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The Russian Federation-UNDP Trust Fund for Development

INNOVATIVE SOLUTIONS FOR SDG IMPLEMENTATION IN ARMENIA

Final report

The Russian Federation-UNDP Trust Fund for Development (TFD)

Project Final Report

Project title:	Innovative Solutions for SDG Implementation in Armenia (SDG Lab Phase II)
Atlas Project ID:	00109316-00108696
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Project start and end date:	Initial dates: 04 May 2018- 01 May 2020 Extension: 04 May 2018- 01 May 2021
SDGs supported by the project:	 1.a; 2.a; 3.4; 5.b; 7.2; 8.9; 16, 17.18; 17.19

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ACRONYMS

AI- Artificial Intelligence

AMD- Armenian Dram

ANAU- Armenian National Agrarian University

CP- Country Programme

CRRC- Caucasus Resource Research Center

DPM- Deputy Prime Minister

ESCO-Energy service company

GDB- Global Data Barometer

LLC- Limited Liability Company

MESCS- Ministry of Education, Science, Culture and Sports

MLSA- Ministry of Labor and Social Affairs

MoH- Ministry of Health

NDA- Non-disclosure agreement

NLP- Natural Language Processing

PV-Photovoltaic System

R2E2- Renewable Resources and Energy Efficiency Fund

RRF- Results Reference Framework

SC- Steering Committee

SDG- Sustainable Development Goals

SRC- State Revenue Committee

TFD- Trust Fund for Development

UAE- United Arab Emirates

UNDAF- United Nations Development Assistance Framework

UNDP- United Nations Development Programme

1. EXECUTIVE SUMMARY

The complexity and interconnectedness of SDGs require novel approaches, methodologies, strong data systems, and institutions that have the capacity to provide out of the box solutions to the problems faced by the global community. In response, UNDP Armenia launched a six-month project in August 2017 aimed at establishing an in-country National SDG Innovation Lab, which would initiate a fundraising campaign to ensure multi-year sustainability and kickstart Phase II of the Project. As a result of the successful fundraising efforts, the "Innovative Solutions for SDG Implementation in Armenia" was approved.

The Project was aimed at piloting the accelerated implementation solutions and models of the SDGs in Armenia, in collaboration with the Government. Through the integration of behavioral experimentation, design thinking, data-analytics into policymaking and service delivery, Armenia National SDG Innovation Lab has been promoting public sector innovation in tax administration, environment protection, healthcare, and public administration. The project unfolded through the following key outputs:

- Increased use of environmentally friendly practices as a result of behavioral experiments
- Increased availability of data for evidence-based policy and decision-making
- Enhanced capacity of National SDG Champions in innovative research methods and skills,
- Designed and tested model of accelerated implementation of the SDG 7 on Affordable and Clean Energy

Taken together, these solutions represented a model of quick and effective SDG implementation that could easily be replicated in similar middle-income countries. Most of the project components have already generated impactful results that lay down solid foundation for systemic lasting change in the long run.

From May 2018 to May 2021, the Project has successfully completed the key activities listed in the Project Work Plan, with notable results and important partnerships achieved. Having successfully set up an on demand behavioral insights facility within the Lab, the Project designed and implemented 4 behavioral interventions treating 4 SDG challenges in the following sectors: preventive healthcare, taxation, environment and public services. Through these experiments, significant increase has been registered in the take-up rate of free cervical cancer screenings among women, turnover and tax declarations among turnover taxpayers, take-up of Government's unified portal for online citizen requests and the Project could notably decrease the consumption of plastic bags among supermarket users. All 4 behavioral interventions served as evidence for providing policy-level insights and recommendations to the Government on incorporating behavioral interventions into their routine operations and scaling up the interventions both in terms of scope and geography. The Ministry of Health has integrated behaviorally informed communication with citizens in its communication strategy and is planning to upscale the intervention for breast cancer screenings. Similarly, the SRC used behaviorally informed messages in their communication with

another type of taxpayers (sole entrepreneurs) and have marked notable results. The SRC initiated another meeting with the Project to develop a communication strategy together with the Lab. As part of its communication with the citizens, the Government is currently encouraging citizens to use the unified portal for citizen requests.

During the course of its 3-year implementation, the Project was particularly successful in increasing the availability of data for evidence-based policy and decision-making.

The project introduced the Travelinsights.ai, an AI-powered real-time online platform that visualizes the results of sentiment analysis of tourist reviews about Armenia, scraped from Booking.com, TripAdvisor and Facebook.com. The project also initiated and succeeded in launching the SDG Monitor platform, online data repository offering real-time SDG progress monitoring based on data collected from public institutions and non-conventional sources, such as Facebook and the Government's official website for the publication of draft legal acts. As parts of its efforts in automating the categorization of citizen-Government correspondence, the workload of public servants was decreased by half.

As a result of its efforts in increasing the Big Data-generated policy insights, the Project has analyzed 7 big data sources and established 3 official partnerships with big data holders through the signature of non-disclosure agreements.

The project marked significant results in promoting affordable and clean energy use in rural Armenia, implemented jointly with R2E2. 379 families in Shirak and Gegharkunik regions installed solar water heaters, with 11 small PV installations, resulting in significant reductions of carbon emissions annually.

Throughout the course of its implementation, the project has actively contributed to the capacity enhancement of National SDG Champions through different events. A series of hands-on co-creating workshops on behavioural experimentation in policy making was designed and piloted for SDG Champions.

The 3-year journey of the Project was full of challenges, which turned into insightful lessons learned. One of the key challenges of the Lab has been working with the data, mainly in terms of the data quality. Often, the lack of necessary capacity and resources of different institutions to properly filter and validate the data have led to the need to spend additional time and resources to ensure that the data meets the required quality for further processing. Another significant challenge of the Project was having to operate in unprecedented settings. The Project kicked off right after the Velvet Revolution in Armenia, with new Government and different vision on national development. The COVID-19 crisis since early 2020 was a challenge not only for the project, but for Armenia and the world in general. This was paired with the escalation of hostilities in and around Nagorno Karabakh in September 2020, which has had a major negative affect on the course of project implementation. The Project, however, succeeded in constantly readjusting its course of action to operate in the times of compound crisis and has successfully completed all its activities.

Within the framework of the Project, new partnerships were established at international level with Oslo Governance Center, Global Data Barometer, DeepPavlov, Mannheim University, Zhongnan University of Economics and Law, University of Podova and other prominent institutions. The experience and knowledge gained through this collaboration will rest within the Government to further mainstream innovation in the public sector.

Notably, through this Project, Armenia took the lead in establishing the first ever national country support platform to accelerate the SDG Implementation, creating a smarter, leaner system for tackling complex development issues. The project is one of its kind in the development sphere and has caught the attention of other country offices, for its new approach towards digitization and innovation, such as UNDP Tunisia, Honduras, Colombia. As a result of its achievements in this Project, Armenia National SDG Innovation Lab now serves as a platform to bring together diverse stakeholders such as the Government, UN agencies, academia, civil society, the private sector and provides for space to look at persisting development challenges from a systems perspective. The Lab's interventions bring policy-level change that lay down solid foundation for systemic lasting impact in the long run..

2. RESULTS

UNDAF Outcome 7: By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied.

UNDP CP Output 4.3: Government uses innovative mechanisms and tools for evaluation and decision-making over conservation and sustainable use of natural resources.

UNDP Strategic Plan 2018-2021: B. Accelerate structural transformations for sustainable development. Output 2.5.1 Solutions developed, financed and applied at scale for energy efficiency and transformation to clean energy and zero carbon development, for poverty eradication and structural transformation. Output 2.2.1 Use of digital technologies and big data enabled for improved public services and other government functions**.**

Output 1: Increased use of environmentally-friendly practices as a result of behavioural experiments.

The 2030 Agenda is a pretty ambitious plan of actions to end poverty and hunger, protect the planet, eliminate the fear and violence in favour of peaceful, just, and inclusive societies. Despite the ambition to transform the planet into a better place to live, the SDGs, when taken in aggregation, represent an unprecedented class of complexity. Many SDGs are directly linked to human behavior. Thus, Agenda 2030 can only be achieved if we critically examine the behavioural factors that lead people to utilize programs effectively and efficiently. The application of behavioral science to policymaking rests on the assumption that individual decision making is not guided by rational calculus and can be affected by cultural, psychological, emotional, cognitive and contextual factors. Thus, using Behavioral Science for designing various programs and

policies, the policymakers improve the design and the implementation of various interventions by moving beyond classical interventions

Increasing the take up rate of cervical cancer screenings among women in Shirak Region

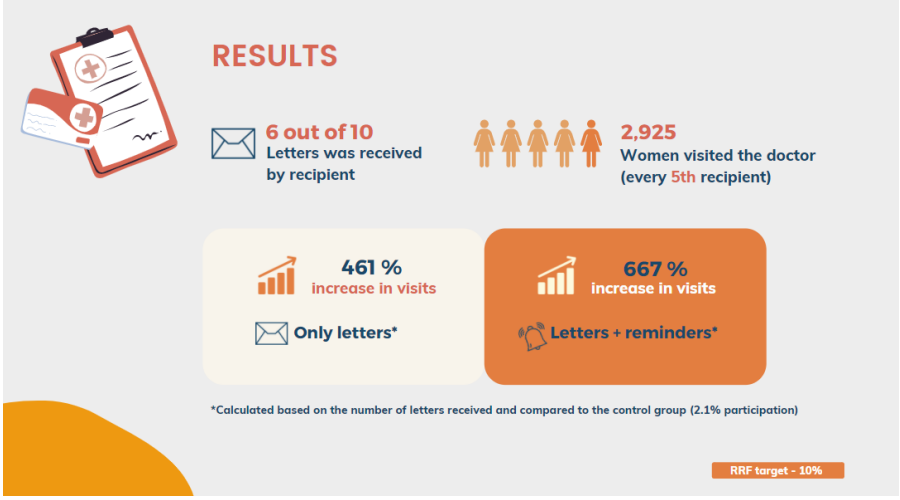
Contributing to SDG 3.4: By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

Cancer is among the top causes of premature death in Armenia, and cervical cancer is proven to be well-treatable in case of early diagnostics. In line with the Government's priority of putting the emphasis on preventive healthcare, the experiment on increasing the take up rate of cervical screenings among women was identified as a priority intervention and was implemented together with the Ministry of Health, making use of the functionalities and databases of the e-health system.

The experiment carried out by the Lab, in collaboration with Armenak Antinyan (Zhongnan University of Economics and Law & SDG Lab), Luca Corazzini (University of Venice), and Marco Bertoni (University of Padova) aimed at increasing the take up rate of free cervical cancer screenings for women of 30-60 years of age, focusing on 10 healthcare institutions in Shirak region. In the first quarter of 2019, the Lab has succeeded in finalizing the project design together with all relevant stakeholders and setting up key partnerships with healthcare institutions and HayPost to ensure smooth implementation of the Project. Already in the second quarter, the experiment entered its active phase of implementation with letters being sent out to the participants of the experiment. The last batch of letters was sent out on 5th of July 2019 officially ending the active phase of the experiment.

During the 3 months of the intervention, 20,800 women in the target age groups (30-60 years old) received behaviorally informed letters and reminders to encourage them attend the check-ups. 6 out of 10 letters were received by the recipient, and every 5th recipient (2925 women) visited the doctor. The data analyzed in August-September 2019 exposed 461% increase in take-up rate for cancer screenings for women receiving only letters and 667% increase for women receiving letters and reminders compared to the same period in 2018. Notably, the combination of letters and reminders were proven to be the most effective type of intervention. Moreover, according to the results of data analysis, the take-up rate was higher in rural communities, than in urban communities, with women above the age of 44 showing higher attendance rate than those aged 30-44. During the presentation of the results of the experiment, the Minister of Health acknowledged the unprecedented impact of the intervention and the need for scaling it up not only on national level, but for other types of preventive healthcare measures as well (such as breast cancer check-ups).

Some of the intervention results are presented in the below infographic.



Increasing Tax Compliance in the Republic of Armenia with the help of Behavioral Interventions

Contributing to SDG 17.1: Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection

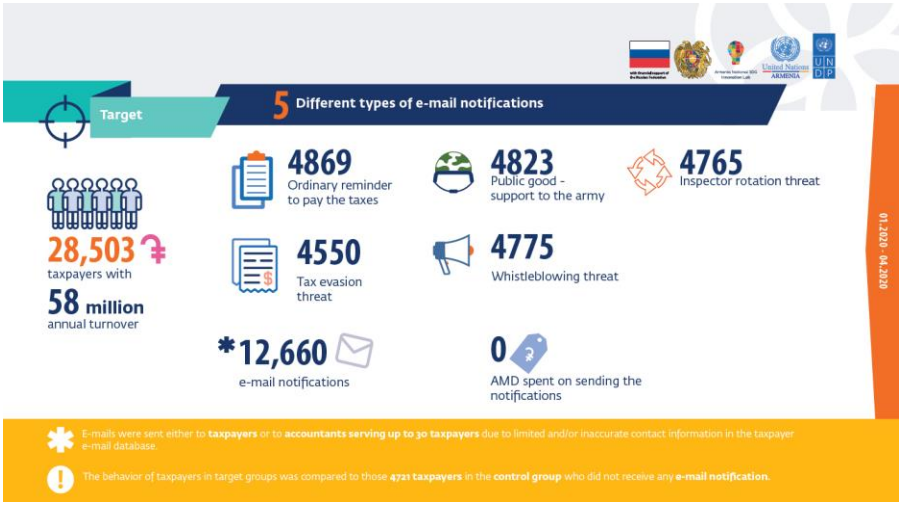
Tax reform overall and improved tax collection were named as a key priority for the new Government. To aid the authorities in developing a dialogue with the citizens and change their perceptions on taxes, the Lab together with the State Revenue Committee (SRC) designed an intervention to nudge citizens to pay their taxes. As a result of the experiment, the Government will have a clear understanding of the types of behavioral nudges that are most effective and possibly scale up the project to wider target groups.

To launch the experiment, five different types of e-mail nudges were put forward by the Lab:

- Ordinary Letter - neutral reminder to pay the taxes in a timely, responsible and conscientious manner.
- Public Good - neutral reminder to pay the taxes and a statement about the Government spending the taxes for public good, namely on army-related expenses.
- Tax evasion threat - neutral reminder to pay the taxes and a statement about ongoing tax inspections and a possibility of being fined in case of non-compliance.
- Whistleblowing threat - neutral reminder to pay the taxes and a statement about the possibility of their business being reported by people aware of tax evasion through SRC hotline and other means of correspondence.
- Inspector rotation threat- neutral reminder to pay the taxes and a statement about regular tax inspections on a rotating basis by different inspectors, and a possibility of being fined in case of non-compliance.

The intervention targeted 28503 turnover taxpayers with a total number of 12660 e-mail notifications sent. The intervention measurement period of the experiment was January 2020 through April 2020.

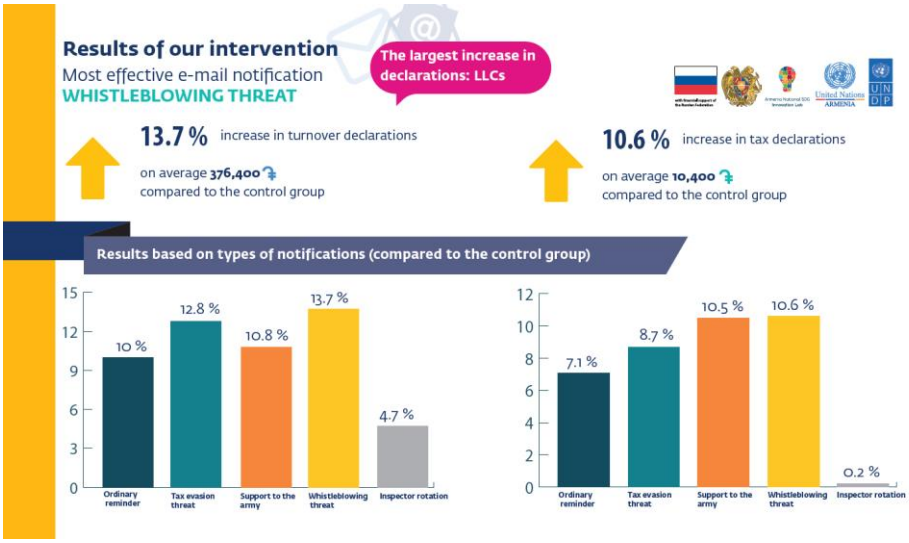
Below is the overview of the intervention presented in an infographic[1].



According to the results, the most effective notifications are the ordinary threat and the whistleblowing threat. More specifically, the whistleblowing threat increases the average turnover declaration by around 376,000 AMD (around 13.7%) compared to the control treatment (those, who did not receive any e- mail notifications). In a similar vein, the ordinary threat increases the average turnover declaration by around 354,000 AMD (around 12.8%) compared to the control treatment. Public good and ordinary emails also result in increase of turnover declarations, albeit the effect size is much smaller (and the result is marginally significant). More specifically, a public good e-mail increases the turnover declaration by around 297,000 AMD (around 10.8%) while an ordinary e-mail increases the turnover declaration by around 277,000 AMD (around 10%). Most likely we face a power problem[2], given the limited number of observations.

[1] Please explore the full infographic here.

[2] The power of a study is a measure of the likelihood that the study finds an effect when that effect is indeed present.



In sum, a costless e-mail can increase the average turnover declaration for LLCs from roughly 277,000 AMD in the ordinary e-mail treatment to 376,000 AMD in the whistleblowing threat treatment compared to the control treatment with no communication.

Furthermore, compared to the control treatment, increased turnover generates increased turnover tax declarations. More specifically, in the public good treatment taxpayers declare around 10,000 AMD more taxes (around 10.5% increase) than in the control treatment (those, who did not receive any e- mail notifications). In a similar vein, in the whistleblowing treatment the taxpayers declare around 10,400 AMD more taxes (around 10.6% increase) compared to the control treatment. The positive (albeit non-significant) coefficients of the other treatments suggest that taxpayers declare more taxes in the other treatments as well (deterrence with rotation treatment is an exception). For instance, in OT the tax declarations increased by around 7,000 AMD (7.1% increase), while in ordinary deterrence treatment, tax declarations increased by around 8,500 AMD (8.7% increase).

The Lab has successfully put together a comprehensive report and overview, as well as communicated the results of the experiment to the SRC for initial review and feedback. The presentation to the Chairman of the State Revenue Committee took place on 18 February 2021, where the Committee expressed interest in exploring the scaleup of the project to include other urban and rural communities, as well as other types of taxpayers.

In May 2021, the State Revenue Committee initiated a meeting with the Project team to discuss the scaleup of the project. It was particularly encouraging to learn that the SRC has applied the behaviorally informed messages in their communication with taxpayers and have marked notable results. Particularly, they shared the combination of Tax evasion threat and Whistleblowing threat messages to reach out to 700 sole entrepreneurs, who did not have registered employees and the sole entrepreneur was employed full-time somewhere else with a labor contract. As a result of this communication, 260 sole entrepreneurs have registered over 300 employees. **The SRC is interested in exploring the effect of behaviorally-informed communication on other types of taxpayers, as well as develop a communication strategy together with the Lab.**

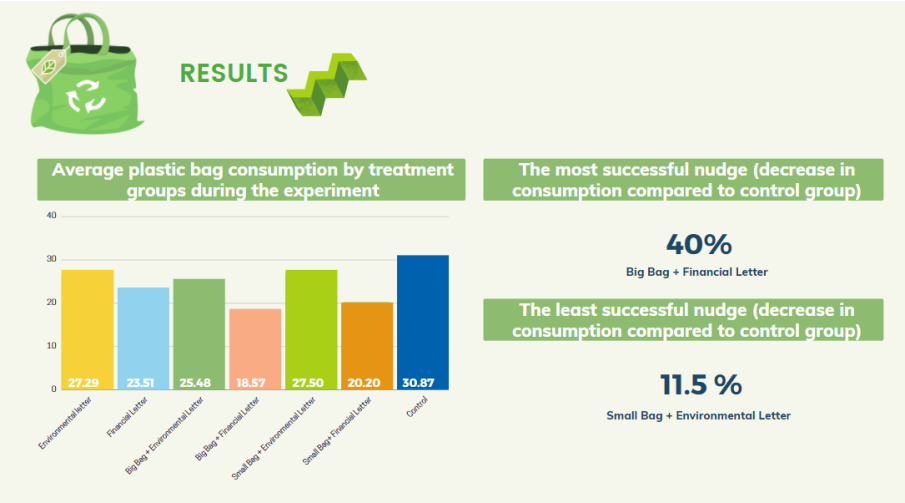
Reducing Plastic Consumption During Shopping at the Supermarket Through Behavioral Interventions

Contributing to SDG 12: Ensure sustainable consumption and production patterns

The Lab, together with My Step Foundation and in collaboration with Armenak Antinyan (Zhongnan University of Economics and Law & SDG Lab) and Luca Corazzini (University of Venice) has also successfully completed a behavioral experiment aiming to induce environmentally conscious behavior among population.

Armenian Government has introduced a new policy that aims at waiving certain types of plastic bags starting January 1, 2022. To make sure that the society is prepared for the new reality, in parallel to the nation-wide campaigns, the Lab together with My Step Foundation decided to test various monetary and non-monetary incentives to see what drives individual behavior to reduce plastic consumption during shopping at the supermarket. Testing these interventions would allow us to discover the most effective interventions and communication strategies in the context of LMICs like Armenia, and beyond.

The behavioral experiment to tested various monetary and non-monetary incentives to see what drives individual behavior to reduce plastic bag consumption during shopping at the supermarket. During the 6 months of the intervention from January to June 2020, targeting 5809 individuals, the most successful incentive composed of a free big tote bag and an invitation to take part in a competition of cutting down on plastic bag consumption with the promise to win a symbolic amount of money succeeded in decreasing plastic bag consumption at the supermarket by 40 % (against the control group). Even the "least successful incentive" of the experiment, a letter that reminds about environmental concerns of plastic consumption, succeeded in decreasing the consumption of the plastic bags by 11.5 % (against the control group). The results of the experiment were published in the Ca' Foscari University of Venice, Department of Economics. The results of the experiment came out during the escalation of hostilities in and around Nagorno Karabakh in autumn 2020, hence the discussion of the results with national authorities was postponed until autumn 2021.



Output 2: Increased availability of data for evidence-based policy and decision-making.

Travelinsights.ai

Contributing to SDG 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

To help to improve Armenia's emerging tourism industry together with the travel ecosystem in Armenia, the Lab launched Travelinsights.ai - its first ever data analytics product. The online tool that operates on AI algorithm to collect, analyze and categorize tourist sentiments about Armenia expressed on popular travel websites, such as TripAdvisor and Booking.com, fuses travel storytelling and machine learning. The platform visualizes the results of sentiment analysis of over 174,000 touristic reviews about Armenia, scraped from Booking.com, TripAdvisor and Facebook.com, with disaggregation of 25 detailed aspects per 4 categories (hotel, restaurant, museum, landmark).

The final version of the tool was planned to be presented to Government counterparts, partner organizations and stakeholders in 2020. After making final polishes in the website, such as bug fixes and language adaptations, a big launching event hosting over 100 participants was scheduled in March, 2020, with the event venue already booked. However, due to COVID-19 outbreak and the escalated hostilities in and around Nagorno Karabakh, the event was reframed into an online launch through e-mail. Over 120 partners and potential beneficiaries, including Government counterparts, international organizations, local businesses and other partners received e-mails about the launch of the platform.

The online tool currently serves the Government, businesses and tourists. Through Travelinsights, the Government and the Tourism Committee in Particular will be able to understand tourists' real needs and expectations- issues they faced and experiences they loved and develop evidence-based policies in the tourism sector. The tool feeds evidence for the development of long-term strategies and contributes to the creation of a tourism ecosystem that provides high-quality services eliminating challenges that distract tourists. This is a go-to tool for the Government to develop targeted and effective marketing strategies to improve Armenia's ranking on the world touristic map.

The businesses, on the other hand, have a hands-on real-time tourist feedback repository to improve their services and provide quality experience to their visitors, meanwhile building on the strength and weaknesses of surrounding businesses through the newly integrated business-level sentiment analysis. The platform is a useful tool for the tourists as well when their stay in Armenia, serving as a source of grouped and analyzed first-hand information on touristic places of Armenia.

Following the Revolution of April 2018, the Government of Armenia has redefined its priorities in different sectors. Consequently, the SDG National Innovation Lab has successfully redesigned and repositioned itself as the go-to partner of the Government for complex issues that require innovative methodologies, advanced data analytics for evidence-based and citizen-cantered policy making.

In line with the Government's priorities and emphasis on new sectors, as well as the requests from different Government counterparts, the Lab integrated the following outputs in the Project Document , which were approved by the TFD SC:

- Artificial Intelligence (AI) for Government's Electronic Document Management System-Mulberry
- Armenian Natural Language Processing
- Digital Service Standards

Artificial Intelligence (AI) for Mulberry

Contributing to SDG 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels; 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreement

The inefficient processing of information in the current Government internal electronic document management system – Mulberry – has led to decreased operational performance and productivity as well as inefficient use of resources within the Government. To tackle this, the Lab has initiated another product to improve citizen-government correspondence and optimize the letter flow and resources. This will be achieved through redesigning the processes of receiving, categorizing, processing and answering citizens' letters, applications and complaints through integration of AI. The project has been evolving in 3 main directions: working with data, designing and implementing a behavioral experiment and prototyping design thinking methodology.

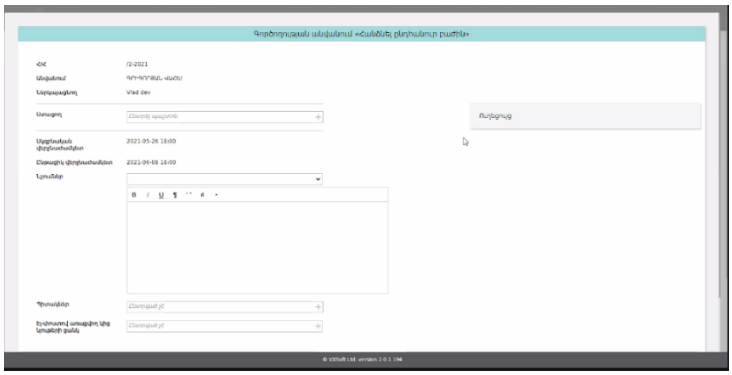
After the signature of an NDA with the Government, Ministry of Education, Science, Culture and Sports in August and the Ministry of Health, the Lab has gained access to over 50000 pieces of citizen correspondence. The Lab has successfully initiated negotiations with the Ministry Labor and Social Affairs for the signature of and NDA and data transfer, however given the emerging

COVID-19 outbreak in the country and the escalated hostilities in and around Nagorno Karabakh, the process is being prolonged, considering the overloaded schedule of this particular ministry.

In 2020 the Lab has piloted the integration of machine learning algorithms into Government's official document management system-Mulberry. Over 100.000 pieces of citizen correspondence from 48 units of Ministry of Education, Science, Culture and Sports and 27.816 pieces of digital citizen correspondence from 24 units of the Ministry of Health were studied for multi-label classification have been reviewed and over 35.000 have been used for multi-label classification. The tokenization and word segmentation of over 150.000 Modern Eastern Armenian sentences through Armenian Natural Language Processing (NLP) tools has significantly affected over 43% accuracy rate already achieved during the initial testing phase of the language model. After refining the AI models with the most state-of-the-art approaches, the accuracy rate was increased to 80%, with plans to reach at least 95% accuracy by the end of 2021.

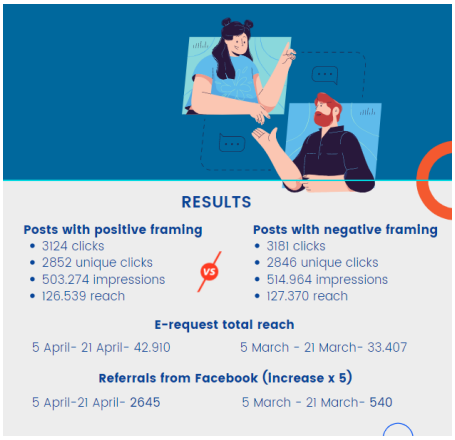
In order to assess the efficiency of the AI model, the Project assessed the % of time saved to categorize digital correspondence by Mulberry users responsible for reading and categorizing citizen letters. A baseline online survey was conducted among Mulberry users with a number of questions regarding the average time spent on reading and categorizing digital correspondence. Based on the survey results, the average time for reading and categorizing a fully-written A4 format digital correspondence was 5.3 minutes. The AI model introduced groundbreaking results: the algorithm processes and classifies inputs in approximately 1 second, which saves 99.7% of the time needed to read and categorize digital correspondence. The figures may vary slightly depending on network performance and document size.

The AI-powered classification model is integrated in the Mulberry system, bring to significant saving of costs and leading to the increase in productivity. Below is a screenshot of the Mulberry interface demo with the AI suggestion box integrated in the system.



In parallel, empathy mapping – an essential step of design thinking aimed at defining and understanding user needs and expectations – was launched in July-September 2020. With significant impediments to the process of conducting interviews and focus-group discussions with several key stakeholders (Adviser to the Deputy Prime Minister and the Head of Deputy Prime Minister's Office, Deputy Minister of Education) due to COVID-19 outbreak, the project team has nevertheless succeeded in finalizing one of the most important phases of this component and presented it to the team. The design thinking team held more in-depth interviews during July-September with more technical-level representatives from the Ministry of Education, Science, Culture and Sports and the Government to reveal more detailed needs. The design thinking team has put together the co-design session methodology which was planned to be held in October 2020. However due to the escalated hostilities in and around Nagorno Karabakh, the Project held the co-design session on 25 February 2021 with participants from the Deputy Prime Minister's Office, MESCS, MOH and VxSoft. As a result of the meeting, the Project came up with a new model for sustainable and centralized collaboration between the Mulberry users and VxSoft to redesign the processes of solving the ongoing technical and operational issues within the Mulberry system. The project shared the recommendations with the Deputy Prime Minister's Office.

Furthermore, in September 2020, the Project has initiated the design phase of the behavioral intervention to increase the uptake of digital services in Armenia. The design was discussed both with the Government and the MESCS. Due to the twofold crisis in the country, some operational hurdles in the MESCS have led to reframe the planned intervention. As a result, the Project used the A/B testing tool on Facebook to nudge the followers of the Government's official Armenian unified infocenter page through the publication of 2 posts presenting the advantages of using the E-request platform- Government's unified portal for online requests and detailing the disadvantages of not using the unified portal. As a result of the intervention, from 5 April to 21 April 2021, the increase in e-request total reach is 28.4% (compared to the same period of the previous month) and the increase in referrals from Facebook is 489.8% (around x5 increased compared to the same period of the previous month).



Armenian Natural Language Processing

Contributing to SDG 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels; 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreement

Closely linked to the previous component, this particular activity comes to fill the gap of necessary technological solutions available to the Government to fully benefit from analysis of Armenian

language text data gathered in various formats. Through the combination of deep knowledge of Armenian linguistic structures with state-of-the-art statistical approaches, the Lab is testing its AI solutions on automation of routine internal operations and therefore improve Government's operational efficiency. The Armenian NLP technology will be integrated into Government's internal operations, service delivery and policy development initiatives that will require language processing and analysis such as analyzing public feedback, improving predictions to aid decision-making, enhancing policy analysis and improving the regulatory compliance.

The tokenization and word segmentation system for Modern Eastern Armenian has been finalized in October 2020. Instead of the initially planned segmentation and tokenization of 50.000 sentences, the experts engaged by the Project completed 150.000 sentences. The process was accelerated thanks to the pro-bono partnership established with DataPoint, a USA-based initiative of students and professionals experienced in data science, who join efforts to advance the development of Armenian NLP through engaging necessary human resources in performing labeling of a large number of Armenian texts.

The advancement of Armenian NLP has significantly contributed to not only this project, but to all other projects of the Lab anchored on data and AI.

Digital Service Standards

Contributing to SDG 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels; 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreement

To ensure that the Government designs and delivers public services which are simple, clear and fast, the Lab has planned to join the efforts of the Government to provide its expertise for the development of unified and universal standard and procedure for co-creation and co-production of public services to increase the effectiveness through increased uptake rate of digital services. To ensure the practicality of the project, one of the public services with low uptake rate and high scalability would be selected to serve as a model. The service would then undergo re-engineering and re-design process in compliance with the standards and procedures. A well-designed behavioral experiment has planned to help understand the real needs of the user and to identify the factors influencing on usage of digital services.

The Project held a meeting with the Ministry of High-Tech Industry in August 2020, which expressed its interest and willingness in contributing to the development and adoption of digital service standards. The process of finding a qualified local expert in this field started in September 2020, with a potential candidate selected before 25 September. The escalated hostilities in and around Nagorno Karabakh on September 27 have significantly affected this component of the project. Namely, the Ministry of High-Tech Industry shifted its priorities to address other emerging needs, and this particular component was cancelled.

SDG Monitor

Contributing to SDG 17.18: By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

In order to advance the conceptualization of the SDG Barometer, a user-friendly data visualization platform that will help monitor the SDGs' progress, inform policy and decision-making, and measure the impact of policy interventions in the long run, the Lab, in partnership with the "Rule of Law and SDGs in Armenia Reform Agenda" UNDP project, has been engaged in collecting, analyzing and visualizing data on SDG 16-as a pilot and then adding the rest in the process.
After the finalization of data mapping, the Project held an extended Working Group meeting on 16 January 2020 to introduce the results of data mapping and outline the next steps. During the meeting, the Working Group put forward recommendations on additional data sources that could be integrated in the data mapping report. The report was finalized in February and the data collection stage of the component was launched.

The data collection activity was envisaged to be carried out in 2 dimensions: a) collecting the data mapped from different public institutions and setting up sustainable mechanisms for regular data transfer and b) collecting data from different non-conventional sources through artificial intelligence. For the implementation of the latter, specific emphasis has been put on SDG 16.7.2, and social media platform, namely Facebook, was identified as a primary data source. The time-series analysis of Facebook posts of current and former officials, keyword trends of the posts and sentiment analysis of the comments will help reveal the proportion of population who believe decision-making is inclusive and responsive. Furthermore, E-draft, the official website for the publication of draft legal acts, will serve as another non-conventional data source to carry out analysis of citizen response and participation to the discussion of legal acts.

As for the data collection from non-conventional sources, due to COVID-19 outbreak, the planned activities faced some delays. Data transfer modalities, channels and frequencies have been set up with 13 institutions to ensure the sustainability of the component following the initiative of the Lab to pass a Government order to all listed institutions. As a result, data was analyzed from 8 public institutions, 30 Facebook profiles of current and former officials, 45000 FB posts and 469264 comments, as well as public feedback on 2226 draft legal acts.

The Lab has also successfully engaged a web development and design company to develop the online SDG Monitor platform that will visualize Armenia's progress towards achieving SDGs through advanced features, such as an interactive visualizations marking the progress of achieving SDG 16 targets as a whole and specific indicators separately with real-time data. While the initial

RRF included 4 SDGs as targets to be visualized on the website, the Project, in consultation with the DPM's office have put specific emphasis on SDG 16 as the priority area of the Government.

Output 3: Enhanced capacity of National SDG Champions in innovative research methods and skills.

Contributing to SDG 17.9: Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

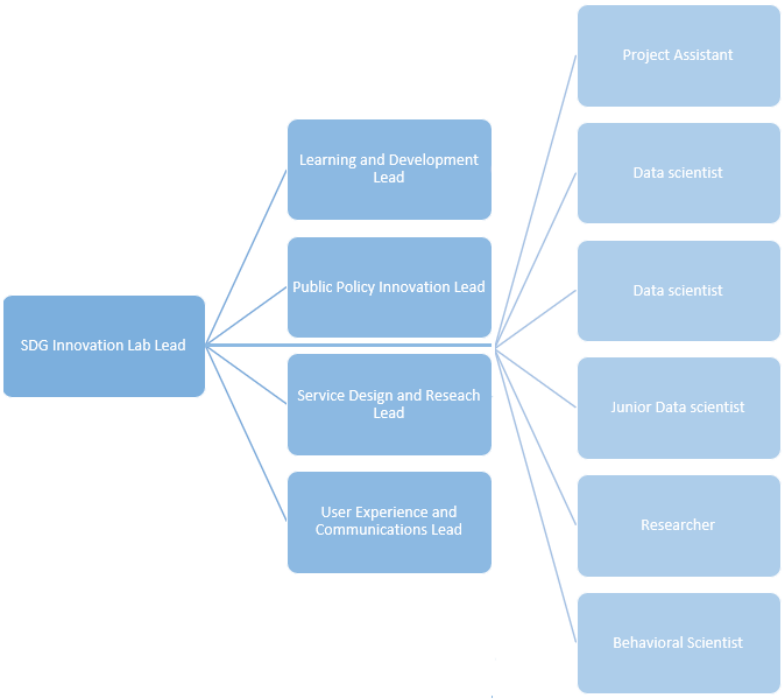
Throughout the course of its implementation, the project has actively contributed to the capacity enhancement of National SDG Champions through different events, some of which are presented as follows. In 2018, three SDG Lab champions from the Government took part in the Stanford Change Labs Systems Thinking Masterclass. Two UNDP representatives took part in the Systems Thinking workshop organized by the UNDP Moldova's MiLab in cooperation with Alberta CoLabs for knowledge and experience sharing. In 2018, Armenia National SDG Innovation Lab hosted "Partnerships for Innovations in Development" regional workshop in Yerevan. Supported by the "Knowledge Management and Capacity Building in Russia-UNDP Partnership, Phase II" regional project and UNDP in Armenia, the workshop was the second event in the series of seminars for Russia-funded UNDP projects to touch base on progress and exchange knowledge on challenges and success stories. In 2019, Members of the project team took part in a regional data event ***DataFest Tbilisi 2019***, where the Lab delivered a ***talk*** on the main stage on the use of data for public policy innovation and the SDG Lab's data initiatives. Furthermore, given the importance of enriching the project experience and learning from our Russian partners, the SDG Lab team participated in the Foresight training held from 1-October 2019 by experts from ***Skolkovo-Moscow School of Management*** co-organized by the colleagues at UNDP Kolba Lab. In 2020, the project team participated in a 3-day workshop "***Behavioral Insights Applied Live Academy"*** with the UK's Behavioral Insights Team. During the workshop, the team learn from the best in the field, put their knowledge into good practice and design behavioral experiments with fellow policymakers. The project presented its activities at the "***Governments in Bosnia and Herzegovina on the Digital Transformation Journey***" event organized by UNDP in Bosnia and Herzegovina.

On 4 March 2021, the Project attended a webinar with the Dominican Republic UNDP Country Office to share insights from their work on the transformation of the tourism sector, organized by Strategic Innovation and SIDS teams in BPPS. This work is a part of the Deep Demonstration program that seeks to explore a different approach to tacking complex issues, going beyond single point solutions and embracing system approaches. UNDP in the Dominican Republic has asked whether the pandemic can trigger a fundamental rethink of how the country conceives the value at the heart of its tourism offer. They seek to support the Government to pivot from a focus on a

single sector to a more comprehensive strategy where leveraging ecosystem services, rethinking waste disposal and employment regulation, and integrating health and wellbeing all contribute to a different value proposition for the country. The Project shared the experience on Travelinsights and learned from the experience of the Dominican Republic.

On 12 March 2021, the Project attended the "SDGs and COVID-19 - how can data and statistics help building back better?" online peer-learning round-table discussion organized by UNECE/ Statistics, Statistics Canada, UK Mission to the UN and WTO (Geneva). A number of important questions were raised and discussed, such as hardships of shifting to "COVID-19 operation mode" for all authorities/stakeholders involved in the COVID-19 response actions, the affects of data availability as a result of the COVID-19 pandemic, how to make better use of both traditional and non-traditional data sources taking into account the timeliness and quality concerns. The Project had the opportunity to share brief information about the SDG Monitor initiative and share its experience about the successful use of non-tradition data sources as a reliable alternative to fill the existing gap in conventional data.

Since May 2018, the funding by the Russia-UNDP TFD has helped the Armenia National SDG Innovation Lab to develop its institutional capacity to become the innovation hub for the Government. The 3-member team grew into an 11-member team of inspired and skilled professionals form various backgrounds: political science, computer science, behavioral science, mathematics and economics, industrial engineering and systems management, business management, law, international affairs, public policy, sociology, psychology.



The "Innovative Solutions for SDG Implementation" project kickstarted the innovation journey of the Lab, significantly contributing to becoming one of the most prominent innovation facilities in Armenia, with initiatives that have already generated impactful results and laid down solid foundation for systemic lasting change in the long-run.

Output 4: Successful model for accelerated implementation and financing of Goal 7 (Affordable and Clean Energy)

Pilot 1 - Competitive financing instruments for facilitating "Green energy" production at household level in Armenia's vulnerable communities

Contributing to SDG 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services

This Component was launched with quite delay in July 2019 due to the post-revolutionary political situation in Armenia. The Armenia Renewable Resources and Energy Efficiency Fund (R2E2 Fund) was selected to become the Project partner for the implementation of this component. R2E2 is a professional and experienced entity in the field of energy efficiency and renewable energy in the Republic of Armenia. Since its establishment in 2006, it has implemented a wide range of activities aimed at promoting investments in energy efficiency and renewable energy sectors, fostering market development in the sphere of Armenia's energy efficiency and renewable resources, enhancing reduction of technological influence on environment and human health, developing mechanisms aimed at increasing the level of reliability of energy security and energy system. The innovative approach of the component is the revolving mechanism earlier tested by R2E2 for public buildings energy efficiency financing. Under this mechanism the households are provided 8% annual interest loan for up to 8 years and repayments are used to finance new households needs.

This component was rolled out in Shirak and Gegharkunik regions of Armenia, through the following 7 main phases from July 2019 to December 2020:

1. Mapping of beneficiaries
2. Awareness campaign, including meetings with beneficiaries, banks, ESCOs
3. Additional awareness campaign by ESCOs
4. Receiving applications
5. Screening/financing by the Bank and approval of application by the R2E2 Fund
6. Installation of solar water heater/PV by ESCO
7. Monitoring and evaluation

As part of the potential beneficiary mapping activity, 20 meetings have been carried out. In total, 427 applications were received out of which 418 for installation of solar water heaters and 9 for solar PV modules (with cumulative installed capacity equivalent to 33.03 kW). As a result of this activity 379 families installed solar water heater, with 11 small PV installations. Several applicants were refused by bank (not creditworthy), while other applicants decided to make a full payment

and install the solar water heaters after the awareness raising campaigns. In total 1,223,200 kW of "green energy" will be generated annually through installations reducing carbon emissions equivalent to 535.7 tons of CO2. Additional research carried out during March-May 2020 identified beneficiaries with three or more children who did not receive bank interest compensation (due to exhaustion of the amount allocated to 100 families under the first phase of the project or improper information about the number of children). In order to arrange reimbursement of the corresponding amounts, clarifications were made with the partner banks and full compensation was paid afterwards. The total number of families benefiting from this activity is 192. The progress monitoring carried out by R2E2 revealed that around 30% of these beneficiary families are women-led households. The infographic prepared by the project reflects the results achieved through this component.

Within the framework of the project, R2E2 Fund's experts have regularly visited non-gasified beneficiary communities of Gegharkunik and Shirak regions[3], organized meetings with the households and with the regional and community authorities responsible for the project implementation, carried out surveys on the project progress, quality of completed works, operation and maintenance of installed systems. Some of the key monitoring findings are the following: (i) households who took part in the survey expressed satisfaction with the project implementation framework and the results. There were very rare cases of defects or malfunctions during the operation, but these were fixed very soon after the reveal; (ii) due to the availability of solar water heaters, women and girls were the first to enjoy the improvement of their living conditions and comfort. Both women and men were pleased largely due to no need to for previous practices necessary for obtaining hot water (buying firewood, transporting, cutting, sticking, drying, making a fire, heating water, moving that hot water, buying liquefied gas, moving containers, connecting, disconnecting them, and other inconveniences); (iii) surveys also revealed that households had previously used electricity, liquefied gas, firewood or manure to heat water for domestic purposes. Based on the experience of the past period, the monthly savings of the majority of households, depending on the type of the previously used heating source and family members, ranged from 4,000 to 8,000 AMD, and in some cases up to 14,000 AMD.

Output 5: Implementation, monitoring and evaluation

On 28 April 2021, the Project held its final Board meeting, attended by the Deputy Prime Minister of Armenia Tigran Avinyan, Mr. Shombi Sharp, UN Resident Coordinator in Armenia, Ms. Mihaela Stojkoska, UNDP Resident Representative a.i. in Armenia, Ms. Natalya Viktorova, Third secretary, Embassy of the Russian Federation in Armenia, Mr. Konstantin Kulikov, Counsellor, Department of International Organizations, Ministry of Foreign Affairs of the Russian Federation, Mr. Anton Tsvetov, Deputy Director, Department of Multilateral Economic Cooperation and Special Projects, Ministry of Economic Development of the Russian Federation, Ms. Olga

[3] Given the COVID-19 outbreak in Armenia, however, very few photos with beneficiaries were taken, which can be found here.

Martynenko, Mr. Alexander Averchenkov and Ms. Anastasia Maximova from Russia-UNDP Trust Fund for Development. Mr. Tigran Tshorokhyan, SDG Innovation Lab Lead thoroughly presented the Lab, its partnerships, and the project overview, which was followed by a detailed presentation of the project outputs and activities, comparing them against the RRF indicators and targets. Mr. Tshorokhyan particularly highlighted the data-driven products delivered by the project, namely Travelinsights.ai, SDG Monitor and AI for Mulberry. Moreover, specific emphasis was put on presenting the results of the behavioral experiments in health, tax and environment sectors in Armenia. It was mentioned that regardless of the COVID-19 pandemic and the escalation of hostilities in and around Nagorno Karabakh, which have caused unplanned delays in some activities, the project was successful in terms of its delivery and impact.
The Board meeting minutes are attached below:

Inno4SDGs_Board meeting minutes_sig

3. SUSTAINABILITY OF THE ACHIEVED RESULTS AND FUTURE PLANS

Through this Project, Armenia took the lead in establishing the first ever national country support platform to accelerate the SDG Implementation, creating a smarter, leaner system for tackling complex development issues. The project is one of its kind in the development sphere and has caught the attention of other country offices, for its new approach towards digitization and innovation, such as UNDP Tunisia, Honduras, Colombia. As a result of its achievements in this Project, Armenia National SDG Innovation Lab now serves as a platform to bring together diverse stakeholders such as the Government, UN agencies, academia, civil society, the private sector and provides for space to look at persisting development challenges from a systems perspective. The Lab's interventions bring policy-level change that lay down solid foundation for systemic lasting impact in the long run. It has been an interesting challenge for UNDP in Armenia to go beyond traditional development approaches and integrate innovation within the most pressing challenges.

Since May 2018, the funding by the Russia-UNDP TFD has helped the Armenia National SDG Innovation Lab to develop its institutional capacity to become the innovation hub for the Government. The 3-member team grew into an 11-member team of inspired and skilled professionals form various backgrounds: political science, computer science, behavioral science, mathematics and economics, industrial engineering and systems management, business management, law, international affairs, public policy, sociology, psychology.

The "Innovative Solutions for SDG Implementation" project kickstarted the innovation journey of the Lab, significantly contributing to becoming one of the most prominent innovation facilities in Armenia. Since 2018, the Lab has positioned itself as a go-to partner for the Government of Armenia and the UNDP, disrupting public policy-making and mainstreaming innovation for

sustainable development. As a result, a number of new projects have been designed and approved in the scope of the Lab (see below), ensuring its sustainability and programmatic approach for their implementation. Moreover, The Lab has become one of the key pillars of the UNDP's Innovation and SDG Finance portfolio, implementing a wide array of thematic projects through focusing on public sector innovation. The Lab currently offers 3 main services lines to the Government a) data science b) behavioral insights c) design thinking, with others coming soon. This rigorous combination of methodologies, tools and approaches positions the Lab as one-of-a-kind innovation facility in Armenia and the region. One of the key advantages is the ongoing national support at the highest level, since the Lab is co-chaired by the Deputy Prime Minister of Armenia.

The Lab is currently implementing 2 separate projects in urban development and healthcare sectors with a total budget of USD 450,000, along with multiple cross-portfolio collaborations across UNDP, with a total budget of USD 105,000. One of the key successes of the Lab is the USD 852,300 secured for 4 upcoming projects, which are currently undergoing administrative procedures before their official kickoff. This includes the USD 144,000 project approved within the scope of the 3rd TFD Youth Window, "Unleashing Employment and Income Generating Opportunities for the Youth in the Regions of Armenia" project funded by the Russian Federation. The ongoing and upcoming projects are detailed below.

Current projects

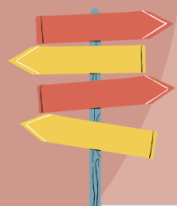
Project	Donor	Funding amount	Duration
Yerevan 2.0: towards more inclusive and greener recovery	UNDP's Rapid Financing Facility	USD 350,000	December 2020- May 2022
BarevBalik: Maternal and Child Healthcare project	Viva- MTS Armenia	USD 100,000	June 2020- December 2021

Cross-portfolio collaboration

UNDP Project	Our contribution to the project	Donor	Funding amount	Duration
Engagement Facility with "Stronger Services for Equal Participation and Inclusive Development"	Ministry of Defense: Digitizing and optimizing provision of social services to veterans	Engagement Facility	USD 40,000	January 2021- December 2021
Women and Youth for innovative local development & Women in Politics	Promoting citizen participation in decision making at local level through behavioral intervention	SDC and GGF	USD 30,000	August 2021- March 2022
Engagement Facility	MedUP: increasing the effectiveness of COVID treatment	Engagement Facility	USD 20,000	Spring 2021 – December 2021
Modern Parliament for Modern Armenia	Behavioral barrier analysis	Sweden, DFIF, SIDA	USD 15,000	September 2021 – November 2021

Upcoming Projects

Project	Donor	Funding amount	Duration
UN Road Safety Fund | UNECE	UN Road Safety Fund | UNECE	USD 488,300	October 2021-October 2023
Increase take-up rate of COVID vaccination in Armenia through behavioral intervention	National Institute of Health, MoH and WHO	USD 50,000	Beginning 2022
Edu2work for VET	The Russian Federation	USD 144,000	Beginning 2022
Police reform	EU	USD 170,000	2022-2024



The Government, and namely the Deputy Prime Minster's Office has been directly involved in a number of Project activities, with direct ownership and coordination of the overall process. The results of the behavioral interventions in preventive healthcare and taxation sectors were of particular interested for the Ministry of Health and the State Revenue Committee, with actual steps

taken by respective institutions to scaleup the project. The signature of NDAs with the Government, Ministry of Health and Ministry of Education, Science, Culture and Sports have formalized the partnership with the SDG Lab, laying the ground for long-term sustainable cooperation for all upcoming projects.

The Travelinsights.ai and SDG Barometer platforms have become a go-to tool for the Government and the Ministry of Economy (Tourism Committee) to monitor the developments in the country and initiate evidence-based policies and interventions.

The partnerships with both Russian institutions and other international partners, as well as the mobilization of internal resources is one of the major takeaways for the Project, contribution to building new partnerships and advancing the already-initiated efforts towards advancing the SDG implementation in Armenia and beyond.

4. CHALLENGIES AND LESSONS LEARNT

The 3-year journey of the Project was full of challenges, which turned into insightful lessons learned. One of the key challenges of the Lab has been working with the data, mainly in terms of the data quality. Often, the lack of necessary capacity and resources of different institutions to properly filter and validate the data have led to the need to spend additional time and resources to ensure that the data meets the required quality for further processing. Consequently, the projects sometimes faced unplanned delays or redesign of some activities to efficiently address these challenges. Being an innovation facility, Lab has faced a persistent challenge linked to the essence of innovation. Innovation is evergrowing: new insights are generated almost daily, which may shift the course of action and require novel approaches, as well as lead to the need of constantly transferring the new learnings to Project counterparts for uninterrupted implementation. Moreover, since innovation entails experimentation, experiments can fail or produce results that are different from the initial planning: while this can also serve as a finding and a reliable source for evidence-based decision-making, financial resources spent on the process cannot be revived.

One of the biggest challenges of the Project was having to operate in unprecedented settings. The Project kicked off right after the Velvet Revolution in Armenia, with new players in the Government and different vision on development perspectives. The COVID-19 crisis since early 2020 was a challenge not only for the project, but for Armenia and the world in general. This was paired with paired with the escalation of hostilities in and around Nagorno Karabakh in September 2020, which has had a major negative affect on the course of project implementation. The Project, however, succeeded in constantly readjusting its course of action to operate in the times of crisis and has successfully completed all its activities.

5. RISKS AND MITIGATION MEASURES

The Project has initially identified the following risks:

1. Project's outputs may be at risk because of reduced or slowed operational processes in the Government or in UNDP by a number of reasons.
2. Low level of engagement and commitment from local counterparts/key partners because of apathy, lack of trust, and/or other reasons.
3. Methodological issues may reduce project effectiveness due to lack of capacity, understanding, or contextual issues.
4. Major natural disaster, e.g. earthquake.
5. Change of the security situation along the border of Armenia and potential escalation of the Nagono Karabakh conflict

Most of the listed risks have occurred during the Project implementation. The Project kicked off right after the Velvet Revolution in Armenia, when the Government priorities and the development vision have changed. The COVID-19 situation and the escalation of hostilities in and around Nagorno Karabakh have inevitably led to reduced or slowed operations within the Government and other partners. The Project had to readjust a number of ongoing activities to both address the new challenges faced by the country and stay within the initially planned project framework.

Namely, in parallel with reviving Component 4 of the Project together with R2E2, the Project conducted a qualitative research among target populations in Shirak and Gegharkunik regions. The success of the R2E2 revolving fund was unprecedented and the "solar ambassador" effect drove the installations of solar panels and water heaters at an accelerated rate. With more installations and more talk on the new technology, the ambassadors led their communities by example, even without an intervention. In other words, the "experiment" happened organically without much external intervention. This behavioral intervention was consequently substituted with another behavioral experiment aimed at reducing plastic consumption during shopping at the supermarket, with significant results detailed above.

The initially planned research exercises on alternative finance and blockchain was also substituted. In February 2019, the Lab established a Data Hub within its premises to conduct a research/feasibility study on leveraging new technologies and AI for crop yield estimation and forecast. A detailed cost-estimation was provided on several data collection mechanisms on different levels, such as through satellite, drone, etc.. Based on the findings of the research and the cost estimations, and to increase the project impact, the Government and the project decided to allocate the funding from the Russia-UNDP TFD for the implementation of other project activities and to allocate part of the co-funding to UNDP ImpactAim Agri-Tech incubator for the implementation of this component.

In November 2019, the Russia-UNDP Trust Fund for Development Steering Committee approved the funding for additional activities of the project in the amount of $250,000, following the ad-hoc board meeting minutes endorsing a) the approval of the top-up finding in the amount of $250,000 to be allocated to the Project for core activities of the Lab in Y2020 and b) the extension of the project from May 2020 to 31 December 2020.

Following the board meeting, the Project proceeded with making necessary revisions and amendments in the Project Document and adjust it to the extended timeframe. In line with the Government's priorities and emphasis on new sectors, as well as the requests from different Government counterparts, the Lab integrated the following outputs in the Project Document , which were approved by the TFD SC:

- Artificial Intelligence (AI) for Government's Electronic Document Management System-Mulberry
- Armenian Natural Language Processing
- Digital Service Standards

Inno4SDGs_Amendment to ProDoc_2020.p

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The application of the design thinking methodology was of significant advantage in this regard, since mapping the empathy of the stakeholders, paired with co-design and co-creation exercises greatly contributed to advancing a number of core project activities. Notably, the innovative tools and methodologies applied throughout the course of the project have significantly reduced the low level of engagement, since most of the project stakeholders were greatly interested in the concept of innovation and wanted to contribute to advancing innovation across Armenia.

Given the COVID-19 pandemic and the escalated hostilities in and around Nagorno Karabakh in 2020, the Project requested a no-cost extension, which was approved by the donor until 1 May 2021. This was an important step in ensuring the complete delivery of project outcomes.

6. PARTNERSHIPS

Ever since its inception, Armenia SDG Innovation Lab has been reinventing development sector practices by acting as a catalyst for brewing evidence-based policy solutions via cross-sectoral collaboration. The funding by Russia-UNDP TFD and the progress, achievements and lessons learned of the "Innovative Solutions for SDG Implementation in Armenia" project laid solid ground to advance the Lab's efforts in the development of models for multi-stakeholder collaboration.

One of the key project successes was the parallel funding received by the Government of Sweden (USD $ 22,804) for Output 6 detailed below and the co-financing from Norway ($ 99,944) for Outputs 7 and 8.

Output 6: Mapping of Armenia and Georgia's reform priorities regarding EU approximation and the SDGs

Armenia and Georgia have been members of the European Neighbourhood Policy (ENP) since 2004 and the Eastern Partnership (EaP) since 2009. More comprehensive agreements for collaboration were signed in 2017 and 2014 respectively in the form of the Armenia-EU Comprehensive and Enhanced partnership Agreement (the CEPA) and the Georgia-EU Association Agreement (the AA). Despite the fact that the SDGs are not explicitly mentioned in the CEPA and AA, many of the provisions of the agreements are in line with the Agenda 2030. It was thus assumed that the implementation of these agreements would contribute to the achievement of SDGs and bring the countries closer to fulfilling their commitments related to sustainable development. However, no detailed mapping of the synergies between these two processes have been carried out.

In response, a study has been conducted to highlight key differences and similarities between the CEPA and AA and their links and synergies with Agenda 2030, including the SDGs with an objective to provide policy makers and international development partners with a framework that links the countries' respective EU approximation commitments to the Agenda 2030. The analysis was carried out along the following lines: SDG mapping, country specific highlights, comparison of commitments and key opportunities for cross-country collaboration. The Deputy Prime Minister's Office, with the support of the Ministry of Foreign Affairs coordinated the processes and submitted their feedback in February 2020. The report has been successfully finalized.

Output 7: Accelerator #5

The core mission of Accelerator #5 (ACC5) program was to empower women and girls living in Armenia by delivering tech and business trainings, as well as helping them to come up with startup projects. The program was tailored to the needs of girls and women, who had little or no field knowledge. The project was successfully completed in 2019 with new ideas on leveraging innovative technological solutions to drive towards advancing Sustainable Development Goal #5: Gender Equality.

Output 8: Big Data and AI for agriculture

In February 2019, the Lab established a Data Hub within its premises to conduct a research/feasibility study on leveraging new technologies and AI for crop yield estimation and forecast. A detailed cost-estimation was provided on several data collection mechanisms on different levels, such as through satellite, drone, etc.. Based on the findings of the research and the cost estimations, and to increase the project impact, the Government and the project decided to allocate the funds to UNDP ImpactAim Agri-Tech incubator.

UNDP ImpactAIM ANAU Agri-Tech Incubator aims at helping startup companies and inspiring entrepreneurs with agrotech solutions to scale up their business and impact models by providing

tech & business services, co-working space and seed funding. The Incubator is designed to act as a catalyst tool for entrepreneurs in the field of Agri-Tech.

Since 2018, the SDG National Innovation Lab established partnerships with key government stakeholders-Ministry of Healthcare of the RA, Project Implementation Unit of the Ministry of Health of the RA, Tourism Committee of the Ministry of Economy of the RA, Shirak Marzpetaran (Governor's office), State Revenue Committee of the RA, 10 healthcare institutions in Shirak region, businesses-restaurants, hotels, hostels, museums, Armenian Hotels' Association and Armenian Restaurants' Association, academia-American University of Armenia, Zhongnan University of Economics and Law, University of Padova, University of Venice, Mannheim University, international partners- Behavioral Insights Team, UNDP Istanbul Regional Hub, World Bank, Government of New Zealand.

In 2020, the Lab has established successful pro-bono partnership with **DataPoint**, a USA-based initiative of students and professionals experienced in data science that helped the Lab in advancing the natural language processing component of the project significantly contributing to the Lab's efforts in advancing Armenian Natural Language Processing. Moreover, becoming a national hub for **Global Data Barometer** was another significant achievement for the Lab, laying solid ground for featuring Armenia in the first edition of the Global Data Barometer report in 2021.

As part of the Lab's efforts in scaling up the SDG Monitor component of the project, successful partnership was initiated with **UNDP's Oslo Governance Center**. As a result of this partnership, the Lab attended the living compendium on measuring, monitoring and reporting SDG 16 with the aim to enable knowledge exchange among different innovation teams. The SDG Monitor Platform was one of the 3 innovative country experiences presented during the webinar, together with El Salvador and Cabo Verde. As a follow up to this partnership, and with plans to scale up the project, the Lab is currently exploring funding opportunities together with Oslo Governance Center, to spread innovation globally and across all SDGs.

7. PARTNERSHIP WITH THE RUSSIAN FEDERATION

Building on the project experience and recognizing businesses as a driving force for economic recovery, the Lab came up with a new scheme that raises private-sector funds as seed capital for public policy innovation and public service reform programs. Through this mechanism, businesses — which are challenged to shift their attention from mere financial gains to sustainability practices and long-term values in light of Covid19 — can grow from a traditional financial partner to a more active one by engaging with governments and other stakeholders in generating fundamental solutions instead of one-off CSR initiatives.

This innovative approach was successfully tested with one of the biggest telecommunication companies in Armenia — **Vivacell MTS Armenia**. The Government of Armenia and VivaCell-MTS signed an MoU in summer 2020 to modernize and improve the maternal healthcare system in Armenia through the development of maternal mobile health (mHealth) app and web portal. With the USD 100,000 funding from Vivacell MTS Armenia for the implementation of the first phase of the "Barev, Balik" (Hello, kid) output is currently being used for the development of a website and mobile application which stand as a one-stop-shop portal for the couples involved in family planning, pregnant women, people with infertility issues, and parents of children of up to 6 years old. The project emphasizes on the creation of an information portal that provides up-to-date scientific information on pregnant women's and children's health and development, along with the integration of new online services for parents (i.e. vaccination tracker). The output will be implemented until December 2021.

The unprecedented interest by the Government of Armenia and the Ministry of Health have inspired the Lab to put together a concept for the implementation of the 2nd phase of the project, expanding the digital services and tools, as well as the health-related content.

As part of its efforts in developing capabilities to process English, Russian and Armenian language data, and mapping open source resources for NLP and developing proprietary datasets, training corpuses, predictive models and heuristic algorithms for tasks in topic classification, sentiment analysis, knowledge graphs, the Project has initiated partnership with **Yandex Research, DeepPavlov and Russian Research Institute of Artificial Intelligence in 2021**.

As a result, successful partnership has been established with **DeepPavlov**. The Project uses the resources made available by the DeepPavlov project team daily, and DeepPavlov's open-source repository as an invaluable facilitator of our work. The project makes extensive use of the DeepPavlov multi–language BERT Named Entity Recognition model, using it in combination with the Stanford NLP morphological parser to extract information from Armenian – language text. DeepPavlov's open-source AI framework for text analysis and the creation of dialog systems has been a valuable asset to advance the Lab's machine learning pipelines. As a result of the meeting with DeepPavlov in March 2021, a new communication channel will be created between the 2 teams through Slack for knowledge and experience exchange, as well as for ongoing collaboration. An informal agreement has been reached to share ideas and collaborate on topics such as temporal knowledge graphs, something that the Lab envisions doing in the near future. The partnership with DeepPavlov renders the Lab's machine learning workflow much more streamlined and object oriented. Notably, the resources of DeepPavlov will be used not only within the framework of this project, but will pay the way for a more sustainable and institutionalized partnership between the two institutions. The shared passion of pushing the boundaries of AI in both teams is something we will be building on to partner with technology pioneers and apply their knowhow in our pursuit of SDGs. The partnership model with DeepPavlov is featured in a blog post. Moreover, the DeepPavlof team reached out to the project with a suggestion to sign a Memorandum of Understanding the formalize the collaboration. The

Founder and Leader of DeepPavlov will visit the Lab on 10 September 2021 to sign the MoU and discuss the next steps of long-term sustainable cooperation between the two institutions.

8. COMMUNICATION AND VISIBILITY

During the course of its implementation, the Project has worked closely with several key institutional partners, bringing together various sectors and networks both on local and international levels. Key achievements of the Project are the knowledge products developed by the Lab, presented as follows:

1. To raise awareness about ***Travelinsights.ai*** online platform, a ***blog post*** was developed and posted on one of the biggest public policy innovation communities — ***Apolitical***.

2. An academic ***paper*** with the findings from the behavioral intervention in healthcare aimed at increasing participation in a nationwide cervical cancer screening program was submitted to **Management Science** scholarly journal in 2020. Moreover, the "Cervical cancer screening invitations in low and middle income countries: Evidence from Armenia" paper was published in Social Science & Medicine journal in March 2021.

3. The Lab team has successfully finalized the **"Increasing Tax Compliance in the Republic of Armenia through a Behavioral Experiment."** The aim of the experiment was to test the impact of low-cost behavioral interventions on tax compliance in the Republic of Armenia as a complementary measure to conventional policy instruments (i.e., costly audits and fines). The results of the experiment are available in the summary as well as in ***infograph.***

4. One of the underlying principles of the Lab is to make sure that all the products are created with the user in mind. The SDG Lab team came up with a strategic solution to build an in-house capacity of design thinkers who would always ensure the human factor in the solutions. As a result of this initiative, the **design thinking** team managed to make extensive research on design thinking methodologies and come up with its own set of principles.

   Some of the lessons learnt are documented in the blog posts available on the Lab's ***Medium*** page and are being distributed through the Lab's social media channels. In fact, one of the pieces has been ***retweeted*** by the UNDP Administrator Achim Steiner. The Lab has recently shared a ***piece*** on the importance of empathy and real human needs while addressing COVID19 crisis. In our latest ***blog post*** the Lab has addressed the Government-citizen divide in behavior changing policies. **A Design thinking toolset** was developed to be in tune with the local context and with the peculiarities of the public policy innovation problems that the SDG Lab team generally deals with.

5. The Lab was highlighted — for disrupting traditional policy making in Armenia — in Asian Development Bank's latest publication on Strategic Foresight "***Futures thinking in Asia and the Pacific***" in April 2020 (p. 14).

6. Armenak Antinyan, the SDG Lab's Behavioral Insights team Lead and Professor at Zhongnan University of Economic and Law, presented the results of our Healthcare RCT aimed at increasing the participation in a nationwide cervical cancer screening program during the 7th Workshop in ***Behavioral and Experimental Health Economics*** in Innsbruck. The experiment received positive feedback from academia and policymakers.

7. The SDG Lab team participated in a 3-day workshop "***Behavioral Insights Applied Live Academy"*** with the UK's Behavioral Insights Team. During the workshop, the team had a chance to learn from the best in the field, put their knowledge into good practice and design behavioral experiments with fellow policymakers representing the education and employment sectors.

8. The Project presented the Lab and its ongoing activities at the "***Governments in Bosnia and Herzegovina on the Digital Transformation Journey"*** event organized by UNDP in Bosnia and Herzegovina. During the panel discussion we shared the details of our Lab's innovative solutions for fighting COVID19 with our UNDP and UN colleagues as well as policymakers. The dynamic panel was a great opportunity not only to share our lessons learned but also to learn about good practices from around the region as well.
9. In August, the Project Team an online presentation of its projects to the Chargé D'affaires of the UAE Embassy to Yerevan Ms. Ahlam Rashed Al Salami. The Lab covered its flagship projects and latest achievements in behavioral science and some of its data products. As a result of the event, various directions for wider cooperation with UAE Embassy to Yerevan were identified.

10. The Lab was interviewed by one of the leading media outlets in Armenia — ***Mediamax*** — and presented the ongoing activities and the support provided to the Government during the pandemic.

11. A working paper on randomized controlled trial to test several interventions to reduce disposable plastic bag purchase in Armenia was published under the auspices of the Department of Economics of the Università Ca' Foscari Venezia. **Working Paper:** Take me with you! Economic Incentives, Nudging Interventions and Reusable Shopping Bags: Evidence from a Randomized Controlled Trial

12. SDG Monitor website.

13. On February 25, SDG Lab team held **a co-design session** named “Improving the written correspondence with the citizens by applying human-centered design principles" within the framework of our AI4Mulberry project — aimed at improving the citizen-government correspondence process and resource optimization. During the session, we identified the top challenges in this process and came up with solutions with the representatives from the DPM office, Ministry of Health, Ministry of Education, Science, Culture, and Sport, and VXSoft.

14. On 18 February, the SDG Lab presented its **"On Increasing Tax Compliance through Behavioral Insights: Experimental Evidence from Armenia”** behavioral intervention results to the representatives of the State Revenue Committee. This experiment was conducted within the framework of the State Revenue Committee of Armenia- UNDP in Armenia cooperation.
15. A **blog post** sharing our experience of collaboration with the Deep Pavlov Project team at Neural Networks and Deep Learning Laboratory at Moscow Institute Physics and Technology. The piece is showcasing how such collaborations are critical because they enable a mutually rewarding opportunity to leverage community knowledge and open-source datasets for positive public change. Moreover, in our case it also meant doing cutting-edge public policy analysis and having unprecedented data access for experimentation.

16. The Lab team has also revived the ***blogs*** section of the SDG Lab website and ***Fishtalks*** format— inspirational talks which tend to promote a more adaptive and learning-oriented approach within the Lab team to achieve better results.

Digital communications

The key medium of communication is social media, the most active and engaging being Facebook. Since the beginning of the project, the *Facebook* page reached around 1,990,959 people, has 4437 page likes and 4555 followers. The page features posts covering activities of the Lab, important meetings, and various online events relevant to the Lab.

9. FINANCIAL MANAGEMENT

Output	Donor	Initially budgeted	Budgeted following the budget revision[4]	Delivered
Output 1: Increased use of environmentally friendly practices as a result of behavioral experiments.	Russia-UNDP Trust Fund for Development	USD 118,000	USD 211,859	USD 211,859
Output 2: Increased availability of data for evidence-based policy and decision-making		USD 129,000	USD 213,965	USD 213,965
Output 3: Enhanced capacity of National SDG Champions in innovative research methods and skills.		USD 141,000	USD 158,370	USD 158,370
Output 4: Successful model for accelerated implementation and		USD 440,000	USD 477,849	USD 477,849

[4] The project kicked off on 4 May 2018 with a total budget of $1.000.000 to be implemented until 1 May 2020. USD 750,000 was allocated to the Lab and USD 250,000 was allocated to R2E2 for the implementation of Output 4.

The virtual project board meeting was convened on 26 November 2019 following the Steering Committee meeting of the project donor Russia-UNDP Trust Fund for Development, where the board discussed to a) approve top-up finding in the amount of $250,000 to be allocated to the Project for core activities of the Lab in Y2020 b)extend the project from May 2020 to 31 December 2020 following the request of UNDP Armenia office and revise the budget adding the new allocation and extension period. The board endorsed the project to proceed with proposed amendments. Following the approval of the board, the top-up funding in the amount of $250.000 has been transferred to the Project and additional budget revision was done to reflect the total funding of USD 1,250,000. To adjust the scope of the project to the new amendments, the Project Document has also been reviewed to include new components and reflect the no-cost extension from May 2020 to 31 December 2020.

financing of Goal 7 (Affordable and Clean Energy) is designed and tested.				
Output 5: Implementation, monitoring and evaluation		USD 172,000	USD 187, 957	USD 187, 957
TOTAL:		**USD 1,000,000**	**USD 1,250,000**	**USD 1,250,000**

Submitted by: Tigran Tshorokhyan, SDG Innovation Lab Lead

Cleared by: Tatevik Koloyan, Innovation & SDG Finance team leader (CO QA)

Cleared by: Mihaela Stojkoska, Deputy Resident Representative (CO Official)

Date: 30 September 2021

10. ANNEXES

10.1 Project performance data

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE			TARGETS		DATA COLLECTION METHODS & RISKS
			Value	Year	Year 1 May 2019	Year 2 December 2020	Results May 2021	
Output 1	**Increased use of environmentally-friendly practices as a result of behavioural experiments.[5]**							
1.1: Solar water heating and PV installations are increased in the population of interest	*1.1.1% of installed solar water heaters and PVs in the population of interest*	*Official statistics, private company statistics and baseline and*	*1 % of the population has solar water heaters and PVs*	*2017*	*2% penetration rate in the population of interest*	*3%*	*N/A*	*Official date sources, annual primary data collection*

[5] In parallel with reviving Component 4 of the Project together with R2E2, the Project conducted a qualitative research among target populations in Shirak and Gegharkunik regions. The success of the R2E2 revolving fund was unprecedented and the "solar ambassador" effect drove the installations of solar panels and water heaters at an accelerated rate. With more installations and more talk on the new technology, the ambassadors led their communities by example, even without an intervention. In other words, the "experiment" happened organically without much external intervention. This behavioral intervention was consequently substituted with another behavioral experiment aimed at reducing plastic consumption during shopping at the supermarket, with significant results detailed above.

		endline surveys						
	1.1.2 Price of the solar water heater and rooftop PV in the population of interest	*Private company statistics*	*1000 (solar water heater); 2-3 kW per household (800-1000$ per kW in average)*	*2018*	-	-	*N/A*	
1.2: Wasteful water consumption is decreased in the population of interest	*1.2.1 Quantity of drinking water consumed per household (m^3)*	*Private company statistics (Veolia)*	*n/a - to be set*	*2017*	-	*5% decrease*[6]	*N/A*	*Baseline household survey to understand the socio-demographic characteristics of treatment and control groups, data from water supplier company.*

[6]In other countries (for instance Costa Rica) a similar intervention resulted in 4-6% decrease in consumption of drinking water.

1.3: An on demand behavioural insights facility is set up within the Lab	*1.3.1 # of SDG challenges treated at the behavioural insights facility*	*Project logs*	*0*	*2018*	*1*	*1*	*4*	*Project progress reports*
	1.3.2 # of behavioral experiments carried out	*Project logs*	*0*	*2018*	*1*	*2*	*4*	*Project progress report*
	1.3.3 % of increase in the uptake rate of cervical cancer screenings	*Project logs*	*0*	*2018*	*10%*	*-*	*461% (letters) 667% (letters + reminder)*	*Project progress report*
	1.3.4. % of increase in tax compliance among turnover taxpayers	*Project logs*	*0*	*2018*	*-*	*5%*	*13.7% (turnover declarations) 10.6% (tax declarations)*	*Project progress report*
	1.3.5 # of policy insights generated	*Project logs*	*0*	*2018*	*1*	*2*	*4*	*Project progress report*
	1.3.6 digital service standard submitted to the	*Project logs*	*0*	*2018*	*-*	*1*	*0*[7]	*Project progress report*

[7] See page 9, "Digital Service Standards" section.

	Government for approval as a binding document							
	1.3.7 % of increase in the uptake rate of digital services	*Project logs*	*0*	*2018*	*-*	*5%*	*28.4%*	*Project progress report*
Output 2	**Increased availability of data for evidence-based policy and decision-making.**							
2.1: Increase in Big Data-generated policy insights	*2.1.1 # of policy insights generated*	*Project logs*	*0*	*2018*	*1*	*1*	*2*	*Project progress reports*
	2.1.2 # of Big Data sources analysed	*Project logs*	*0*	*2018*	*1*	*1*	*7*	*Project progress report, interviews with stakeholders*
	2.1.3 # of partnerships with Big Data holders	*Project logs*	*0*	*2018*	*1*	*1*	*3*	*Project progress reports, MoUs*
	2.1.4 # of platforms developed	*Project logs*	*0*	*2018*	*1*	*1*	*2*	*Project progress reports*
	2.1.5 % of time saved on categorizing digital correspondence with the citizens and the Government	*Project logs, progress reports*	*0*	*2018*	*-*	*20%*	*99.7%*	*Project progress reports*

	2.1.6 # of annotation guidelines developed for the Armenian Language Treebank	*Project logs, progress reports*	*0*	*2018*	*-*	*1*	*1*	*Project progress reports*
	2.1.7 # of tokenized words from digital correspondence between citizens and the Government	*Project logs, progress reports*	*0*	*2018*	*-*	*15000*	*150,000*	*Project progress reports*
	2.1.8 universal dependency treebank from the digital correspondence between citizens and the Government	*Project logs, progress reports*	*0*	*2018*	*-*	*1*	*1*	*Project progress reports*
	2.1.9 # of linguistic data banks, dictionaries for most commonly researched tasks in natural language processing	*Project logs, progress reports*	*0*	*2018*	*-*	*2*	*2*	*Project progress reports*
2.2: An SDG-specific monitoring mechanism, the SDG	*2.2.1 Digital platform of the SDG Barometer*	*Project logs*	*0*	*2018*	*-*	*1*	*1*	*Secondary research, project progress report*

Barometer, is scaled up	*2.2.2 # of SDGs reflected in the barometer*	*Official reports, project logs*	*0*	*2018*	*1*	*3*	*1*[8]	*Secondary research, project progress report, website*
Output 3	**Enhanced capacity of National SDG Champions in innovative research methods and skills.**							
3.1: A series of hands-on co-creating workshops on behavioural experimentation in policy making is designed and piloted for SDG Champions	*3.1.1 # of participants in the workshop/s*	*Project logs*	*0*	*2018*	*15*	*15*	*73*	*Secondary research, project progress report*
3.2: A series of hands-on co-designing workshops on Big Data use in policy making is piloted for Armenia's SDG Champions	*3.2.1 # of participants in the workshop/s*	*Project logs*	*0*	*2018*	*10*	*10*	*72*	*Secondary research, project progress report*
3.3: Research exercises on alternative finance and blockchain are	*3.3.1 # of counterparts involved in the research exercise/s*	*Project logs*	*0*	*2018*	*4*	*4*	*N/A*	*Secondary research, project progress report*

[8] See page 10, "SDG Monitor" section.

designed and piloted for SDG Champions[9]	*3.3.2 # of ideas generated on the application of alternative finance and blockchain in Armenia*	*Project logs*	*0*	*2018*	*1*	*1*	*N/A*	*Secondary research, project progress report*
3.4: An on-demand training facility is set up within the Lab to socialize the Lab's most advanced public policy tools	*3.4.1 # of co-creating workshops in to-be-identified areas*	*Project logs*	*0*	*2018*	*1*	*1*	*2*	*Secondary research, project progress report*
Output 4	**Successful model for accelerated implementation and financing of Goal 7 (Affordable and Clean Energy) is designed and tested.** *Pilot 1 - Competitive financing instruments for facilitating "Green energy" production at household level in Armenia's vulnerable communities*[10]							
4.1. Sustainable financing mechanism for installation of solar water heaters and PV systems by inhabitants of targeted regions is	*4.1.1 - # of households in the target regions that are financed to install solar water heaters and PV panels from revolving fund through partner banks*	*Official statistics, private company statistics and baseline and*	*-*	*2018*	*300*	*500*	*390*	*Official data sources, annual primary data collection*

[9] February 2019, the Lab established a Data Hub within its premises to conduct a research/feasibility study on leveraging new technologies and AI for crop yield estimation and forecast. A detailed cost-estimation was provided on several data collection mechanisms on different levels, such as through satellite, drone, etc.. Based on the findings of the research and the cost estimations, and to increase the project impact, the Government and the project decided to allocate the funding from the Russia-UNDP TFD for the implementation of other project activities and to allocate part of the co-funding to UNDP ImpactAim Agri-Tech incubator for the implementation of this component.

[10] Updated result figures as per the R2E2 report.

available and functional.		*endline surveys*						
	4.1.2 # of households with 4 or more children in the target regions that benefits from significantly reduced interest rates	*Official statistics, private company statistics and baseline and endline surveys*	*0*	*2018*	*150*	*310*	*192*	*Official data sources, annual primary data collection*
4.2. Increased awareness on benefits of renewable energy and energy efficient technologies and promotion of "Green jobs" in the target regions.	*4.2.1 % of population realising socio-economic benefits of using solar energy solutions at their homes*	*Official statistics, private company statistics and baseline and endline surveys*	*5%*	*2018*	*15%*	*25%*	*24%*	*Official data sources, annual primary data collection*
	4.2.2 # of people self-employed in the sector	*Project logs*	*-*	*2018*	*20*	*40*	*35*	*Annual primary data collection*

10.2 Media coverage report

Media-coverage-report_2021.pdf

10.3 Statistical annex

Armenia_Innovative Solutions for SDGs_St

10.4 Evaluation reports if available

N/A