Japan SDGs Innovation Challenge for UNDP Accelerator Labs
[India] ACCELERATOR LAB INNOVATION CHALLENGE

Target SDGs	1,2,13 & 17
Sustainable development challenge that A-Lab is working on.	India is the world's fifth-largest economy with a total GDP of USD $2.94 trillion and expected to become the world's third largest economy by 2025. India has halved the incidence of multidimensional poverty by lifting 271 million out of poverty during 2005-2016[1]. However, the country is still facing challenges such as rising inequalities, with higher concentrations of poor in rural areas, and threats posed by climate change to livelihoods. From global perspective, the progress of the world to meet the SDGs largely depends on India's progress. UNDP India's Country Programme Document addresses three priorities: eradicating poverty; structural transformations, and; building resilience. As part of the "**building resilience**" work programme of UNDP India, the Accelerator Lab is currently working on the focal areas of **Climate Resilient Livelihoods and Air Pollution.** Under the Climate Resilient Livelihoods portfolio, the Lab is striving to enhance the resilience of small-holder farmers. India has 136 million families (more than 50% of total population) dependent on agriculture, 80% of whom are small farmers with less than 2 hectares of land. **More than a fifth of the small farm households are below poverty**.[2] Resilience of small farmers in India is important from the context of multiple sustainable development goals. **The Specific Challenge Statement:** <u>How to ensure equitable returns to spice growing farmers of India?</u> India is the largest producer (and consumer) of spices in the world- with export value worth USD $ 2.8 billion every year. One of the major challenges that small farmers face is to secure their "fair" share of income. This is due to difficulty in assuring quality at every stage of the value chain and presence of a large number of middlemen who take a major share of profits from exports[3]. This is further aggravated during the current COVID pandemic when the agriculture supply chains are strained, less transparent and working sub-optimally during this period. The application of blockchain technology to enable traceability across the agricultural value chain is a plausible solution which the Lab is seeking to explore.
Learning questions that A-Lab is trying to answer related to this challenge.	Given the challenge of lack of traceability in agriculture commodities and its negative implication to small farmers' income, the India Accelerator Lab intends to co-design and implement a farmer-centric, transparent and robust blockchain platform for Indian spices, while leveraging existing systems and technologies available among our development partners. We expand on this more in the following section as well.

[1] Global Multidimensional Poverty Index (MPI), 2018
[2] Doubling Farmers Income, NITI Aayog, 2017
[3] https://indianspices.com/quality/quality-standards/guidelines-quality-improvement.html

	Through this development challenge, our Lab will address the following learning questions– ✓ What incentive structures and systems work better for farmers' adoption of blockchain platform? ✓ What is the **value addition of blockchain platform** in terms of: o Reducing food adulteration of spices o Improving export potential of spices o Enhancing small farmer's income o Enhancing transparency and accountability across all stakeholders in the value chain o Improving resilience of farmers to market shocks and weather ✓ What is the potential to scale-out the blockchain initiative to new commodities and geographies? ✓ What is **return on investment** of blockchain platform and how do economies of scale pan-out for private sector? ✓ What **market incentives and policies** promote fair trade practices and provide better opportunities for the private sector investments in blockchain? ✓ What is the scope of extending blockchain platform to other agriculture commodities and other sectors like health, fintech, public records etc.?
Target beneficiaries and stakeholders that A-Lab is serving related to these learning questions and the development challenge.	For this challenge, the lab focuses on building resilience of small and marginal spice-growing farmers of India. The learning questions are addressed to the wider development ecosystem working with farmer producer organizations of spices – ranging from grassroots organizations to policy think tanks and private sector: ✓ **Farmer Producer Organizations (FPO):** FPOs will learn which incentives (compliance mechanisms, patronage dividends etc.) work better for onboarding farmers on blockchain platform. ✓ **Spices Board:** As government agency entrusted with export of spices, the learning on improvement in exports of spices (or reduction in rejection of exports) through blockchain platform is very important. ✓ **Private Sector:** Technology firms will be interested in business potential through improved exports and fair-trade practices for Indian spices, business model with FPOs, economies of scale and return on investment of blockchain platform will be important learning for private sector. Application of blockchain technology beyond spices to other agriculture commodities and other sectors like health, fintech, construction etc., will also be an important learning for private sector including Japanese technology firms. ✓ **NITI Aayog:** As apex think tank of Government of India advising on public investments in agriculture (approx. $47 billion each year), NITI Aayog is interested in both - potential of blockchain to improve farmer's income

	as well as market incentives and enabling ecosystem for private sector partnership in blockchain for agriculture. ✓ **UNDP Global Accelerator Labs Network:** The world's largest learning network would be interested in generalizable learnings for scale-out of this initiative to new geographies - countries of global south keen on strengthening agriculture value chains.
Description of the problem to Japanese partners who may wish to work with A-Lab.	India is the world's fastest-growing large economy, having outpaced China over the past year. At the same time the population is growing rapidly. The middle-class population in India has doubled in size to 600 million people between 2004 and 2012[4]. The progress of the world to meet the SDGs largely depends on India's progress. Given the vast population size, rapidly growing free-market economy and a sharp focus on leveraging innovations for SDGs, **India is undeniably the primary choice for being a testbed for innovations**. Agriculture is a very important economic sector for India in terms of both GDP and employment generation. In FY19, export of agricultural and processed food products totaled US$ 38.49 billion. India's Agriculture Export Policy, 2018 aims to double farmers' income by 2022 by doubling agricultural exports and integrating Indian farmers to the global value chain[5]. One of the significant agricultural commodities in terms of share in revenue generation for Indian farmers is spices. Indian spices, though very much in demand in the global market have several factors that affects the overall quality and export potential. Issues such as **pesticide residues** and **inadequate drying methods**, leading to, among other things, **aflatoxin** problems. Food contamination and the resulting diseases are of great concern for prospective buyers both in domestic as well as foreign markets. **Traceability platforms** based on digital innovations have a great potential in effectively monitoring and enforcing quality control at every stage of spices value chain including **farming, harvesting, processing, packaging and distribution**. Blockchain offers an opportunity to **increase transparency and accountability** across the value chain to **enhance the quality assurance and export potential** of spices. Due to the transparency of the process, farmers are also directly able to access exporters and regulators which enhances their chances of profits by minimizing the role of middlemen. Japan is a global leader in developing and adopting blockchain applications. Even as early as in 1990s, Japanese companies have developed breakthrough innovations such as the **QR code** that revolutionized the field of traceability. Japan's technological prowess in blockchain and the long experience of

[4] https://qz.com/india/742986/600-million-people-are-now-part-of-indias-middle-class-including-your-local-carpenter/

[5] https://www.ibef.org/exports/agriculture-and-food-industry-india.aspx

	developing and deploying blockchain applications by Japanese firms will be of great value for Indian spices market. India and Japan share robust ties with cooperation in areas of defence, science and cooperation and trade. In 2006, India and Japan upgraded their relationship to **'Global and Strategic Partnership'**. In 2018 during the visit of the Prime Minister of India to Japan, Japan-India Digital Partnership was launched, to further areas of cooperation and innovations focused on "**Digital ICT Technologies**". Given the strategic global partnership between Japan and India with a special focus on digital technologies in the recent past, and Japan being a pioneer in blockchain technology, the India Accelerator Lab aspires to partner with Japanese technology firms to **co-create a robust national-blockchain platform** to enhance smallholder farmer's income in India. Presently, testing or adoption of blockchain applications is still in a very early stage in India. **A successful large-scale execution of PoC (Proof of Concept) platform on blockchain will be a game changer**, on one hand for the **digital transformation of businesses**, and on the other **doubling of the income of small farmers.**
Research done on current market solutions that informs this work as needing innovation.	We have undertaken a thorough research to understand the bottlenecks in spices value chain in India, including: ✓ **Identifying major challenges** involved in implementing traceability systems such as – adoption of new technology and protocols, compliance mechanisms, incentive structures for all the stakeholders ✓ **Solutions mapping** of various traceability systems that have been developed in the recent past in India and globally. This includes solutions like blockchain for coffee (Coffee board of India), blockchain for honey (IIT-Delhi India), blockchain for chocolate (UNDP Ecuador) etc. ✓ **Stakeholder consultations** involving government, chambers of commerce, farmer federations, regulatory agencies and key players involved in developing e-commerce as well as traceability platforms for Indian spices sector. As a result of the research and consultations, we learnt about the complicated dynamics of multiple partners involved in spice trading. Among these stakeholders the most notable one was **Spices Board** under Ministry of Commerce and Industry, Government of India. It is the apex body mandated with promoting export of spices from India. In our interactions, we identified an opportunity through their past project- **eSpice Bazaar (2015)** wherein an e-commerce platform was already developed for providing market linkages for spice farmers. They expressed a need of an additional layer of quality assurance through blockchain technology which could help in going the extra mile and enhance the profitability of farmers. The **opportunity unlocked** is the **value addition** that blockchain technology has to offer. In this case, it would translate to increasing the transparency of the process and enable the connection of farmers to the export markets directly.

	Thus yielding increase in income. Integration of blockchain to eSpice Bazaar will also facilitate its **national scale up covering all states in India** that are involved in spices processing. Given the potential of national scale-up, partnership with Japan will provide stronger technical solutions to strengthen the blockchain platform, and further enhance the bilateral science-technology cooperation and business partnerships.
The way Japanese science/technology /methodologies could advance A-Lab's work on this problem.	Given the enormous technical expertise and strong innovation ecosystem pertaining to blockchain in Japan, the involvement of Japanese enterprises in this blockchain PoC platform for Indian spices will offer an excellent entry point for a win-win partnership between India and Japan. Japan is a global leader in developing and adopting blockchain applications. Leading Japanese corporations including Hitachi, Sony and Fujitsu, are actively participating in blockchain research and developing tailor-made solutions essential for the future. Regulatory bodies in Japan recognize blockchain as revolutionary technology and support the development of blockchain industry through progressive regulations. India has a lot to learn from the experience of Japan in developing and deploying blockchain platforms. There are several use cases well established in Japan such as the digitization of social benefits program of the municipality of Kakegawa with a population of 115,000 people using blockchain to protect data and prevent fraudulent transactions; development of a transparent, tamper-proof intellectual property rights management ecosystem powered by blockchain and so on[6].
Experimental and/or exploratory component.	The exploratory component is envisioned as follows: ✓ Conduct stakeholder mapping and arrive at strategic partnerships with diverse stakeholders for – community ownership, technology, implementation, knowledge ✓ Leverage UNDP's presence in states and relation with state governments ✓ Co-design systems with partners including farmer producer organizations The experimental component is envisioned as follows: ✓ Set up case-control trials (with and without blockchain intervention) with 3000 farmers spread across 4 states of India to objectively evaluate the value addition of blockchain to farmer's livelihoods. ✓ Ensure Quality Control and Assurance in implementation in partnership with GS1 (global standards organization) ✓ Share knowledge and insights with development partners (government agencies, think tanks, policy makers, innovation networks, research community)

[6] https://www.forbes.com/sites/japan/2019/06/26/japans-blockchain-sandbox-is-paving-the-way-for-the-fintech-future/#6ab43db33279

Description of A-Lab portfolio.	The lab has developed **three distinct strategies** to address the innovation needs of a large and diverse country like India. We are working at three levels - **policy, institution and technology**. The India Accelerator **Lab is successfully leveraging all three types of scaling strategies namely Scaling Up, Scaling Deep and Scaling Out** at the policy, institutional and technology levels respectively. **At Policy Level** (**Scaling Up - Impacting laws and policy**) ▪ The lab is partnering with the national think tank **- NITI Aayog** and their national innovation mission to build a conducive innovation ecosystem for various stakeholders. **At Institution Level** (**Scaling Deep** - **Impacting culture within organization**) ▪ The lab is working working towards embedding innovations within the Central/State government institutions for accelerating the progress on SDGs. One of the success was setting up a **grassroots innovation cell** in Telangana (a state in southern India)- a **first-of-its kind** in India, anchored within the state government's innovation ecosystem. More such innovation cells will be set up in partnership with a local partner- **GIAN (Grassroot Innovation Augmentation Network).** **At technology level (Scaling Out - Impacting greater numbers)** ▪ We are leveraging the power of new and emerging technologies such as Blockchain, Artificial Intelligence, Internet of Things (IoT) for addressing complex development challenges in India. The proposed national blockchain platform is aligned with this piece of work. Other initiatives under this umbrella are as follows: • An **Artificial Intelligence platform using geospatial data has been established to help the regulators monitor air pollution** over 36,000 brick kilns in Northern India. • As part of the COVID-19 response strategy, the Lab has designed and delivered an innovative game called "Corona Champion". The game is an innovative medium to bust myths and spread awareness related to COVID-19 while offering an immersive experience to the users.
Information publicly available on A-Lab's work on this. And previous or ongoing experience country office have working with Japanese partners.	The work of India's Accelerator Lab has been discussed in various print and digital media ever since its launch in November'2019. Our concept on Blockchain for Spices was discussed on various national and international platforms including the **High-Level Political Forum (HLPF)** in June 2020. A blog written by the India Accelerator Lab on Blockchain for Indian agriculture, in partnership with researchers from University of Washington, Seattle and University of Warwick, UK was very well received by key regulatory agencies in India such as the Coffee Board of India. This work has generated keen interest from various government counterparts. UNDP India is best positioned to take forward the partnership with Japan because of its strong bilateral ties with the government of Japan and Japanese private sector, long-standing credibility as a partner of choice at the national and state levels with government, civil society organizations and private sector. Our

	team's expertise in leveraging technological innovations, experience of working with various Japanese stakeholders in Japan and abroad is an added advantage. In terms of programmatic cooperation with the government of Japan, the Japan Supplementary Budget (JSB) is supporting UNDP India in COVID-19 response for enhancing the social protection schemes and livelihood recovery programmes. This is being implemented in 14 States of India. One of our implementing partners is a private company affiliated with Mitsui. UNDP India was also part of a regional programme to strengthen school preparedness for Tsunami in Andhra Pradesh. As part of this project, UNDP has developed 18 school disaster management plans, conducted mock drills (reached 7000 students) and strengthened school disaster management teams in the coastal areas. The country office has also started to explore potential partnership with Japanese companies such as Muji and Hitachi. The partnership with Japanese partners is being strengthened for the past one and half years because UNDP India team has the distinct strategic advantage of having members with a deep understanding of the Japanese science and technology and business ecosystem. UNDP India is currently represented by a Japanese national, Shoko Noda, who brings experiences in partnering with key stakeholders, including media, in Japan as well as working in Mitsubishi Research Institute (MRI) prior to joining UNDP. The Accelerator Lab team also has a member, who had undertaken doctoral research at Waseda University, Tokyo and has sound understanding of Japan's national innovation system. The team is also benefitting from the deep understanding and knowledge of the Japanese private sector of Mr. Yuta Kono who will soon assume his responsibilities as Junior Professional Officer (JPO) at the UNDP India office. https://www.thehindu.com/news/national/undp-launches-accelerator-lab-in-india-to-work-on-tackling-pollution/article30108154.eceThe team's recent blog on this topic: https://in.news.yahoo.com/undp-launches-accelerator-lab-india-130306965.html https://www.youtube.com/watch?v=B8LVlKbWACw&t=9s https://youtu.be/DaDQ4_G-eMg https://www.in.undp.org/content/india/en/home/blog/Bridging_the_Gap_Is_Blockchain_the_big_next_thing_in_Indian_agriculture.html