Village of Hope. Iran, Kermanshah province, Sarpol Zahab city, Sarab-e Zehab village

Scored by name(s): Jamal Mohktari, Ferdowsi Unversity of Mashhad (jamal.mokhtari@mail.um.ac.ir)
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Is the project a case of…:

☐ State-initiated co-creation

☐ Entrepreneur-driven co-creation

☒ Grassroots-based co-creation*

**For an elaboration of the typology, please consult the GOGREEN theoretical framework p. 25.*

Integrated case analysis

Before proceeding to the scoring of the GFs, please provide a *3–5 page case analysis* in which you describe the background, history, and national, regional, and local contexts of the case, the problems and goals addressed by the local collaboration, the participating actors and their relationships, the unfolding of the co-creation process, the most important governance factors (this may include factors other than those in focus in this project), and the generated outputs and outcomes. The conclusion may specify a few lessons learned from the case study.

1) Background, history, and national, regional, and local contexts of the case

In November 2016, an earthquake with a magnitude of 7.3 on the Richter scale hit Kermanshah province, which destroyed 90% of the Sarab-e Zehab village and resulted in 620 casualties. The people affected by the earthquake initially lamented the relief efforts and the delayed arrival of first aid. In response, Professor Sadegh Zibakalam, a professor of political science at the University of Tehran and a well-known figure among the Iranian people, declared his commitment to support the relief efforts by initiating a donation campaign. He announced his account number to receive donations from the population, as a result of which he collected $700,000 in 3 days. Dr. ZibaKalam initially planned to use the money for relief efforts, such as repairing the destroyed houses and delivering food to the people affected by the earthquake. However, he decided instead to use the opportunity to direct the funds to a rebuilding program with the aim of creating lasting effects, aimed at transforming the community into a modern and sustainable village.

The village was rebuilt based on the collaborative efforts between university professors as well as local communities and authorities, using the sustainable development goal (SDGs) indicators as a benchmark. The government were opposed to the project at first, as Dr. Zeba Kalam commented in an interview: “the local authorities did not support the reconstruction program from the beginning, as they did not like the fact that people were transferring $700,000 to the account of a private individual.” In the end, after further negotiations, the local authorities finally selected one of the villages affected by the earthquake as a pilot project for the rebuilding program, which was later designated as the "Village of Hope” (Hope in Persian

means Omid). The village had a lot of potential due to its unprecedented collaborative scope, involving 152 individuals, including members of the parliament, academics, researchers, civil rights activists, and so on. The village was strategically positioned in the Kermanshah province, situated within a distance of fewer than 2 kilometers (or less than a 7-minute drive) from eight neighboring villages. As a result, it served as a central hub, facilitating connectivity with the surrounding villages. For instance, the establishment of a library or a bank counter was intended to enable residents from the adjacent villages to easily access and utilize these facilities. The broader objective of the pilot project was also to assess the feasibility of the reconstruction program based on the SDGs, with the ultimate goal of extending its implementation to neighboring provinces in the future.

2) The aims of the project and the sustainability problems that it seeks to address

The Village of Hope is a reconstruction program designed as a pilot project based on the SDGs. A core objective of the pilot project was to build 85 housing units, 15 of which were completed in the first year. A key leader in this pilot project has been Dr. Salahuddin Vaisi, a professor at Kurdistan University, who holds a PhD in architecture from Trinity University Dublin. In an interview about the aims of the reconstruction program, he explained:

> We determined that the reconstruction program should adopt a holistic and sustainable approach, deviating from mere renovations of existing structures. Our goal was to avoid a scenario where a village is rebuilt, only for its inhabitants to later discover a lack of sustainable means of subsistence, compelling them to migrate to the countryside in search of new livelihoods. To address this concern, we selected a village as a pilot project based on criteria such as a higher incidence of poverty, a significant loss of life relative to its population, and extensive destruction.

Continuing the interview, Dr. Vesey talks about the objectives of this project:

> To alleviate the need for the government to install extensive gas pipelines, a thorough examination of the village's climate revealed an abundance of over 300 sunny days. Recognizing this substantial solar potential, we incorporated solar energy into the plan as a viable alternative for heating water in both the bathroom and kitchen. Over the course of nine months each year, the solar module could effectively meet the

household's energy consumption, making it a sustainable and environmentally friendly solution.

The first goal of the project was to alleviate poverty in the village, as it was one of the poorest in the region. Continuing the interview, Dr. Vesey elaborated that:

> "Our goal with this project is to showcase that living in the countryside should not be synonymous with poverty." The villagers should not have to buy eggs from the city and commute back to the village. We want the village to produce chickens and eggs, such that not only are they self-sustained, but they can even produce a surplus for exporting to nearby cities. Finally, they also entertained the idea of attracting tourists, since the province of Kermanshah hah a very high potential to attract tourists."

The second goal was to use of sustainable building materials, based on 3D-printed panel technology (see below), which is not only lightweight but also optimizes energy consumption. 3D panels are prefabricated walls consisting of three main components: a fire-resistant polystyrene insulation core or Ionolite, pre-welded steel mesh and a concrete layer. The numerous advantages of this structure are said to be:

a) Reduction in the weight of the building thanks to the lightness of the roof and walls
b) High resistance to earthquakes due to its high structural integrity
c) Insulation against heat, cold, moisture, and sound
d) Fire resistance
e) Impermeability of the building to insect infestation
f) Reducing the weight of the iron and concrete used and obtaining a larger usable space due to the lower thickness of the three-dimensional walls
g) Design flexibility in terms of interior and exterior facades in arched and sinusoidal systems, due to the flexibility of the prefabricated parts of the three-dimensional walls

The third objective aimed to establish a "Cultural House" in the Village of Hope, designed to empower the women within the community. This initiative extended beyond the boundaries of the Village of Hope, as it sought to benefit not only its residents but also those from 20 neighboring villages. The envisioned Cultural House was conceived as a versatile hub, providing not only access to literature but also serving as a multifunctional space equipped with computers, software, and various other facilities for the local community.

The fourth goal pertained to the use of sustainable wastewater treatment plants and the introduction of a sewage network, based on an aerobic rather than chemical process that was deemed more environmental-friendly. Aerobic wastewater treatment involves the biological degradation of impurities and organic substances in wastewater by aerobic microorganisms and bacteria. In this method, an activated sludge tank is established at the bottom of the wastewater treatment plant, supplying water, food, and oxygen to bacteria through air pumped into the sewer. As aerobic bacteria consume organic matter, masses of bacteria accumulate and settle at the tank's bottom due to increased weight. Clean effluents are then directed to the outlet. The wastewater treatment process involves two key steps: collection and transportation, followed by treatment. Village wastewater is gathered and transported to a treatment plant. After treatment, the water can be utilized for agriculture or discharged into the river,

posing no pollution risks. Consequently, the treated water is either reused in agriculture or released into other existing water sources, such as rivers or other deposits. Solar energy and panels cover the electricity consumption for wastewater treatment, eliminating the use of fossil fuels and mechanical equipment, except for a pumping device that lifts the water. The village relies on a natural system without mechanical equipment. Moreover, sludge produced during wastewater treatment, which is rich in nutrients like nitrogen and phosphorus, serves as fertilizer in agriculture.

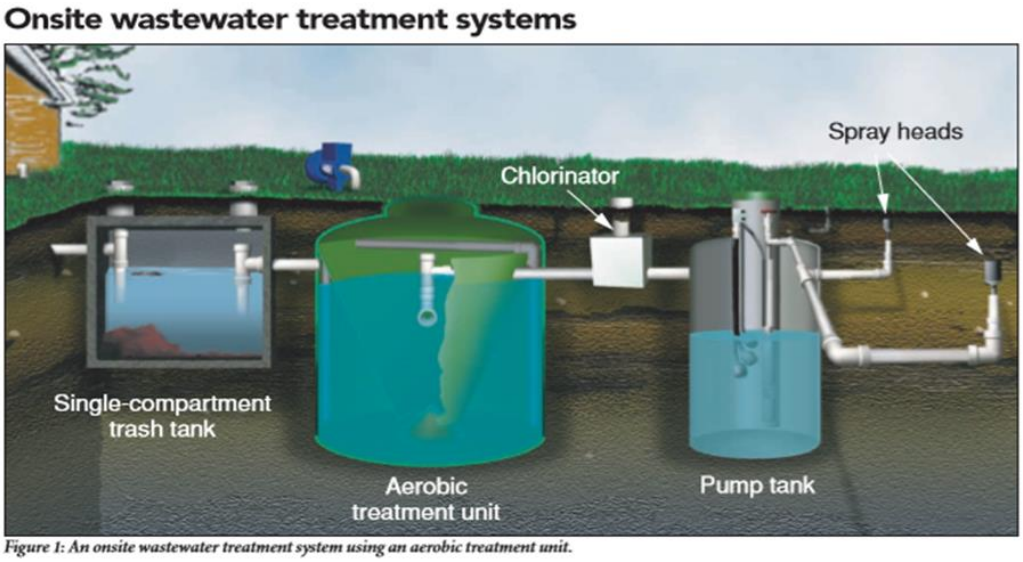


Figure 1: An onsite wastewater treatment system using an aerobic treatment unit.

Aerobic treatment unit

3) The participants and their interaction and communication in and between meetings

The main actors of this project can be classified according to the following roles within the collaborative network:

a) **Scholars/academics:** The founder of the pilot project is Dr. Sadegh Zibakalam, professor of political science at Tehran University, whose main idea was to organize the reconstruction program based on the SDGs as benchmarks. Other core academic stakeholders are the professors at Razi University of Kermanshah and the University of Kurdistan, who were familiar with the region affected by the earthquake and the local culture. In total, 62 professors and experts were working as an advisory team for this project, 23 of which were directly involved in designing the implementation. The reason why people in Iran have more confidence in scholars than in the government when unexpected natural events such as earthquakes occur, is because the governments have been known to shirk from their responsibilities during natural disasters due to their incompetent crisis management. For example, in the spring of 2019, there had been flood warnings in the northern regions of Iran, but the local governor traveled to Canada when the flooding occurred, escaping from his responsibilities.

Two years after the inauguration of the project, the Village of Hope project was officially to Tehran University, which is now responsible for coordinating its continued reconstruction program. Finally, university professors have also played a key role in designing the sewage system and water treatment plant that turns the village's waste into compost.

b) **Local communities:** In the aftermath of the earthquakes, local communities actively engaged as pivotal stakeholders in the collaborative pilot project. Initially cautious about collaborating with authorities due to mistrust, their commitment to the collaborative process became contingent upon the mediating influence of academics, whom they trusted more. In an interview about the role of the local communities, Dr. Salahuddin Veisi says: "We have made many trips to the area affected by the earthquake. We talked to the people in the region and conducted studies to get to know the region. I talked to all the villagers, their councils and villagers about the architectural plans and explained to the villagers what sustainable development is and I explained to them that sustainable development has three main pillars: a social, environmental, and economic dimension. We looked at all three dimensions together. In the social dimension, the plans should be drawn up with the participation of the people, and the people should be kept updated by the building process. We also talked to the women of the village. In the economic dimension, we examined the local economy, specifically focusing on the agricultural practices. The inquiry delved into the types of crops cultivated, such as maize or wheat, similar to agricultural practices observed in countries like India and Africa. Notably, 152 Kurdish representative stakeholders, representing various segments of the local community, including university professors, members of parliament, Friday Imams, writers, journalists, and citizen activists, collectively expressed support for the Village of Hope through an open letter.

c) **Government:** Initially, the provincial and local government held a pessimistic stance towards the reconstruction program, resulting in various legal and administrative barriers hindering the execution of the pilot project. However, these administrative and legal hurdles were gradually addressed through collaborative efforts with both the government and the regional governor. This positive relation emerged as a result of the rapport built through several meetings with the different project stakeholders. All in all, the central, provincial, and local governments were all gradually onboarded in the collaborative project, who were consulted about the removal of legal obstacles and the obtainment of the prerequisite permits. The central government played a critical role in supporting this process due to their prerogatives. The provincial and local housing authorities were also involved in the design and implementation of the new infrastructure, such as electricity, water, and so on. Dr. Salahuddin Veisi emphasized the importance of government intervention in an interview, stating, "We dedicated a significant portion of our time to administrative discussions with government officials. Our approach aimed to avoid arbitrary actions and uninformed decisions that might prove ineffective. Securing the approval of relevant authorities and obtaining necessary permits were paramount. In a village setting, undertaking construction without proper coordination, or making unfulfillable promises was not our strategy. Hence, such coordination with government organizations was deemed essential."

d) **Housing foundation:** The housing foundation, the Revolution Housing Society, pioneered the construction of new village infrastructure and houses based on sustainable development indicators, marking the first recorded instance in the country. In an interview, Dr. Zibaklam described the negotiations with the Islamic Revolution Housing Society as another task for which he has been responsible: "We [the core organizing team] were well received in this regard, and a memorandum of understanding was signed between me and the housing society for the

construction of Village of Hope. From the outset, we defined the approach and direction of our aid and declared that we would not be involved in the reconstruction of buildings. Because with the money we had, we could only build a limited number of houses, but we were involved in infrastructure work for the development of the village."

4) How often do they meet up and do they communicate between meetings?

About a month and a half before the pilot project began, the necessary investigations were carried out with many experts from all over the country, mainly from regional universities, and after the work began, two reports on the progress of the work were submitted each month. Numerous meetings and discussions were held with regional academics, the governor, the Kermanshah crisis team, the Red Crescent, and the army officials responsible for providing relief supplies, as well as the Mehrgan Charity Foundation.

Following the initial plans, meetings were held monthly during the reconstruction phase, during which all stakeholders would regularly convene to discuss the process. The reconstruction process involved a division of labor, hence large aggregate meetings involving all stakeholders were not necessary more frequently.

In between meetings, it has always been possible for the different stakeholders to communicate with each other through standard measures, such as phones, emails, and messaging services. In the event of emergencies, these channels would be used.

5) The role and forms of knowledge sharing, coordination and joint problem-solving

The idea of the "Village of Hope" project is the result of collaborative problem-solving processes, as the initial planning phase involved inputs from all the stakeholders who collectively decided on the design and plan for the reconstruction program. The collaborative aspect of these meetings revolved around identifying joint solutions through shared deliberation, although with an added emphasis on tapping into the expertise of the various experts. This is reflected in the innovative technologies introduced in the Village of Hope, some of which carry an experimental quality due to their advanced properties (such as the wastewater treatment plant). Throughout the planning phase, the cultural and social NGO "Mehrgan" was also temporarily involved in identifying joint solutions, as they contributed to questions concerning education and cultural affairs, which would later be part of the Culture House.

The allocation of funds was also decided collectively through this collaborative process. For example, the government pledged to cover the construction costs of the Village of Hope without tapping into the public campaign donations. In contrast, it was decided that the auxiliary infrastructure such as the sewage system, solar panels, and other parts were covered by the public campaign donations that were initially retrieved during the beginning of the disaster.

In order to align the construction of the village with the SDGs, it was necessary to distribute responsibilities so that the project could progress more quickly by separating responsibilities. The construction and financial management groups were separated so that responsibilities were not concentrated in one place. Consequently, the execution and implementation of the project involved a division of labor between three core working groups:

a) The construction group;
b) The social group involved in the empowerment of the villagers is one of the main branches of the board in Village of Hope; and
c) The financial/accounting management group documenting financial expenses and the allocation of funds.

6) The relation between consensus and conflict and the handling of the latter

Despite the initial conflict between the government and the project initiators from the regional universities, there have been three interface points where conflict and consensus have potentially emerged throughout the collaboration.

SDGs as cultural invasion and a source of conflict:

a) The concept of developing the Village of Hope based on the SDGs faced initial resistance from the government, leading to the obstruction of the public aid account. The primary issue regarding the SDGs was their perceived cultural invasion into Islamic culture and Iranian cultural mores and norms. For example, several parts of the SDGs involve reproductive health and sexual education, which were perceived as in conflict (haram) with Islamic law. Over time, however, these challenges were successfully addressed. Dr. Zeba Kalam, in an interview, acknowledged the initial criticism, stating, "We encountered significant criticism initially, but the collaboration and support from esteemed personalities and fellow citizens were uplifting. I willingly cooperated with the investigation, providing extensive oral and written statements when summoned by the prosecution, expressing readiness for further clarification if needed." Despite the initial resistance, compromises were realized as the scholars and NGOs managed to appeal to the other developmental features of the SDGs, shifting the focus away from the more problematic parts.

Conflicts over the cultural objectives of the pilot project:

b) One source of enduring conflict has been over the cultural dimensions of the pilot project, as it was initially proposed by the project leaders to build a movie theater and concert hall in the village. However, the government opposed these proposals as they were perceived as a potential cultural invasion (from the West), seeking to supplant the local cultural norms of Iranian society. This conflict could unlike the similar critique raised against the SDGs not be reconciled with the priorities of the government, and the proposal was consequently never realized. This issue was an enduring source of disagreement because the project leaders from the universities, in collaboration with the NGOs, held that these cultural objectives of the pilot project were a prerequisite for realizing the SDGs.

Natural disasters as catalysts for social unity and collaboration

c) The Hope of Village pilot project showcases how social and political unity emerges amid natural disasters, as it became possible to unite the divergent interests between the authorities (and their need to exert control) and civil society (the scholars, local communities, NGOs). The Kermanshah earthquake catalyzed the collaborative pilot project as it redirected the interests of the respective stakeholders towards the urgency of the humanitarian disaster unfolding in the region. Drawing on historical experiences in Iran, these natural events have in the past also played a significant role in bridging the gap between the government and the people, fortifying national cohesion and solidarity.

7) The role and form of leadership: lead actor, steering group and/or collective leadership

The lead actor at the center stage of the collaborative processes were the scholars, who were entrusted with the reconstruction program. After all, the Iranian people chose to extend their donations to the public campaign initiated by Professor Sadegh Zibakalam, due to their mistrust towards the government and their disaster management. Alongside the scholars, the other stakeholders participate in the steering group who have exercised collective leadership over the contents of the pilot project. What stands out is the government's adoption of a secondary role in this collective leadership, a noteworthy occurrence given the authoritative nature of the Iranian state. One plausible explanation is that the government opts for a more hands-off approach, allowing the introduction of the SDGs in the pilot project while maintaining a certain distance. This strategic positioning ensures that the government appears to be indirectly supporting the SDGs rather than explicitly endorsing them, perhaps reflecting a balance between incorporating global sustainability initiatives and navigating domestic political considerations.

8) The temporal unfolding of the co-creation process: major shifts and ups and downs

The pilot project can be divided into four distinctive phases:

Phase 1: The collaborative design and planning process (2016)

In the aftermath of the earthquake and the outpouring support from Iranian citizens in the public donation campaign, the project encountered an initial phase of opposition from the authorities, which among other things entailed that the bank account of the Professor Sadegh Zibakalam was temporarily blocked. However, upon realizing the broad support for the private-led relief campaign by Professor Zibakalam, the authorities accepted the ambition of the professor, with the support of civil society, to initiate the reconstruction program. The first phase refers to the collaborative planning process, where most stakeholders were mobilized in designing the reconstruction program. It was also at this initial stage where conflicts emerged around whether a range of cultural facilities should be built.

Phase 2: Construction process (2017-2018)

Following the design and planning process, the construction phase was initiated, after which 85 residential units were built in total. The pilot project was divided into the three core working groups, which worked alongside each other to execute the plan agreed upon in the prior phase. Furthermore, this phase was relatively frictionless as potential conflict points were already resolved. This phase was less collaborative due to the division of labor.

Phase 3: The supply, care, and training process (2019-2020)

After the completion of the construction phase, the buildings underwent interior furnishing to guarantee the habitability of the houses. Additional infrastructure, including sewage piping and the installation of solar panels, was implemented in the village. The initial phase involved the transfer of 34 houses to residents, while the remaining houses were allocated in the subsequent year. As a part of the pilot project's inauguration, various initiatives were launched to empower the local community, with a specific focus on women. Among these initiatives was the provision of handicrafts training, contributing to skill development and community engagement.

Phase 4: Completion of the project (2021):
The project was officially completed in 2021 and its management was handed over to the university, which became responsible for its ongoing management. It thereby also marks the conclusion of the collaborative process.

9) The most important governance factors

Of the 16 governance factors mentioned in the research protocol, the most important governance factors in the case of Village of Hope were as follows:

Structural GF:

a) **(GF1) perceived importance of the conditions of the biosphere:** the acknowledgment of the significance of biosphere conditions has demonstrated an important catalyst for the collaborative success of the Village of Hope pilot project. All interviewed stakeholders have concluded that the SDGs and their focus on sustainable development has been a core motivational force enabling the collaborative process.

Strategic GF:

b) **(GF6) Strategic agenda-setting by means of translation:** the translation process was prerequisite for allowing the SDGs to be used in the pilot project, as they would otherwise be in conflict with Islamic law. The scholars, who were the facilitative leaders, had a key role in the translation process.

c) **(GF9) Provide access to blended finance:** initially the cost of building houses was covered by the public sector and then by the government**.**

d) **(GF10) Ability to leverage government support to enable local cooperation:** The village of Hope project has demonstrated well the importance of support from the authorities. Because government permits are required to build the village.

Tactical and operational GF:

e) **(GF11) Involvement and empowerment of relevant and effective actors:** The most important factor in building cooperation in the case Village of Hope is the inclusion and empowerment, as it is an effective way to mobilize local communities to participate in the project.

f) **(GF12) Illustration of interdependence through a common problem and a common vision:** The Village of Hope project illustrates the interdependence of scholars, local communities, and government in solving problems, who formed a joint vision and collective agency based on the SDGs.

g) **(GF16) Facilitative leadership:** Without facilitative leadership, this project would not have been possible. The responsibility for facilitative leadership lay with the scholars.

10) The generated outputs and outcomes

The final output of the pilot project is manifold but can be summarized as the Village of Hope in its totality. The following noticeable outputs are worthwhile highlighting:

a) 130 houses

b) The houses have been connected, through a sewage network of 1740 meters, to an anaerobic wastewater treatment plant system. One of the problems with conventional wastewater treatment systems is that the system runs into problems when the microbial load in the wastewater increases, or the water flow rate rises. However, the wastewater system designed in

this village is characterized by the fact that it can withstand any shock and its performance is constant. Another feature of this wastewater system is its long service life, which can be up to 50 years. Conventional sewage systems, on the other hand, normally have a service life of 20-30 years. Finally, it is the first village in Iran whose wastewater does not end up in the river or the ground, but is purified and used for agricultural purposes.

c) The walls are not made of clay blocks, concrete blocks, or bricks. It is made of foam, which has less weight.
d) The village's water treatment plant consumes zero electricity and, furthermore, produces sludge, which can be combined with food waste to create an agricultural fertilizer that does not contain any chemicals.
e) 500 solar panel have been installed to provide hot water for the family. The electricity for the treatment plants is furthermore also generated by the solar cells.
f) About 1200 fruit saplings have been planted in the village.
g) The streets were paved with natural stones rather than asphalt.
h) A library
i) The length of the transmission line is 800 meters.

11) Lessons learned about the conditions for co-creating green solutions

The successful promotion of the SDGS relies on a cohesive foundation, marked by the interplay of three key features:

a) The Wisdom System: This encompasses a participatory political culture, competent governance, and an interactive foreign policy. These elements collectively form a robust framework essential for fostering sustainable development.
b) Triangle of Capital: Comprising social capital, human capital, and financial capital, this triangular framework underscores the multidimensional resources necessary for sustainable development efforts to thrive.
c) Triangle of Decentralization: Encompassing political decentralization (emphasizing democracy and civil society), administrative decentralization, and economic decentralization, this configuration reinforces a balanced and inclusive approach in the pursuit of sustainable development.

The actualization of the SDGs in Iran hinges on the synergistic functioning of these three factors. Achieving this requires a transformative shift in political, economic, socio-cultural, and administrative structures and management practices. In contexts like Iran, where the SDGs officially face opposition, the role of scholars as agents of change becomes pivotal. Leveraging their intellectual and political influence is crucial in promoting the SDGs and facilitating the transition to green governance.

Considering Iran's stance on globalization as a potential threat to Islamic values, a balanced approach involves embracing "globalization-localization." This approach advocates for the harmonious interaction between local cultures and the global culture, encapsulating the ethos of "Think global and act local." Addressing Iran's concerns about Western cultural invasion necessitates fostering dialogue and understanding to establish a middle ground that accommodates both local values and global perspectives in the pursuit of sustainable development.

12) Points of interest in subsequent studies

A possible area of interest is to understand how the SDGs can be implemented with greater efficiency based on local conditions. Perhaps it is possible to examine the feasibility of having an international agency supporting the local implementation of SDGs, functionally equivalent to the role of the Atomic Energy Agency (IAEA). The formation of a hypothetical International Agency of Sustainable Development could offer the institutional support to implement and tailor the SDGs, providing an international development forum that offers capacity building processes around the world. In the Iranian case study, the SDGs are shown to have great potential, although the experimental nature of the pilot project suggests that it still cannot be mainstreamed. International support structures for the implementation of the SDGs might, for this reason, be useful for advancing sustainable development, especially in authoritarian countries.

Scoring and analysis of governance factors

1. Perceived importance of biosphere conditions

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The creation of a village based on the SDGs was the main concern of the scholars who initiated the idea for this pilot project. The government did not initially share this priority and wanted to spend the public aid money on the basic needs of the earthquake victims, such as water, food, and shelter. However, a consensus was subsequently established that it was important to ensure that the reconstruction program was sustainable, such that it would not only provide the local communities with immediate relief but, furthermore, also the chance to raise their livelihoods. Upon reaching this consensus, the importance of sustainability concerns was thereby perceived to be central to the collaboration.

More generally, rural areas in Iran still face the devastating consequences with ecological instability, as they regularly suffer from draught as a result of water scarcity, environmental change, and ecosystem degradation. In turn, draught undermines the foundation for agriculture in the rural countryside, thereby posing socioeconomic risks in terms of poverty and starvation. Villagers like the Village of Hope represent one among many villages that are vulnerable to these environmental disasters, hence the focus on sustainability and biosphere conditions has been of key importance.

The perceived importance of biospheric conditions is the main motivation for rebuilding villages based on SDG indicators. Dr. Pirsaheb, the designer of the village's sewage wastewater treatment plant system, says that sustainable development wasan integral part of the infrastructure development in the Village of Hope, and he gives the example of the village's sewage treatment plant system where all the pipes have been placed underground. In most if not all Iranian villages, they do not have a sewage network altogether, which has adverse impacts on the local environment of the village. It can lead to water contamination,

public health risks, air pollution, and so on. The underground sewage network connected to the wastewater treatment plant demonstrates one of the sustainability aspects of the design of the Village of Hope.

152 people, including university professors, civil rights activists, and a number of Majbes representatives, have stated their support for this project, describing the Village of Hope as a pioneering project and a "model village" based on the international principles of "sustainable development". The interviewees all corroborated that the sustainable development principles have been prerequisite for empowering the village communities, as the sustainable housing and infrastructure that has been built ensures that they are less vulnerable. The choice to use 3D-printed walls is similarly informed by the future risks of similar environmental disasters, whether related to earthquakes or fire hazards, as they provide a robust alternative to standard brick or clay houses.

2. Legislation, programs, and formal goals

QCA score:	Scoring confidence:	Data sources:
☒ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☐ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The pilot project was the exceptional outgrowth of multi-actor and community-led mobilization; hence it did not benefit in any direct ways from legislation, programs or formal goals. As noted earlier, the authorities were reluctant to accept the reconstruction program, especially due to its focus on the SDGs as a benchmark for development. If anything, the prevailing legislation worked directly against the introduction of the pilot project due to its potentially subversive content. One of the opponents of the UN SDGs argued that "the main problem and challenge that the UN SDGs creates is the challenge of local [Iranian] autonomy; in other words, the UN SDGs subordinates the management of planning and macro-planning of all countries to developmental standards of developed countries and grants them the legitimacy to control global development." One of the reasons for the rejection of the educational and cultural components of the SDGs in Iran is that some people think that this developmental agenda corrupts the mind of the youth. Another aspect has been the focus on sexual and reproductive health, which is similarly perceived as problematic due to its conflict with Islamic values.

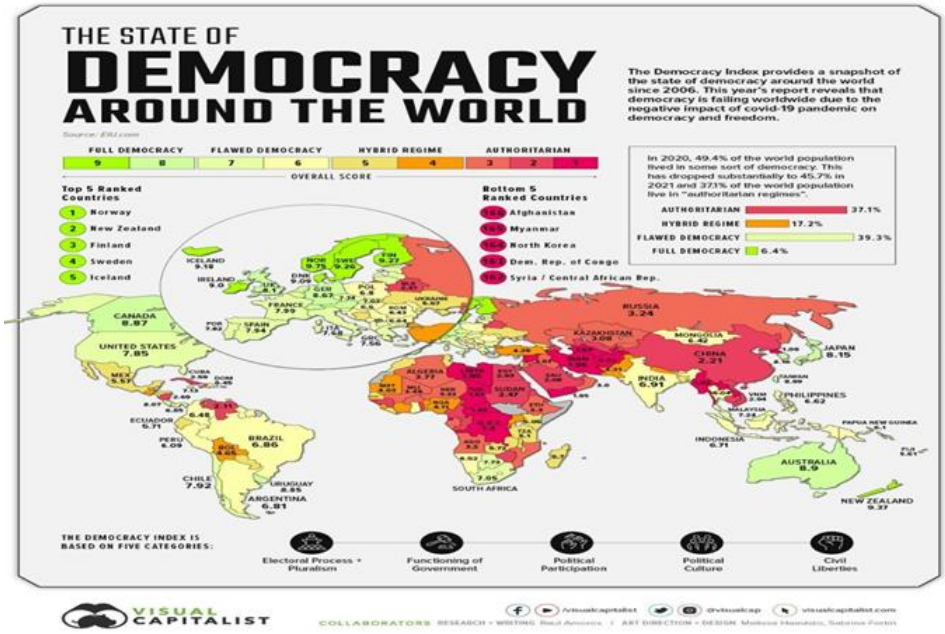
3. Relative openness of public governance paradigms

QCA score:	Scoring confidence:	Data sources:
☒ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Iran is an authoritarian country and limits the scope of inputs from non-state actors. The public governance paradigm can this be described, all else equal, as closed and repressive. The opportunity to initiate the Village of Hope as a pilot project should be interpreted as an exception to the role, as it barely managed to receive support. The exceptional circumstances under which the pilot project was allowed to run were due to the overwhelming support commanded by civil society, in combination with the lack of resources to address the destructive impacts of the earthquake. The authorities allow non-state actors to participate in solving local problems when they are pressured by public opinion and international organizations. The administrative system in Iran is theocratic, hence the highest political official is called the "leader" who considers himself chosen by God and is in power until death. All important decisions in all domains of society are made by the leader(s) of Iran. The president is the second political official in Iran who carries out the orders of the leader in macro-politics. In limited instances where non-state actors are allowed to provide inputs, they are circumscribed to private companies and individuals loyal to political office holders. In general, the pessimistic attitude towards the West and international organizations, the lifelong and god-like leadership in Iran, despotism rather than meritocracy and accusations of spying on environmental activists are among the important obstacles to the launch of sustainable development projects in Iran.

Indicators of democracy in the world and Iran according to the Economist magazine:



Iran's GPA is 1.95 out of 10.

The Iranian government's financial stability is intricately tied to oil revenues, rendering it a rentier state. In such a system, where a substantial portion of income is derived from natural resources, accountability and civic participation often take a back seat. The heavy reliance on oil revenue serves as a rationale for overlooking environmental concerns within Iran. A poignant illustration of this is the deliberate drainage of the Hor Al Azim international wetland along the Iran-Iraq border to facilitate oil well drilling and extraction, exemplifying the prioritization of economic interests over environmental preservation.

To illustrate the opposition to inputs from non-state actors interfering in governmental affairs, we need only to examine the multiple instances in which civil society has encountered the repressive and violent suppression by the government. In 2017, 8 Iranian environmental activists were arrested on charges of espionage and one of them, Professor Kavos Seyed Emami, died in prison under mysterious circumstances. In the Village of Hope project, the government first blocked Dr. Ziba Kalam's bank account due to the overwhelming public support in the form of public donations. The public prosecutor initially subpoenaed him, subjecting him to potential criminal prosecution. However, after a month-long investigation, the bank account was unblocked, and he was cleared of any wrongdoing. Of course, it is worth noting that in such cases, the political and social scholars are able to persuade governments and open the way with the help of public opinion pressure, albeit with difficulty.

4. Formalized institutional channels for citizen participation and community mobilization

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

There are limited opportunities for citizen participation and community mobilization in Iran, with the exception of non-governmental organizations (NGOs). NGOs provide a formal but limited avenue for citizens and civil society actors to carry out environmental campaigns and activism, albeit on an extremely limited scale and under strict supervision. Besides NGOs, there are no official institutional channels for popular participation and mobilization. The only way of popular mobilization in Iran is the virtual space and the ability of political, social, cultural and sports Scholars. However, the government's solution to such potentially subversive citizen-led activities in Iran is to filter digital social networks through strict surveillance and control. On occasions societal contradictions overflow, people form spontaneous gatherings, e.g. citizens who oppose air pollution and garbage dumping in the forests. However, these public displays of protest only occur on a limited scale, and the government practically does not care. For example, in winter, due to the demand for gas in factories and industries, access to gas for residents was turned off and diesel fuel was used instead, causing severe local air pollution. In sum, there is a limited presence of the governance factor, although it is by no means significant.

5. Mechanism for ensuring top-down government and bottom-up social accountability

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☒ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The pilot project had several accountability mechanisms in place throughout its duration. In particular, the project submitted monthly reports targeted at the local citizens, ensuring that the project developers were held accountable to their financial costs. It was particularly the finance and accounting working group that was responsible for due diligence in this regard, in order to display that the public donations were put to proper use. Moreover, video reports have also been made by the project designers, which elaborated upon the progress of the pilot project and its progression into different stages of implementation. Finally, a Telegram channel and Instagram page were set up to upload reports and answer people's questions during the implementation of the project, which are still available. While several bottom-up social accountability mechanisms were in place, there is no clear evidence suggesting that it directly supported the collaborative process of the pilot project. One of the reasons was that the accountability mechanisms were targeting the broader segments of civil society, in particular those who donated, but not necessarily the limited scope of citizens who would later on live in the village.

6. Strategic agenda-setting by means of translation

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☐ 0.66	☐ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The Village of Hope offers an interesting example of strategic agenda-setting by means of translation, as the UN SDGs were formally banned in Iran but have been translated into a local context to meet local political requirements. Iran opposes the adoption of the UN SDGs as part of its formal state policy, as the Iranian head of state has publicly spoken out against the development agenda. The Iranian authorities considers it a form of western hegemony imposed upon Iran as a way to deprive them of their local autonomy. In the public session of the Iranian parliament on June 23, 1396, 151 MPs asked the president for time to officially announce the cancellation of the 2030 document. Some radical people in Iran believe that the adoption and implementation of the UN SDGs will adversely impact the Islamic values of the country, including the elimination of sexual stereotypes and the provision of sex education for children, as well as the removal of some Quranic concepts and values from school textbooks under the pretext of promoting peace and development.

Despite the formal opposition to the SDGs, Iranian scholars and civil society have, as part of this pilot project, expressed a strong support towards them and have thus been looking for a way to facilitate their implementation. Consequently, the scholars have translated the contents of the SDGs without formally pledging a commitment to the principles. They have also removed aspects of the SDGs that are perceived as subversive, e.g. regarding education, reproductive health, and so on. The proposed theater that was cancelled is an example of how the scholars and the local community had to make concession during the translation process to ensure their compatibility with Iranian laws.

Consequently, while the project does not officially follow the UN SDGs, they are clearly based on them as benchmarks and thus exhibit a clear process of translation. This translation process has been an integral element in the collaborative process, as it has served as a shared template for discussing the design and implementation of the reconstruction program. It has also allowed the different stakeholders to have a clear benchmark to advance sustainable development principles, as they can converge around a clear set of criteria for pursuing the reconstruction program.

7. Construction of narratives about successful multi-actor collaboration

QCA score:	Scoring confidence:	Data sources:
☒ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☐ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Among the interviewed informants, there have been no clear prior narratives about successful multi-actor collaboration prior to the pilot project. This is unsurprising insofar as Iran scores low on the other governance factors related to citizen participation and the openness of the Iranian public governance paradigm. There are, in other words, limited societal experience with multi-actor collaboration in the past to draw upon. Consequently, we record the absence of the governance factor.

However, the informants do mention how this pilot project has contributed to an emerging narrative of successful multi-stakeholder cooperation, insofar as it has enjoyed widespread success. In sum, the collaboration between the scholars, civil society, NGOs, and the authorities have led to an outcome acceptable for all stakeholders, suggesting that there are future opportunities to explore other collaborative projects – perhaps in relation to development-based projects or future relief efforts in response to earthquake-affected villages and cities.

8. Building or harnessing institutional platforms and arenas

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☒ Documents
☒ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The pilot project has used institutional platforms and arenas to a limited degree, as they have been circumscribed to basic meeting facilities and modes of virtual communication based on messaging applications. Most of the collaborative meetings have been held as face-to-face meetings during the planning and design phase, during which all the key stakeholders were gathered to deliberate and

brainstorm solutions. However, the facilities were not particularly designed to enable the collaborative processes, hence the institutional platforms qualify as significant but not supportive. As also noted earlier, key stakeholders have also communicated updates about the project updates to the broader civil society through social media channels in the form of video reports, accounting for the progress of the project. All informants noted that the meeting facilities were sufficient, although nothing specific was done to enable the collaborative process.

9. Provision of access to blended financing

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☒ Documents
☐ 0.66	☐ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The pilot initiative demonstrates a commendable utilization of blended finance, amalgamating contributions from private individuals with public funds from governmental authorities. Initially, the Village of Hope garnered financial support solely from public donations, amassing a substantial sum of $700,000. As the project evolved, the responsibility for constructing houses transitioned to the housing association, a state institution, due to the escalating costs associated with building residences. Simultaneously, funds from the broader population were allocated for infrastructure development. Respondents underscored that relying solely on donations proved insufficient to propel the pilot project forward, necessitating government funding as a pivotal prerequisite for its success.

Additionally, as mentioned earlier, the reliance on donation-based funding prompted project leaders, including academics, to institute robust accountability mechanisms. Monthly reports and video updates were introduced, ensuring transparency in the execution of the reconstruction program. In essence, the infusion of funds from unconventional sources, such as private donations, compelled the implementation of accountability measures, establishing checks and balances crucial for steering the pilot project toward its objectives. Moreover, it is noteworthy that without the initial influx of funds from private donations, the pilot project might not have surpassed the critical threshold required for its initiation. In sum, a number of interlocking mechanisms based on the provision of access to blended financing improved the project and its collaborative process.

10. The capacity to leverage support from authorities to enable local collaboration

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The capacity to leverage support from the authorities has been one of the critical success factors to the pilot project, as it would never have taken off without their formal consent. Most importantly, the authorities have proactively collaborated with other stakeholders to secure permits for the reconstruction program, as they were otherwise not allowed to rebuild the village. As noted earlier, the government was initially pessimistic, but eventually supported the project, albeit with certain reservations. The governor, the judiciary and the first vice president were among the officials who supported the pilot project. According to several informants, they have been positively surprised about the receptiveness and support provided by the authorities in relation to the Village of Hope. Dr. Zeba Kalam, the main initiator of the project, noted how he personally thanked the governor for his help when he handed over the houses to the villagers. Both the grantees and the villagers thanked the government officials for handing over each part of the project and ascertained that the work would not have been possible without the support of the government. Put differently, the authorities assumed a proactive role in enabling the collaborative process insofar as the pilot project faced so many administrative barriers. It was thus a administratively burdensome process for the authorities to commit resources to clearing these barriers on behalf of the project, showcasing a high level of proactivity.

11. Inclusion and empowerment of relevant and affected actors

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Empowerment and inclusion were important components of the pilot project, both as part of its collaborative process but also as an end-goal.

In the collaborative phase, project leaders, comprised of scholars, underscored the imperative of involving local communities slated to reside in the Village of Hope. Emphasizing a participatory planning approach, they made it clear that engaging with the local populace was a fundamental prerequisite. Additionally, recognizing the value of diverse perspectives, the project leaders actively sought the expertise of NGOs, whose intensive contributions during the initial design and planning stages were paramount. The emphasis on participatory planning and local governance aimed to boost villagers' motivation for active participation.

Ensuring a robust participatory approach, the project leaders facilitated strong community involvement in the deliberative process, providing multiple avenues for input. This inclusive strategy granted local communities a substantive voice in decision-making. Leveraging the support of NGOs, citizens were empowered to clearly articulate and visualize their needs, thereby enhancing their influence in the

deliberative process. The collaborative efforts of scholars, local communities, and NGOs collectively worked towards fostering an environment of empowerment and inclusive decision-making.

As an end-goal, the pilot project placed a high priority on empowerment and inclusion. Consequently, the reconstruction plans crafted during the planning and design phase prominently featured initiatives aimed at enhancing the livelihoods of women. The overarching goal of sustainable development guided these efforts, emphasizing the creation of a self-sufficient village equipped with essential infrastructure and amenities. This approach aimed to eliminate the necessity for residents to commute to neighboring cities and villages for basic necessities.

Feedback from various informants underscored the indispensable role played by civil society stakeholders, particularly NGOs and local communities, in the success of the Village of Hope. Their inclusive participation not only contributed to the sustainable construction of the reconstruction program but also ensured that the end-users found the village habitable. In essence, the collaborative efforts of NGOs and local communities were instrumental in shaping a reconstruction program that not only met sustainability standards but also met the practical needs and aspirations of the community members.

12. Clarification of interdependence vis-à-vis common problem and joint vision

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☐ 0.66	☐ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

All the informants universally acknowledged their interdependence with other stakeholders in propelling the pilot project forward. Several informants arrived at a shared understanding that sustainable development inherently involves interdependence, recognizing that no single stakeholder can effectively advance it in isolation. Collaboration across diverse sectoral stakeholders is imperative to ensure a unified effort directed toward achieving the SDGs. Sadegh Zibakalam, in an interview, elaborated on this perceived interdependence, highlighting that the inception of the Village of Hope was a collective endeavor involving environmentalists and 150 local figures, including parliamentarians, university professors, writers, and trustees. In essence, the project was conceived through the collective wisdom of different segments of society.

At various stages of the collaborative project, collaboration with the authorities was essential. To initiate the reconstruction program, governmental intervention was required to clear collapsed buildings before any other work could commence. Subsequently, government permits were necessary to kickstart the reconstruction process, showcasing the project's interdependence with governmental bodies, specifically the Housing Authorities. This underscored the necessity of working in tandem with the government to overcome administrative barriers.

The local communities, having faced substantial losses, required an acknowledgment that constructing the village in alignment with sustainable development indicators was in their paramount interest. Garnering support from these communities involved seeking guidance from village elders in the village council. Their endorsement played a crucial role in securing widespread acceptance across the broader local community, fostering a shared vision through constructive dialogue and mutual recognition among stakeholders. This collaborative approach not only reinforced the understanding that the success of the pilot project relied on collective effort but also underscored the interdependence and shared responsibility among all parties involved.

In conclusion, the recognized interdependence and joint commitment toward a common goal were instrumental in advancing the pilot project. This approach ensured that all stakeholders converged around a unified objective. Serving as a cohesive framework for this collective vision, the SDGs acted as a crucial binding agent, providing a broader template that guided and united the diverse stakeholders toward shared aspirations and a sustainable future.

13. Trust-building and conflict mediation

QCA score:	Scoring confidence:	Data sources:
☐ 0	☒ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☒ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Most informants reached the conclusion that trust was a prerequisite for the success of the project, although it is not clear what concrete steps have been taken to proactively build trust and mediate conflict. In other words, trust was important, but it did not in a majority of cases result from deliberate trust-building and conflict mediating routines. Several examples illustrate these ambivalent dynamics.

First, the conflict between the authorities and the scholars (representing civil society) was noticeable from the beginning, although it was gradually mitigated based on the shared recognition of interdependence. This perceived interdependence was, however, not the result of any deliberate effort to build trust but was rather the consequence of the growing pressure from civil society, from which the authorities could not escape. Consequently, they had to make concessions and allow the reconstruction program to continue but chose to collaborate with the civil society actors (scholars, local communities, and NGOs) to ensure that the translation of the SDGs was acceptable and within the scope of Iranian law. The apparent trust was thus ambivalent and partly reinforced by the reciprocal interdependence between the party rather than any trust-building process.

Second, one exception where an active attempt to build trust took place was between the pilot project group and the local Kurds in the region. Dr. Zibakalam elaborated that the local Kurds were invited in various informational campaigns to let them oversee various parts of the reconstruction program, such as

the construction of the water treatment plant and its functions. Insofar as the village communities were not familiar with these new technologies, it was a prerequisite for their successful implementation that they could command support from the local communities. Rural areas such as village communiteis are familiar with traditional forms of agriculture, thus they might show resistance towards new technologies with which they are unfamiliar. However, upon being told about the prospective uses of the water treatment plants, they gradually established support for their introduction.

In conclusion, there were a few notable efforts to promote trust and mediate conflicts in the pilot project, although they were inconsistently implemented. Furthermore, it is not clear how the trust-building and conflict mediation processes actively enabled the collaborative processes.

14. Use of experimental tools for innovation

QCA score:	Scoring confidence:	Data sources:
☒ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☐ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

While the Village of Hope has deployed several innovative technologies such as the aerobic wastewater treatment plant and 3D-printed walls, none of the qualified as prototyping or user-centered design.

15. Ongoing critical self-reflection and learning (i.e., process and/or developmental evaluation):

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☐ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☒ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

As previously mentioned, accountability mechanisms have been diligently implemented throughout the project, aiming to convey to the broader civil society that donations have been utilized responsibly. In pursuit of this objective, diverse evaluation mechanisms have been integrated into the pilot project, facilitating periodic assessments of its progress at various stages. The table below succinctly encapsulates the advancements achieved during different development phases, conducted by the finance and accounting core group of the pilot project.

The stage of progress until 2018 November 4	Number of units/buildings
Completion of the concreting of the foundation	85
Completion of the installation of the skeleton	76
Completion of the concreting of the roof	73
Completion of the wall	59
Completion of the finishing works on the building	32
Installation of the windows	34
Execution of building facade	25
Habitable houses	11

The stage of progress until 2019 August 11	Number of units/buildings
Completion of the concreting of the foundation	109
Completion of the installation of the skeleton	108
Completion of the concreting of the roof	102
Completion of the wall	95
Completion of the finishing works on the building	84
Installation of the windows	77
Execution of building facade	72
Habitable houses	71

Despite the substantial role that evaluation measures play in the pilot project, regrettably, they have not been effectively leveraged to enhance the collaborative process in subsequent phases. In essence, these evaluations have predominantly functioned as tools for monitoring progress rather than serving as the foundation for feedback mechanisms designed to refine and improve the collaborative process. The informants have commented that there were no foresight regarding the strategic use of the evaluation mechanisms to improve the collaborative process, hence the governance factor scores significant but not supportive.

16. Exercise of facilitative leadership:

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☐ Documents
☐ 0.66	☐ High confidence	☐ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The driving force behind the facilitation of the Village of Hope primarily rested in the hands of the scholars, who took the initiative to transcend conventional political structures often associated with relief campaigns. The scholars' foresight was pivotal, laying the groundwork for the central role of the SDGs in the collaboration, a dimension that might have been overlooked due to its sensitive nature. Notably, the scholars' capacity to translate these SDGs into politically acceptable development agendas significantly enhanced the overall coherence of the project, as previously highlighted in the essential role of the SDGs in fostering a shared vision among diverse stakeholders.

A resident of the Village of Hope expressed, "I believe that the scholars in the Village of Hope have done a commendable job in organizing this project." Specifically, the current inhabitants of the Village of Hope have expressed satisfaction with the introduction of modern and sustainable infrastructure and buildings, a testament to the ambitions of the scholars in their leadership role.

Informants unanimously agree that sustainable development necessitates effective leadership and management. The scholars, in leading this project, have demonstrated success for several reasons. Their status as intellectuals enables them to command considerable respect and support from both authorities and the local communities, who value their expertise and recognize them as legitimate actors. Additionally, their perceived neutrality positions them as meritocratically entitled leaders, contributing to their effective leadership of the ambitious, large-scale reconstruction programs.

Outcome variable: Successfully co-created green transitions

The outcome variable ‘co-created green transitions’ will be scored in two parts. First, ‘co-creation’ will be scored based on an assessment of whether the participants in the initiative, project or process engaged in collaborative problem-solving that fostered creative ideas and innovative solutions (data will consist of survey data combined with interviews and documents). Next, ‘green transitions’ will be scored based on an assessment of whether the initiative, project or process has fulfilled or is expected to fulfill its green goals, ambitions and aspirations (data will consist of survey data combined with interviews and internal and/or external evaluation reports, including scientific publications).

The scoring of this variable is done in two parts:

1. *Is the developed solution based on collaborative problem-solving spurring creativity and innovative solutions?*
2. *Does the developed solution engender a green transition?*

This scoring should be conducted based on both the survey and complementary green outcome evaluations. Please consult Sections 4.4 and 6.10 in the Research Protocol for more details.

1. Is the developed solution co-created?

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Survey
☐ 0.33	☒ Medium confidence	☒ Interviews
☐ 0.66	☐ High confidence	☐ Documents
☒ 1		☐ Observations

Please elaborate on the reasoning behind your scoring for this part of the governance factor, including the data sources used for the scoring.

Based on the questionnaire, it is evident that most survey items score high, suggesting that the pilot project has been based on collaborative problem-solving that has spurred creativity and innovative solutions. The only exceptions are survey items 3, 4, 5 and 11, which concern respectively whether the outputs of the pilot project breaks with established practices (3, 4 & 5) and if the solution was innovative solution (11). The reason for these low scores, upon further discussion with respondents, is due to the fact that the pilot project used the SDGs as a benchmark, hence they literally followed the textbook solution from the global development agenda initiated by the UN. In this sense, it also makes sense that they do not think that it is technologically innovative from a global perspective, insofar as the wastewater treatment plants, the sewage system, and the 3D-printed walls are not novel solutions that have not been used before. Despite these survey items scoring low, the pilot project still scores as innovative insofar as they are *socially* innovative, as the SDGs and these technologies have never been adopted in the context of rural Iranian villages. Based on this rivalling interpretation, the project is both creative and innovative, as it breaks with the established developmental patterns, but in terms of its collaborative nature but also its commitment to the SDGs as a benchmark for development.

Furthermore, the informants fully agree that the project was collaborative and would not have succeeded had all the stakeholders not collectively pooled their knowledge and wisdom to devise the reconstruction plan. The project and its scope are unprecedented in Iran; hence all have agreed that it also had innovative elements in this regard.

In an interview, the farmer of the village commented: "a wastewater treatment plan for the village of Hope has not yet been drawn up in any other village in Iran. In comparison to the past, the surface water and the water used in bathrooms and kitchens now no longer flows into the streets and alleys of the village, as it is now channeled into the underground sewage system instead. The difference between our village and other villages after the implementation of the village of Hope project is the introduction of the water and sewage system, and this is one of the innovations for sustainable development in this village."

If possible, please insert your survey responses in the table below (in % for each response), including the mean/average % for each survey item.

N=30	Strong. dis.	Dis.	Slight. dis.	Neither agr/dis	Slight. agree	Agree	Strong. agree	Mean
1. Problem-solving mobilized different experiences, and/or ideas and/or forms of knowledge to develop new perspectives	-	-	-	-	-	40% (12)	60% (18)	2.6
2. Through the collaborative problem-solving process, different experiences and/or ideas and/or forms of knowledge have been mobilized to search for unconventional solutions	-	-	-	-	-	33% (10)	67% (20)	2.66
3. The collaborative problem-solving process mobilized different experiences, and/or ideas and/or forms of knowledge to search for solutions that go beyond standard/text-book solutions	-	-	33.3% (10)	60% (18)	6.7% (2)	-	-	-0,26
4. The co-created solution breaks with established practices	-	100% (30)	-	-	-	-	-	-2
5. The co-created solution disrupts conventional wisdom	-	40% (12)	20% (6)	40% (12)	-	-	-	-1
6. The co-created solution offers new ideas to address the green transition problem	-	-	-	-	-	30% (9)	70% (21)	2.7
7. I'm supportive of the co-created solution	-	-	-	-	-	10% (3)	90% (27)	2.9
8. I'm content with the overall collaborative process of the project	-	-	-	-	-	30% (9)	70% (21)	2.7
9. I feel the multi-actor collaboration process was a prerequisite for the success of the project	-	-	-	-	-	-	100% (30)	3
10. I'm satisfied by the results of the co-creation effort in terms of expected impact on the welfare of the community	-	-	-	-	-	50% (15)	50% (15)	2.5

11. The collaborative interaction in the project has led to an innovative solution	-	-	20% (6)	30% (9)	-	50% (15)	-	0.3
12. The actors involved in the project are engaged in collaborative interaction that stimulated creative problem-solving	-	-	-	-	-	30% (9)	70% (21)	2.7
13. The co-created solution meets the proposed goals of the project	-	-	-	-	-	40% (12)	60% (18)	2.6
14. The co-created solution will be durable and robust in the long run	-	-	-	-	-	10% (3)	90% (27)	2.9
15. The co-created solution is expected to significantly improve sustainability for the whole community	-	-	-	-	-	10% (3)	90% (27)	2.9

2. Does the developed solution engender a green transition[1]?

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Survey
☐ 0.33	☐ Medium confidence	☒ Interviews
☐ 0.66	☒ High confidence	☐ Documents
☒ 1		☐ Observations

Please elaborate on the reasoning behind your scoring for this part of the governance factor, including the data sources used for the scoring:

The questionnaire administered also results in the unambiguous conclusion that the pilot project has engendered a green transition that improves the status quo by magnitudes. A full list of tangible outcomes is listed related to green transitions is repeated below. Furthermore, the documentation of these green outcomes has been documented by the university professors from the two regional universities, Kurdistan University and Kermanshah University, corroborating the green outcomes that have been realized.

Green outputs and outcomes:

a) 130 sustainable houses built based on sustainability indicators
b) The houses have been connected, through a sewage network of 1740 meters, to an anaerobic wastewater treatment plant system. One of the problems with conventional wastewater treatment systems is that the system runs into problems when the microbial load in the wastewater increases, or the water flow rate rises. However, the wastewater system designed in

[1] By ”green transitions”, we mean objectives and aspirations that correspond to at least one of the Green SDGs (SDG 6, 7, 11, 12, 13, 14, 15). The project does not have to refer explicitly to the green SDGs, but the project’s green objectives

this village is characterized by the fact that it can withstand any shock and its performance is constant. Another feature of this wastewater system is its long service life, which can be up to 50 years. Conventional sewage systems, on the other hand, normally have a service life of 20-30 years. Finally, it is the first village in Iran whose wastewater does not end up in the river or the ground, but is purified and used for agricultural purposes.

c) The walls are not made of clay blocks, concrete blocks, or bricks. It is made of foam, which has less weight.
d) The village's water treatment plant consumes zero electricity and, furthermore, produces sludge, which can be combined with food waste to create an agricultural fertilizer that does not contain any chemicals.
e) 500 solar panel have been installed to provide hot water for the family. The electricity for the treatment plants is furthermore also generated by the solar cells.
f) About 1200 fruit saplings have been planted in the village.
g) The streets were paved with natural stones rather than asphalt.
h) The length of the transmission line is 800 meters

If possible, please insert your survey responses in the table below (in % for each response).

1. The project:	Yes	No	Don't know
…did not produce any green transition solution			
…is expected to produce/has produced a green transition solution aiming to avoid a worsening in the status quo	100 % (n = 30)		
…is expected to produce/has produced a green transition solution aiming to maintain the status quo	100% (n = 30)		
…is expected to produce/has produced a green transition solution aiming to improve the status quo	100% (n = 30)		

Please list all the informants you have interviewed for the case study (list project role + interview date):

The main ideator
Village sewage treatment system designer
Architect
CEO of Kermanshah Material Recycling and Excellent Fertilizer Production Company
Advisor
Environmental activist and Advisor
Environmental activist and Advisor
Village resident supervisor
CEO of the Housing Foundation

Active in meetings with government officials Local artist and tambour player Environmental activist and Advisor Help in equipping the village library and empowering women Village council Village council Village council

Please list all the observations you have made (type of meeting/workshop/etc. + observation date):

The first official informants' report on the progress of the project was made public on May 23, 2018. The last report was announced on April 12, 2023, coinciding with the completion of the construction of the village and the achievement of the planned goals. Workshops were held to empower women in the area of independence and educational workshops for village children and young people. Meetings were also held to teach the villagers how to separate and recycle waste.

Please list all the documents you have analyzed (document name + source + year):

a) Village of Hope (2018-2021). (https://t.me/Dehkadeh_Omid_Official)
b) Village of Hope (2018-2021). (https://instagram.com/dehkadeh_omid_official?igshid=ghp7yefagnh)
c) Village of Hope (2018-2021). (https://www.instagram.com/p/CKjqX6SJo-C/?igshid=1puepb7t3ukpt)
d) Isna, Video report from Hope village (2018), (https://www.isna.ir/news/97011202345/)
e) Asre https://www.asriran.com/fa/news/591088/-جزئیات-برنامه-زیباکلام-و-ساخت-دهکده-امید-ساخت-واحدهای-مسکونی-روستا-به-عهده-بنیاد-مسکن-استبین-10-تا-12-میلیارد-تومان-هزینه-اجرای-توسعه-پایدار-دهکده-است-62-متخصص-مشاور-طرح-دهکده-امید-هستند Iran, report from Hope village (2018), (www.asriran.com)
f) Corfee-Merlot, Jan et al. (2009), "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, OECD publishing.

Please note the response rate for the survey/measurement of outcome variable:

30 people were surveyed and all of them answered the questions. 100% of them were responsive and aware of the actions taken.