

## CASE STUDY

How transparent, digital rice trading is strengthening livelihoods in Southeast Asia and mitigating the effects of climate change



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### 1.1 Introduction

Comprised of eleven countries and over 420 million residents, Southeastern Asia (SEA) is a global agricultural hub. Agricultural production contributes to both local and export markets, advances regional food security and sustains farming families. However, shifts to facilitate economic growth in industry and services, along with the adverse effects of climate change, pose a significant challenge to SEA agricultural production. In 2016 alone, the region reported a negative growth rate of 0.8%.<sup>1</sup> Consequently, despite maintaining large exports, SEA is struggling to achieve self-sufficiency in agricultural commodities such as rice.

Approximately 30% of the world's rice harvest originates in SEA.<sup>2</sup> With rice production accounting for 10% of global methane emissions and using 40% of the world's irrigation water,<sup>3</sup> unsustainable practices are hindering long-term production, local economic opportunities and food security. In fact, although rice contributes to 50% of the region's caloric intake,<sup>4</sup> roughly 61 million people in SEA are undernourished while an additional 33 million are severely food insecure.<sup>5</sup> Sustainable local agriculture is a pathway for inclusive growth by protecting current and future generations via the reduction of hunger and promotion of good health, responsible production, action against climate change and diminishing inequalities.

Seeking to address this, Digital Commodity Exchange (DCX) Group and Fujitsu Limited collaborated to revolutionise SEA's agricultural industry through an equitable, accessible and transparent digital rice trading platform. An industry first, it is designed to deliver greater profits to small farmers, reduce waste and maximise social good.



## 2.1 Ricex: Digital solution for equitable access and collaboration in the global rice market

The traditional rice market is highly fragmented and the lack of transparency hinders fair and equitable access to the marketplace and efficient trade practices.<sup>6</sup> Digitally enabled ecosystems have the potential to overcome such market inefficiencies and create greater value for all stakeholders. In 2019, DCX partnered with Fujitsu to develop the first digital platform for global rice trading, the Rice Exchange Platform (Ricex). Ricex leverages blockchain technology to provide stakeholders a platform to build trustworthy collaborations and transparency within the global rice market.<sup>7</sup>

Ricex's digital marketplace reduces the administrative burden of rice trading, making the global rice market more accessible to small farmers and improving productivity throughout the supply chain. Cost reductions achieved through this efficient platform benefit sellers, buyers and consumers alike. The creation of new efficiencies also reduces food waste through improvements in transportation and storage of rice.<sup>8</sup> In addition, the platform encourages sustainable rice cultivation practices through various stakeholder initiatives and incentives.<sup>9</sup>



3.0

# Built for All: Applied



### 3.1 Pillar One: A level playing field for work and competition

With the majority of global rice production originating from smallholders with 'little or no access to credit, training, or...services', the ability to establish the market relations necessary for the reliable and transparent trade of rice is inhibited.<sup>10</sup> Ricex demonstrates the value of fair footing amongst stakeholders in a market where limited relations contribute to market inefficiencies, namely by removing such inhibitions through improved digital access to industry resources. Accessing the resources necessary for sustainable and transparent trading is a significant barrier to levelling the playing field within the global rice industry.<sup>11</sup> Smallholders struggle to develop relations with reliable shippers that are willing to transport small orders, while predatory practices by insurance companies can leave buyers in the lurch when their shipments are damaged.<sup>12</sup> To overcome these hurdles, Ricex partnered with industry leaders. Partners such as Intertek Group and Cotecna provide quality assurance and inspection services throughout the shipping process.<sup>13</sup> Ducat Maritime, a premium shipping service that specialises in the rice route between Asia and West Africa, offers parcel services for small or medium-sized bagged loads tailor-made for smallholders.<sup>14</sup> Siaci Saint Honoré, an insurance consulting and brokerage firm based in Switzerland, provides users with a dedicated maritime insurance policy that is linked to loss prevention measures such as dry bags and coverage of moisture-induced spoilage.<sup>15</sup> These platform-exclusive partnerships enable Ricex's users to digitally access reliable resources that would otherwise be out of reach.<sup>16</sup>

The lesson learned here is that service accessibility is essential to market competitiveness. A lack of access to essential industry services can render the costs of entering said industry prohibitively expensive.<sup>17</sup> By providing digital access to reliable services through platform-exclusive partnerships with tried-and-true partners, Ricex guarantees sellers and buyers will succeed or fail based on their own merits.

### 3.2 Pillar Two: Equitable access to resources and opportunities

Ricex demonstrates the importance of equal access to emerging opportunities. A lack of reliable and transparent infrastructure reinforces the global rice industry's status as a thinly traded market, with just 10% of global rice production traded internationally.<sup>18</sup> Due to the industry's regional concentration, production shocks and policy shifts can have crippling consequences for the market, with the imposition of rice export restrictions by India and Vietnam in 2007–2008 skyrocketing international prices by over 200%.<sup>19</sup> A readily accessible digital marketplace centred on reliable and transparent trading, Ricex encourages competitive pricing by enabling buyers and sellers to seek out the deals that suit them best regardless of geographic location.<sup>20</sup> As Fujitsu's blockchain technology is dependent on Microsoft Azure, which covers 'more global regions than any other cloud platform', Ricex is uniquely situated in its ability to empower actors within the global rice industry to take advantage of emerging opportunities that transcend geographic boundaries.<sup>21</sup>

In this way, Ricex teaches that ease of engagement is foundational to market health. When markets lack dependability and transparentness, they incur greater risks upon those who operate within them.<sup>22</sup> By decreasing operational risks through Fujitsu's blockchain technology, Ricex empowers users to engage with opportunities in 'new emerging markets in a secure and trusted environment'.<sup>23</sup> Reporting stakeholder savings of at least 20%, Ricex is an example of how emerging technology can substantially reduce the costs of emerging opportunities.<sup>24</sup>

However, there are opportunities for improvement. While access to emerging opportunities in the global rice market is effectively assured by Ricex, the digital connectivity required to access the platform is not. With regional internet penetration below 70%, most SEA states suffer from a lack of affordable and stable internet access.<sup>25</sup> This digital divide is acute for rural smallholders, who stand to benefit the most from the Ricex platform.<sup>26</sup> Collaborating with regional telecom providers on readily accessible digital infrastructure is an essential means through which Ricex could further align with Pillar One of the BFA framework.

### 3.3 Pillar Three: Collective stewardship of shared resources for future generations

Ricex facilitates the creation of knowledge networks to generate consensus and share best practices. Overcoming the ramifications of climate change for the rice industry necessitates communication and collaboration between stakeholders.<sup>27</sup> To that effect, Ricex has partnered with the UN Environment Programme, the International Rice Research Institute and various other public, private and civil society actors to develop the Sustainable Rice Platform (SRP).<sup>28</sup> The SRP's mandate is threefold, namely to

- a) improve smallholder livelihoods,
- b) reduce the social, environmental and climate footprint of rice production, and
- c) offer the global rice market an assured supply of sustainably produced rice to meet growing global demand.<sup>29</sup>

Through members such as Ricex sharing best practices centred around these shared goals, the SRP has created the Standard for Sustainable Rice Cultivation (SSRC). 'The world's first voluntary standard for sustainably produced rice', it is capable of reducing emissions by 25–50%, reducing water consumption by up to 25% and boosting smallholder income by 10–25%.<sup>30</sup> The SRP further approves qualified sustainable suppliers, with qualified users of the Ricex platform receiving digital verification statements that enable them to charge price premiums.<sup>31</sup>

In addition, Ricex is advocating through associations and lead investments in green and digital infrastructure. The global rice industry is carbon-intensive, possessing the same climate footprint as the international aviation industry.<sup>32</sup> By embracing Fujitsu's proprietary blockchain technology, Ricex has rendered digital infrastructure as the standard-bearer for global rice trading whilst simultaneously cutting down on the carbon-intensive excesses of the antiquated model of global rice trading.<sup>33</sup> Smart contracts have rendered the paper-dependent documentation and conduct of trades obsolete, while the ability to see and negotiate prices from multiple geographic locations in real time has eliminated the necessity of travel and courier services.<sup>34</sup> Through targeting smallholders as key platform users, Ricex further leverages its digital infrastructure as a means of exposing them to more sustainable practices via market linkages to sustainable value chains.<sup>35</sup>

Ricex highlights how stakeholder collaboration and communication is essential to the proliferation of sustainable best practices. Hubs such as the SRP are essential in this regard, as they enable stakeholders from various sectors of an industry to devise frameworks such as the SSRC. While such frameworks may be optional, tying the SSRC into the Ricex platform's operational ethos encourages broader adoption amongst users. The platform also showcases that digital market value transcends profits. While a digital market structure provides bottom-line savings through the elimination of costs associated with antiquated practices, it further achieves carbon savings due to the carbon-intensive nature of these practices. Digital markets further serve as platforms through which to introduce smallholders to sustainable practices through market linkages to sustainable value chains.

There remains an opportunity for growth under Pillar Three for Ricex. Exposure to frameworks such as the SSRC increases awareness of the practices necessary for a climate-smart global rice market, but exposure alone is not enough to guarantee adoption, especially amongst smallholders who face financial barriers.<sup>36</sup> To better align itself with Pillar Three of the BFA framework, Ricex could develop ties with actors in the climate finance sector.<sup>37</sup> Doing so would decrease the costs of sustainable practices for global rice market stakeholders, catalysing even the most isolated of smallholders to adopt them.<sup>38</sup>

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