable energy, etc. but they required manpower and intent of both the local representatives and government officials. Anna involved the village community in all government and self supported development projects and often acted as a go between the villagers, and the government

Ever-since the failure of the government water conservation scheme in 1974-75, the issue of making the village independent of rains was on top of Anna's mind and so among various water conservation programmes, inadvertently Anna's team zeroed on Decentralized Integrated Water Resources Management (Decentralized IWRM) approach to manage water in late 1980's. Villagers looked into the central issues of IWRM i.e. a) social welfare, b) equity, c) environment, etc. to revitalize the village [1 Decentralized IWRM is about micro-watershed-based planning and management with "bottom-up" approach and all the communities in a micro-watershed are collectively work together for positive result]. Decentralized IWRM has proved efficient, effective and sustainable for Ralegan Siddhi (Singh, 2015)^[30] and made Ralegan Siddhi water resilient. Anna recognized the importance of rainwater harvesting, watershed development and renewable energy. He considered it a balanced approach aimed towards developing economic efficiency; environmental sustainability and social equity to overcome water related sustainability challenges.

The available literature on Ralegan Siddhi highlights primarily involves wise water management, strong leadership, good will, pure intentions, no corruption, public participation, and transparency in administrative system and in the application of the rules, etc. It also reflects principles of effective water governance ultimately helping to enhance effectiveness of decentralized IWRM.

Conclusion: Initially he was threatened by the liquor manufacturers and money lenders of the area but he was able to overcome this issue with the help of few young people of the village. His honesty, tenacity and selflessness convinced the village elders to once again approach the government departments for aid and projects for village development. Anna used interpersonal relations, persistence and rational arguments to convince both the villagers and the government departments, so that the village could fully develop. Anna used his influence and persuasive ability among the villagers to initiate various development activities from water shed development, social forestry, agricultural and soil management, infrastructure along with regular interaction with the government officials for improved government grants and other facilities to create and maintain a sustainable village environment and natural ecosystem. Anna not only stopped the migration of people from the village and but also encouraged reverse migration to the village.

This case study is an example of initiating village development through individual efforts to create a sustainable socio-ecological system creation.

Case study-2. Mulai Kathoni Forest in Majoli Island, Kokilamukh Johat, Assam (Jadhav Peyeng)

As a child Jadav Payeng often observed the ebb and flow of tides on his small island. He also saw how riverine creatures like snakes, fish, etc. were left stranded on the sand, only to be eaten up by the birds or killed by the villagers. Born in Jorhat District of Assam in India Jadav found that frequent floods near his home caused many reptiles to die on the banks of the river Brahmaputra because there was no shade from the sun.

Desperate to find a solution, he approached the village elders of his community, the Mishings, and urged them to take action to make the island more hospitable to wildlife. The elders said nothing could be done, but told him to plant the tallest grass of the world. They also helped him by giving him 20 bamboo shoots and suggested that he plants them. He did not have any helping hand, because no one was interested. Undeterred, he started planting the bamboo shoots, hoping to make the small islet green with plants that attracted animals. He then collected and planted silk cotton and local plants like Samalu, Azar, etc. around his hut. He followed it up by collecting seeds that came floating up the river and planted them in small pots. He later replanted them in the nearby areas. Slowly planted forest grew in size and became a deep and dense wood, home to different bird species, reptiles, animals and other organisms. This pushed him to him to start planting trees to prevent flooding in more areas, with renewed vigour. Years later, the trees grew and spread into what is now known as

“Molai Kathoni”, meaning Molai’s woods, a forest of 1,360 acres on the river island of Majuli, Assam, in India. Today, the Molai wood is home to animals such as the Indian rhinoceros, tigers, deer, elephants and many different bird species.

In the 1990s, Jadav was recruited by the Assam Forest Department to plant trees on land near the village of Aruna Chapori and eventually reached a plantation size of 1,400 acres. The forest department, recognized his efforts towards biodiversity. Jadav Payeng, on his own volition continued to plant a forest, even after the project was completed. This attracted many animals and birds and helped to increase the biodiversity of the area.

In 2007, a herd of 100 elephants started visiting Jadhav’s forest for food. They sometimes, crossed over to Kokilamukh and northern Jorhat and caused immense destruction in the area. The irate villages held Jadhav responsible for this and set fire to his forest. Not only they burned the forest they also cut down many trees. Jadhav resisted this wanton destruction and called out to the villagers-‘Why train your anger on elephant over the trees. We owe our civilization to the forest’, Although extremely angry he braved the mob by calling out to their conscience. Luckily sanity prevailed and the violence died down.

In 2010, the forest that Jadhav had planted faced a new crisis when it was overrun by Rhinos from the nearby Kaziranga wildlife sanctuary. These rhinos took shelter in his forest during the rainy season. This attracted poachers, who entered this forest to kill the Rhinos and other wild life for their horns and hides. Poachers, also entered the forests to cut valuable trees.

Jadav Payeng^[31] was aware of the need to recover and sustain biodiversity in the river basin areas of Assam after floods wash away small wildlife and reptiles. As he was aware that the tribe would soon lose their homes to the recurring floods, thus consciously expressing the subconscious urge of his tribe, who did not wish to constantly relocate or scatter in different areas of Assam.

Story of Mishing Community: Aruna saporì is a village on the Aruna Saporì Islands. It is inhabited by the Mishing community, a riverine tribe of Assam. Mishings are a nomadic tribe. They came on the islands in 1970, at the time the Aruna Saporì sandbars were almost barren. Later due to the efforts of Jadhav these sandbars developed into a rich bio-diverse ecology.

There are over 600 Mishing families living on the island living in clusters called chubas, located on the edge of Mulai Kathoni. The island forest is a host to rich vegetation and a large number of rare migratory birds like pelicans, vultures, brown roofed turtle, and a few Royal Bengal Tigers from the neighbouring Kaziranga Wildlife Sanctuary. This tribe inspired by Jadhav, helped Jadhav to build a 50m long and 2.13m deep riverine canal, which serves as a water source for wild animals and cattle.

The Mishing live on elevated bamboo platforms in huts called saang ghors. These huts are made according to the topography of the land which is prone to floods. This community protects the forest that Jadhav has planted although it does not have access to any modern amenities like electricity, vehicles and weapons for warding off poachers. Floods, are the annual and the biggest threat to the forest, and bring with it the problem of intense soil erosion. During monsoons the Kaziranga Wildlife Sanctuary is inundated with flood waters, animals seek refuge in Mulai Kathoni and threaten the Mishing settlements which already face the flood fury, which attracts poachers. In 2013, a rhino was poached at Mulai Kathoni, after which Mishing community and the Forest department formed in 2014, 10 eco-conservation units with the help of, a local non-profit, agency working with the Mishing community. These conservation units also warded off a poacher attack and informed the state Forest Department. As of now the Mishing community is working along side the forest department, Jadhav, Wild life Trust of India, Europäische Tierschutzstiftung (ETS), and Seven Look (a local organization), but the future of the Mishing community at Aruna saporì is uncertain and is dependent upon the mighty Bramhaputra.

Conclusion: Jadhav’s efforts were unsung till 2003, when for the first time the forest department of the state of Assam discovered his forests. Payeng does not get any help from the government and it is through his own efforts that these riverine forests are flourishing.

Today this type of social forestry is being emulated by many across the world,

However its only the Mishing tribe, to which Payeng belongs, that is on the forefront of warding off the future disaster of the riverine ecology by constantly monitoring the riverine ecology. Jadhav used soft skills and interpersonal relations to defuse tensions between wildlife and villagers. He also lead by example by using native ingenuity to keep the soil moist around the newly planted saplings by using drip irrigation from earthen pots. He created a channel within the river for animals to drink water and worked to improve the soil eroded by floods. This case study is an example of an individual foresight towards the regeneration of ecology and survival of the plant and wild life species. Re-establishing harmony in a natural system requires ecological knowledge and a complete understanding of the ecosystem. From there, individual

projects can be “scaled up”, over a period of time.

Case study-3. Versova Beach Mumbai

Mumbai, is one of the most populous city in India. However, mountains of garbage at every corner, and contamination of the water resources by sewage have made the city and its beaches unsafe for residents and visitors.

Beaches have turned into trash heaps making them like the Versova Beach, extremely polluted. In a study conducted by Jelil & Jain (2014)^[32] of nine Mumbai beaches between November 2015 and May 2016, it was found that Juhu, Versova and Aksa beach were in a very bad shape. Mountains of urban waste created by non-biodegradable photo-grade material like plastics often break down in minute pieces and contaminate soil, water ways and oceans. They are ingested both by land and aquatic life and are the cause of their destruction. Plastic bags besides littering the area clog the drainage system and cause flooding in urban areas during the rains.

The Versova beach clean up was the brain child of Afroz Shah, who after moving into his new apartment on the Versova Beach in 2015, noticed mountains of plastic waste reaching upto 1.67 meters in height in sections of the beach. He then along with his 84-year-old neighbour, Harbansh Mathur, took upon himself to clean up the mountains of garbage. Observing their diligent efforts, many locals joined them as volunteers and removed about around 50,000 kilograms of waste during the first clean-up period in 2016, on the 2.5-kilometre shore. This act of Shah echoed the view of green campaign group ‘Greenpeace’ that community forms a persuasive tool that links people to the ecological worldview.

Dubbed as the “world’s largest beach clean-up in history,” by the United Nations Environment Programme (UNEP), it is an initiative of two individuals that brought the entire community and more to this clean-up and motivated people to join them in a massive cleanup exercise involving removal of almost 5 million kilograms of hazardous waste and plastic trash from the 2.7 kilometre stretch of beach in a span of 85 weeks. Their community based initiative- ‘Versova Residents Volunteers (VRV), included students, UN representatives, members of a local fishing community, as well as many more concerned citizens, athletes, swimmers and UN Environment Patron of the Oceans, who visited Mumbai and joined hands with the volunteers.

Not only did they rally residents and fisherfolk, they explained how the marine litter caused damage to the marine and beach ecology. Further they expanded their operation in a way that prevented the litter from washing down the local creek and onto the beach.

By 2016, the Versova Residents Volunteers Group, which organised clean up drives every week, had attracted a lot of attention. Every weekend this group came together to pick up garbage and junk spread across the beach. This cleanup mission now has more than 200 volunteers and has brought together people from the film industry, police personnel, lawyers, fishermen and various different communities came together for this cause resulting in the removal of over 800,000 kg trash from the beach, and clean up coastline’s rubbish-choked mangrove forest which naturally serves as a defense against storms. Volunteers of Versova beach are set an example for the Global community to take matters into their hands and do the best they can for the environment.

So far Shah’s has been successful in educating commercial establishments, small businesses and residents around the beach to embrace a circular economy [2 A circular economy is restorative and regenerative by design. It uses as few resources as possible-from renewable sources-in the first place and derives the most value from them during their lifetime.], and the total garbage collected from August till December in 2018 came down to less than half of what was collected during the same period in 2017, as per a report in Mumbai Mirror. As of now volunteers continue to keep watch over the private company contracted to remove the garbage for the next six years to ensure that the beach stays clean. In 2017 the Mumbai Municipal corporation took forward this exercise by letting citizens take lead. Later a joint team, comprising of citizens and the municipal officials was formed. Together they drew up a contract comprising of many penalty clauses for the government workers and the citizens. The clause called upon the people to a) keep the beach clean and not litter it, b) collect and recycle milk pouches, etc.

Conclusion: Shah and Mathur took initiative to clean Versova beach in Mumbai, he used his own resources at the initial stage before the community started partaking in the clean-up. He used his influence and persuasive ability among the local Versova communities to initiate clean-up activities. Voluntary acts of citizens forced the municipal authorities to appoint a contractor to clean up the beach, under the watchful eyes of the local citizens. His actions prompted various individuals and agencies to contribute (in form of equipment and labour) to the clean up of the Versova beach and also inspire beach cleanups in the metropolitan city of Mumbai (Bombay).

This case study is an example of individual efforts inspiring local communities and forcing the authorities to take up the task of environment protection thus creating for the socio-ecological system. So far their efforts are crowd funded. Any other support from the government depends upon the whims of the local municipality.

5. Discussion and analysis

All the three protagonists of the case studies saw the problems and took it upon themselves to rectify the situation single handedly. Individuals sensitive to their environment are often known to emerge from within the community to develop plan, for taking action for improvement of the local environment. Exhibiting the characteristics of community organizers these people are aware and have exposure to education, city life and facilities which they wish to replicate within their community. Such people serve as important interfaces and take specific lead on (a) Building relationships with key stakeholders and (b) catalyzing specific intervention processes for system change within the community (Fawcett, Francisco, Paine-Andrews, & Schultz, 2000^[33]; Israel, Schulz, Parker, & Becker, 1998)^[34]. These initiators play a crucial role in shaping a collaborative network by reaching out to people within the community. They help in identifying those members who can assist in pinpointing resources-both existing and required- for the purpose of developing mid-stream connections within the context of the community for the purpose of value creation. These community members help the initiator to pinpoint community welfare issues (needs identification) and work towards developing a process (solution planning) with which to overcome the problem and also implement the solution along with the initiators with the help of all the possible tools (technology, machinery or information) available to them.

According to Israel et al. (1998)^[34] 'Communities of identity' contain many individual and organizational resources, but may also benefit from skills and resources available from outside of the immediate community of identity (see Fig.1). Such partnerships may include representatives from health and human service organizations, academia, community-based organizations, and the community-at-large. These partnerships focus on issues and concerns identified by community members [Bishop (1996)^[35], deKoning and Martin (1996)^[36], Gaventa (1993)^[37] Green (1995)^[38], Hatch et al. (1993)^[39], and create processes that enable all parties to participate and share influence in the research. Under the aegis of participatory sociology, there are a few common components-a) a commitments to the needs and interests of the community, b) a direct engagement with the community so as to permit its problems and goals to be defined in its own voice, and c) a moral commitment to the transformation of the social, political and economic injustices directly afflicting the community studied (Petras and Porpora, 1993)^[40] which find a suitable fit with the actions and approaches of people like Anna, Shah and Jadhav. Efforts within the society for environmental change occur when an individual troubled by the deteriorating condition of his/her surrounding environment takes upon himself/herself to remedy it. His/her initiatives are observed by the society, which later copys it, and starts to actively support and assimilate it within its systems and institutions. Such individuals initiate public engagement and trusting relationship among the community, thus developing social capital and ensuring environment protection. In trying to repair the damage done within the historical relationship between government and the community in their respective areas, they prevailed upon their communities to pursue strategies of resisting the standard policies of the state and practices. They pursued positive actions to reclaim control over their own environment. Their community efforts give rise to-a) sense of ownership among the community members and to b) ensure an oversight mechanisms to monitor the government participation and individual lapses that could cause a setback to the system. These initiatives have proved to be crucial elements in the struggle to revitalise and restore (Glynn et al. 2001)^[41] the ecological imbalance created by human exploitation of resources.

As can be observed the case studies match the characteristics of the initiator of change in real life viz. a) understanding the social, economic and the environmental world around them, b) taking a lead in solving the social economic problems through mobilization of the community, interacting with the authorities whenever possible to find situation appropriate solution, c) persuading the affected community and identifying and defining the boundaries of the problem, lastly d) they play a key role in streamlining the collective choices made by the community to increase efficiency of the evolving system. Anecdotal evidences available on the social media, the internet and available documents suggest that during the early days of these projects; actions were modeled by Hazare, Payeng and Shah, who demonstrated through their behavior as an initiator the action that should be taken by the community. As they began to display some of the modeling components their actions were mimicked by the community. Thus, the initiator (teacher) showed the community peer the prompt checklist for steps to be taken and resources that were required, they praised the peer as each component was completed accurately. The initiator provided all the necessary assistance to encourage the peer action in form of infrastructure, funding and assistance.

The case studies highlight not only individual efforts but also the eventual creation of-*A sense of ownership in process ; A sense of ownership in outcome ; and A sense of ownership about the distribution of the both the processes and the outcomes* (Lachappelle, 2008)^[42].

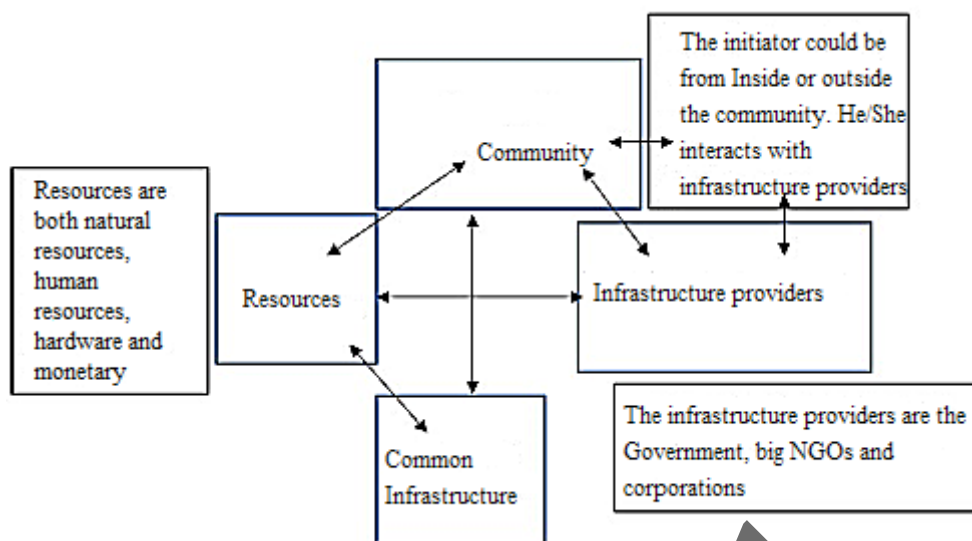


Figure 1. A conceptual model of the Role and Place of the Initiator in Social-Ecological system
Adapted from Source: Anderies, J., Janssen, M. and Ostrom, E. A framework to analyze the robustness of social-ecological systems from an institutional perspective. *Ecology and society*. 2004; 9(1)

All the case studies can be roughly mapped on the social-ecological system, and do not go beyond small, homogeneous groups working in accordance with mutual reciprocity to create a noticeable benefit for the community and the its environment. Additionally, the case studies mentioned above exhibit a unanimity towards acceptance of external resources for a) speeding up the initiated processes and, b) acquiring hardware like tractors, boats, and solar lanterns. Within the SES model the researcher identified a gap pertaining to the role of an individual/initiator to mobilize community for social preservation by preserving the local ecology i.e. social-ecological system of the area. Besides being the concept/thought marketer, the initiator also plays a critical role in coordinating with the providers (governments, Large NGOs, Corporate organizations, etc.) to initiate appropriate actions in terms of facilities, technology, hardware and learning/training required by the community(enactors) and the creators (human resources).

Social-environment initiators, like Anna Hazare, Jadhav Payeng, and Afroz Shah took upon themselves to act—Anna Hazare began by talking to people in his village, Jadhav Payeng just took the available plants and placed them in the soil hoping that they will take roots, Afroz Shah went straight to the littered beach and began by cleaning a small patch of the beach on his own. Each act was instinctive and the protagonist took one day at a time. Not only did they use their own resources, they also acted on either their own land as was the case of Anna Hazare or on the desiccated soil which had no use for the villagers as was the case of Jadhav Payeng or on a small area of public beach which was never cleaned by the municipality as was case of Shah.

Pre-existing apathy of the community and the authorities ensured that their actions were left alone and there was no intervention from the government agencies.

Available news reports, interviews and observations pointed to the fact that these individuals acted in their own time; at their convenience and on their own volition. Nowhere has it been exhibited that they initiated the process so that they could scale it up in the near future. Neither of them appeared to act consciously or thought long term or ahead of the community. They neither visualized a new behavior, a new possibility and/or a new course of action basing them upon their current status of their communities. All the available information suggests that these individuals acted on the spur of the moment at the time of initiation the act. Their ability to take initiative common sense, and environmental awareness can therefore be considered an act of foresight. All the three individuals faced indifference, resistance, open hostility and contempt from the society because their initiatives were a departure from the standard and long standing indifference of the community.

It's a possibility that their communities may or may not be aware about the disaster that they were facing, but it was a surety that the community and its environment were rapidly worsening. However, when the initiators - Anna arrived at the village when Ralegaon Riddhi was on the brink of famine, Jadhav took to planting trees at a time when massive soil erosion was destroying the riverine islands of Brahmaputra river and the Mishing Tribe had begun to relocate to other parts of the country, Afroz Shah came to live in the building near Versova beach and took upon himself to clean the beach of plastic waste. Fortuitous timing of their arrival and their actions caused other people to imitate them and cause a rippling

effect in and around the society causing a social change. Momentum thus created has a positive impact all around the environment and the country.

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