A New Narrative of Resilient and Climate Smart Societies

Aligning Adaptation, Mitigation and the SDGs

Holistic Approaches to Climate Action in the Context of Sustainable Development

Key Points:

- Adaptation and mitigation action represent **two sides of the same coin**, when climate action is aimed at sustainable development and resilience building.
- The **Paris Agreement's** capability to reflect and incentivise the exploration of holistic climate action is limited.
- The largely maintained conventionalism of thinking in adaptation and mitigation silos continues to rule out truly **holistic** climate action.
- Innovative ideas and case studies can showcase the interdependence of adaptation and mitigation action within a broader development context, and that **effective and efficient** outcomes are reached only through **joint objectives or holistic approaches**.
- It is important to set adaptation and mitigation as objectives in order to plan and optimise policies and actions. Not considering an integrated approach could result in **a collapse of mitigation**.
- The identification of ideal approaches to climate action demands the reappraisal of **policy and projects design** as dynamic processes.

Regional action, innovative ideas and decentralized solutions are components of a new narrative, which calls for a rethinking of how climate action can become a proactively integrated part of an increasingly holistic multi-benefit development agenda.

Negotiators, funding bodies, ministries and multilaterals, as well as practitioners and project developers want to understand how to align better their key objectives. This paper considers recent analysis of related top-down approaches (Adaptation Committee, 2019) and combines those with a complementary review of theory arising from practical experiences.

It is the objective of this undertaking to project these ideas into the ecosystems of impactful sectors (energy, land use, etc.), to stipulate a theory of change, as well as the tools, that can strengthen the change agents to drive a lasting paradigm shift.

Authors: Kepa Solaun (Factor), Florian Eickhold (Factor), Mats Marquardt (Factor)

Background

This strategy paper is based on findings developed in 2018 by Factor for the German Corporation for International Cooperation's (GIZ) Support Project for the Implementation of the Paris Agreement (SPA), implemented on behalf of the German Federal Ministry for the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). Central parts of this project entailed the conceptualization of a theoretical model that can explain mitigation and adaptation linkages and their embeddedness within an overarching development framework. The energy sector of Caribbean Small Island and Development States (SIDS) was chosen as an initial example to study the applicability of the model's assumptions and predictions, which were later on also refined in related sectors.

A surge in energy demand increased global carbon emission levels to a 7 year high in 2018 (BP, 2019). Global temperatures in 2018 were 0.83°C warmer than mean temperatures between 1951 and 1980, with the past 5 years representing the warmest years since records began (NASA, 2019). The economic impact of natural disasters rose to USD 160 billion in 2018, almost 15% above the inflation-adjusted average over the last 30 years (Löw, 2019). Clearly, another landmark year for the continuous intensification of the effects and impact of anthropogenic climate change.

To counteract this negative development, policy makers and scientists convened at the UNFCCC COP24 in Katowice in December 2018. The objective was to establish consensus and an "operating manual" on how the Paris Agreement and countries' Nationally

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Factor Ideas for change

Determined Contributions are to be implemented and how targets and plans can become more ambitious. While the Paris Rulebook provides further guidance on how mitigation and especially adaptation action should be communicated, the largely maintained conventionalism of thinking in adaptation and mitigation silos continues to rule out truly holistic climate action.

Climate Action in the Paris Agreement: A Holistic Approach?

Mitigation and adaptation strategies are two broad pathways through which countries can channel climate action. The IPCC (2012) describes mitigation action as measures to either reduce GHG emissions or to enhance GHG sinks. Mitigation can be measured at sub-national levels and be aggregated to comparable global scales that allow to forecast and track temporal developments. The majority of climate finance continues to address mitigation action (44% of funding in 2015 and 2016), while adaptation projects remain less "attractive" (only 24% of finance, 17% for projects combining mitigation and adaptation, and 14% of finance without clear categorization, see OECD (2018)). This is little surprising: Where attractiveness is a function of the perceived bankability of projects and the availability of "tangible" returns to investments, it comes at little surprise that mitigation action maintains its high grounds. Adaptation action is defined by the IPCC as the adjustment of human systems to the impacts of climate change. As such, adaptation action is highly context specific and complex on multiple levels and temporal dimensions, thereby rendering the derivation of comprehensive and comparable measurement metrics challenging. Also, in practice, adaptation action and development efforts strongly overlap, which can rise questions with respect to funding entitlement or regarding investment flows that are strictly earmarked for climate action (IISD, 2019).

The Paris Agreement (PA) calls for balanced financial support for mitigation and adaptation action (Article 9(4)). While commendable, the proclamation is undermined by the Agreement's otherwise significant bias for mitigation action (see for a discussion Dovie (2019)). Article 4(7) for instance, introduces the prominent co-benefits theme, which, however, only speaks of mitigation co-benefits of adaptation and economic diversification (not vice versa). Further, while Article 7(4) acknowledges the significant need for adaptation action, it resorts to the notion that greater levels of mitigation will reduce the need for adaptation and corresponding adaptation costs. In the context of SIDS, the inadequateness of Article 4(7) and Article 7(4) are remarkable: The mitigation co-benefits of SIDS adaptation efforts are negligible relative to global emissions, and neither local nor international mitigation action is likely to reduce small island's vulnerability to adverse impacts of climate change anytime soon. With the importance of strengthened adaptive capacity further gaining momentum, the way adaptation action is institutionalized needs reconsideration. More broadly, the notion of side effects extends beyond the PA's declaration. That is, mitigation efforts are often found to have general and adaptation-related side effects (positive or negative); but while these are frequently observed, they are often unintended and as such not internalized.

A Starting Point for Linking Adaptation and Mitigation: The Resilience Gap Model

Climate change policy ultimately reflects the objective to "manage unavoidable changes and avoid unmanageable ones" (Bierbaum et al., 2007). In other words, climate change must be mitigated in order to avoid adverse and irreversible consequences for our planet, while resilience needs to be built to cope with those impacts that we have failed to avoid. Hence, adaptation and mitigation action are intrinsically linked through their impact on resilience to climate change. However, resilience is a system's ability to deploy adaptive capacities. As such, resilience to climate change is not a function of mitigation and adaptation only. Adaptation and mitigation, and especially their regulatory divide, are artificially constructed concepts outsourced from an overarching sustainable development ambition. Therefore, strengthening resilience depends on the development of holistic approaches that allow for concentrated efforts from multiple, but aligned, perspectives. Where such imperatives are neglected, climate change will tear up and enlarge a series of new and existing gaps that existing international frameworks are ill-prepared to bridge.

The Resilience Gap Model suggests overcoming the adaptation mitigation divide by redirecting focus on the resilience of people, communities and countries to the impacts of climate change. The IPCC defines resilience as "the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions" (IPCC, 2012). The Resilience Gap, in other words, describes the inability or the lack of preparedness to cope with the consequences of climate change.

Conceptually, the Resilience Gap Model links mitigation and adaptation action by highlighting their parity with respect to complementarity and cross-dependence. If global warming can be reduced to below 1.5°C, the global community would face fewer complex challenges. Nevertheless, the model also highlights that even if emissions were dropped to zero today, atmospheric GHG levels would continue to adversely affect ecosystems, i.e., further adaptation action will be needed for generations.

A further developed version of the original Resilience Gap Model explains why partial approaches to climate action are less successful. Figure 1 showcases the underlying dynamics. For instance, what would happen if current mitigation efforts are reduced in favor of strengthening adaptation action? From the left side, adaptation would grow larger and reduce the resilience gap. Simultaneously, however, the resilience gap extends on the right side of Figure 1 where mitigation action is reduced. Moreover, the limitation of mitigation action as proposed in this example scenario would result in the increasing emergence of more extreme and intense consequences of climate change, which are more and more difficult to adapt to (i.e., the viability of adaptation action to growing impacts of climate change is diminishing).

The same principles also work vice versa. What would happen if one was to focus all efforts on mitigation? The Resilience Gap would reduce from the right side of Figure 1, but also here the return on efforts would be diminishing, i.e., the closer we advance to carbon-neutrality, the more difficult and expensive the progression will be. Further, existing adverse manifestations of global warming would not disappear and would continue to demand an expansion of the adaptive capacity of affected populations. If this remains neglected for too long, suboptimal measures may be required at later stages, which itself could entail the emission of large amounts of GHGs.

While the Adapted Resilience Gap Model allows to link the two predominant streams of climate action via the concept of resilience, the model features also practical advantages. By establishing a framework in which adaptation and mitigation are represented equally, the model can serve as a diplomatic tool to overcome negotiation hurdles. Where countries or communities express differing interest or priorities with respect to which form of climate action they deem important, frameworks such as the Adapted Resilience Gap model can be helpful in mediating a common understanding of the interconnectedness of different approaches.

Finally, the Adapted Resilience Gap Model highlights an opportunity. By proposing that neither adaptation nor mitigation action will suffice in isolation, the model suggests that more holistic solutions are not only needed but in fact, more effective and efficient. At the same time, the potential for synergies should not compromise efforts that target high-impact interventions, which continue to be required to foster mitigation or adaptation independently.

Are more Holistic Approaches Possible?

The Adapted Resilience Gap Model portrays how silo thinking mentality within the climate action domain can have severe consequences for the livelihoods of affected populations. Policy making needs to depart away from narrow perspectives towards an integrated understanding of how both mitigation and adaptation action are inherently embedded in the sustainable development agenda. This can be achieved if, and only if, previously non-contiguous objectives are aligned through comprehensive and holistic interventions, and within an all-embracing international policy framework. The difficulty of deriving such a new narrative stems from the complexity of climate change and resilience cause- and effect dynamics. The analysis and reappraisal of the interaction of development gaps and counteraction must as such become an ongoing process. Figure 1 is meant to provide a conceptual point of departure for policymakers and stakeholders to contemplate on where and how climate action and development can be complementary or even synergistic. Additionally, the report suggests a tool to operationalize the Resilience Gap Model. The tool, currently being under development, connects theory with practice and is meant to provide a framework for policy analysis and planning.

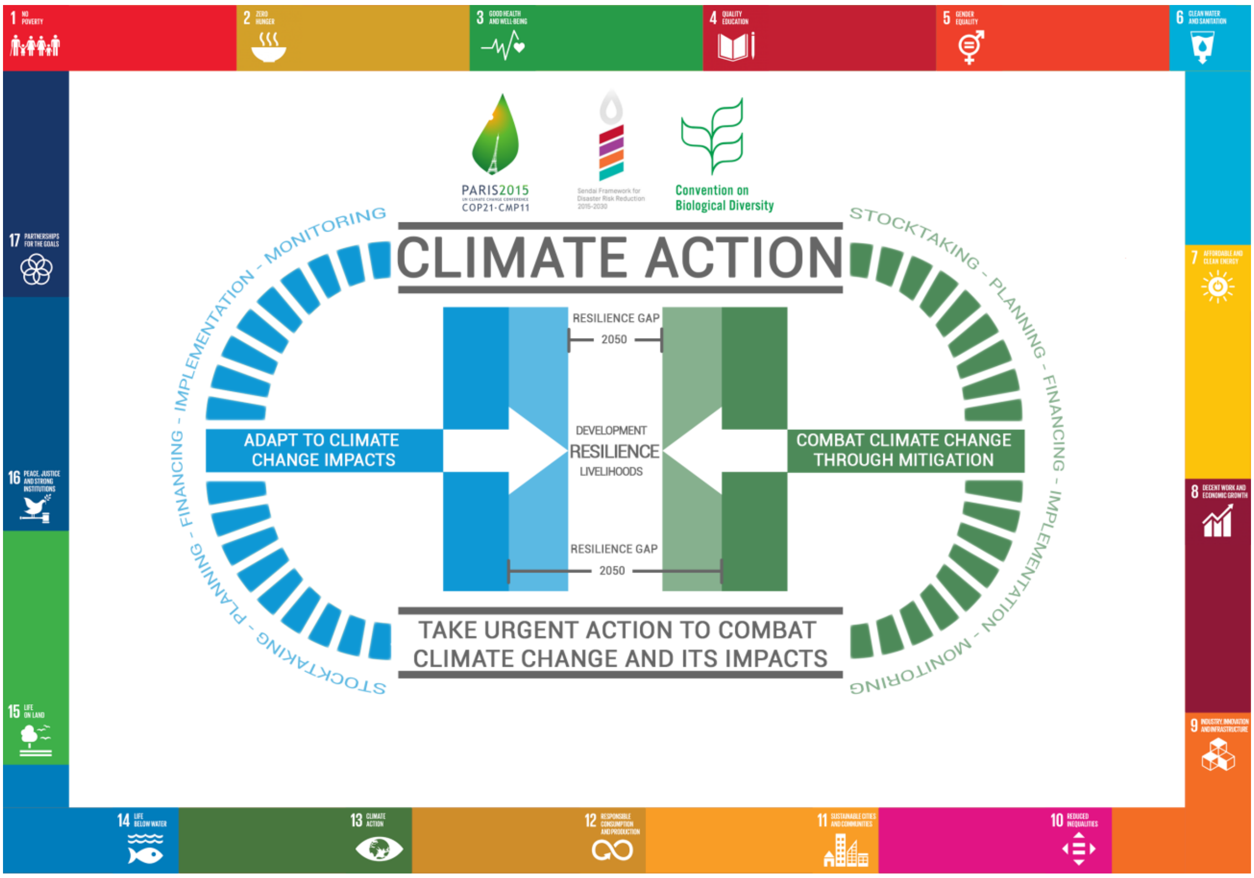

Figure 1: Own elaboration: The Adapted Resilience Gap Model based on USC (2016).

INFO BOX: Aligning Objectives and Outcomes

Three main conceptions can be derived, which essentially define how objectives and outcomes of policy interventions and projects are aligned (see Locatelli et al., 2015).

1. Joint Outcomes: a project is pursuing primary objectives unrelated to climate action, which nevertheless have outcomes for adaptation, mitigation or both.
2. Unintended Side Effects: positive or negative effects emerging from the pursuit of set objectives.
3. Joint Objectives: this constitutes the desired approach, as it allows for aligned progress towards connatural objectives. Through a focus on joint objectives, resources can be used more efficiently, outcomes may be more effective, and synergies are possible.

Where objectives and outcomes are aligned, a project or policy is often found to pursue multiple benefits simultaneously, i.e., a multi-benefits approach. Multi-benefits notably distinguish from co-benefits, in that they are intentionally targeted in project and policy design. Multi-benefits can be visualized as exemplified below.

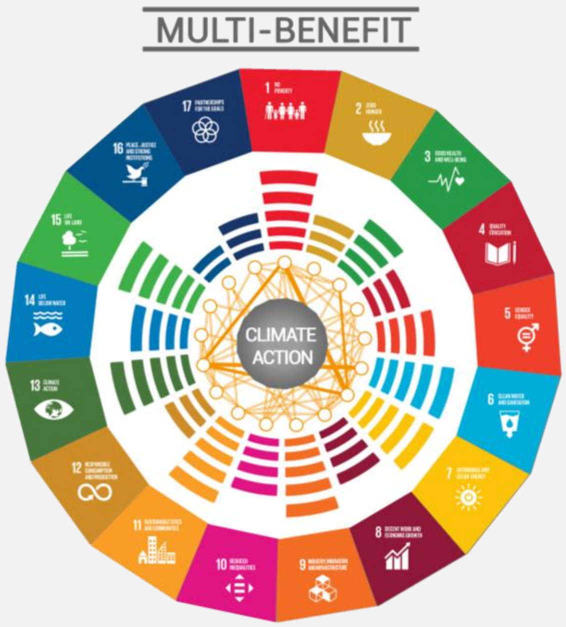

Figure 2: Multi – Benefit Model

CASE STUDY: Innovative Wind Turbines in Japan

Joint Outcomes and Objectives: *Adaptation of renewable energy generation capacity to climate change through the deployment of storm-resistant wind turbines.*

Decentralized renewable energy solutions are more resilient to extreme weather events so that they are found to be able to withstand much stronger winds as their decentral deployment renders the system less prone to outages. However, innovative adaptions of renewable energy technologies are being developed that are not only capable of withstanding strong winds but can also harvest the enormous energies carried by storms and tropical cyclones.

The Japanese company Challenergy, for instance, has designed and developed what essentially is a storm turbine. In theory, the idea of harnessing the energy of tropical cyclones seems attractive, given the enormous levels of kinetic energy released in these extreme weather events. According to the Japanese Ministry of Land, Infrastructure, Transport and Tourism, the kinetic energy borne by a large typhoon equates 50 years of Japan's total power generation (Carter, 2019).

Figure 3: Challenergy's innovative wind turbines (Credit: Challenergy Inc.)

Challenergy's solution is called Magnus Vertical Axis Wind Turbine (VAWT). The turbine is driven by quasi-blades (columns) mounted on omni-directional vertical axes that allow to incorporate the Magnus effect. Through prototype testing and in simulations the innovative technology has achieved 30% efficiency levels (40% commonly achieved by standard propeller-based wind turbines). The prototype is already being tested in Okinawa (Japan) and has proven to be able to withstand wind speeds of up to 225 kph (Carter, 2019).

Challenergy aims to begin the deployment of the VAWTs also in the Philippines and China, i.e., regions prone to the impacts of tropical cyclones in the Western Pacific Ocean. An initial batch of fifty 10 kW turbines is to be produced in 2020. Not only do these solutions offer an innovative way of harnessing otherwise unused renewable energy (and thereby reducing the dependency on fossil fuels), the VAWT can further provide access to reliable and modern energy in settings that had formerly been found unsuitable for the deployment of other forms of generation capacity. The Sustainable Development Agenda's mitigation and adaptation efforts can coincide, for example where VAWTs are deployed for remote island communities in the Philippines.

CASE STUDY: MacBioS Biogas Systems in Grenada

Joint Outcomes: *Biogas as a central component for mitigation, with simultaneous adaptation support through assuring energy access in neglected areas.*

Grenada alike many SIDS depends mostly on fossil fuel imports for its energy supply. To reduce its CO_2 emissions the country has committed to raise the share of renewables in its energy mix. As a response, Grenada aims to take advantage of the great potential for biogas production, using organic waste generated by the agricultural sector. This waste is often dumped in watercourses or burned, and thus not made use of.

Organic waste is a vital resource in the production of biogas and bio-fertilizer. Producing those bears the advantage of being a sustainable waste management practice and reducing Grenada's dependence on fuel and fertilizer imports. Furthermore, the use of agricultural waste in the production of energy can reduce the economic dependence on volatile fossil fuel prices and thus increase the sector's competitiveness, decrease the CO_2 emissions and protect groundwater resources and coastal ecosystems, which play an important role in the protection of the islands against storm surges.

Figure 4: MacBioS Biogas systems in Grenada (Credit: MacBioS)

To take advantage of these positive effects, Grenada implemented the "Market Creation for small-scale Biomass Systems" (MacBioS), a pilot project brought to life by several public and private entities from Grenada and Germany. In the framework of this project, ten small-scale biogas systems are installed by local partners in Grenada whereby the system's progress will be monitored and assessed. Additionally, the pilot aims at capacity building and institutional development activities to ensure a sustainable operation and to build a facilitating environment for biogas technologies. This objective is reached through cooperation with local vocational and financial partners to develop training materials as well as a financing system for small-scale biogas systems.

To date, the project has achieved to support the market creation for small scale biogas systems through the installation of six "HoMethan" biogas digesters in Grenada and Carriacou. That was accompanied by the establishment of an interest and knowledge base among the existing and potential users of small-scale biogas systems in Grenada through trainings and capacity building measures (GIZ, 2019).

The MacBioS pilot is a good example of a programme resulting in benefits on multiple fronts, as Grenada cannot only contribute to climate change mitigation by reducing its CO_2 emissions from imported fuels but also strengthen its resilience to the adverse impacts of extreme weather events. At the same time, the island's ecosystems are more resilient when agricultural waste is no longer dumped into its watercourses but used as a resource for biogas production.

CASE STUDY: Grenada Water – Energy Efficiency

Joint Outcomes: *Strengthening the resilience of critical sectors and achieving cross-sectorial mitigation benefits through renewable energy reliance.*

The GIZ Project "Climate-Resilient Water Sector in Grenada (G-CREWS)" which is funded by the Green Climate Fund aims at building up resilience in Grenada's national water sector. This objective is meant to be reached by addressing two major climate risks and vulnerabilities of Grenada: freshwater availability and disaster preparedness. Especially the former is jeopardized by climate change as Grenada's water supply is highly dependent on surface- and rainwater. Currently, the amount of rainwater is already diminishing, and rainwater events are increasing in their severity due to climate change so that the problem of already existing water scarcity is further aggravated. Moreover, a vulnerability assessment undertaken in the framework of the project revealed that the water sector is highly exposed and sensitive to climate change and only has a limited adaptive capacity to handle climate change impacts.

To counteract these findings, amongst the project's main objectives is the additional contribution of the water sector to Grenada's NDC which is co-financed by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU). Specifically, the water-energy efficiency in the National Water and Sewerage Authority (NAWASA) System shall be improved and hence also stimulate climate action in other relevant sectors.

The activities undertaken to reach the objective are based on the assumption, that water production can be decreased when water losses are reduced. This would in turn impact Grenada's dependency on water in a positive way and foster the resilience of the water supply system towards climate change impacts and risks. The resilience can further benefit from reducing or replacing the use of fossil fuels and thus decreasing CO_2 emissions.

To make those assumptions come true solutions to power NAWASA operations with renewable energies shall be explored and implemented for NAWASA to be able to benefit from efficiency gains as a result of lower energy costs per gallon of potable water, which is positively impacting the financial sustainability of the project. To employ the best renewable energy technology options, suitable locations for the installation of microturbines to replace pressure-reducing valves in the water distribution network and solar PV systems that will provide power for water treatment and pumping, are identified and assessed. Following this assessment an operation and maintenance concept for these microturbines and PV systems will be developed and finally these technologies will be installed. To keep track of the actual reductions of CO_2 emissions, an emission inventory for the water sector in coordination with the NDC process in Grenada will be developed. Furthermore, water loss in the NAWASA shall be reduced through e.g. water audits, GIS-based infrastructure and customer management system and selected replacement of leaking pipes.

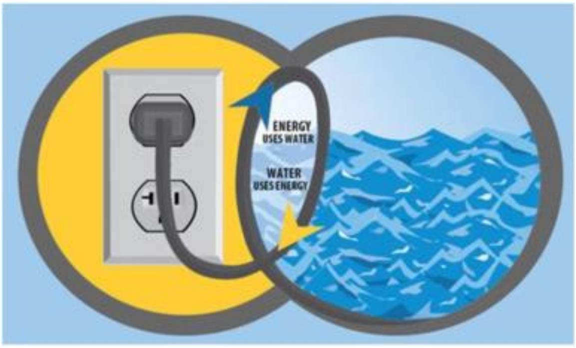

Figure 5: Energy-Water Nexus in Grenada (Credit: sciencedirect.com)

Those undertakings will not only strengthen institutional and regulatory systems for climate-responsive planning and development but also the adaptive capacity. Further, exposure to climate risk will be decreased (GIZ, 2018).

This project represents a holistic approach to address one of Grenada's most pressing issues – water scarcity. By making use of renewable energies to facilitate adaptation in the critical water sector, and thus establishing linkages between two of the sectors that are most important for survival, the energy, and the water sector.

CASE STUDY: A Climate-Friendly Agribusiness Value Chains Sector Project in Cambodia

Joint Outcomes: *Policy measures for strengthening the resilience of a highly vulnerable sector to the adverse impacts of climate change, accompanied by significant mitigation effects.*

The agricultural sector is vital for the Cambodian economy as 33.7% of the country's GDP is contributed by agricultural activities including processing, transportation and the trade of farm products, whereby the largest contribution stems from crop production. The economic success of the sector is however highly dependent on drivers such as expansion rates of cultivated land, prices of farm products and growth in other sectors. Additionally, the agricultural sector is highly vulnerable to extreme weather events which are likely to aggravate due to climate change. Furthermore, the transition of Cambodia's agricultural sector towards modern commercial agriculture is rather slow, so that traditional subsistence techniques are still dominant.

Figure 6: Agriculture in Cambodia (Credit: pixabay.com)

To strengthen the competitiveness of the sector, the Government of Cambodia implemented the Agriculture Sector Strategic Development Plan that aims to increase agricultural productivity, diversification and commercialization.

The plan will foster the climate resilience of critical agricultural infrastructure and help commercialize the rice, maize, cassava, and mango production. It will boost crop productivity and diversification, improve the capacity for storage, processing as well as quality- and safety testing. The plan will further strengthen the technical and institutional capacity for climate-smart-agriculture (CSA) and create an enabling environment for climate-friendly agribusinesses. All these undertakings will work in favour of long-term environmental sustainability and enhance the profitability for farmers and agribusinesses. The former is further promoted by the implementation of the strategy and action plan for climate change mitigation and adaptation that is accompanied by the government's promotion of the use of biogas and bioenergy, a priority in Cambodia's Intended NDC (ADB, 2019).

Cambodia's Agriculture Sector Strategic Development Plan showcases that efforts to foster the climate resilience of a critical sector by adapting good practices can also lead to success stories on the mitigation side as GHG emission can be reduced.

CASE STUDY: Renewable Energy Deployment and Disaster Risk Management

Joint Outcomes: *Policy measures for strengthening the resilience of a highly vulnerable sector to the adverse impacts of climate change, accompanied by significant mitigation effects.*

Florida's SunSmart Emergency Shelter Programme represents an example of an intervention, which takes a comprehensive approach at building resilience, with joint objectives for adaptation and mitigation action. The SunSmart Emergency Shelter Programme seeks to equip emergency shelters in about 100 schools in Florida with 10kW grid-tied PV systems coupled with battery storage. The ground-mounted PV system generates power during normal times, as well as during and following emergencies when utility power is unavailable (Young, 2013).

Figure 7: Solar Education. (Credit: Florida Solar Energy Center)

Awareness raising had been an important objective of the scheme. The shelter programme is accompanied by an educative campaign, that has established a network of 250 teachers engaged with PV technology education and provides data, which is integrated and analysed in workshops and dedicated curricula. This has led students, parents and school board members to become familiar with solar PV technologies and to promote the adoption of renewable energy sources (Young, 2013).

The programme has built up resilience to climate change, by strengthening the adaptive capacity of communities and schools by equipping dedicated emergency shelters with solar PV systems. The role of renewable energy in this programme is significant. Foremost, the solar PV systems allow for affected community members to cope with power outages during and after storms and hurricanes.

Further, the integrated education programme pursues the goal of intensifying renewable energy technology adoption in the medium – to long term. Finally, the avoided emissions from the use of solar power generated by about 100 solar PV systems should not be neglected. As such, the programme manages, through early on initiated joint objectives, to tackle climate change comprehensively and to pool resources to effectively and efficiently foster climate action through mitigation and adaptation action.

As such, the emergency shelter programme effectively represents a project fostering adaptation to climate change, but one that itself avoids the emission of further greenhouse gases by reducing the need for fossil based generation capacity in the emergency shelter context, and by raising awareness of these technologies also in other forms of application. Hence, the project follows the joint objective strengthening adaptation and mitigation.

Conclusion: A new Narrative and How it can be Operationalized

Issues of environmental injustice intrinsic to climate change have unfortunately gained global prominence (Prieur and Schumacher, 2016). Building and supporting the resilience of societies - turning them climate smart - is imperative, requiring policy engagement, development-orientated climate finance, as well as willingness to harness innovative technology solutions (SGP, 2019).

Theoretical approaches such as the adapted Resilience Gap Model expose pathways for taking advantage of neglected opportunities for climate action. It shows that solely atomistic approaches to climate action limit the resilience of a system. Case studies show that synergies can be leveraged where both mitigation and adaptation strategies are considered within their sustainable development context.

As a conceptual model and through the supplementation of good practice examples, the adapted Resilience Gap Model offers a valuable tool mainly for high-level policy dialogue. Especially, it was found to be helpful for establishing a basic understanding of the need for resilience building, and how focusing on livelihoods allows for overcoming a mostly artificially created adaptation-mitigation divide. As such, the adapted Resilience Gap Model also proves to be valuable for facilitating political dialogue between stakeholders with different priorities, demands, and capabilities. However, beyond the function of raising awareness, the model offers little guidance for practical action. The limitation faced is typical for modelling complex contexts: a trade-off between practicality and generalizability.

To operationalize the adapted Resilience Gap Model practical solutions, have to be considered in conjunction with theoretic approaches. The analysis of good practices has shown that complementary or synergistic action, as well as trade-offs, are possible across different levels of granularity (i.e., from community level to international level), across different sectors (i.e., energy, transport, buildings, waste, industry, agriculture, and forestry), and for different stakeholders (policymakers, project developers, beneficiaries and adversely affected populations).

The approach to operationalize the new narrative suggested is an evaluation framework with the objective of identifying synergistic characteristics of a given policy or project, which demands stakeholders to define strategies to handle trade-offs a priori. It is assumed that the tool can allow stakeholders to better integrate adaptation and mitigation perspectives in their policymaking or project design, especially where the tool directs attention to issues related to resilience. First prototypes of the tool are currently under development.

> *"Adaptation and mitigation action are intrinsically linked through their impact on resilience to climate change."*

Focusing on the blend of adaptation and mitigation reframes climate action and demands a reconsideration of the functioning and operation of initiatives and processes. Communication, collaboration, alignment of existing policies, coordination of interventions and identification of shared opportunities are all significantly hampered where policymakers and international agreements fail to recognize the importance of joint efforts for designing climate-conscious development agendas. The inability of existing instruments of governance to facilitate balanced approaches to climate change must be a call to policymakers and stakeholders to revisit prevailing approaches and to consider pathways for greater integration.

Climate action has the potential to become more comprehensive, where:

- ➔ Adaptation and mitigation are constructively linked in the context of sustainable development;
- ➔ Policymakers and stakeholders are willing to challenge structural and institutional constraints;
- ➔ Resilience building to strengthen, and secure livelihoods becomes a central objective;
- ➔ Science and results-based action dictates current and future intervention;
- ➔ Persistence is maintained even in the face of widespread resistance to a transformative agenda.

The analysis at hand represents an initial advance into the identification and understanding of promising approaches to climate action. However, the analysis must not stop here. The new narrative needs to be further developed.

Applying the findings of this paper to the practical work of policy makers, project developers and practitioners can help to safeguard existing efforts in the field of mitigation and adaptation and rise overall ambition now. Further research can be combined with practical implementation to learn more about the alignment of mitigation, adaptation and SDGs.

Next steps:

- ➔ The qualitative evaluation of case studies must be supplemented by a quantitative appraisal of the avoided trade-offs and gained benefits. This is challenging, especially in the context of quantifying effects on the adaptation site of climate action. However, progress on this front is imperative, as it is exactly the absence of comprehensive but balanced quantitative evaluation frameworks that have restricted the employment of holistic approached so far.
- ➔ Beyond the refinement of existing case studies, future work shall offer practical support to existing and prospective projects developed through key climate finance instruments such as the Green Climate Fund (GCF) or the International Climate Initiative (IKI).
- ➔ In parallel, relevant stakeholders need to be provided with the tools and services to break down complex interdependences such that they can deliberately target joint objectives in their policy or project design. Tools and frameworks that emphasize the existence of multi-benefits must unveil complementary effects or trade-offs, unpacking the complexities of a more integrated approach.

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Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15
E info@giz.de
I www.giz.de

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Author/Responsible/Editor, etc.:
Florian Eickhold
Country Manager / Director Climate Change Germany at Factor
feickhold@iamfactor.com

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