

Biodiversity offsetting in Germanyⁱ

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Brief summary of the case

Biodiversity offsetting has been a mandatory requirement in Germany since the 1970s, and aims to achieve no net loss (NNL) of biodiversity and certain ecosystem services through compensation, such as through ecosystem restoration, of residual impacts from developments. Habitat banking where offsets are carried out without *ex ante* links to specific development impacts, has been allowed since 2004, thereby enabling the storing and trading of offset credits. Offsetting is integrated with the planning system, enabling strategic planning of the location of offsets and the engagement of civil society in decision making on the acceptability of development projects and their offsets.

In accordance with the polluter pays principle, the costs of offsetting are borne by the project proponent. The overall costs (i.e. revenues for compensation, excluding transactions costs) of offsetting in Germany are not well known, but a recent study estimated that they are very approximately EUR 2.5 billion per year.

Studies have revealed that a substantial proportion of offsets failed to achieve their objectives. This was considered to be due often to restrictions on their location, which made it difficult to find suitable sites and the absence of clear requirements for authorities to monitor the long-term performance of the offsets. Subsequent amendments to the legislation and learning have improved offsetting in practice by enabling a more efficient and effective process. However, a substantial proportion of offsets is still not implemented nor achieves their objectives. Despite this, the Impact Mitigation Regulation (IMR) is considered to reduce overall rates of biodiversity loss from built developments, although this cannot be quantified as no overall evaluation of the instrument has been carried out in Germany. Furthermore, the impact of the IMR is significantly constrained by the exemption of agricultural, forestry and fishery related activities from the regulation's scope.

1 Description of the design, scope and effectiveness of the instrument

1.1 Design of the instrument

Biodiversity offsetting¹ has been a mandatory requirement in Germany since the 1970s when it was firstly introduced by some states (Länder), and then nationally in Articles 13 to 19 of the 1976 Federal Nature Conservation Act (FNCA). These and other related legal requirements, including in the Federal Building Code (which regulates impacts on nature and landscape in the urban environment) are widely referred to in Germany as the Impact

¹ In accordance with the Business and Biodiversity Offsets Programme (BBOP), biodiversity offsets are widely defined as “measurable conservation outcomes of actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people’s use and cultural values associated with biodiversity”.

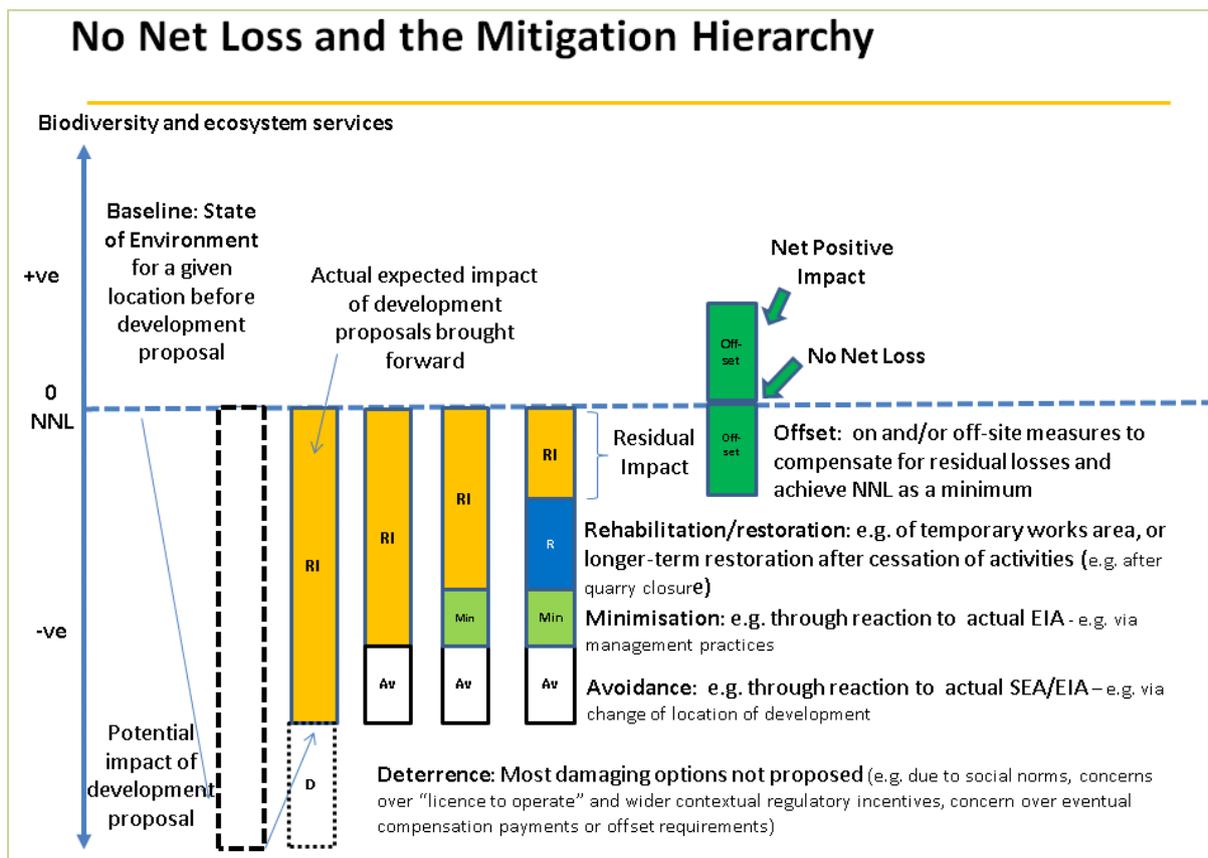
Mitigation Regulation (IMR)² (Tucker et al., 2014). As Germany has a federal governance structure, the IMR sets out general legal obligations, which are implemented through state-level regulations that also provide considerable flexibility to local authorities, as a result of which offsetting practices vary considerably.

The IMR requires the avoidance of significant negative effects, and the compensation (i.e. offsetting) of residual impacts from human interventions affecting natural assets and their functions. Natural assets are defined as flora and fauna, soil, water, climate and air quality, the aesthetic quality of the landscape, and their functions (such as soil processes and productivity, groundwater replenishment, and local climate regulation). Therefore the offsetting requirements relate to ecosystem services / natural capital as well as biodiversity *per se*. Impacts on biodiversity are generally assessed in terms of impacts on broad habitat types and sometimes certain priority species, with each federal state having lists of habitats and species that must be taken into account.

The IMR requires adherence to the mitigation hierarchy, and accordingly project proponents must take firstly appropriate actions to avoid and minimise impacts on natural assets (see Figure 1). Any remaining unavoidable adverse impacts must then be addressed through offsets. Offsets can be provided through tangible measures such as habitat creation, restoration or enhancement, but offsetting through the protection of areas (i.e. risk aversion) is not allowed.

² The term 'mitigation' has a broad meaning in the German IMR and does not just refer to avoidance and minimisation measures, but also includes compensation.

Figure 1 No Net Loss and the mitigation hierarchy



Source: in Tucker et al., 2016

The impacts of agriculture, forestry and fishing are excluded from the IMR provided that good practices standards are followed. In principle all other interventions with significant adverse effects should be addressed, but in practice the interpretation of what is significant is difficult. To aid this, lists of projects that are impacts by definition when they exceed a certain size have been produced in some states. But these project types and thresholds differ between states. The impacts of interventions on biodiversity and ecosystems (debits), and the potential impacts of the proposed offsets (credits) are generally assessed through various metrics. There is no federal level standards or guidance on the assessment methods and metrics that should be used to quantify impacts and required offsets (i.e. credits), which has resulted in wide variety of approaches being used (Bruns, 2007; Darbi and Tausch, 2010).

Initially the FNCA required 'restoration compensation' offsetting to be on-site and in-kind (i.e. being of the same type of lost nature and landscape components and having a direct spatial and functional connection to them). However, as a result of this restriction it was often difficult to find suitable sites that could provide good quality offsets, and therefore many compensation requirements were not delivered (Tischew et al., 2010; Pfaffenberger & Sedlak 2011). In response to this, amendments were made to the FNCA in 2002 and 2009 that relaxed this requirement so that offsetting is more feasible.

Under the current law, compensation restoration is still preferred, but where this is not feasible or appropriate, then offsetting may be through 'substitution measures' or

‘replacement compensation’, which only requires a loose spatial and functional relationship to the impact area (Louis, 2004). However, where offsets are carried out off-site there is a legal requirement for them to be located in the same bio-geographical region as the impact that it is compensating for.

If residual impacts remain that cannot be offset then monetary compensation may be made, but this is a last resort. The monetary payment should correspond to the average costs of a hypothetical suitable offset measure and must then be used for appropriate nature conservation measures with a demonstrable additionality within the same bio-geographical region.

Changes to the Building Code in 1998 allowed greater flexibility in the location and timing of offsetting. These and the similar changes to the FNCA in 2002 referred to above, created conditions that allowed the establishment of ‘compensation pools’, which are mapped-out concentrated collections of usable sites and measures for the compensation of residual impacts. As a result of this, and further reforms to the Building Code in 2004 and the FNCA in 2009, and practitioners increasing familiarity with offsetting, more innovative and efficient means of implementing offsets have been developed, including through eco-accounts (Mazza and Schiller, 2014). These allow trading in offset credits (provided within the same biogeographical region) and are therefore analogous to habitat banks.

The IMR is carried out within a comprehensive strategic planning framework (Busse et al., 2013). Thus various levels of spatial plans define settlement zones and rural zones, and identify biographical zones that offsets must fall within and areas that may be used for offsetting within these (which should contribute to ecological networks / green infrastructure). Project proposals must include assessments of the expected environmental impacts and set out the proposed impact mitigation and, if required, offsetting, which must be coherent with the relevant spatial plans.

1.2 Drivers and barriers of the instrument

As the initial offsetting legislation was developed over 40 years ago it is not possible here to describe in detail its specific drivers and any barriers that may have affected its development. However, it is generally considered that offsetting was introduced in response to wide concerns over the state of nature and landscapes in Germany, e.g. resulting from rapid urbanisation in the 1960s, and the lack of an up to date nature conservation and landscape protection legislation at the time. Such concerns were raised by a number of scientists and NGOs, including the German Council for Landscape Maintenance. Importantly, the Council called for legalisation that applied beyond protected areas, and this led to the inclusion of offsetting in the legislation to address impacts on biodiversity and landscapes in the wider environment. At the time there was a widespread desire to protect the environment and no major barriers to the adoption of the legislation are known of.

1.3 Revenue collection and use

Offsetting in Germany is in accordance with the polluter-pays principle, in that the costs of mitigation and offsetting measures must be borne by the project proponent that is causing environmental impacts (which in many cases is a local authority or another public body). Third party funding is only supposed to be allowed if this contributes to additional measures /

benefits. However, a case study for a European Commission report found that the costs of managing a grassland restoration offset (habitat bank) were in fact partly dependent on basic agricultural support payments provided by the Common Agricultural Policy (Tucker et al., 2014).

Offsets for housing and public infrastructure projects (e.g. roads) are often carried out by the public authorities on their own land, as this can be cost effective for them if they have the necessary expertise, land and equipment (Tucker et al., 2012; Underwood et al., 2013). However, offsets for most private developments are delivered by third parties, such as local government land agencies or private bodies, as individual offsets or habitat banks.

Payments for offsets (whether local authority or private), are often estimated according to standard charges, rather than actual costs as these are only known at the end of the process. For example, standard one-off per hectare forest creation costs vary between EUR 17,015 - EUR 155,742, grassland creation is EUR 1,231 - EUR 168,129 and wetland creation is EUR 36,398 - EUR 172,021 (Freistaat Thüringen, 2003).

The total costs of offsetting (i.e. revenues spent on compensation) under the IMR are not documented. However, a European Commission study estimated that the total costs of offsets per year in the state of Hesse (based on 1992-2010 data), which have recently amounted to about 1,000-1,500 ha per year (Battefeld 2012), are approximately EUR 150 million (EUR 70 million to EUR 210 million depending on the range of standard per ha costs) (Tucker et al., 2016). Assuming that the federal state of Hesse represents an average of the (16) German federal states, by simple extrapolation the study estimated that the total annual costs of offsetting in Germany are very approximately EUR 2.5 billion (EUR 1.1 – 3.4 billion).

Although the total value of offsetting in Germany is clearly substantial, this should not be seen as a source of revenue for biodiversity conservation. This is because in most cases offsets only aim to achieve no net loss of biodiversity, or a relatively modest gain. As planned gains may in fact be a contingency, as many offsets do not fully compensate for losses (Tucker et al., 2014), then the overall payments made by project proponents from all offsets are unlikely to be greater than the full costs of actually achieving no net loss of biodiversity.

1.4 Environmental impacts and effectiveness

There has been some scepticism over the actual effectiveness of the IMR in compensating for residual development impacts. This was supported by a number of studies that found that a significant proportion of offsets were not implemented or did not actually achieve their compensation goals (e.g. Tischew et al., 2010; Jessel et al., 2006; NABU Rheinland-Pfalz, 2007, Rexmann et al., 2001). This implementation deficit arose as a result of limitations on the availability of suitable land (under the former stricter like-for-like and on-site requirements) and a lack of clarity over monitoring and control responsibilities. Clearer requirements for compliance monitoring have since been introduced through reforms in the IMR that should improve offset implementation and achievement of ecological objectives. But some NGO stakeholders consider that the situation has not improved considerably³. For example, a 2010 study of compensation measures under 20 development plans in Baden-Württemberg, found

³ Christine Fabricius, Nature Conservation Officer at FoE Baden-Württemberg / Germany pers. comm. 2016

that only 2/3 were implemented and only 1/3 achieved their desired outcomes (Sperle, 2010). However, other reforms that allowed the establishment of eco-accounts are considered by many key stakeholders to have significantly improved offsetting in practice by providing a more efficient and effective process, simplifying and speeding up the development planning process (BFAD 2011; Jessel et al., 2006; Köppel et al., 2004; Mazza & Schiller 2014).

Despite some problems outlined above, it seems highly likely that the IMR leads to offsetting outcomes that do compensate to some degree for residual development impacts on biodiversity and ecosystem services (Tucker et al., 2014). Thus the introduction of mandatory offsetting requirements has had beneficial impacts compared to the former situation whereby residual impacts were not addressed. There has, however, been no impact assessment or overall study of the effectiveness of the IMR, and therefore the overall magnitude and extent of its impacts cannot be quantified. It is, however, clear that a major weakness of the IMR is the exclusion of the impacts of agriculture, forestry and fishing activities, as these are major causes of ecosystem degradation and biodiversity losses.

1.5 Other impacts

No studies are known of the overall economic and social impacts of the IMR in Germany. However, evidence indicates that, whilst individual offset costs can be significant (see 1.3), they are normally a small proportion of the overall development costs and benefits. Offsetting costs for residual impacts from building construction have been estimated to be about 3.0% of the total construction costs (excluding ground works) in Hesse and 2.9% for Germany overall (Tucker et al., 2016). Offset costs for roads in Germany are considered to be around 5% of total costs (Technische Universität Berlin n.d.). This suggests that offsetting is unlikely to be having significant detrimental impacts on economic development or competitiveness.

Information on the impacts on jobs is also lacking, but it is clear that offsetting leads to employment. Offset related jobs are created in public bodies overseeing and advising on the IMR and offsetting, and for consultants and offset providers (which may be public bodies, NGOs, private companies and landowners) as part of the impact assessment, offset design, consultation, habitat creation / restoration, maintenance and monitoring process.

Although the overall costs of offsetting are often relatively low, some project developers have indicated that the variety of offsetting regulations and requirements that have developed over the 16 states leads to a complex variety of project and offset permitting procedures. This reduces the implementation efficiency of the IMR and increases its transaction costs for sectors and businesses that operate across many states (e.g. in the transport and energy sector).

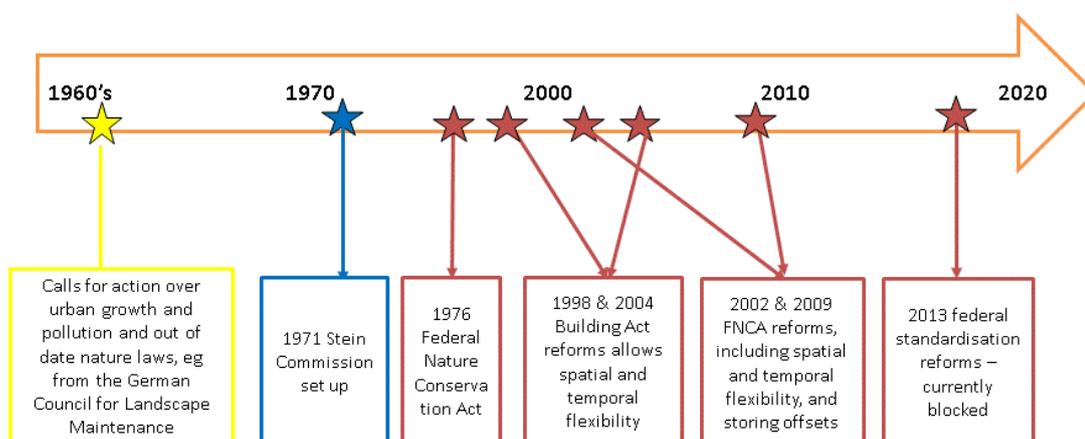
2 Stakeholder engagement

As indicated in section 1.2, the calls for the wide protection of nature and landscapes, and requirement for offsetting, initially arose from scientists and NGOs. In response to this, the FNCA was developed through the establishment of the Stein Commission, which included representation from key NGOs including the German Council for Landscape Maintenance. Subsequently relevant stakeholders have been further consulted over reforms to the IMR as there is a requirement in Germany for all proposals for legislation and reforms to be subject to such consultations.

Since the development of the IMR, there has been some concern amongst some NGOs particularly in the 1980s, that offsetting may be counterproductive as it may result in damage that could and should be avoided or reduced. However, to reduce this risk the mitigation hierarchy is clearly followed in the IMR, and the 2009 reforms strengthened this by introducing the requirement for project proponents to provide a justification why avoidance cannot be undertaken if offsetting is proposed. Although it is suspected that some offsetting may be avoidable, there appears to be no evidence of serious widespread contraventions of the mitigation hierarchy and currently most NGOs support the IMR offsetting requirements and engage in the process.

Wider society is able to engage in the implementation of offsetting through the planning process, which is transparent and requires authorities to publish spatial plans (from regional to local) and project proposals, and to consultate with the public on them. As described above such plans and project proposals must set out their expected impacts and proposed offsetting measures. This provides an opportunity for the public to comment on and influence the practical implementation of offsetting. In fact NGOs play an important scrutinising role, checking impact assessments, spatial plans and the adequacy and suitability of planned offset measures. However, their capacity to carry out this role is limited and it is felt that state bodies should fulfil compliance monitoring more effectively.

Timeline of Key Developments in biodiversity offsetting in Germany



Key

Civil Society Actions

Key Developments of the instrument

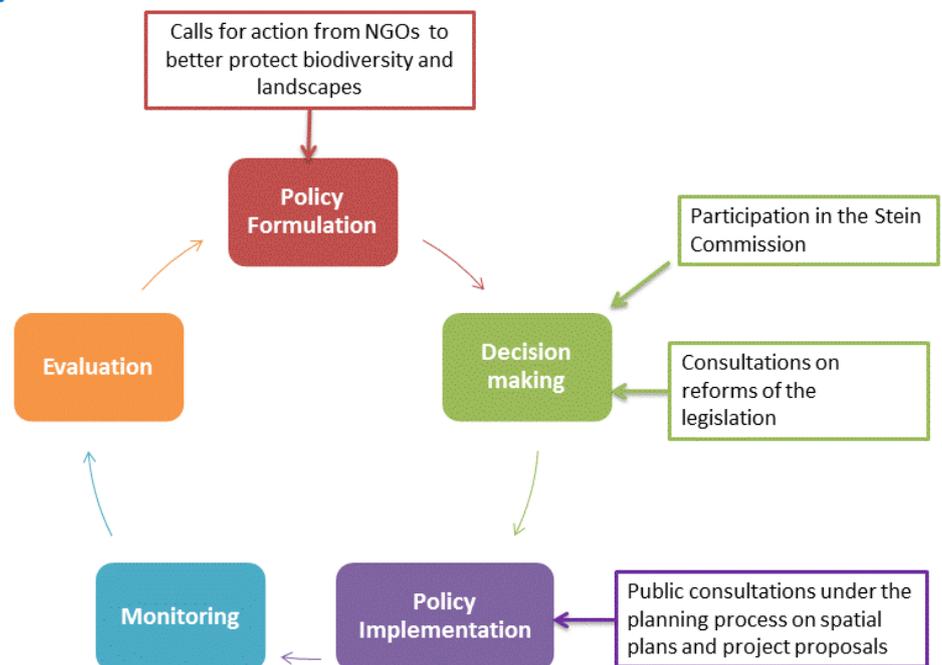
Windows of opportunity in governance processes

3 Windows of opportunity

Stakeholders have been able to engage in the development of the IMR through the original Stein Commission, and its subsequent reforms through Germany's general mandatory stakeholder consultation processes that apply to legislation. There are also mandatory public consultation processes for planning authorities that enable wider engagement of stakeholders in the implementation of the IMR in relation to the strategic location of offsetting and the acceptability of individual project proposals.

To date there has been no overall monitoring and evaluation of the IMR and therefore no opportunity for stakeholders to engage in this element of the policy cycle at a national level. The extent to which evaluations of state level regulations has occurred is uncertain.

Civil society engagement with biodiversity offsetting in Germany



4 Insights into future potential/reform

4.1 Actual planned reforms and stakeholder engagement

To address some of the problems that relate to the considerable inconsistencies in approaches to the implementation of the IMR (e.g. relating to impact significance thresholds and impact assessment metrics) the federal government proposed a reform to the FNCA in 2013. This aims to simplify and standardise some of the procedures, but it has been blocked by some states as it would increase federal powers at the expense of local flexibility⁴.

⁴ Wolfgang Wende pers comm.

4.2 Suggestions for future reforms – instrument design and civil society engagement

No further intended reforms or requirements for reform are currently known of. It would, however, appear to be at least necessary to carry out some form of overall monitoring and evaluation of the IMR, to establish if further reforms are necessary.

4.3 Suggestions for replicability

The EU has an overarching target of halting the loss of biodiversity and degradation of ecosystem services by 2020, and a supporting action under the EU Biodiversity Strategy is to ensure no net loss of biodiversity and ecosystem services. The adoption of an offsetting policy and legislative framework similar to that under the IMR could make a substantial contribution to the EU headline target and its NNL objectives, provided that it complemented other measures that aim to avoid and reduce impacts (Tucker et al., 2014, 2016). However, experience from Germany and internationally indicates that there potential risks from offsetting and it can be counterproductive (Bull et al., 2013; Conway et al., 2013; Gardner et al., 2013; Maron et al., 2012; Walker et al., 2009). For example, if offsetting regulations, design standards and compliance are weak, this may allow developments to go ahead that would not otherwise do so because of the intended offsetting, which in practice does not lead to NNL of biodiversity and ecosystem services and related socio-economic impacts. Therefore if it is to be replicated elsewhere in the EU it would need to be regulated according to internationally best practice principles and standards such as those set out by the Business and Biodiversity Offsets Programme⁵, with design elements as indicated in a recent European Commission (Rayment et al., 2014) and properly monitored and robustly enforced (i.e. more so than in Germany).

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⁵ <http://bbop.forest-trends.org/pages/guidelines>

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