Response to the Public Consultation on India Digital Ecosystem of Agriculture (IDEA)

Submission by IT for Change

June 2021

IT for Change

IT for Change's Response to the Consultation Paper on India Digital Ecosystem of Agriculture (IDEA) by Ministry of Agriculture & Farmers Welfare

Table of Contents

Summary

- **IDEA will prevent corporate capture of core structures of the digital agriculture ecosystem:** Digitalization in all sectors is being accompanied by platformization, as monopolisitc platforms make the rules of digital interaction in a sector and own most of its data. The only way to protect the key and sensitive sector of agriculture from such an extremely problematic fate is to develop an initiative like IDEA. This is IDEA's key appeal, and should be its main driving rationale.

- **Farmer centricity as the first and core principle:** While the IDEA document appears to claim farmers' centricity, the proposed plan and architecture often seem to be centered instead on private agriculture services. It should not be difficult to see that the two can mean very different things, and interests of private agriculture services may overlap with some interests of some farmers, but not all in either case. Every aspect and part of IDEA needs a thorough reassessment from a farmer centricity angle, keeping it as its core principle.

- **Decentralization and federation:** Federated architecture, again, is stated as a key principle, but we are not sure the cardinal values of decentralization and federation are taken in true the political sense of decentralizing power as per the principle of subsidiarity. When applying it, not only do states need to be the principle anchors or hubs of a decentralized IDEA, but also further means should be built for engaging Panchayati Raj bodies, and farmers' cooperatives and Farmer Producer Organizations (FPOs) directly into the system.

- **Farmers' community data and Data Exchange:** Much of data and data value is aggregate, but there is no mention of the all important collective or community data rights of farmers. Such rights are well explained and operationalized in the draft report of the Non Personal Data Governance Framework Committee. The data trust concept and mechanism coming from this report should also be incorporated in Data Exchange apart from the data market aspect which seems currently to be its exclusive function.

- **Public versus private roles in IDEA**: The main rationale of IDEA, as stated above, is to capture under public control the core roles of the digital agriculture ecosystem. This rationale gets defeated if the IDEA architecture employs Public-Private Partnerships (PPPs) to invite private players into such core roles. Building blocks and core services must be deemed 'public functions' and remain completely with governments. However, private sector participation in

the service layer must be encouraged, with suitable guidelines ensuring that farmers' interests remain center stage and the concentration of network power and data power in a few hands does not take place.

A note on 'our key observations' first highlights, in general, aspects of the consultation paper that may be better expanded, as well as some areas requiring caution and change. Answers to some of the specific questions raised in the consultation paper are in Part II**.**

Part 1: Note on our key observations related to IDEA

A. IDEA is needed to prevent corporate capture of core structures and controls of digital agriculture ecosystem

As all sectors are digitized and platformized, the key roles and controls of their operation have unfortunately largely resided with monopolistic corporate players, whether (speaking globally) we consider Uber in the transport sector, or Amazon in commerce. The same cannot be allowed in the agriculture sector in India, given its socio-economic and public interest importance, and the fact that it involves largely marginalized citizens. If we want the best of digital benefits to be realized in this key priority sector, the only option is for the public sector to own and control the core of the digital agriculture platform, or, at one higher level of hierarchy,[1] the entire digital agriculture ecosystem. It is in this regard that the conception of India Digital Ecosystem of Agriculture (IDEA), by the Ministry of Agriculture & Farmers Welfare (MoAFW), must be seen and appreciated, and its framers congratulated.

Since digital dependence and entrenchment can quickly become irreversible, the Ministry must move fast to implement IDEA. This is most important, even as this submission includes many critical propositions seeking changes of various kinds to the theory, practice and architecture of IDEA. The definite need for making these changes and improvements should however not slacken the urgency and speed with which the basic aims and principles of IDEA must be pursued and implemented on the ground. This dual challenge, including, very importantly, the task of listening much more to farmer groups and organizations, while not allowing the key control of an imminent agriculture digital ecosystem to slip away into monopolistic corporate hands, is something the Ministry will need to deftly and ably deal with, which we are assured it will be able to.

Most of our critical points stem from an analysis of the strengths of an IDEA kind of structure and system, and not its irrelevance or weakness. The very fact that such a system is going to be extremely strong requires us to move with much caution in its design and implementation, and through extensive

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1   In most cases of monopolistic platforms, platform-level and digital ecosystem-level controls are collapsed into one, which is a big problem. A plurality of inter-operable platforms is a must in all sectors, and certainly in a priority sector like agriculture.

participation of the most important stakeholder here, i.e. farmers and their representative groups.

The IDEA consultation paper is an important first step in establishing a long-term vision for sector-specific, horizontally and vertically integrated software platforms that can aid in government administrative operations in agriculture. The ecosystem architecture will help ensure that data in this core sector of the economy is available for strengthening the sustainability and operational efficiency and effectiveness of the sector, deepening public innovations, encouraging distributed entrepreneurship, and setting guard rails to guide the development of Indian agriculture in a rapidly digitalizing economy. IDEA marks an important intent to ensure that digital and data systems that undergird the agriculture ecosystem in India are operated by accountable stakeholders – protecting against large multinational corporations who are seeking to replicate totalizing platform models in the space. As digitization enters various facets of agriculture value chains (with or without government support), it is important to recognize that these value chains will be led by those who hold and control the most valuable data, and make the rules of interaction (what a platform essentially signifies). In the context of a rising number of proprietary protocols, infrastructures, and services, the conception of IDEA will help the government maintain long term neutrality and interoperability of agricultural information systems, to ensure that data power and network power do not get disproportionately concentrated. Various parts of IDEA will play fundamental roles, as digital systems to be deployed by the administrative bodies, as bases for agriculture data exchange, and as farmer-facing applications. The data generated in an agriculture digital ecosystem will thus be extremely susceptible to misuse, which a system like IDEA, with public interest ownership and control of its core, should be able to address.

The IDEA consultation paper serves as an introduction to the broad technical and institutional contours required to develop a digital architecture to support an ecosystem as complex and interconnected as that of agriculture in India. At the outset, we recognize the large and almost entirely novel undertaking that IDEA represents. The complexity of the challenges associated with developing IDEA are heightened by the large divide in digital literacy among India's farming community, largely composed of small and marginal farmers. In this sense, IDEA (and the many 'building blocks' it entails) is distinct from initiatives such as the Unified Payment Interface (UPI), the Indian Urban Data Exchange (IUDEx), and the National Digital Health Blueprint (NDHB), even though specific aspects of the paper may map to these initiatives independently (Unified Farmer Service Interface, Agriculture Data Exchange, etc). This context must inform the technical design of the system, but also the process followed for its development and deployment at a national scale.

B. 'Farmer centricity' as the first and core principle

Given the situational context in which the farmer community currently operates, the intent, design and deployment of IDEA must remain oriented towards the sustainability of farm livelihoods and the benefits of farmers as a community, especially small and marginal farmers and their representative organizations. The Ministry must ensure constant communication with stakeholders regarding the directions of IDEA development, to ensure that the intent of the system is clear, fears of the unknown impacts of digitization are accounted for, and trust in the system is built through robust processes for transparency. In the absence of these, the initiative will likely face large backlash, and its potential for success will be severely affected. The IDEA consultation paper should be one part of the broader steps taken by the Union Government towards long-term digitization. It must be supplemented by policy documents that are more accessible to the farmers and their representative organizations, and elaborate the intent and nature of the objectives of the IDEA initiative. These documents must *inter alia* describe how farmers will be consulted for various aspects of the design of IDEA, such as the process for definition of 'use cases' to be facilitated through IDEA, and governance of data under it. Consultation mechanisms must account for the varying contexts of marginalized farmer communities and the different means of communication that they trust and use.

We believe that both the data systems and 'building blocks' developed as part of the IDEA framework must ensure an enduring focus on the betterment of Indian farmers through robust institutional processes. This will require viewing data as more than enablers of markets and 'fintech' services, but rather the creation of systems that respond to the basic needs of farmers and help address their self-determined needs. The perception of farmers must change from 'data producers' to potential 'data users' (even if through representative or other trusted agencies), and the architecture of IDEA should then be suitably modified. MoAFW must remain cognizant of the fact that the Venture Capital (VC) industry fueling the current boom of the 'agri-tech' space is bound to channel their resources to a limited set of digital agriculture related uses — such as supporting (controlled, and not free and open) digital markets for produce and inputs, and the usage of farming data to inform credit decisions. These will likely only address the surface of challenges being faced by the Indian agriculture sector, and even there focus on addressing the needs of only a small subsection of a vast farming community. It is therefore critical that use cases that are not 'viable' (as determined by free markets) are also identified through transparent consultation processes — and the intended digital agriculture ecology addresses them appropriately. Use cases such as the development of a 'real time farmer distress index' could be very helpful to both administrators and farmers in identifying potential locations of farmer distress, for corrective action. However, such a use case will likely see little support from the agri-tech start-up

space. In some cases, the interests of enterprises may in fact contrast with interests of farmers in ways similar to what we are witnessing in aggregation platforms in other areas. Amazon and other e-commerce entities, for example, routinely withhold and employ data related to and arising from the activities of platform-dependent businesses for their own exclusive benefit, often at the expense of dependent businesses.[2] In the case of agriculture, such practices will be even more pernicious, given the weak position of most farmers. It is important that from the outset it is ensured that all the data in the digital agriculture ecosystem is also shared with and available to the farmers and their representative organizations. This must be established as a key goal in the development of IDEA. Another illustrative use case is that of 'quality assaying' of agricultural produce, which requires the creation of large sets of images of various types of agricultural produce which may or may not be viable for VC investment but potentially serve a critical role in helping farmers realize better prices and choice.

C. Decentralization and federation

The principle of federation is reiterated throughout the IDEA consultation paper. In keeping with this objective, there has to be a clearer highlighting of the role of state governments in IDEA, and extensive consultations undertaken with the latter in this regard. Recognizing that while a few states may have the capacity to develop and maintain their own IDEA 'state cores', many of them may not, at least at this point of time. Rather than viewing lack of capacity as a rationale for increased centralization of underlying data infrastructures, however, this must be viewed as an opportunity to supplement IDEA's launch with centrally sponsored personnel training for the operation of their own digital systems. These 'handover' arrangements may be time-bound, depending on the 'digital maturity' of the state at the time of evaluation. This is particularly important since states that are not digitally mature may also represent the most marginalized of the farming community. Inadequate support at the state level for the implementation of initiatives such as IDEA will not only likely exclude them from the benefits of IDEA, but also ignore their needs in how IDEA must be shaped, leading to the development of systems that are inherently exclusionary. Farmers and state governments that do not represent the forefront of digital adoption in India must therefore be carefully engaged throughout the process, in keeping with the principles established in the IDEA consultation paper.

On the technical front as well, more may be done to explain the relationship between the data stores at the state government and union government levels. While the union government may keep some form of copy of state farmer registries, it must ensure that access control and hierarchies are defined

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2   Such platform practices are under regulatory scrutiny both in the EU and the US. These have also been pointed out in a study done by the Competition Commission of India, which may be found here.

in a manner that is in keeping with constitutionally defined ideas of federation. Federation and decentralization may be further bolstered through the encouragement of local-level government to also participate in the usage of digital and data systems, providing appropriate access controls. The principle of subsidiarity[3] should be employed in how various national, state, and local agencies, as well as community organizations, are involved in the development and maintenance of data infrastructures. This is important to ensure that means of access to digital records, and processes for their correction or 'mutation', are conveniently available to farmers through established channels of engagement with the government machinery. In the implementation of digital land records systems, for example, the removal of local administrators from the process of land record correction may have made it harder for members of the farming community to be able to modify the contents of these databases or mark them for correction.

As large sectoral databases are increasingly decentralized and federated — the National Digital Health Blueprint recommends a federated system for Indian health data involving decentralized data storage and processing at hospital, district, and state levels — the corresponding data infrastructures of IDEA may also be governed by the users of the building blocks or systems at more decentralized levels of administration, such as Farmer Producer Organizations (FPOs). Despite the description of state government-owned database registries and directories, we strongly caution against data architectures in which Union-owned systems take precedence over those that are owned by state governments or lower administrative bodies, and the positioning of a 'Single Source of Truth' at the Union level. We believe that this would not be in keeping with established principles of federation and decentralization, and would create an insurmountable hurdle in access, transparency, and accountability by creating additional layers of bureaucracy between farmers and the databases that describe them and their assets and activities.

D. Farmers' community data and Data Exchange

It is increasingly recognized that data's greatest economic value (other than for personalization of services which requires individual or personal data) is in the patterns found in aggregated big data. An appropriately developed Agriculture Data Exchange (ADEx or 'the Data Exchange') will be helpful in preventing the formation of 'data enclosures' of agriculture-related aggregated big data generated by parts of IDEA and its users. IDEA must therefore establish clear rules that dictate how such non-personal data is governed.

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3   What could be done and governed at a lower level of organization should not be done at a higher level. The subsidiarity principle is intended to ensure that decisions are taken as closely as possible to the citizen.

It is noted that as per the current framing of the IDEA document, there are no obligations to share any part of this enormous value back with the original contributors of data i.e. the farmers, individually or collectively, and for farmers to have control over uses of such data. It remains unclear whether the current imagination of ADEx is designed to take into account developing ideas of ownership over their data by various farmer communities. It is also unclear how the Data Exchange will manage issues of data re-usability and purpose limitation. In the case of both personal and non-personal data being transacted through the exchange, issues of value-sharing and farmer centricity remain unaddressed, despite their positioning as basic principles of IDEA. Much more work and clarity is needed in these areas vis-a-vis IDEA's intent and architecture.

We would caution against seeing ADEx as purely a marketplace for the trading of data. The Data Exchange should also facilitate voluntary as well as mandated sharing of data (as per NPD Committee Report's draft recommendations[4]), so that data generated by the farming community is available back to it for use for the community's benefit. Collective means of exercising data rights are needed not just because many rights pertaining to data can only be collective (like when pertaining to a group or community), but also because individual rights too need collective mechanisms to exercise them effectively. Data trusts can also undertake this function (as a possibility taken up in EU's draft Data Governance Act[5]).

The Data Exchange should therefore play the twin but separate functions of a data marketplace and a data trust, largely in keeping with the concept of data trusts laid out in the NPD Committee's draft report. While some data in the Data Exchange would therefore be available with a fair and open pricing, other data may be made available as a 'commons', which gets its data from all large data collectors, and is free to access for all, but with certain public interest conditions. These possibilities must also be clearly communicated to the farmer community, and specific initiatives undertaken to ensure that organizations such as FPOs, and other organizations such as NGOs or Krishi Vigyan Kendras (KVKs) are equipped to take on roles of being data trusts to help farmers manage their data in their own best interests.

EU's draft Data Governance Act provides good guidelines and rules for procedural regulation of data intermediary services, which should be taken into account for designing the Data Exchange. The draft

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4   Officially, the 'Report by the Committee of Experts on Non-Personal Data Governance Framework', which may be found here. Henceforth referred to as the 'NPD Committee Report', and the committee itself as the 'NPD Committee'.

5   'Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on European data governance (Data Governance Act)', released by the European Commission. May be found here.

recommendations of the Indian NPD Committee report provides important collective or community rights, which are very useful in the context of farmers and agricultural data, and also lays out how to operationalize such rights through data trusts, which as argued, should be an important part or aspect to the Data Exchange.

E. Public versus private roles in IDEA

The participation of private sector actors in the development of various modules or objects of IDEA must be carefully and closely guided. Given the economic significance of the endeavor, and especially the data resource at stake, there will be an understandable interest from the private sector in helping define, and if possible co-build the building blocks and services of IDEA in a manner that favors their own long-term business prospects. **We strongly recommend that the core protocols, building blocks, and services may be clearly deemed 'public functions' and remain under the purview of the government.** This is to ensure that the rules and protocols that underpin such large-scale digital infrastructures are based on, and always further, public interest, through appropriate institutional oversight rooted in democratic and participatory governance. For one, they must be neutral to all the private players in the ecosystem. Partnerships must be designed keeping in mind the danger of 'lock-ins', ensuring that systems remain open and interoperable, with clearly defined technical as well as contractual terms of engagement.

At the service layer, the involvement of private sector entities in the development of services must be enabled — but with data rules that clearly recognize and enforce the rights of farmers and the role of their representative organizations. The technical architecture would also ensure that all such private services adhere to the rules and policies of the government. However, such rules and policies should be developed in a legitimate, open and consultative manner. Technical control itself should not become the means of both developing and enforcing policies in an illegitimate and perhaps ad-hoc manner. Platform models that may be developed as value added services are also susceptible to the concentration of data through 'network affects' — and checks must be put in place to ensure that this does not happen. A nuanced perspective is thus required for the governance of public-private collaborations in IDEA implementation. We consider three broad models for engagement of the private sector for the delivery of IDEA. They are described briefly, together with the considerations that would need to be addressed before they are employed:

- **Public-Private Partnership (PPP):** This model for collaboration encapsulates that which is traditionally seen in infrastructure projects in the physical realm (highways, ports, etc.). This model of partnership would imply a degree of private sector funding or stake in the creation of

the IDEA sub-part in question, and may involve some degree of 'royalty sharing' in implementation. In this case, data governance issues must be adequately addressed, as well as the potential for lock-in to specific data infrastructures. Accountability may lie with the government, or a Special Purpose Vehicle (SPV) established to develop and maintain software infrastructure. We recommend that this model is not employed at any layer of IDEA because in digital and data based systems, the private sector stake is mostly aimed at some undue networking or data advantage – the value of which is not clear and upfront as with traditional revenue sharing. This makes it difficult to judge the actual value accrual to the respective public and private partners, and mostly leads to comprising on the public side. The dangers of such models are made only worse with such partnerships offered very cheap or even free, because, as argued, some other resources are being eyed, whose value to the private sector, and possible involved harmed to public interest, are almost always under-assessed if not completely ignored by the public partner. It is therefore best to avoid this trap as a principle.

- **Tender-based procurement or 'Outsourcing':** Distinct from the earlier described PPP arrangement, outsourcing would entail a direct engagement of a private sector entity for a specific purpose through a tender process. This would not involve any private sector investment, and 'outward accountability' (accountability to citizens) of the system's functioning should remain with the public sector entity which hires the private sector vendor. In this case, emphasis must be laid on the creation of software that can function equally well on different data and compute infrastructures, with concerns of intellectual property ownership, data purpose limitations, and governance of personal and non-personal data generated adequately addressed. Wherever private expertise and equipment is needed for the core public aspects of IDEA, this model should be used, but with a very open and transparent of tendering, and ensuring no undue access to 'digital or data value' from the system for the private partner. The 'Building Blocks' level, and the data exchange system, should however be completely developed and controlled in-house by government agencies.

- **Independent or empaneled development:** In this case, as seen in the UPI ecosystem, duly audited and empaneled agencies will be allowed to use the APIs arising out of IDEA for the creation of value-added services that may be delivered to farmer groups directly. Care must be taken in ensuring the technical systems meet a basic threshold of security. Strong incentives must also be created to ensure that data generated out of these applications is somehow fed back into the system for its improvement and made available to farmers for their use. Monopolistic platformization of services in this layer must carefully be guarded against.

We want the IDEA system to become so entrenched that it becomes difficult for private businesses to bypass it, as it is with current monopoly private digital platforms. IDEA can then become both an enabling and a regulatory device.

We would also like to strongly express our opposition to the Memorandum of Understanding (MoU) signed by the MoAFW with Microsoft, and also separately with some other parties, seemingly without any kind of consultations, and principally evidently against the assertions made in the IDEA consultation document. While the consultation document, for example, clearly states that national level core data infrastructure will be developed only by the government, the reading of the MoU seems to suggest that this will be developed in collaboration with Microsoft. There has been with no prior open process for identification of suitable vendors and no data governance processes in place. Such agreements provide some privileged private parties exclusive access to data resources and network resources of a public system built on the commons of farmers' data. The draft EU Data Governance Act lays down some very useful guidelines and rules for sharing public sector data with private players, seeking neutrality, equality, and fairness for all players. Further, based on the sensitivity of the data, we urge the Ministry to take a careful look at the conditions of access and use which must be imposed for such data processing involving private players.

We also note a discrepancy in the paper, with respect to the issues of private sector engagement for reference building blocks such as the 'Agri Data Exchange' and 'I-Sandbox'. While the paper defines them as 'reference building blocks' and states that these will be developed by the government only and made open source for broader use — the consultation paper is also seeking responses for whether or not these should be developed in partnership with the private sector entities. In our opinion, both of these building blocks should be moved to the bucket of 'common building blocks', with their development and maintenance limited to government entities.

Part 2: Responses to some consultation questions

2B – Does IDEA capture the spirit of Federated Architecture correctly and adequately?

<IDEA is founded on the principles of Federated Architecture – Federated Databases, Federated Applications and Federated Governance. What are the technological concepts, products, standards and protocols that reinforce/ enable the Federated Architecture?>

The motivation for federation in technical architecture is the need to address the different contexts and policies in different states. Agriculture being a state subject, it is the state government that should be able to determine how the digital agriculture ecosystem will actually work and deliver in a state. Conceptions of federated design for IDEA need to be informed by this principle (e.g. land records are maintained differently by different states) and *inter alia* be mindful of how the de-contextualization of the information to national settings may obscure certain facets of the data describing it. So in this case, federated databases would mean the creation of separate, more detailed state registries, which are also abstracted at a national level to create a national view of data such as that of land ownership. A federated design also needs to enable a range of policy choices rather than constrict them, as usually happens with enterprise-wide technical systems. The principle of federated architecture should be broken into these key guiding principles of what such an architecture is supposed to mean and achieve.

For a good part, yes, IDEA does seek a federated design, through a federation not only of applications but also of the underlying database infrastructures. However, greater clarity and certainty is needed that these will indeed be primarily owned and controlled by respective state governments. Ideals of federalism would be further bolstered through the encouragement of local-level government to also participate in the management and usage of agriculture data systems. Further federation to community-level would mean incorporating appropriate participatory roles of farmers groups like cooperatives and FPOs, and orienting corresponding elements of the IDEA architecture to such participation and engagement. We currently do not see these in the IDEA paper. See *Section C (Decentralization and federation)* of the preceding note on our key observations for more regarding the question of federation and decentralization.

4A – IDEA proposes development of a PPP framework for its implementation. How to develop such a framework?

<What are the design considerations for developing a PPP Framework for implementing IDEA?>

Firstly, it is important to clarify what part or infrastructural layer of IDEA will be open to PPP development, and more generally to different kinds of roles for private players. While it is mentioned as part of the implementation strategy, different aspects would require different architecture-level considerations. Nature of private participation should especially be differentiated across service layer, infrastructure layer, and core layer. The scope of any substantial private sector participation should in any case be subject to public consultation, especially with the impacted farmers. See *Section E (Public versus private roles in IDEA)* of the preceding note on our key observations for more regarding the question of appropriate private sector roles in IDEA.

5A – Is Agri Data Exchange[ADEx] necessary?

<IDEA suggests the need to establish Agri Data Exchange for faster and purpose-driven exchange of data. Is there a business case for establishing Data Exchange for the agri sector? Given the large landscape, variety of commodities and activities in the agri ecosystem, is there case for multiple Data Exchanges, focusing on multiple groups of crops/ commodities?>

The Agriculture Data Exchange (ADEx) may be helpful in preventing the formation of 'data enclosures' as farming processes are increasingly digitized. The Data Exchange, however, should not only be seen as data markets but also as data trusts, providing means for collective exercise of their data-related rights by farmers. Such rights can lead to mandated sharing of important agriculture data by larger collectors of data to form 'data commons' which can be accessed by all, subject to some public interest norms and principles. (This takes from recommendations in the draft NPD report). The data market aspect and the data trust part of the Data Exchange may have to be structurally separated, requiring some different architectural constructs. However, there are common elements as well like means of safe data sharing and access, protecting respective rights of all parties.

Meanwhile, it remains unclear in the consultation paper how the Data Exchange will manage issues of data re-usability and purpose limitation. In the case of both personal and non-personal data being transacted through the exchange, issues of value-sharing and farmer centricity remain unaddressed, despite these being positioned as basic principles of IDEA.

5B – What should be the implementation model for ADEx?

<Should ADEx be a government-led or private sector-led initiative? What kind of incentives, if at all, are required to be provided by the Central/State Governments to promote ADEx(s)?>

The implementation model of ADEx must be public sector-led, given its foundational function is to facilitate data sharing and transfer. Development of the exchange by private sector actor(s) has the

twin problematic potential of allowing and enabling unfair exploitation of the value of farmers' data, and 'locking out' smaller private players in the agriculture services space. This will lead to further concentration of data power and network power in the hands of a select number of large corporations. Private sector development of the exchange will necessitate the identification of business incentives for the exchange operator, which may not align with the interests of the farmer community or the nature of government policy.

There is no greater incentive required for ADEx implementation than making government data available through it in an easily consumable manner. Making the availability of data contingent on sharing data back into the system can help create a sustainable ecosystem of data use. However, issues of purpose limitation for data use and API access controls will also need to be considered. Inspiration may be drawn from the India Urban Data Exchange (IUDEx).

5C – What are the regulatory requirements for ADEx?

<ADEx(s) deal with huge data that can consist of personal and nonpersonal data. Are the proposed provisions of PDP Bill, and the Report on Non-Personal Data Governance Framework adequate to regulate the ADEx(s). If not, what other regulatory provisions are required?>

The proposed provisions of the PDP Bill and the NPD Committee Report provide appropriate law, rules, and guidelines for setting up and governing ADEx. The recommendations of the NPD Committee are especially relevant in the regard. *Section D (Data exchanges and farmer's collectives)* of the preceding note details application of these recommendations to developing and governing ADEx, especially how a data trust element or aspect (with a data sharing function) too has to be included in ADEx apart from a data market aspect (with a data trading function). The two will have drastically different regulatory requirements.

The NPD report also provides detailed recommendations for the data trust part of community rights-based data sharing into a data commons. On the other hand, for the data market part, EU's draft Data Governance Act is the appropriate place to take from. It details how data markets should only be run by neutral entities that conform to stringent parameters laid out in the draft Act in this regard.

Further, the NPD report does suggest that it seeks to lay horizontal, cross-sector rules and guidelines regarding non-personal data and community data, but sector regulators may want to add more sector-specific rules and guidelines. In this respect, agriculture being a unique priority and complex sector – involving livelihood of majority of Indians, as well as food needs of all – the Ministry should develop additional rules and guidelines for data trusts for agriculture data, so as to maximally protect farmers'

interests.

Meanwhile, the draft Data Governance Act also provides facilitating mechanisms for collective exercise of individual data rights which can be an important element of ADEx, and will be very useful for farmers to exercise their individual rights to their farm and farming data.