# This image contains the Threatened Species Recovery Hub logo and text saying this script explains some of the concepts and challenges central to biodiversity offsetting and ecological compensation in plain language

# Video 9

#  Monitoring and evaluation: Tracking and performance of individual offsets and offset programs

The monitoring and evaluation of biodiversity offsets is a crucial part of any offset program. Monitoring offsets is the only way to know if the benefit, or gain, that we aimed to achieve at a site really occurred, and was enough to counterbalance the losses caused by the development. This is an essential part of evaluating the effectiveness of an offset – in other words, identifying whether it achieved at least no net loss of biodiversity.

Evaluating an offset involves comparing the gains resulting from the offset action with the losses resulting from the development that triggered the offset. In this video, we first discuss the monitoring of offsets, and then consider how to use data from monitoring to evaluate the effectiveness of offsets at multiple scales.

In video 4, we discussed how to estimate the future gains that we think we will get from an offset action. This involved comparing the expected outcome at an offset site, as a result of the offset actions, with an estimate of what would have happened at that site without the offset actions - the counterfactual scenario. The difference between the outcome with the offset action, and the counterfactual scenario, allows us to estimate the gain from the offset – in other words, the difference the offset action made, compared to what would have happened without the offset.

Monitoring includes on-ground measurements that can be used to verify these estimates of future gains. During monitoring, we track what actually occurs once we implement an offset. This requires field visits to the offset site, and measuring how the biodiversity features that are the focus of the offset are responding. For example, if our offset actions were aimed at increasing the population size of a threatened plant species, our monitoring may consist of counting the number of individuals of that species at the site after the offset actions have commenced. Depending on the size of the offset site and the distribution of the plant species at the site, the monitoring might be done by locating sampling quadrats randomly and counting the number of individuals in the quadrats, and then using these results to estimate the total number of individuals at the offset site.

As discussed in video 4, the outcome we measure at the offset site is only part of the picture. Best practice evaluation requires us to work out how much of the change at the offset site is caused by the offset actions. That means we also have to compare the changes at the offset site with the changes occurring in similar control sites, where the offset actions are not being done. This is so that we can check whether our assumptions about the counterfactual scenario were correct.

Offsets often have a time horizon within which they are required to deliver their gains. For example, a site might be required to achieve a particular increase in the population of a plant species within 10 years of the offset actions starting. It is a good idea to monitor offset sites regularly, starting before the offset actions commence – for example, every year. That way, it is possible to tell whether the gains are being accrued at the expected rate, or whether they are falling short, which might mean additional offset actions need to be done. Once the time horizon is reached at which the offsets are required to have delivered their gains, the offsets still require monitoring to ensure that the gains from the offset actions are maintained. This is because offsets are usually required to create a gain that lasts for the same duration as the loss they are compensating for – and that is often in perpetuity.

The monitoring of offset sites is required to allow the success of offsets to be evaluated, but it is not sufficient. We also need to monitor the loss from the development, which could end up being different to what was expected. The loss from the development is usually estimated as part of some form of Environmental and Social Impact Assessment, and these estimates are used to determine how much offset benefit is required. However, it is important to check that these assumptions are correct, and to make sure that the losses at the development site and the gains at the offset site are measured in the same way, using consistent sets of assumptions. If this is not done, it may not be possible to compare the losses and gains, and the success of an offset cannot be verified.

Another important point to consider when evaluating offsets is the scale of the evaluation. A site-level evaluation, like we have described here, is used to determine if and when a single development and its associated offset(s) achieve no net loss. But we might also want to evaluate the performance of an offset policy or offset program, under which many offsets are being done. In this case, all the losses from developments and gains from their associated offsets need to be considered, and the aim is to see if and when no net loss occurs at scale of the offset program. This can then indicate how the offset policy is performing overall, and whether changes to the policy are required to ensure no net loss is being achieved.

Ideally, the results of the monitoring and evaluation of offsets would be recorded in a public offsets register. This should also record information about the offset and its associated development, including where they are, what biodiversity features were the focus, and what offset gains are required to be achieved. This is important as it allows researchers and the public to check how individual offsets and the policies as whole are performing and whether the stated goals, such as no net loss, are being met. In this way, we can make recommendations for improvements to the design and implementation of offsets, and the programs and policies that guide them.