Crypto
Council for
Innovation

Impact Assessment Framework Compendium

Impact Assessment Framework

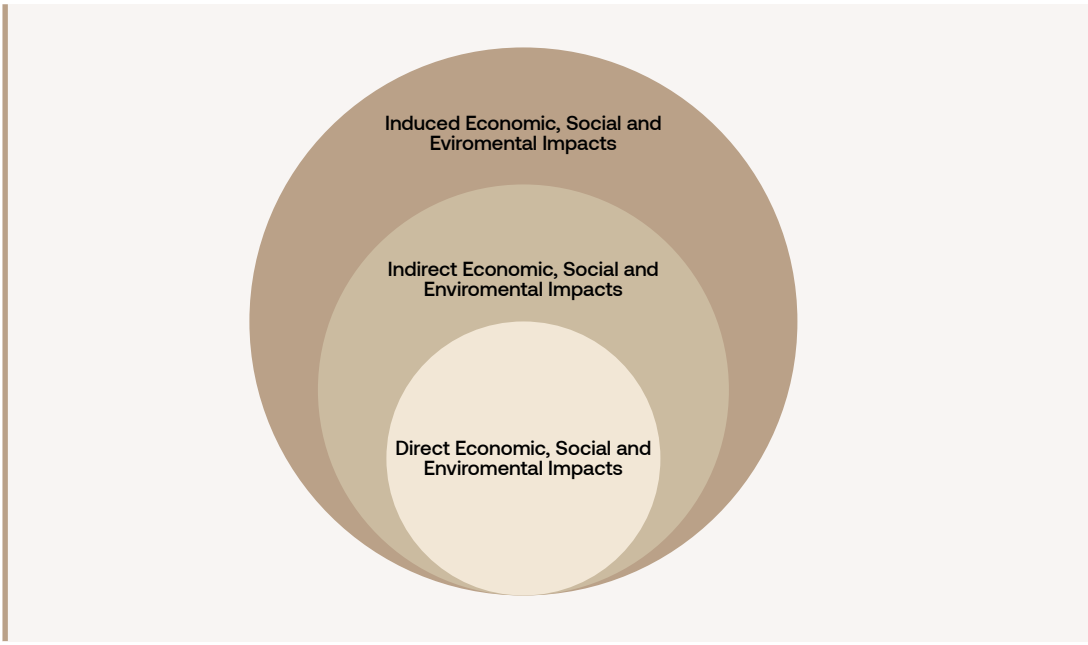
Several frameworks exist to robustly measure the environmental impact of digital technologies (refs). However, cryptocurrency provides extra challenges that need to be addressed beyond those of traditional data centers and infrastructure.

First, most data centers are purpose-built by one company for a particular set of offers. For example, a telecoms operator may build one to ensure it can provide high speed mobile services or a web services provider may build one to manage customer data and run services on their behalf.

Data centers are general purpose technologies (GPT). When crypto is treated as a means of exchange, it transforms money itself into a GPT. This makes the measurements and comparisons against crypto more difficult to ascertain. For example, what is the CO2 output from money (as opposed to the financial system)? Measurement of the social, economic, and environmental impact of cryptocurrencies in an effective way therefore requires a new type of framework that balances all impacts against one another

We present a very simple framework here to help with the initial stages of that assessment – to help the crypto and broader communities properly assess the overall impact of crypto. Importantly this is a starting point – not a comprehensive framework. Any framework that is ultimately put into place should involve consultation with experts from academia, industry, and civil society.

First, it is important to take a full perspective. We therefore apply three different lenses to each of the areas of environment, economy, and society: direct impacts, indirect impacts and tertiary impacts. This is to fully capture the role that crypto plays in both the solution in question – but also more broadly as a GPT. Direct, Indirect and Tertiary impacts are well-known frameworks for economic and environmental measurements. This is illustrated briefly below:



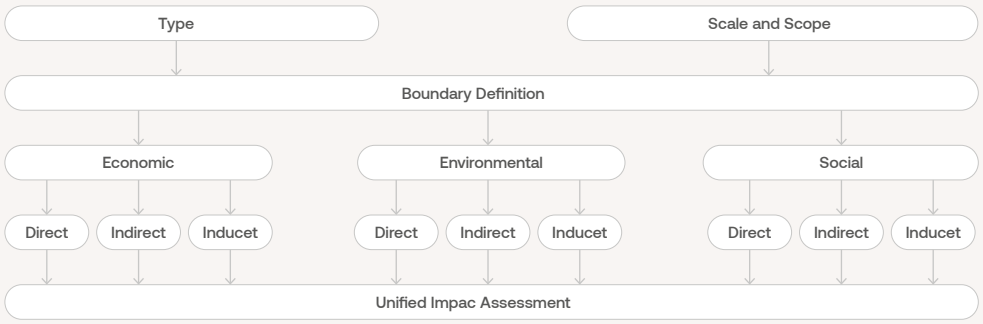
A. **Direct:** Direct impact includes all direct effects the solution or project has; namely the immediately identifiable impacts.

B. **Indirect:** Within economics, indirect impacts have a specific meaning: the impact of local industries buying goods and services from other local industries. This is normally followed through the entire cycle of spending until it works its way through the supply chain and all the money is spent outside of the local economy in question. This framing is useful for projects that are based within localized areas – however this is often not the case for crypto solutions that deliberately cover the globe, but also create flow-on indirect economic impacts. Crypto may require additional thinking around indirect impacts.

C. **Tertiary Impacts:** Tertiary impacts are those third order impacts and are more difficult to predict. This is where the most unintended consequences often occur – for example does co-locating a crypto data center close to a flared gas installation mean that it prevents the installation of more efficient equipment in the gas plant itself? This phase requires thinking through the full life cycle and supply chain of a data center.

It is important to note that these measurements should be quantifiable and provable – rather than predictions of potential impact. Within our Sustainability Framework, therefore we apply these notions more broadly to understand the impact of our technical solution on local and adjacent industries.

One of the most critical aspects of this type of assessment is to clearly set the boundary of the data center. Through knowledge of its customers, it will be possible to make some rough estimations for the indirect and tertiary impacts. Direct, indirect and tertiary impacts can all be both positive and negative in nature and a comprehensive assessment will enable the data centers to provide clear and robust evidence about the true nature of its impact in terms of environmental, economic, and social impact. The framework presented here is the first step to outlining a full set of tools and guidelines.



Data Center Impact Assessment Framework

Step 1: Fundamentals	**Type** Scale and Scope			
Step 2: Boundary Definition				
Step 3: Impact Assessment	Economic Social Environmental	**Direct**	**Indirect**	**Induced**
Step 4: Unified Impact Assessment	Consolidated Assessment Overall Impact	**Direct**	**Indirect**	**Induced**

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Questions?
Please email us at: info@cryptoforinnovation.org

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