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Summary

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Retreat of settlements – Law and planning in the context of climate and demographic change

Summary

by

Gerold Janssen, Carolin Rubel
Leibniz-Institute of Ecological Urban and Regional Development e.V., Dresden, Germany

Falk Schulze, Friedhelm Keimeyer
Öko-Institut e.V., Institute for Applied Ecology, Office Darmstadt, Darmstadt, Germany

unter Mitarbeit von

Marie-Luise Plappert
Leibniz-Institute of Ecological Urban and Regional Development e.V., Dresden, Germany

Anna Kröner
Öko-Institut e.V., Institute for Applied Ecology, Office Darmstadt Büro, Darmstadt, Germany

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Umweltbundesamt
Wörlitzer Platz 1
06844 Dessau-Roßlau
Tel: +49 340-2103-0
Fax: +49 340-2103-2285
info@umweltbundesamt.de
Internet: www.umweltbundesamt.de

/umweltbundesamt.de
/umweltbundesamt

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Leibniz-Institut für ökologische Raumentwicklung e.V.
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1 Object of research

Urban development must fact up to the double challenge of climate change and long-term demographic change, particularly as these phenomena affect the areas of housing, industry and infrastructure. Although the preferred strategy continues to be adaptation in the form of upgrading or revitalisation of the existing building stock, there is an argument in favour of controlled settlement contraction in particularly affected or endangered areas. Before such measures can be implemented, it is necessary to investigate their legal feasibility in order to revise the statutory framework as required and thereby to facilitate the enforcement of (existing) norms.

2 Definition of terms

The basic term "settlement" is understood to encompass residential areas, urban infrastructure as well as commercial and industrial sites, and is not subject to any predetermined spatial qualification.

The term "retreat of settlements " implies the cessation of use of settlement structures for housing or commercial purposes, leading to the uncontrolled dereliction of abandoned buildings or to controlled measures of urban contraction.

Previous experience of urban contraction measures implemented in a well-managed and foresighted manner has been largely limited to the spatial planning of lignite mines. Furthermore, urban contraction can take the form of reactive processes dictated by local events. Such forms of contraction can be subdivided into foreseeable contraction, e.g. due to danger of flooding, and unforeseeable contraction, e.g. as a result of landslides and earthquakes. Settlement contraction can also occur as a long-term and uncontrolled process, e.g. due to falling population levels.

3 Examples of settlement contraction

1. Experiences gained in the planning of lignite mines have confirmed the following key steps necessary for successful spatial planning: (1) the timely notification and involvement of affected local citizens, particularly in regard to the search for new residential locations; (2) the process of settlement relocation must proceed in a controlled manner with a clear timetable, budget and administrative competence; (3) generous compensation must be provided that exceeds the legally stipulated amount; (4) citizens and (political) decision-makers must reach a common understanding that the settlement relocation presents an opportunity for a new beginning (e.g. with improved living conditions). Regarding instruments of spatial planning, it is vital that the foresighted steering of contraction measures takes place at the regional level, even if the motives for contraction arise at a different level.
2. Vital aspects of planning for settlement relocation in the wake of major infrastructural projects (such as the new airport Berlin-Brandenburg / Diepensee) are: Close involvement of all affected parties in early planning stages; the actual relocation process should be speedily executed; the new location should be located relatively close to the original site; affected residents should not be burdened with costs. In the state development plan for the new airport of Berlin and Brandenburg, the "socially acceptable relocation of Diepensee" was specified as a developmental goal.

3. The process of urban contraction in the programme "*Stadtumbau Ost*" ("Urban Regeneration East") encompassed numerous projects to demolish empty buildings, particularly high-rise blocks of flats. For example, in the city district of Halle-Silberhöhe more than 5,500 flats were demolished in the period up to mid-2012. In order to gain funding for such a programme, an urban development concept must be drawn up (§ 171b *Baugesetzbuch (BauGB)* – Federal Building Code).
4. Settlement contraction has also been implemented as a reaction to flooding caused by climate change. As in the case of spatial planning for lignite mines, social acceptability must be ensured in order gain the support of the local population and to quickly execute the relocation process. Thus the planning process should be transparent and should closely involve the affected population, who must also receive adequate compensation.
5. Other than a statutory obligation to remove built structures that are no longer in use, there exists no other measure related to the demolition of industrial sites that can be transferred to settlement contraction as a result of climate or demographic change.
6. In general there are no instances of controlled settlement contraction in the USA. Long-term vacancy in the property market is generally a reflection of underlying economic conditions, and this problem is left for market forces to resolve. Until now political decision-makers have only reacted when the problem could no longer be ignored. The adopted strategy has been to pursue urban renewal through regeneration. Measures of urban contraction regularly result in the establishment of green structures.
7. The Austrian government has assisted local residents in flood-endangered areas to relocate to new settlements and thereby absolved itself of further responsibility. Those residents left behind must bear the risk of flood damage. This practice is controversial, as the state cannot in principle absolve itself of the due care of its citizens.
8. The primary concern in the United Kingdom has been to ensure (controlled) settlement relocation as an adaptive measure to climate change. Here the main planning instrument is the Shoreline Management Plan (SMP), part of a long-term strategy for the sustainable management of flooding and coastal erosion along various stretches of coastline. This is a concrete example of how difficult decisions on the tasks of settlements can be incorporated into land-use planning. The diverse strategies pursued by the SMP include the (active) managed relocation of flood protection facilities further inland and the (passive) strategy that does not involve any concrete interventions.
9. Until now the subject of controlled settlement contraction as a result of demographic change has not been directly addressed in the European Union. The issues of falling population levels and retreat of settlements, such as forecasted for Germany, have hitherto been regarded by European agencies as regional phenomena.

4 Legal framework for settlement contraction

1. Measures of settlement contraction are not specifically mentioned within the *Raumordnungsgesetz* (*ROG)* (Federal Spatial Planning Act). However, such measures are specified amongst the core elements of spatial plans according to § 8 para. 5 no. 1 lit. d *ROG*. Thus the spatial plans (of the federal states) must include some specifications of spatial structure, particularly in regard to settlement development. The general opinion is that such development encompasses measures of settlement demolition.

2. Furthermore, according to § 2 para. 2 s. 4 *ROG*, a basic principle of spatial planning is that "settlement development…should be spatially concentrated; the focus should be on existing settlement areas with sufficient infrastructure as well as on central places [*Zentrale Orte*]." This principle also encompasses measures of settlement demolition. However, clarification in the form of an explicit clause ("including measures of demolition") would be desirable.

3. Land-use planning can help to steer strategies of settlement contraction. As spatial development also encompasses measures of settlement demolition, one option is to draw up provisions regarding spatially important functions or usages in the form of sectoral and spatial aims and principles. Spatial development is basically oriented towards growth. At the same time, this focus can help uncover situations in which settlement demolition is a useful option.

4. Strategies of settlement contraction must be more closely integrated into land-use planning at the regional and federal state levels. This presupposes a careful survey of spatial structures and a system of land zoning that obeys an explicit set of criteria (in connection with the concept of "central places").

5. Retreat of settlements is a particular concern of the federal states of eastern Germany, where demolition is viewed as an adaptive strategy to cope with falling population levels. Here the principle of "central places" plays a fundamental role.

6. According to § 11 para. 3 s. 2 no. 4 *LplG BW* (Land-Use Planning Act of Baden-Württemberg), it is possible to designate municipalities in which – for special reasons particularly related to preserving natural resources – no settlement development may take place other than connected to internal development. Provisions of this type can help to localize settlement areas that may be subject to contraction measures.

7. The *Raumordnungsverfahren* (Spatial Planning Procedure) according to § 15 *ROG* is a basic instrument to ensure structural growth in settlement development. Yet it can also be used to investigate settlement contraction in regard to its compatibility with spatial planning goals. The plans and measures foreseen under § 15 *ROG* include not only the erection and expansion of facilities, but also for example the removal of a national waterway or the alteration (partial demolition) of an airport (cf. § 1 s. 3 nos. 11 and 12 *RoV* (Spatial Planning Ordinance)). It is therefore feasible that the demolition of a settlement area can be objected to from an inter-municipal perspective due to the close infrastructural and technical integration with a neighbouring municipality.

8. Much like (regional) spatial planning, municipal land-use planning law (*Bauplanungsrecht*) is oriented towards growth. Local land-use planning is understood by town planning law as a form of tender planning for third-party use. Insofar as the municipalities wish to implement elements of local land-use plans themselves, these can serve as instruments of extraordinary town planning law (e.g. in the form of renovation and development measures).

9. Municipal land-use planning law can make a valuable contribution to adaptation to climate change through settlement contraction. Here the primary aim is to create opportunities for local land use that meets the requirements of new climatic conditions.

10. Municipal land-use planning law continues to focus on measures to increase the resilience of the building stock, and thus is not particularly suited for implementing a programme of settlement contraction. This focus is rooted in the protection of property and legitimate expectation enjoyed by the respective landowner.

11. Potential features of the preparatory land-use plan (*Flächennutzungsplan*) according to § 5 *BauGB* and the possible designations of the binding land-use plan (*Bebauungsplan*) according to § 9 *BauGB* are restricted to the use of land. Therefore, demolition measures can only be implemented as an alternative form of use that preserves land stocks. The adaptation and restructuring of existing urban districts according to § 1 para. 6 no. 4 *BauGB* should be understood in this sense. Measures to adapt settlement areas to climate change are restricted to public facilities and institutions as well as other measures (cf. § 5 para. 2 no. 2 lit. c *BauGB*).

12. When embarking on measures of adaptation, municipalities must resolve strong and diverse conflicts of interests within the local population. Planning decisions related to adaptation measures must be flexible and, in some cases, reversible. Gaps that arise between the theoretical relevance and practical application of instruments must be closed.

13. Municipal planning law presents municipalities with the opportunity to revise or halt binding land-use plans. In particular, after the seven-year period of permissible building usage has expired, the municipalities are only liable for the actual form of use and do not have to guarantee comprehensive property protection for the property owner.

14. According to § 9 para. 2 *BauGB*, in special cases it is possible to stipulate forms of use and facilities in the binding land-use plan as permitted for a certain time period or as permitted/not permitted until such time as certain conditions arise. The so-called "time-limited building rights" are intended to ensure that interim forms of use are allowed on plots that are earmarked for urban restructuring. These secondary forms of use, as indicated in § 9 para. 2 s. 2 *BauGB*, can be ecological in nature.

15. It is practically impossible to manage urban contraction processes under environmental considerations by employing planning guidelines under §§ 34 and 35 *BauGB*, as these guidelines only regulate for growth and not for contraction. However, corresponding contraction programmes could be steered using spatial instruments if the areas under investigation possess relevant spatial features.

16. Although settlement contraction is not explicitly mentioned, it can be the object of an urban renovation measure under §§ 136 ff. *BauGB*. One difficulty with this approach is the need to gain the agreement of affected property owners.

17. The instrument known as the "urban development measure" ("*städtebauliche Entwicklungsmaßnahme*") according to §§ 165 ff. *BauGB* can be employed for settlement contraction, particularly in combination with federal state and regional spatial planning. In this way urban districts or other areas of the municipal territory can be given new development impulses that reflect the targeted development at the federal state or regional level (§ 165 para. 2 2. *Alt. BauGB*). This instrument can be used to apply spatial and other sectoral goals and principles of spatial planning to measures of settlement contraction. An additional advantage is that the land must be purchased by the municipality beforehand.

18. Some of the most important instruments of extraordinary town planning law for settlement contraction are the provisions on urban restructuring specially created for this case according to § 171a ff. *BauGB*. Urban restructuring measures are intended to ensure that facilities which cannot be employed for some other use may be demolished. In order to implement urban restructuring measures, urban development contracts as specified in § 11 *BauGB* are drawn up with the property owners (e.g. housing associations and property companies). One object of the contractual agreements can be, in accordance with § 171c s. 2 no. 1 *BauGB*, the demolition of physical structures. This regulatory form can

serve as a useful template for a strategic, plot-based process of well-ordered settlement contraction. It encompasses all forms of action, whether regulatory instruments (securing of implementation measures by statute, § 171d *BauGB),* incentives (urban construction funding, § 164a *BauGB*) and instruments that are voluntary in nature (urban development concept, § 1 para. 6 no. 11, § 171b para. 2 *BauGB*). The demolition of physical structures is specifically mentioned in § 171a para. 3 no. 5 *BauGB*.

19. In regard to urban building legislation, the "development reduction" order according to § 179 *BauGB* is a useful instrument to combat the negative repercussions of derelict properties. Under this law a municipality can oblige the property owner to accept the complete or partial demolition of a physical structure if it does not meet the specifications of the binding land-use plan and cannot be suitably adapted (no. 1) or if the property displays undesirable conditions or deficits that cannot be remedied by a process of modernization or upgrading (§ 177 para. 2 and 2 s. 1 *BauGB*) regardless of the existence of a land-use plan. The property owner is required to bear the costs up to a sum equivalent to the increase in the value of the property resulting from the demolition measures, which sum may be determined by a valuation report. It is feasible that the law on development reduction may be strengthened from toleration of the demolition process to obliging the property owner to undertaken the demolition work themselves. For the municipalities it would certainly make sense to transfer full costs to the owner up to the limits of acceptability. It should be noted that this instrument is only to be employed in individual cases.

20. Demolition orders are strongly regulated within building law. They are not issued simply to remove an "eyesore" from the urban environment, but are only applied in cases of public endangerment, for example when the building fabric is crumbling onto public roadways. Even in such cases the primary action is to secure the integrity of such derelict buildings, thereby obeying the principle of proportionality.

21. The contents of instruments of landscape planning constitute a possible planning basis to accompany the process of settlement demolition. In this way demolition measures can be linked to the removal of impairments to the landscape and natural environment. It may be determined that spaces opened up in this way are, in view of their location or natural potentials for development, particularly suited as compensations for interventions or can contribute to the creation and protection of a biotope network. The creation and development of climate-resilient landscape structures could gain greatly in importance in future years.

22. In view of falling population levels, the removal of under-utilized water supply networks can be a feasible measure to promote sustainable water use – similarly, a water body can be assured a good ecological condition by means of renaturation. In this way the planning of measures can be employed as a way to manage settlement contraction.

23. The concrete measures of "flood protection other than physical structures" according to § 75 para. 2 s. 2 *Wasserhaushaltsgesetz* (Federal Water Act) can, for example, ensure that rivers are accorded more land to expand during times of flooding. These include, in particular, measures to secure new and old floodwater retention areas. In this way a flood risk management plan can be drawn up to make a positive contribution to water levels, flow speeds and generally on the flooding process through the well controlled flooding or draining of water retention areas. The implementation of the flood risk management plan can be supported by provisions within regional land-use plans.

24. In view of the stipulations regarding the planning of waste management as laid out in § 30 para. 2 *Kreislaufwirtschaftsgesetz* (Waste Avoidance, Recycling and Disposal Act), namely

that projected requirements must be considered for a period of at least 10 years, this instrument also presents itself as a potential tool to manage waste removal structures in areas that are undergoing demolition. While obeying the principles and regulations of material recycling as well as waste disposal management in pursuance of the common good, planning agencies have considerable leeway in drawing up their spatial plans, which, naturally, must take into account the aims and principles of land-use management (cf. § 30 para. 5 *KrWG*).

25. Current environmental regulations other than those applying to sectoral planning do not make explicit reference to the influence and steering of settlement demolition as a precautionary measure. An exception is the case of flood protection legislation as a particular subdivision of water management legislation, which does include preventative measures (e.g. bans on construction).

26. The most important area of environmental protection law is constituted by ancillary provisions and provisions that deal with clean-up and rehabilitation measures. These are primarily employed in the field of impact management (examples: instruments for nature and soil protection).

27. Immission control regulations generally apply to polluting facilities, and hence have limited applicability to settlement contraction. These regulations could become more relevant if interactions between settlement contraction and the construction/operation of facilities were to arise, i.e. a link is drawn between the facilities governed by immission control legislation and the services they provide for adjacent residential or commercial settlements (heat production plants, which provide heat to residential settlements as well as making waste heat or steam available to nearby industrial facilities).

28. Legislation governing water/sewage management and material recycling is regulated by public authorities for the common good. Water management and material recycling differ in the form of regulation. Material recycling is more strictly regulated than water management in regard to the designation of facilities for the treatment of certain types of water. Furthermore, there are differences in the evaluation of decentralized solutions for these essential public services in view of the fact that water supply and sewage removal – in contrast to waste disposal –requires pipeline networks, which have high maintenance costs.

5 Retreat of Settlements in the context of demographic change

1. A clarifying amendment to the *Raumordnungsgesetz* (Federal Spatial Planning Act) would help to facilitate demolition work as part of a (partial) settlement contraction, especially in rural regions. In this respect, we can point to § 8 para. 5 s. 1 no. 1 lit. d *ROG* regarding "settlement development", which should take account of demolition alongside expansion and concentration. However, this norm only applies to the federal states and not spatial planning at the national level, which must be determined by legal interpretation. This presents a particular difficulty for the practice of spatial planning. § 2 para. 2 no. 2 s. 4 *ROG* could be revised as follows: "Settlement work should be spatially concentrated; the focus must be on existing settlement areas with sufficient infrastructure and on central places, including measures of settlement dedevelopment."

2. Until now there has been no sectoral planning, specific criteria or threshold values to determine the selection of settlement and settlement areas to be demolished for demographic reasons. Yet this spatial planning task could feasibly be integrated within general

planning measures, for example in the form of sectoral sub-plans as a task of regional planning. One option at the level of general spatial planning could be, for example, to introduce the spatial category "*Entleerungsgebiete*" (areas designated for abandonment), for which financial assistance could be made available only in the case of "managed retreat". There must, of course, be a strong justification for such a process, as this classification could lead to considerable economic disadvantage, which must then be compensated in the case of reclassification.

3. The most important spatial management tool at a time of demographic change is no doubt the principle of "central places". Thus demolition should be prioritized in settlements that do not function as such so-called "central places".

4. Due to its political and sectoral neutrality, its interdisciplinary cross-sectional working methods and interdisciplinary perspectives as well as the many good contacts to superior administrative levels, the system of general spatial planning is well suited to assume the role of initiator and moderator in managing the processes of contraction. Here the emphasis should be on the application of informal instruments in regions facing processes of urban contraction. Such instruments are characterised by flexibility, practicality and the close integration of diverse actors responsible for spatial development.

5. According to § 136 para. 2 s. 1 *BauGB*, measures of settlement renovation are those that serve to greatly improve or regenerate settlement areas by remedying serious deficits in the built environment. Such measures can be implemented "in town and country", i.e. they not only apply to urban areas or rural areas, but in particular to small municipalities and villages. In regard to settlement contraction in the wake of demographic change, deficits can be the structural characteristics of buildings (no. 1 lit. b) as well as the impact of land parcels and industrial facilities, particularly in the case of polluted sites (lit. f).

6. The special task of ensuring that settlement structures reflect demographic change is laid out in § 136 para. 4 no. 3 *BauGB*. Thus rehabilitation measures must ensure that settlement structures are designed to accommodate local population trends. This aim was already incorporated in the *BauGB* in 1987 in order to reflect population trends that were expected to have a considerable impact on the structure of settlements, e.g. regarding demolition.

7. According to §§ 165 ff *BauGB*, urban development measures are distinguished from renovation measures in that the former do not aim to remedy deficits in the built environment, but strive to meet new demands as quickly as possible. Thus the focus is on settlement expansion and the development of the property market. However, a connection does exist through the implementation of demolition measures in state and regional planning.

8. According to the legal definition in § 171a para. 2 *BauGB*, urban redevelopment measures are adaptive measures to ensure that "sustainable urban structures" are created in areas "suffering a considerable loss of spatial function". Such a loss of spatial function can be assumed in the case of the existing or forecasted "permanent over supply of buildings […] for residential purposes" (i.e. vacant buildings) in the wake of demographic change.

9. The instrument known as the "social city" according to § 171e para. 4 s. 2 *BauGB* is intended to improve the connection between the home and work environments and to create and maintain a socially stable population structure. One basic precondition for this is a suitable residential environment with a low level of building vacancy. The law does not specify which type of measure should be used to create the "social city", and thus the

municipality has considerable leeway in its actions, which may include a partial demolition of settlement structures. The image of urban districts can thus be improved and an ongoing downwards trend or loss of population can be stopped by improving the identification of the local population with their residential environment.

10. The application of environmental regulations in regard to settlement contraction in the wake of demographic change largely focuses on the clean-up and regeneration of facilities for which operations have ceased.

11. Service charges and the setting of utility rates are important instruments to regulate the level of consumption of basic public services. Measures to be considered in this regard are the setting up of diverse charging zones, the staggering of charges and fees according to the intensity of use or income level as well as the regulation of the scale upon which waste disposal charges are oriented. Such measures are not used to regulate settlement contraction, but rather are a form of reaction to these developments.

12. One option is to establish charging zones, graded according to settlement density and/or the distance to public utility facilities. There are no particular legal objections to the feasibility of this zoning model. However, the principle of cost recovery and equivalence must be obeyed. While these are not rooted in constitutional law, their impact is felt through the principle of reasonableness.

13. In adapting the regulation of service charges to the fact of demographic change, it is important to consider the increasing number of single households. One possible reaction to this development in regard to waste disposal is to pursue a combined approach of a basic charge (based on the size of rubbish bin) and a (linear) service charge. This model has already been adopted in diverse rural districts. The disparate level of fees resulting from these two components does not violate the general principles of equivalence and equality according to Art. 3 para. 1 *GG*, as the varying fee levels have a practical justification (particularly in regard to protecting the environment and natural resources).

14. Against a backdrop of population loss, the waste disposal plan according to § 30 *KrWG* (Waste Avoidance, Recycling and Disposal Act) assumes a regulatory function in the setting of charges for waste disposal. According to § 30 para. 2 *KrWG* the waste disposal plan must also take account of future (population) trends; hence, this instrument is also of interest for areas undergoing contraction.

15. One of the most important regulatory tools is the *Verbindlichkeitserklärung* (binding declaration) according to § 30 para. 4 *KrWG*. This provides the planning agency with a regulatory tool (according to § 30 para. 1 s. 4 *KrWG*) to designate a waste recycling facility for connection to and use by a planning area. In this way it is possible to coordinate the demand for new facilities and to ensure that current facilities are fully utilised.

16. Nature protection legislation offers an alternative path for the development of already abandoned settlement areas or those in the process of becoming vacant. However, in order to react to demographic change by facilitating the compulsory purchase of properties lying within designated nature protection zones, it is necessary to make a clear case for such action lying in the public interest. In the field of landscape planning and in regard to compensatory measures within intervention provisions, potential settlement contraction areas could prove to be suitable sites for conservation measures or as buffer zones to protect existing forms of land use.

17. Regulatory powers for soil protection in regard to guidelines on the unsealing of sealed ground are only available in restricted form, as the enabling legislation under § 5

BBodSchG (Federal Soil Protection Act) applies to exterior areas that cannot be further characterized as built-up structures or which are not subject to general building legislation. The relevant legislation only covers areas for which soil-sealing is not a result of construction work but rather some other form of use.

18. Legal provisions for the closure and dismantling of industrial facilities according to the *BImSchG* (Federal Immission Control Act) are not linked to settlement contraction. Here the focus of immission control legislation is the safe operation of a facility up to its closure, insofar as a permit for continued operation is not issued.

19. The validity of the *USchadG* (Environmental Damage Act) is limited due to the subordinate nature of the legislation. It is particularly relevant in the case of soil and water pollution. The act's strength is in regard to the avoidance and removal of damage to biodiversity, although here restrictions apply pursuant to § 19 para. 1 s. 2 *BNatSchG* (Federal Nature Conservation Act, here: Approval and Legalization of Damaging Activities).

20. Articles of civil law (transferral of land ownership, pre-emptive purchase rights and cancellation of rental contract) only become relevant subsequent to a public decontamination order or expropriation of property. Civil law does not foresee any options for cancelling rental contracts in order to manage general processes of population relocation. Instead, use must be made of public legislation. While the legal transferral of land ownership can support the process of settlement contraction, it is not sufficient in itself to steer this process.

21. Instruments for the transferral of land ownership and the cancellation of rental contracts in order to relocate and rededicate residential and commercial areas for the purposes of nature protection are already foreseen in the *BauGB* and the *BNatSchG* as well as the corresponding nature protection regulations of the federal states. To make better use of instruments of urban development and expropriation in this framework, i.e. to assist the aims of nature protection as well as to resolve existing uncertainties regarding their application, an alternative regulatory concept should be introduced that encompasses the vacating of settlement areas as well as the rededication of these areas to other forms of land use.

22. The currently valid version of § 165 *BauGB* regulates for urban development measures. These measures could become a core element of managed settlement contraction – supplemented by nature protection regulations – as both expropriation and the cancellation of rental contracts are permissible subsequent to such planning.

6 Retreat of settlements in the context of measures to adapt to climate change

1. In the *Raumordnungsgesetz* (Federal Spatial Planning Act) the issue of adapting to climate change was introduced as a principle of regional planning at a comparatively early stage. Aspects of climate change adaptation are particularly reflected in § 2 para. 2 no. 6 s. 7 and 8 *ROG*, which reflect the spatial requirements of climate change through measures […] that help to adapt land use to climate change.

2. Adaptive strategies to climate change, which may also encompass measures of settlement contraction, can be formulated within general land-use plans, particularly by specifying the targeted development of the structure of urban open spaces. In this way it is possible to set goals for large-scale networks of open spaces, for the conservation of open spaces, for the use of open spaces as well as for preventative flood protection (§ 8 para. 5 no. 2

ROG). General land-use plans can also include provisions to support the implementation of flood risk management plans.

3. Construction planning law only makes a limited contribution to settlement contraction as a reaction to climate change. In general the aim is to create possibilities for land use that meets the demands of climate change. Legislation focuses on measures to adapt current settlement areas by increasing their resilience without specifying concrete measures of contraction.

4. Under existing legislation, the federal states and the municipalities have available to them options for measures on climate adaptation that in some cases foresee interventions in settlement structures. If the general land-use plans drawn up by federal states have provisions that can be used to steer settlement contraction, then this opens up a wealth of options at the municipal level, of which expropriation can be the strongest form of intervention (provisions for the expropriation of land as a preventative measure for technical flood protection).

5. Following the 2013 amendment of the *BauGB*, the aims of climate adaptation must be investigated and carefully weighed for measures of urban redevelopment according to §§ 136 ff. *BauGB* in the framework of a general development measure, insofar as this is demanded by local conditions (§ 136 para. 2 s. 2 no. 1 *BauGB*). In this way urban regeneration measures can serve as instruments to overcome conflicts in land stocks when planning climate adaptation measures, including those of settlement contraction.

6. According to §§ 165 ff. *BauGB*, urban development measures play a subordinate role in climate adaptation. These were left unrevised by the amendments to the *BauGB* of 2011 and 2013. The precondition for their use is an urgent public interest that outweighs any private interest. Only a careful review in the individual case can determine whether this is justified for a climate adaptation measure that leads to some form of climate-relevant settlement contraction. The principle of due reasonableness must be considered, and will determine the relevance of application.

7. The regulations on urban restructuring according to §§ 171a ff. *BauGB* were expanded as part of the 2011 amendment to meet "the general requirements of […] climate adaptation" (§ 171a para. 2 s. 2 *BauGB*). In regard to the spatial approach, the measures are also applicable to intact settlement areas. The legal preconditions also foresee corresponding measures to demolish built-up sites.

8. The intention of grandfathering is to protect the legally sanctioned use of a built structure for future ownership. Following a high-court decision, the legal institute of grandfathering serves to protect building stock against measures that would destroy or render worthless investments made in consideration to the existing legal status. This matter is rooted in Art. 14 para. 1 *Grundgesetz*. Grandfathering can, however, be restricted or annulled by provisions of the building code, urban development legislation or administrative procedural legislation, which is legally comparable to the contents of and restrictions on ownership rights and which is possible by means of expropriation according to Art. 14 para. 1 s. 2 and para. 3 *GG*.

9. According to § 9 para. 2 *BauGB*, binding land-use plans can specify that certain building-related or other uses and facilities are permitted for a specified period of time or are permitted/not permitted until certain conditions arise. These conditions relate to the climate (environmental risks).

10. In regard to compliance with the German constitution, measures of settlement intervention for the purpose of climate adaptation must observe the basic rights secured by Art. 11 *GG* (freedom of movement) and Art. 14 *GG*. The mandatory relocation of house owners and tenants generally contravenes the rights provided by Art. 14 *GG*. Here the requirements for legal-constitutional justification and reasonableness are determined by the type of intervention (content and limits of ownership rights, Art. 14 para. 1 s. 2 *GG*, or expropriation Art. 14 para. 3 *GG*). The primary consideration for contravening the content and limits of ownership rights is consideration of the common good, whilst expropriation can only be defended in regard to some urgent and major public interest.

11. Regarding measures of climate adaptation, various constellations can be imagined in which changing environmental conditions justifies a wide-ranging restriction of the named basic rights. Possible reasons for such encroachments could be in the interests of flood protection or to halt an ongoing process of soil erosion (resulting in a danger of landslides). These reasons could be considered to constitute reasonable considerations of public interest, thereby providing a justification for a limit on the contents and rights of ownership. Furthermore, flood protection and protection against landslides/mudslides can also be seen as urgent measures in the public interest, which would then justify the expropriation of property.

12. A distinction must be drawn between flood protection and coastal protection measures when considering how to finance these measures and to create incentives. For flood protection there exists an allocation formula (costs per sq. metre land) for areas that would benefit from such measures. In these cases it would be possible to distinguish between built-up and non built-up areas. Incentives can be created by abstaining from implementing flood protection measures on certain areas and thereby transferring responsibility to the landowner. The result is that these areas are either abandoned by the owner or they resolve to maintain and protect their property themselves.

13. In regard to coastal protection, the structure of funding should be adapted to ensure that restrictive coastal management measures such as land abandonment or the demolition of built-up areas are earmarked for funding. The requisite legal amendments can be undertaken at national level by means of the joint federal/state task "Improvement of agricultural structures and coastal protection".

7 Avoidance of insufficiently climate-resilient settlements

1. A central task of land-use planning, both at the level of general spatial planning and municipal land-use plans, is to ensure that settlements are suitably climate resilient. Currently, however, no specific regulation of resilience is foreseen in the *Raumordnungsgesetz* (Federal Spatial Planning Act). Based on the EU Directive on Maritime Spatial Planning (2014/89/EU), currently being implemented, the following amendment is proposed for § 2 para. 2 no. 6 s. 7 *ROG*: *"The spatial requirements of climate change must be recognised both through measures to counteract climate change as well as those which facilitate adaptation to climate change and to increasing the resilience to climatic impacts."*

2. The revisions of § 1 para. 5 s. 2 *BauGB* and § 1a para. 5 *BauGB* serve to underline the importance of resilience without, however, giving it precedence over other concerns as laid out in § 1 para. 6 *BauGB* and § 1a *BauGB*. In view of the need for action as reaction to the so-called "energy revolution", the municipalities must now carefully balance the various

options at their disposal. The new aim of counteracting the effects of climate change while simultaneously adapting to these effects justifies (in compliance with the necessary weighing up of public and private concerns according to § 1 para. 7 *BauGB*) the usual representation and provisions regarding land-use as well as the newly introduced options as laid out in § 5 no. 2 a, b, c *BauGB* and in § 9 para. 1 no. 12, no. 23 b, para. 6 *BauGB*.

3. According to § 9 para. 2 *BauGB*, in special cases the legally binding land-use plan can specify that certain building-related or other uses and facilities are permitted for a specified period of time or are permitted/not permitted until certain conditions arise. These conditions can be related to climate (e.g. environmental risks), which means that this instrument can additionally support the avoidance of non climate-resilient structures.

4. The methodology of the EIA (Environmental Impact Assessment) is currently not aimed at a comprehensive assessment of the climate change compatibility of an initiative. The focus of the EIA, according to the *Gesetz über die Umweltverträglichkeitsprüfung* (*UVPG)* (Environmental Impact Assessment Act), is on the specific objects of protection: local residents, environmental as well as cultural and other material assets, but not the initiative itself. Hence an assessment is not directed towards the compatibility of the initiative with current or future environmental conditions.

5. The instrument of the EIA offers a way of taking account of aspects of climate resilience. An indirect link can be created if, under the influence of climate change, an initiative reaches a state in which it has an impact on the protected goods listed in § 2 para. 1 *UVPG*. This situation can particularly arise in the area of facility security. Regarding the determination of operator obligations within the *Störfallverordnung* (Major Accidents Ordinance), there already exist comprehensive suggestions for the operationalisation of climate change adaptation measures within the non legally-binding guidance instruments.

6. A major step has been a legal amendment to the *UVPG* in the form of a climate compatibility clause (determination of the susceptibility of a project in regard to the repercussions of climate change). In view of the implementation requirements of the climate change adaptation features in the Amending EIA Directive, the lawmaker now has the possibility of expanding the methodological principles of the EIA. The approach described in recital 13 and in appendix IV no. 5 lit. f of the Amending EIA Directive merely indicates the path that allows agencies and initiators to deal with the uncertainties of changing environmental conditions.

7. In regard to general spatial planning, it is important to investigate at an early planning stage whether the intended result of a land-use plan is resistant to climate change. The SEA is a suitable instrument for the requisite knowledge creation and to prepare the groundwork for planning decisions. Therefore, a basic clarification of the relevant criteria for a preliminary investigation of each individual case in the framework of an SEA should be included in Appendix 4 of the *UVPG* (and the corresponding Appendix II of the "SEA" Directive 2001/42/EG). The susceptibility of designations in relevant plans to climate change should be detailed there.