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TAKDİM

Mekân, yalnızca üzerinde yaşanan bir yüzey değil, geçmiş ile gelecek arasında kurulan güçlü bir bağdır. Bir ilçenin coğrafi özelliklerini bilimsel yöntemlerle ortaya koymak, o yerin doğal potansiyelini anlamak kadar, kalkınma vizyonunu sağlam temellere oturtmak açısından da büyük önem taşımaktadır. Bu yönüyle coğrafya atlasları, yalnızca akademik bir çalışma değil, aynı zamanda stratejik bir bilgi altyapısıdır.

Hekimhan** (Malatya) **İlçesi Coğrafya Atlası, ilçenin doğal ve beşerî unsurlarını disiplinler arası bir bakış açısıyla ele alan kapsamlı bir eserdir. Arazi şekillerinden iklim parametrelerine, su varlığından toprak özelliklerine, arazi kullanım desenlerinden demografik yapıya kadar pek çok veri; çağdaş Coğrafi Bilgi Sistemleri uygulamaları ve mekânsal analiz teknikleriyle bütüncül bir yaklaşımla değerlendirilmiştir. Bu çalışma; mekânsal veriyi anlamlandıran, yorumlayan ve karar süreçlerine entegre edilebilir hale getiren nitelikli bir bilimsel üretim örneğidir.

Günümüzde yerel kalkınma, planlama ve afet yönetimi gibi alanlarda sağlıklı kararlar alabilmenin temel koşulu; güvenilir, sistematik ve karşılaştırılabilir verilere dayalı analizler yapabilmektir. Bu atlas, Hekimhan'ın mevcut durumunu ortaya koymanın ötesinde, geleceğe yönelik projeksiyonların oluşturulmasına da önemli bir zemin hazırlamaktadır. Bu yönüyle hem akademik araştırmalara katkı sunmakta hem de yerel yönetimler ve ilgili kurumlar için güçlü bir başvuru kaynağı niteliği taşımaktadır.

İnönü Üniversitesi olarak, içinde bulunduğumuz coğrafyayı bilimsel bilgiyle daha iyi anlamayı ve bu bilgiyi toplumsal faydaya dönüştürmeyi temel önceliklerimiz arasında görmekteyiz. Üniversite-şehir bütünleşmesinin somut bir göstergesi olan bu çalışma, yerel ölçekte üretilen bilginin ulusal literatüre katkı sağlayabileceğini açık biçimde ortaya koymaktadır.

Bu değerli eserin hazırlanmasında emeği geçen akademisyenlerimizi tebrik ediyor; çalışmanın Hekimhan'a, Malatya'ya ve ülkemizin coğrafya çalışmalarına kalıcı katkılar sunmasını diliyorum.

Prof. Dr. Nusret AKPOLAT
İnönü Üniversitesi Rektörü

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BAŞLARKEN

Bir kenti, bir ilçeyi ya da bir bölgeyi gerçekten tanımak, onun sadece yollarını, mahallelerini ya da sınırlarını bilmekle mümkün değildir. O yörenin dağlarını, vadilerini, sularını, iklimini, toprağını, üretim biçimlerini ve insanıyla kurduğu ilişkiyi birlikte okumak gerekir. İşte coğrafya atlasları, bu bütüncül bakışı sağlayan en kıymetli bilimsel eserler arasında yer almaktadır.

Elinizde bulunan Hekimhan (Malatya) İlçesi Coğrafya Atlası, Hekimhan'ın doğal ve beşerî çevresini bilimsel yöntemlerle ortaya koyan, veriye dayalı, sistematik ve kalıcı bir başvuru kaynağı niteliğindedir. Bu çalışma, yalnızca haritaların bir araya getirilmesinden ibaret değildir; aynı zamanda bir ilçenin mekânsal hafızasının oluşturulması, coğrafi kimliğinin kayıt altına alınması ve geleceğe taşınması anlamına gelmektedir.

Hekimhan'ın jeomorfolojik yapısından iklim özelliklerine, hidrolojisinden toprak ve arazi kullanımına, nüfus yapısından ekonomik faaliyetlerine kadar pek çok unsur, çağdaş coğrafi bilgi sistemleri ve mekânsal analiz teknikleri kullanılarak değerlendirilmiştir. Bu yönüyle atlas, hem akademik çalışmalar için güvenilir bir altlık sunmakta hem de yerel yönetimler, planlamacılar ve karar vericiler için önemli bir rehber olma özelliği taşımaktadır.

Üniversitelerin en temel görevlerinden biri, bulundukları kentin ve bölgenin sorunlarını anlamak, potansiyellerini ortaya koymak ve bilimsel bilgi üretimi yoluyla topluma katkı sunmaktır. İnönü Üniversitesi olarak, içinde bulunduğumuz coğrafyayı daha yakından tanımaya yönelik bu tür çalışmaları son derece değerli buluyoruz. Hekimhan Coğrafya Atlası da bu anlayışın somut ve nitelikli bir ürünüdür.

Bu kıymetli çalışmanın hayata geçirilmesinde emeği geçen tüm akademisyenleri içtenlikle tebrik ediyor, İnönü Üniversitesi Bilimsel Araştırma Projeleri Birimi'nin desteğiyle ortaya çıkan bu eserin, Hekimhan'a, Malatya'ya ve ülkemiz coğrafya literatürüne önemli katkılar sunmasını diliyorum.

Prof. Dr. Ahmet KIZILAY

GİRİŞ

Coğrafi mekân, yalnızca yüzey şekillerinin dağılışını ya da sayısal göstergelerin harita üzerinde temsiline indirgenebilecek bir gerçeklik değildir. Mekân, zamanın biriktirdiği doğal süreçlerin, üretim biçimlerinin, yerleşim tercihleri ve sosyal örgütlenme kalıplarının üst üste eklenmesiyle oluşan çok katmanlı bir yapıdır. Bu nedenle yerel ölçekte hazırlanan coğrafi çalışmaların temel sorumluluğu, yalnızca mevcut durumu göstermek değil, belirli bir tarihsel kesitte mekânın fiziksel ve beşerî dokusunu bütüncül biçimde ortaya koymak, onu hem nicel hem de nitel boyutlarıyla kayıt altına almaktır. Hekimhan Atlası bu anlayış doğrultusunda şekillenmiş, ilçenin doğal çevresi ile insan faaliyetleri arasındaki karşılıklı etkileşimi sistematik, doğrulanabilir ve izlenebilir bir veri altyapısı üzerinden görünür kılmayı hedeflemiştir. Bu çalışma, haritaların estetik düzenlenişinden önce verinin nasıl üretildiği, nasıl denetlendiği ve nasıl anlamlandırıldığı sorularına cevap arayan bir üretim süreci üzerine inşa edilmiştir.

Hekimhan, Malatya ili sınırları içerisinde, Fırat Nehri'nin Yukarı Havzası içerisinde konumlanan, topoğrafik açıdan parçalanmış ve yükselti farklılıklarının kısa mesafelerde belirginleştiği bir arazi yapısına sahiptir. İlçe, Doğu Anadolu'nun batı kesiminde yer almakta ve bu konum, hem morfolojik hem de iklimsel özellikler üzerinde belirleyici olmaktadır. Dağlık alanlar, plato yüzeyleri ve akarsu vadileri ilçenin temel jeomorfolojik birimlerini oluşturmakta; bu morfolojik çeşitlilik yerleşim dağılışını, ulaşım ağını ve üretim desenlerini doğrudan etkilemektedir. Fırat Havzası'na bağlı hidrolojik sistem, yüzey şekillerinin gelişiminde önemli rol oynamış; akarsu aşındırmasına bağlı vadi sistemleri yerleşim için nispeten elverişli alanlar oluşturmuştur. Yükselti, eğim ve bakı koşullarının birlikte şekillendirdiği mikroklimatik farklılıklar ise tarımsal faaliyetlerin mekânsal örüntüsünü belirlemekte; bu durum doğal çevre ile beşerî organizasyon arasındaki karşılıklı ilişkiyi somutlaştırmaktadır. Dolayısıyla Hekimhan'ın coğrafi karakteri, homojen bir arazi yapısından ziyade, farklı morfolojik ve klimatik koşulların iç içe geçtiği dinamik bir sistem sunmaktadır.

Hekimhan Atlası'nın hazırlık süreci masa başında tasarlanan bir kartografik projeden ziyade sahada başlayan bir gözlem ve veri üretim programıyla şekillenmiştir. Yaklaşık yirmi güne yaklaşan arazi çalışmaları kapsamında ilçeye bağlı köyler ve mezralar sistematik biçimde ziyaret edilmiş, yerleşimlerin mekânsal dokusu yerinde incelenmiştir. Bu saha programı tek zamanlı bir ziyaret şeklinde yürütülmemiş, 2022 yılı içinde farklı dönemlerde ve farklı mevsim koşullarında tekrarlanmıştır. Böylece çevresel koşulların, tarımsal faaliyetlerin ve yerleşim kullanım biçimlerinin yıl içindeki değişkenliği doğrudan gözlemlenebilmiş, mekânın tek bir zamansal kesite indirgenmesi engellenmiştir. Bu tercih, özellikle bitki örtüsü yoğunluğu, suya bağlı kullanım alanları, tarımsal üretim ritmi ve yerleşim canlılığı gibi unsurların daha sağlıklı değerlendirilmesine imkân tanımıştır.

Arazi sürecinin lojistiği dönemsel olarak üniversitenin ve belediyenin sağladığı araçlarla yürütülmüş, ayrıca belediye tarafından yöreye hâkim muhtarlar ve yerel bilirkişiler saha çalışmalarına eşlik etmiştir. Bu durum yalnızca erişilebilirliği kolaylaştıran bir unsur değil, aynı zamanda yerel mekânsal bilginin akademik gözlemle eş zamanlı değerlendirilmesine olanak tanıyan metodolojik bir avantaj sağlamıştır. Yerleşim adlarının kökenleri, terk edilmiş mezraların geçmişi, üretim biçimlerindeki dönüşüm ve nüfus hareketliliği gibi konular sahadaki fiziki izlerle birlikte değerlendirilmiş, böylece haritaların arkasındaki anlam katmanları güçlendirilmiştir. Bu yaklaşım, mekânı yalnızca ölçülebilir bir yüzey olarak değil, aynı zamanda deneyimlenmiş ve kültürel olarak anlamlandırılmış bir alan olarak ele alma çabasının bir yansımasıdır.

Saha çalışmaları sırasında yerleşimlerin morfolojik özellikleri ayrıntılı biçimde kayıt altına alınmıştır. Yapı yoğunluğu, yapıların kullanım durumu, parsel örgüsü, sokak düzeni, yol bağlantıları, tarımsal kullanım biçimleri ve topoğrafya ile kurulan ilişki doğrudan gözlem yoluyla değerlendirilmiş, standartlaştırılmış saha notları oluşturulmuştur. Bu notlar masa başı analiz sürecinde kontrol katmanı olarak kullanılmış, sayısal verilerle elde edilen sonuçların yerinde gözlemle tutarlılığı sınanmıştır. Böylece Hekimhan Atlası'nda üretilen her tematik harita, yalnızca masa başında işlenen veriye değil, sahada doğrulanmış gözlemlere de dayandırılmıştır.

Mekânsal analiz sürecinin bir diğer önemli ayağını uzaktan algılama verilerinin işlenmesi oluşturmuştur. Uydu görüntüleri doğrudan harita üretiminde kullanılmadan önce sistematik bir ön işleme sürecinden geçirilmiştir. Görüntülerdeki bulut ve gölge etkileri maskelenmiş, bant kombinasyonları kontrol edilmiş, çalışma sınırına uygun mozaikleme ve kırpma işlemleri gerçekleştirilmiştir. Ardından yüzey ve vejetasyon özelliklerini temsil eden spektral indeksler üretilmiş, bu indeksler CBS ortamında raster analiz zincirine dâhil edilmiştir. Ancak burada önemli olan yalnızca indeks üretmek değil, bu sayısal yüzeylerin sahadaki gerçeklik ile ne ölçüde örtüştüğünü test etmektir. Bu nedenle uzaktan algılama çıktıları, arazi gözlemleri ve İHA ortofotoları ile karşılaştırılmış, yorumlama süreci çok katmanlı bir doğrulama yaklaşımı içinde yürütülmüştür. Böylece elde edilen haritalar soyut sayısal yüzeyler olmaktan çıkarılmış, gözlemlenmiş mekânsal gerçekliğe dayanan analitik katmanlara dönüştürülmüştür.

CBS üretim hattında veri entegrasyonu kritik bir aşamayı oluşturmuştur. Resmî kurumlardan temin edilen istatistiksel veriler tablo formatında elde edilmiş, bu veriler idari birim sınırları ile ilişkilendirilerek mekânsallaştırılmıştır. Bu süreçte yalnızca tablo birleştirme işlemi yapılmamış, aynı zamanda veri tutarlılığı kontrol edilmiştir. Farklı yıllara ait veriler arasında tanım farklılıkları incelenmiş, birim dönüşümleri yapılmış, eksik ve uç değerler analiz edilmiştir. Zaman serisi karşılaştırmaları gerçekleştirilirken aynı metodolojik çerçevenin korunmasına dikkat edilmiş, böylece değişim analizlerinin sağlıklı bir zemine oturtulması sağlanmıştır. Bu yaklaşım, Hekimhan Atlası'nın yalnızca statik bir durum fotoğrafı değil, değişim dinamiklerini gösterebilen bir çalışma olmasına imkân tanımıştır.

Raster ve vektör katmanların birlikte kullanıldığı analizlerde mekânsal çakıştırma, alan hesaplama, sınıflandırma ve yeniden sınıflandırma işlemleri uygulanmıştır. Özellikle eğim, bakı ve topoğrafik türevler gibi sayısal yükseklik modeline dayalı analizler, arazi kullanım ve yerleşim örüntüleri ile birlikte değerlendirilmiştir. Bu analizler yalnızca teknik çıktı üretmek amacıyla değil, mekânsal mantığı anlamlandırmak amacıyla gerçekleştirilmiştir. Hangi kullanım biçiminin hangi topoğrafik koşullarda yoğunlaştığı, hangi alanlarda mekânsal kırılganlığın arttığı gibi sorular doğrudan CBS ortamında test edilmiş, elde edilen sonuçlar açıklama metinlerinin temelini oluşturmuştur.

İHA verilerinin CBS ile entegrasyonu üretim sürecine ayrı bir derinlik kazandırmıştır. Ortomozaik görüntüler, yüksek çözünürlüklü referans katmanı olarak kullanılmış, sayısallaştırma işlemleri bu görüntüler üzerinden gerçekleştirilmiştir. Yapı sınırları, yerleşim yoğunluğu ve parsel düzeni gibi mikro ölçekli unsurlar, makro ölçekli uydu verileri ve kurumsal veri setleriyle aynı mekânsal sistem içinde değerlendirilmiştir. Bu bütünleşik yaklaşım, Hekimhan Atlası'nın hem geniş ölçekli mekânsal eğilimleri hem de yerel ölçekteki ayrıntıları aynı çerçevede sunabilmesini mümkün kılmıştır.

Kartografik tasarım süreci ise analizlerin doğal bir uzantısı olarak ele alınmıştır. Haritalar yalnızca görsel estetik kaygılarla değil, okunabilirlik, veri şeffaflığı ve metodolojik tutarlılık ilkeleri doğrultusunda tasarlanmıştır. Semboloji seçimleri temanın niteliğine göre belirlenmiş, renk skalaları sınıf aralıklarının anlamlılığını destekleyecek biçimde oluşturulmuştur. Her haritada veri kaynağı, üretim yılı ve gerekli açıklamalar sistematik biçimde yerleştirilmiş, böylece haritaların bağımsız olarak da okunabilir olması sağlanmıştır. Lejant yapıları, ölçek çubukları ve yön göstergeleri standart bir tasarım dili içinde düzenlenmiş, atlas

genelinde bütüncül bir görsel kimlik oluşturulmuştur. Bu yaklaşım, Hekimhan Atlası'nın yalnızca içerik olarak değil, kartografik kalite açısından da bütünlüklü bir eser niteliği taşımasını sağlamıştır.

Üretim sürecinde Python tabanlı araçlar da destekleyici olarak kullanılmıştır. Tekrarlayan veri işleme adımları için otomasyon betikleri hazırlanmış, katman isimlendirme standartları korunmuş, toplu projeksiyon dönüşümleri ve istatistiksel özetler daha hızlı ve kontrollü biçimde gerçekleştirilmiştir. Bu yöntem, insan hatası riskini azaltmış ve üretim sürecinin tekrarlanabilirliğini artırmıştır. Böylece Hekimhan Atlası'nın veri işleme aşaması, klasik manuel işlemlerden ziyade denetlenebilir ve sürdürülebilir bir analiz zinciri içinde yürütülmüştür.

Atlasın içerik çeşitliliği de bu metodolojik altyapının doğal bir sonucudur. Yüzü aşkın tematik harita, fiziki unsurlardan demografik göstergelere, arazi kullanımından ekonomik faaliyetlere kadar geniş bir yelpazeyi kapsamaktadır. Ancak bu çeşitlilik dağınık bir içerik üretimi anlamına gelmemektedir. Her harita, diğer tematik katmanlarla ilişkilendirilebilir bir kurgu içinde yerleştirilmiş, mekânsal örüntüler arasındaki bağlantılar açıklama metinleriyle desteklenmiştir. Böylece Hekimhan Atlası, ayrı ayrı haritaların bir araya getirildiği bir derleme değil, mekânsal ilişkilerin bütüncül biçimde okunabildiği bir sistem haline gelmiştir.

Deprem sonrası kısıtlı imkânlar altında yürütülen haritalandırma süreci, çalışmanın disiplinli yapısını daha da belirginleştirmiştir. Veri kaybını önlemek amacıyla düzenli yedekleme yapılmış, her analiz adımı kayıt altına alınmış ve çıktıların doğruluğu örneklem kontrolleri ile test edilmiştir. Bu süreç, Hekimhan Atlası'nın yalnızca akademik bir ürün değil, aynı zamanda zor koşullar altında sürdürülebilen bir bilimsel üretim pratiği olduğunu göstermektedir.

Hekimhan Atlası, sahada üretilen birincil veriyi, kurumsal kaynaklardan sağlanan ikincil veriyi ve CBS ile uzaktan algılama temelli analizleri tek bir üretim hattında bütünleştiren çok katmanlı bir mekânsal envanterdir. Bu çalışma, belirli bir tarihsel kesitte mekânın fiziksel ve beşerî dokusunu ayrıntılı biçimde kayıt altına almakla kalmamış, gelecekte yapılacak karşılaştırmalı çalışmalar için sağlam bir referans veri zemini oluşturmuştur. Eğitimciler, araştırmacılar ve yerel yöneticiler için başvuru kaynağı niteliği taşıyan Hekimhan Atlası, mekânsal bilginin nasıl üretileceğine, nasıl denetleneceğine ve nasıl yorumlanacağına dair metodolojik bir örnek sunmaktadır.

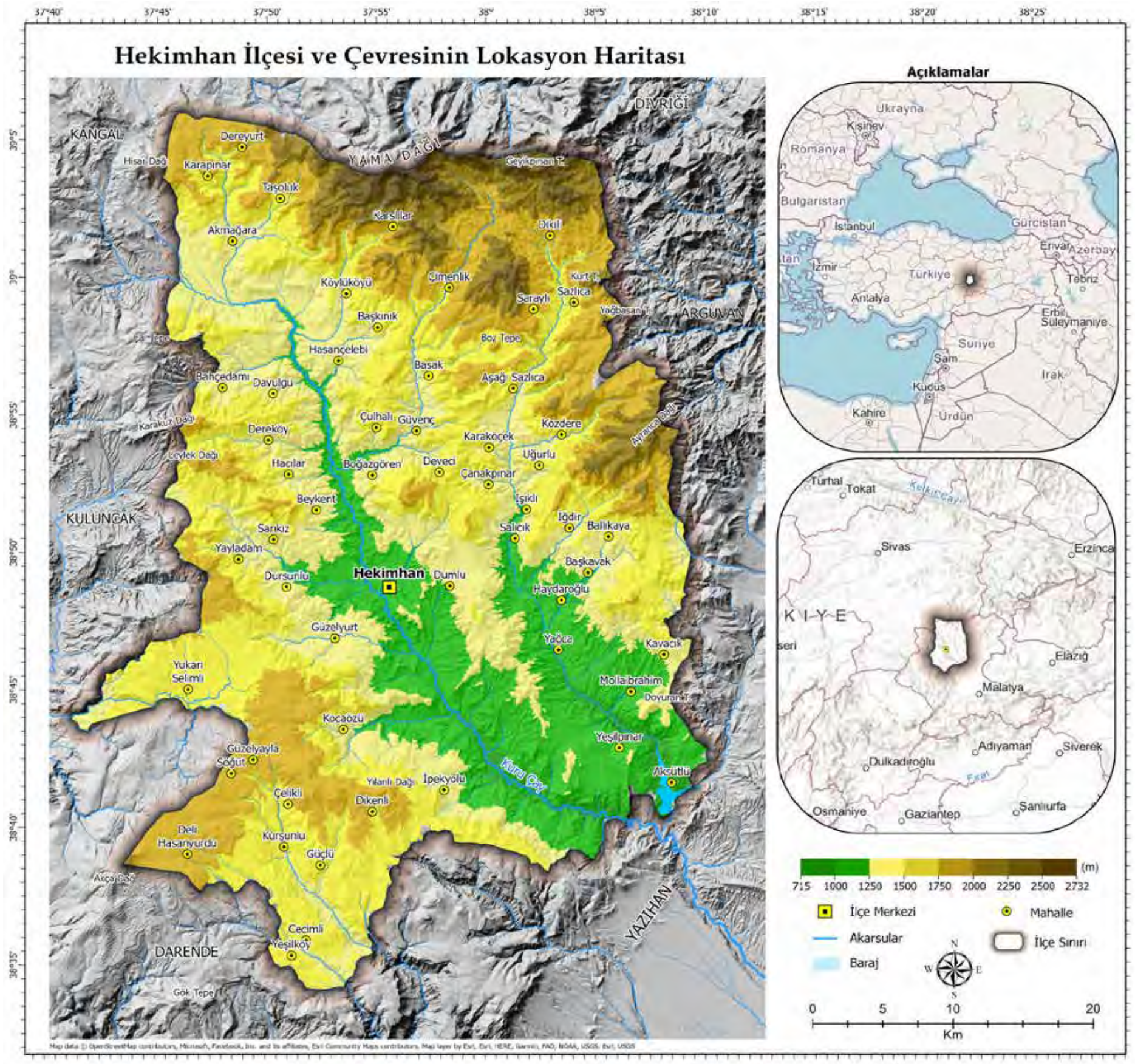
Arazi çalışmalarının en önemli teknik boyutlarından biri insansız hava araçlarının sistematik kullanımıdır. Köy yerleşmelerinin tamamında yüksek çözünürlüklü hava fotoğrafları çekilmiş, bu görüntüler fotogrametrik işleme için planlı biçimde üretilmiştir. İHA uçuşları belirli yükseklik ve örtüşme oranları dikkate alınarak gerçekleştirilmiş, elde edilen görüntüler daha sonra Agisoft Metashape ortamında hizalama, yoğun nokta bulutu üretimi, yüzey modeli oluşturma ve ortomozaik üretimi aşamalarından geçirilmiştir. Ortaya çıkan ortofoto görüntüler yalnızca görsel belge niteliğinde bırakılmamış, CBS ortamında sayısallaştırma ve analiz girdisi olarak kullanılmıştır. Yerleşimlerin dijital envanteri bu ortofoto veriler üzerinden oluşturulmuş, yapı sınırları, kullanım alanları ve mekânsal örüntüler mikro ölçekte kayıt altına alınmıştır. Bu üretim hattı, Hekimhan Atlası'nın en güçlü yönlerinden birini oluşturmaktadır; çünkü çalışma yalnızca tematik genellemeler üretmekle kalmamış, yüksek çözünürlüklü bir referans veri arşivi de oluşturmuştur.

Hekimhan Atlası'nın ortaya koyduğu bütüncül veri altyapısı, ilçe ölçeğinde planlama ve karar verme süreçleri açısından önemli bir referans çerçevesi sunmaktadır. Yerleşim dağılışı, arazi kullanım örüntüleri, topoğrafik eşikler ve demografik değişim süreçlerinin aynı mekânsal sistem içinde analiz edilmesi, farklı sektörlere ait verilerin ilk kez karşılaştırılabilir bir zemin üzerinde değerlendirilmesine imkân tanımaktadır. Bu durum, özellikle kırsal yerleşmelerde altyapı yatırımlarının önceliklendirilmesi, doğal risk alanlarının belirlenmesi ve üretim desenlerinin sürdürülebilirlik açısından yeniden ele alınması gibi konularda somut

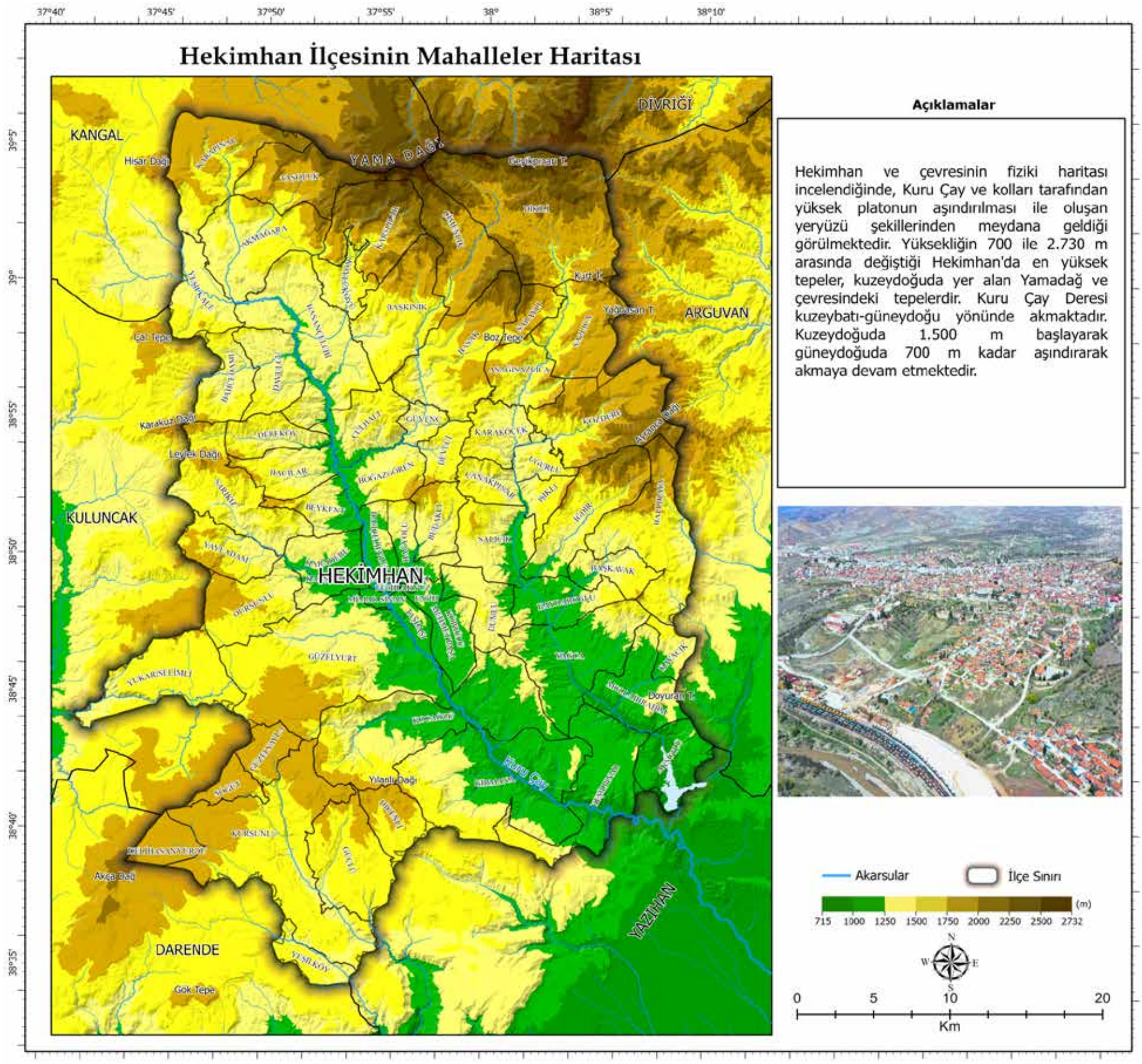
bir karar destek mekanizması oluşturma potansiyeline sahiptir. Atlas, yalnızca mevcut durumu gösteren bir görsel arşiv değil, aynı zamanda mekânsal ilişkileri görünür kılan analitik bir planlama aracıdır.

Bununla birlikte Hekimhan Atlası, ilçenin zamansal dönüşümünü izleyebilmek açısından da stratejik bir eşik oluşturmaktadır. Nüfus hareketliliği, üretim biçimlerindeki değişim, yerleşimlerin kısmi terk süreçleri ve arazi kullanımındaki yönelimler, bu çalışmada oluşturulan veri seti sayesinde ilerleyen yıllarda karşılaştırmalı olarak değerlendirilebilecektir. Bu yönüyle atlas, belirli bir tarihsel kesitin ayrıntılı mekânsal kaydını tutmakta ve gelecekteki dönüşümlerin ölçülebilirliğini mümkün kılmaktadır. Eğitim kurumları, araştırmacılar ve yerel yöneticiler için başvuru niteliği taşımasının ötesinde, Hekimhan'ın mekânsal hafızasını kurumsal bir zemine taşıyan kalıcı bir referans çerçevesi oluşturmaktadır.

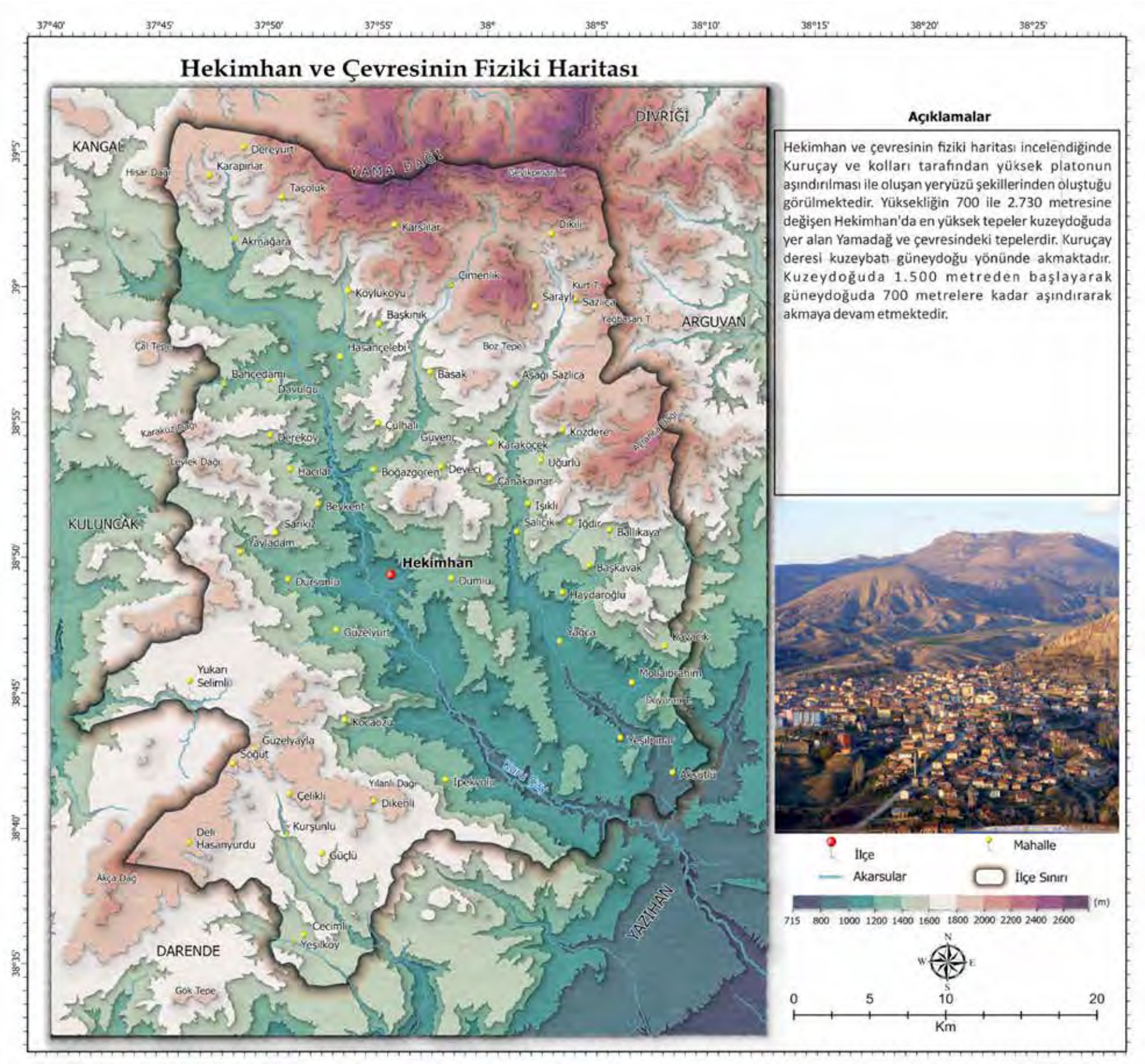
Sonsuz rahmet ve minnetle andığım babam Bekir Boyraz anısına...



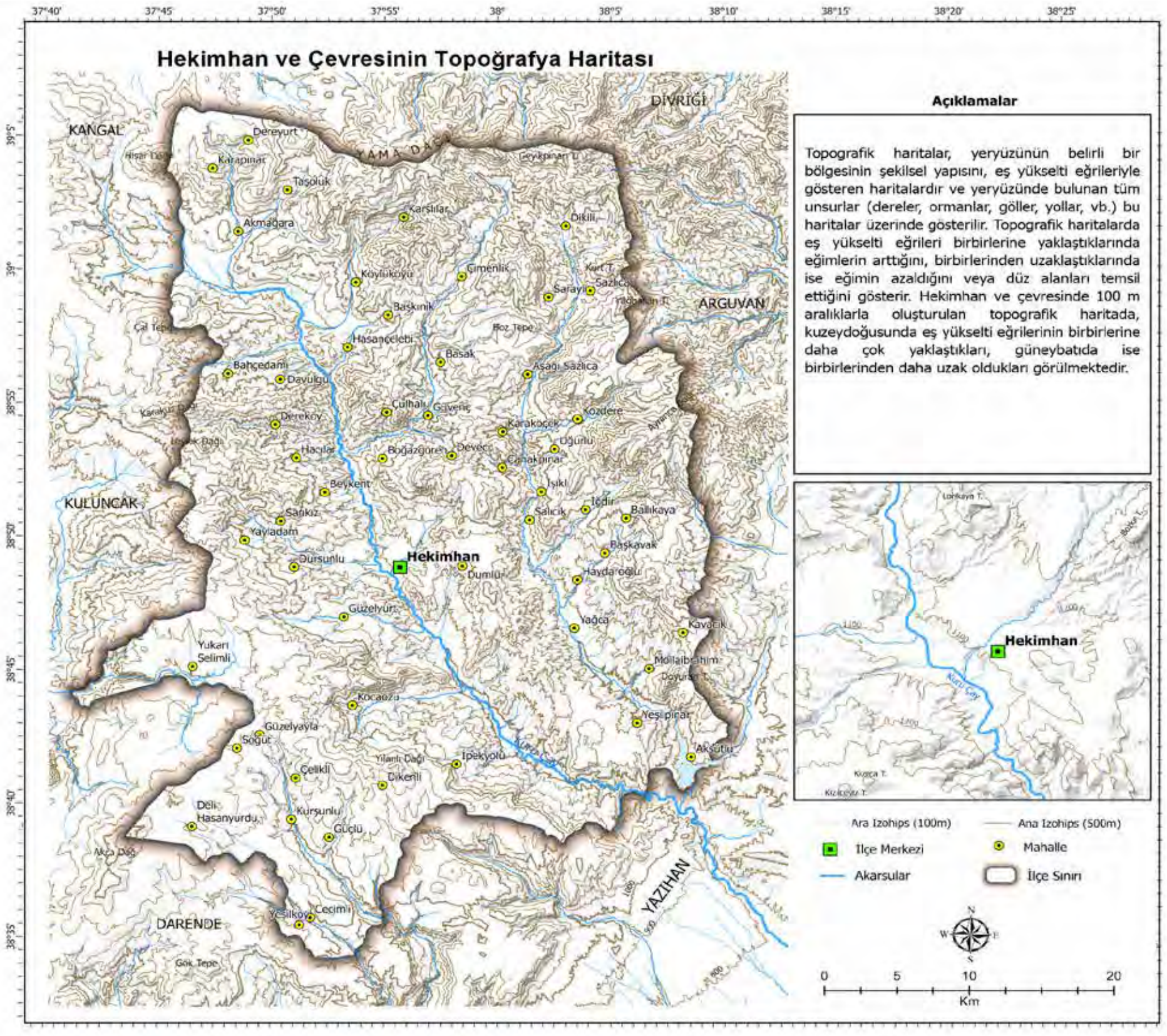
Harita 1: Hekimhan İlçesi ve Çevresinin Lokasyon Haritası.



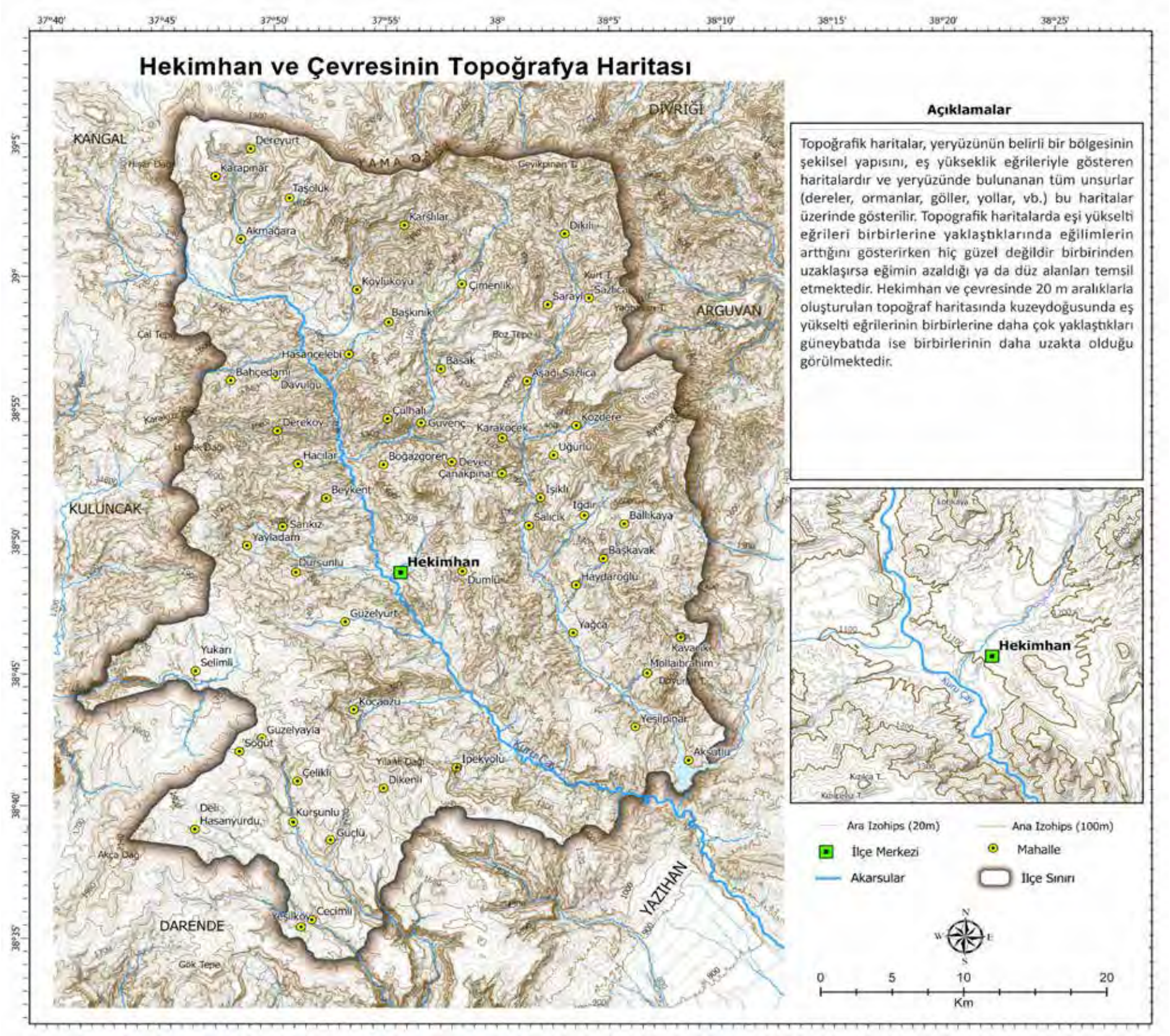
Harita 2: Hekimhan ve Çevresinin Fiziki Haritası (Mahalle Sınırlarıyla Birlikte).



Harita 3: Hekimhan ve Çevresinin Fiziki Haritası.



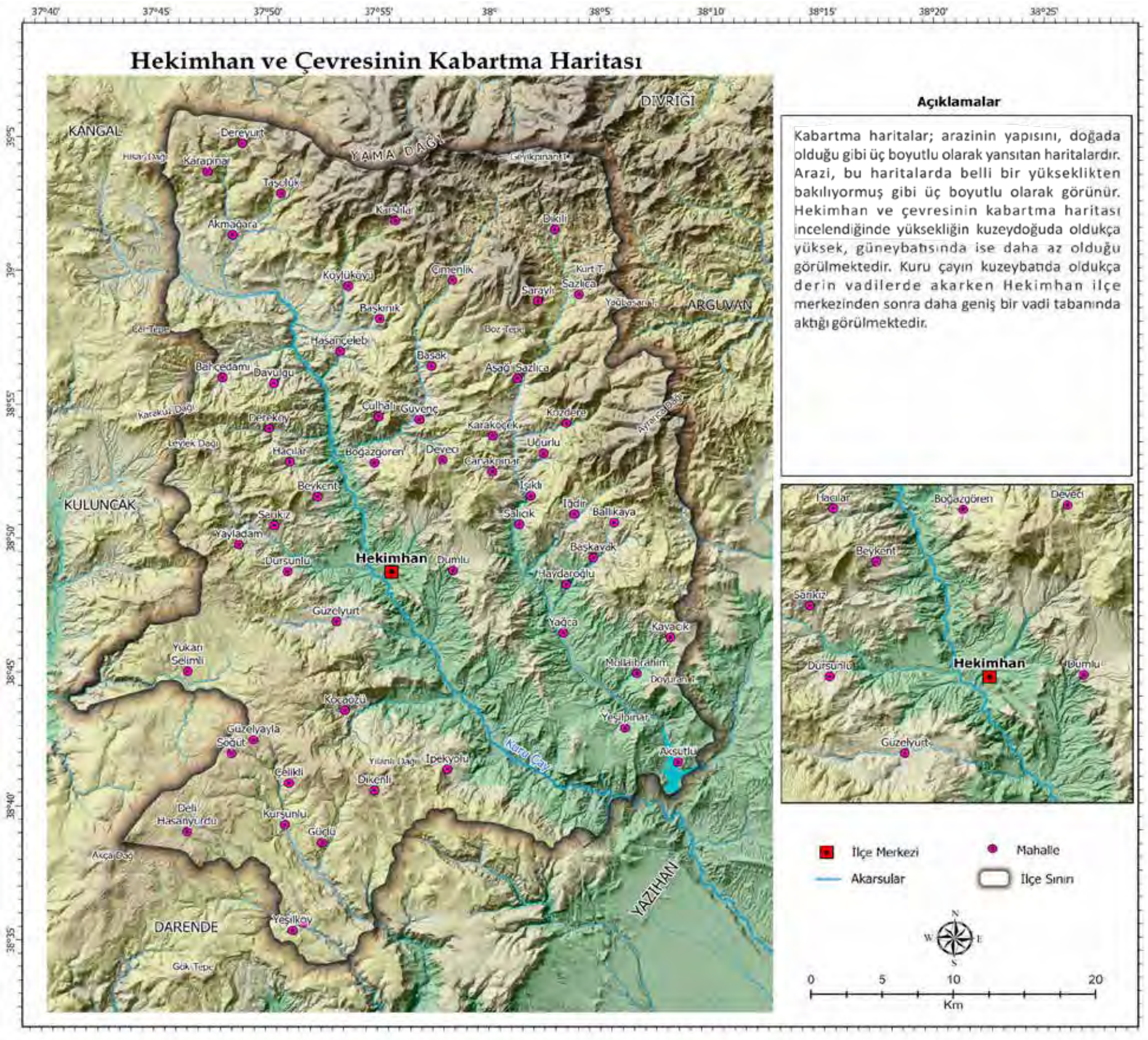
Harita 4: Hekimhan ve Çevresinin Topoğrafya Haritası (100 m).



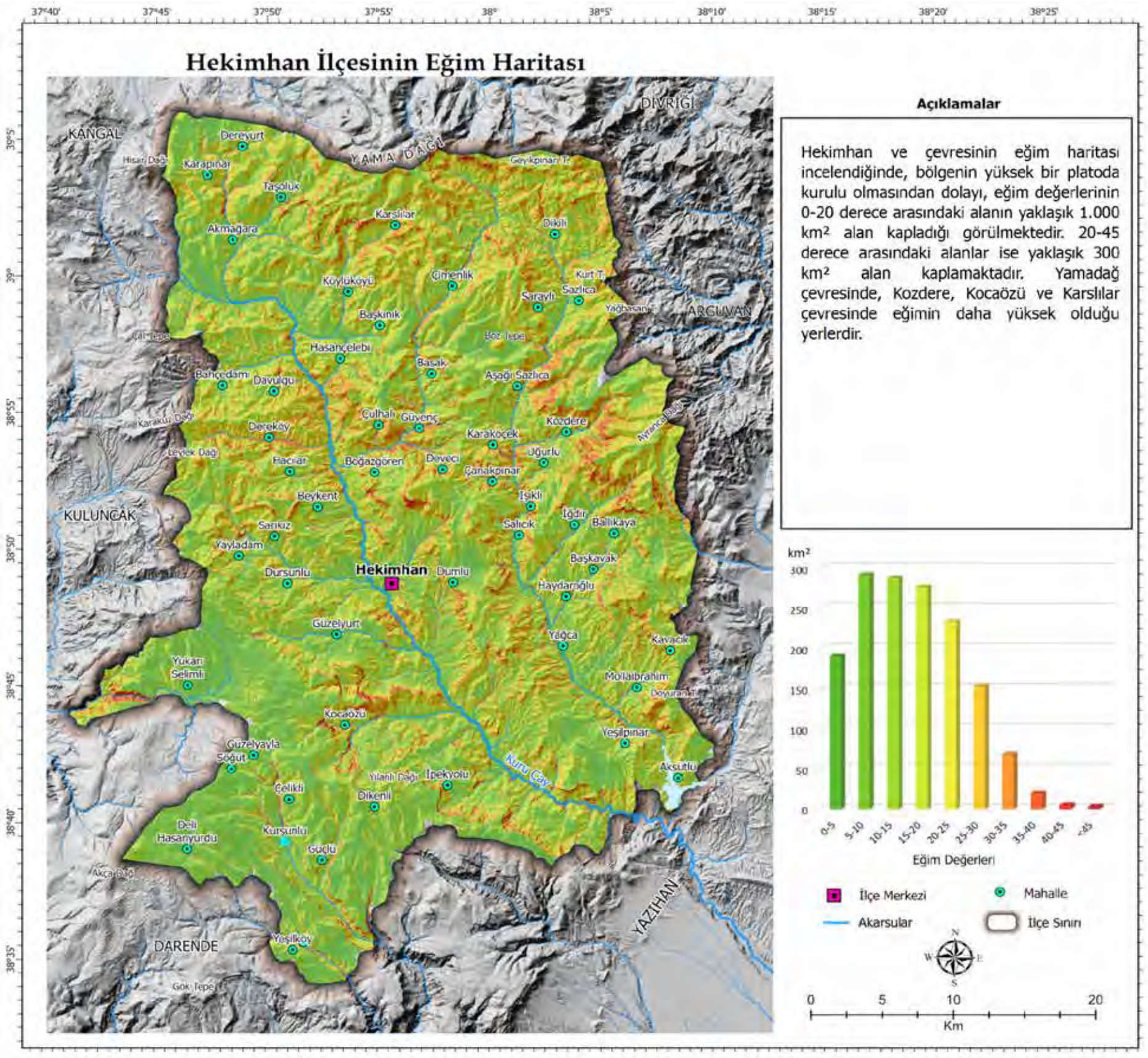
Açıklamalar

Topoğrafik haritalar, yeryüzünün belirli bir bölgesinin şekilsel yapısını, eş yükseklik eğrileriyle gösteren haritalardır ve yeryüzünde bulunanan tüm unsurlar (dereler, ormanlar, göller, yollar, vb.) bu haritalar üzerinde gösterilir. Topografik haritalarda eşi yükselti eğrileri birbirlerine yaklaştıklarında eğilimlerin arttığını gösterirken hiç güzel değildir birbirinden uzaklaşırsa eğimin azaldığı ya da düz alanları temsil etmektedir. Hekimhan ve çevresinde 20 m aralıklarla oluşturulan topoğraf haritasında kuzeydoğusunda eş yükselti eğrilerinin birbirlerine daha çok yaklaştıkları güneybatıda ise birbirlerinin daha uzakta olduğu görülmektedir.

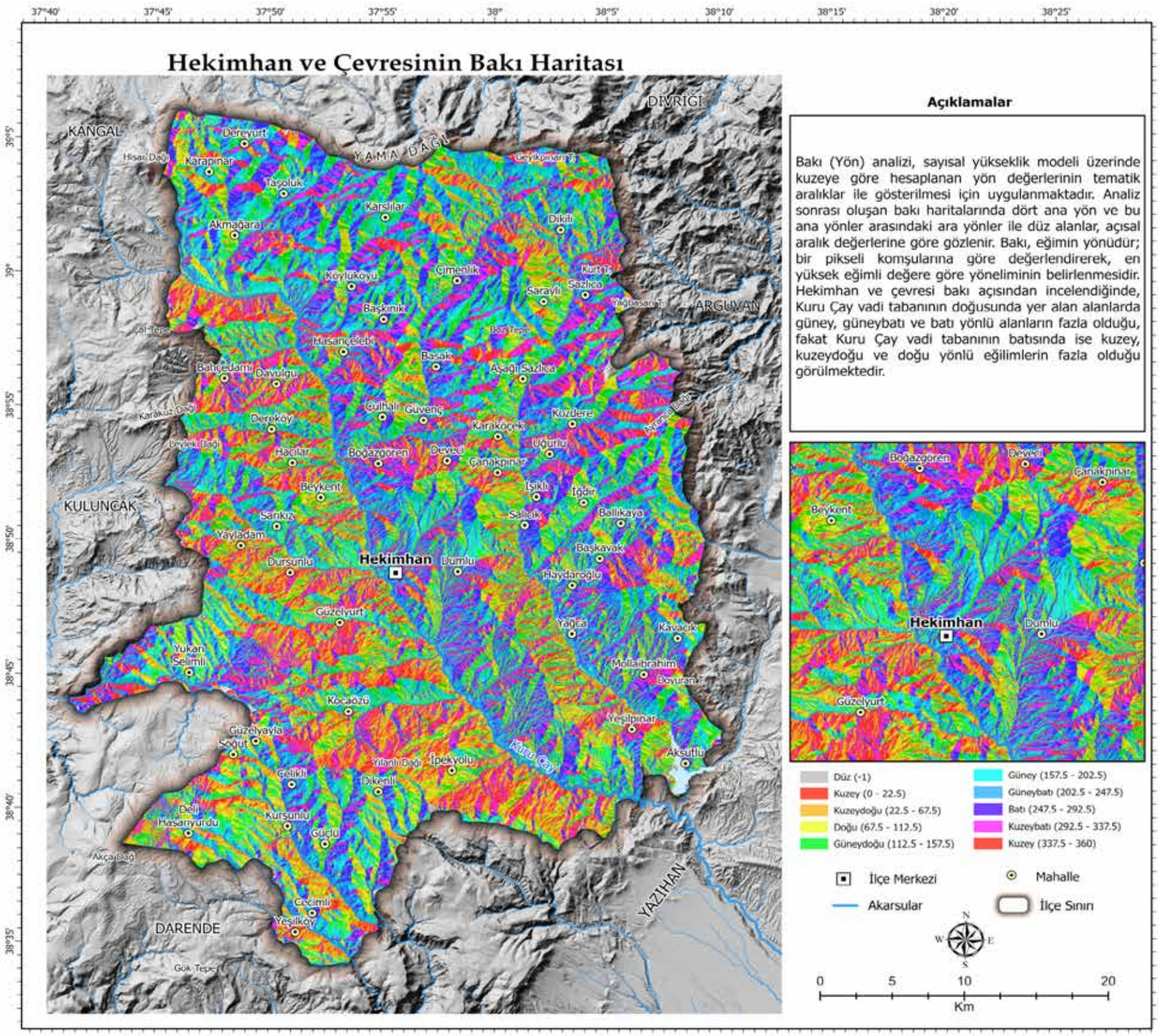
Harita 5: Hekimhan ve Çevresinin Topoğrafya Haritası (20 m).



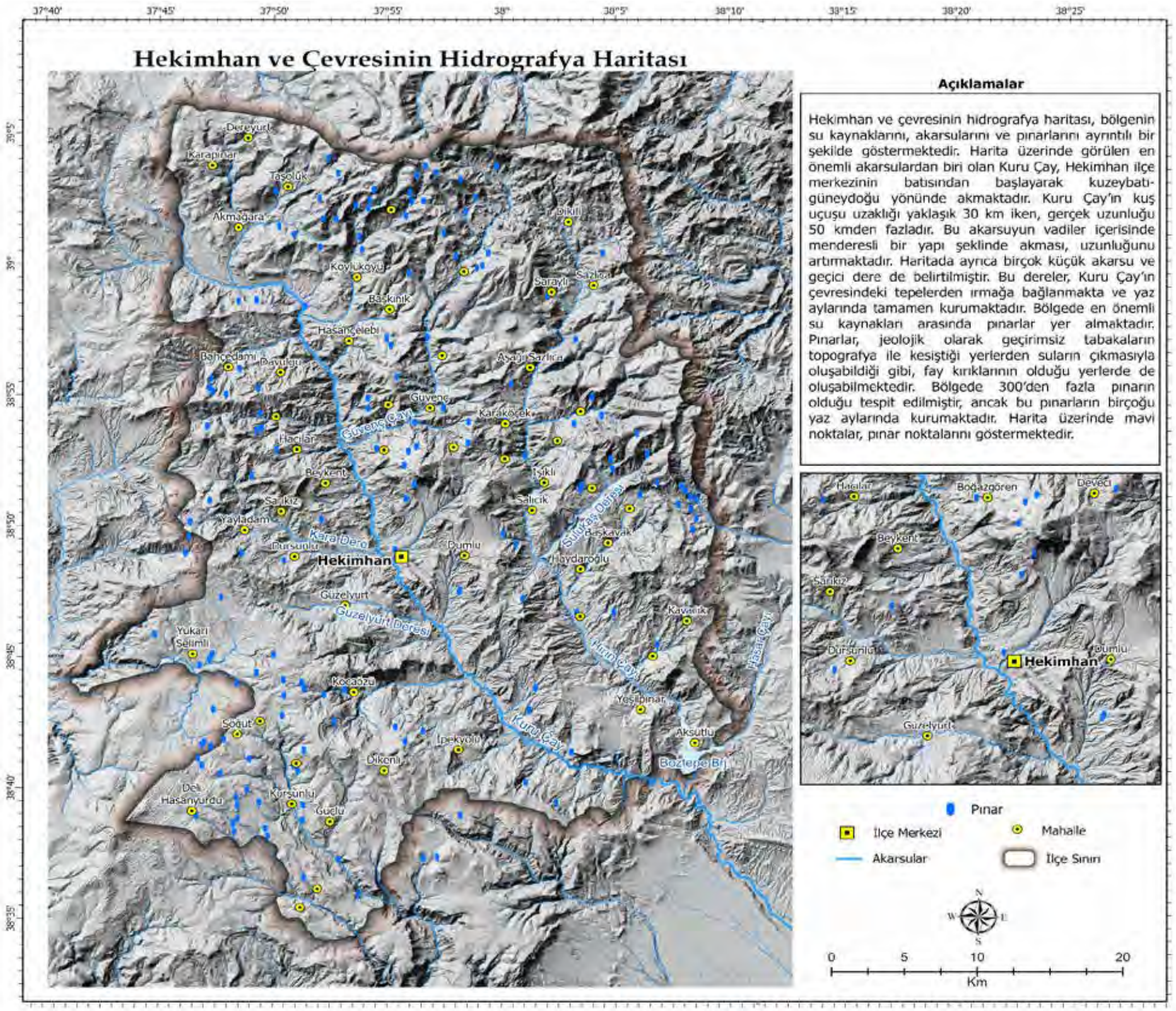
Harita 6: Hekimhan ve Çevresinin Kabartma Haritası.



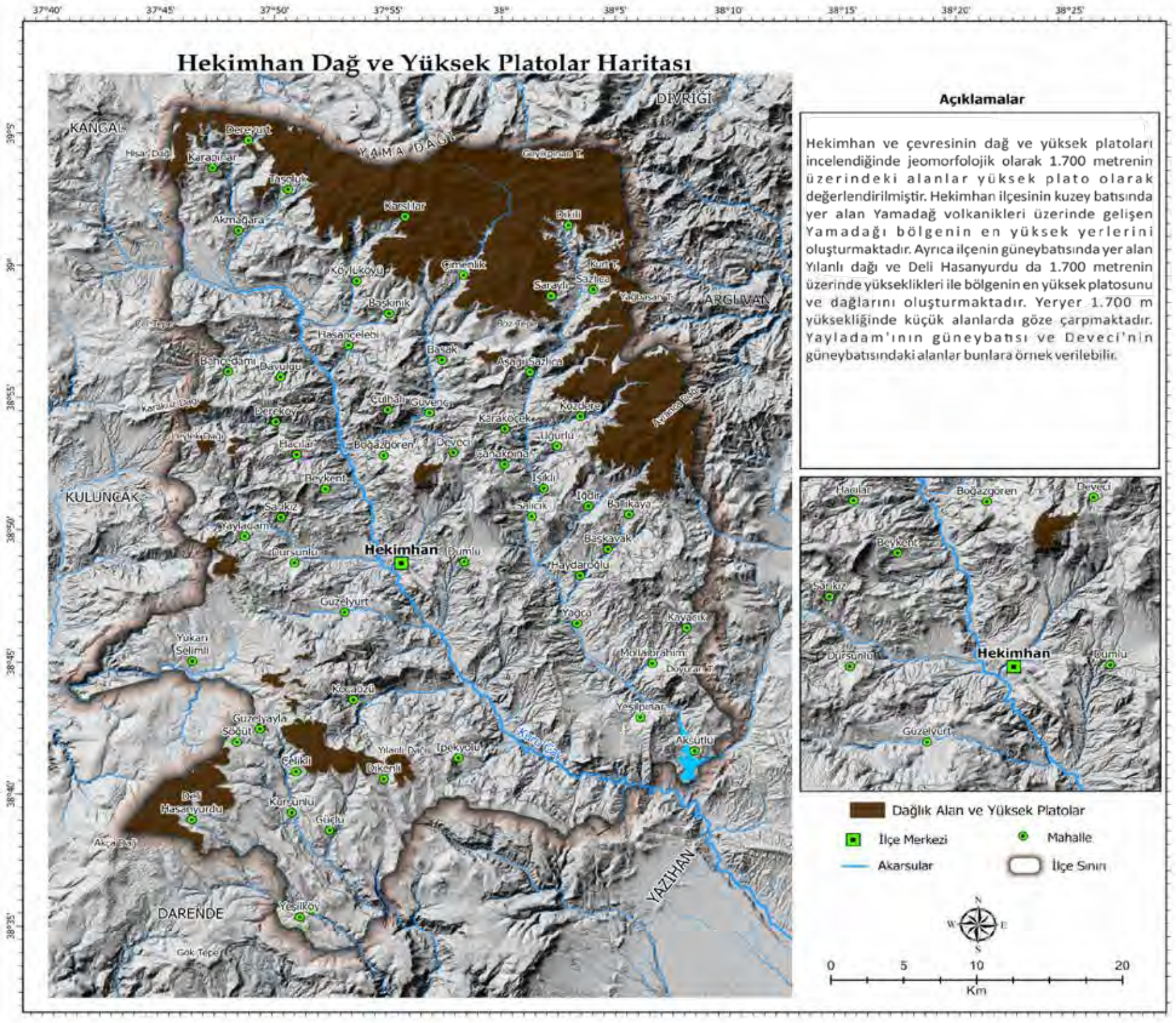
Harita 7: Hekimhan İlçesinin Eğim Haritası.



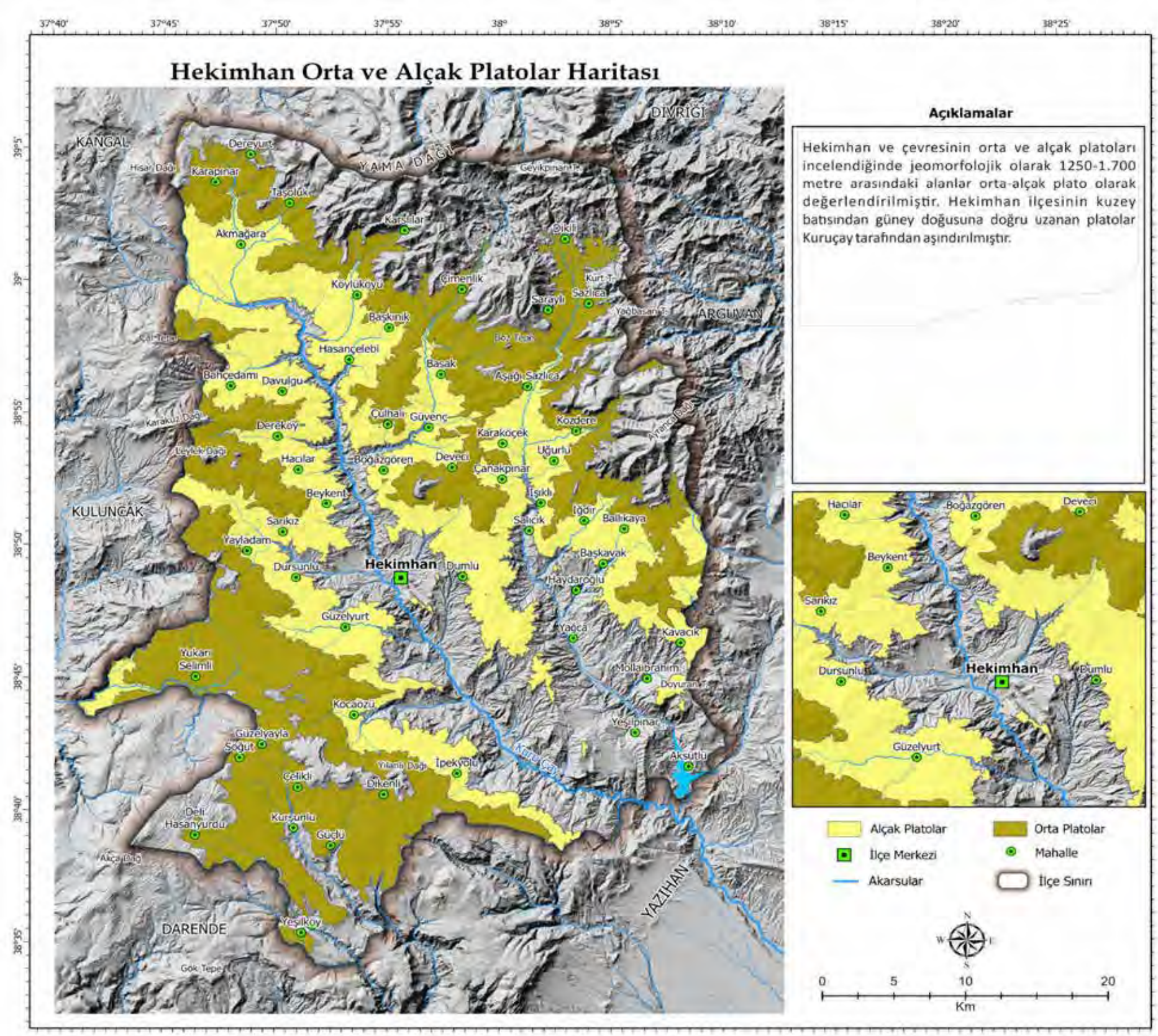
Harita 8: Hekimhan İlçesinin Bakı Haritası.



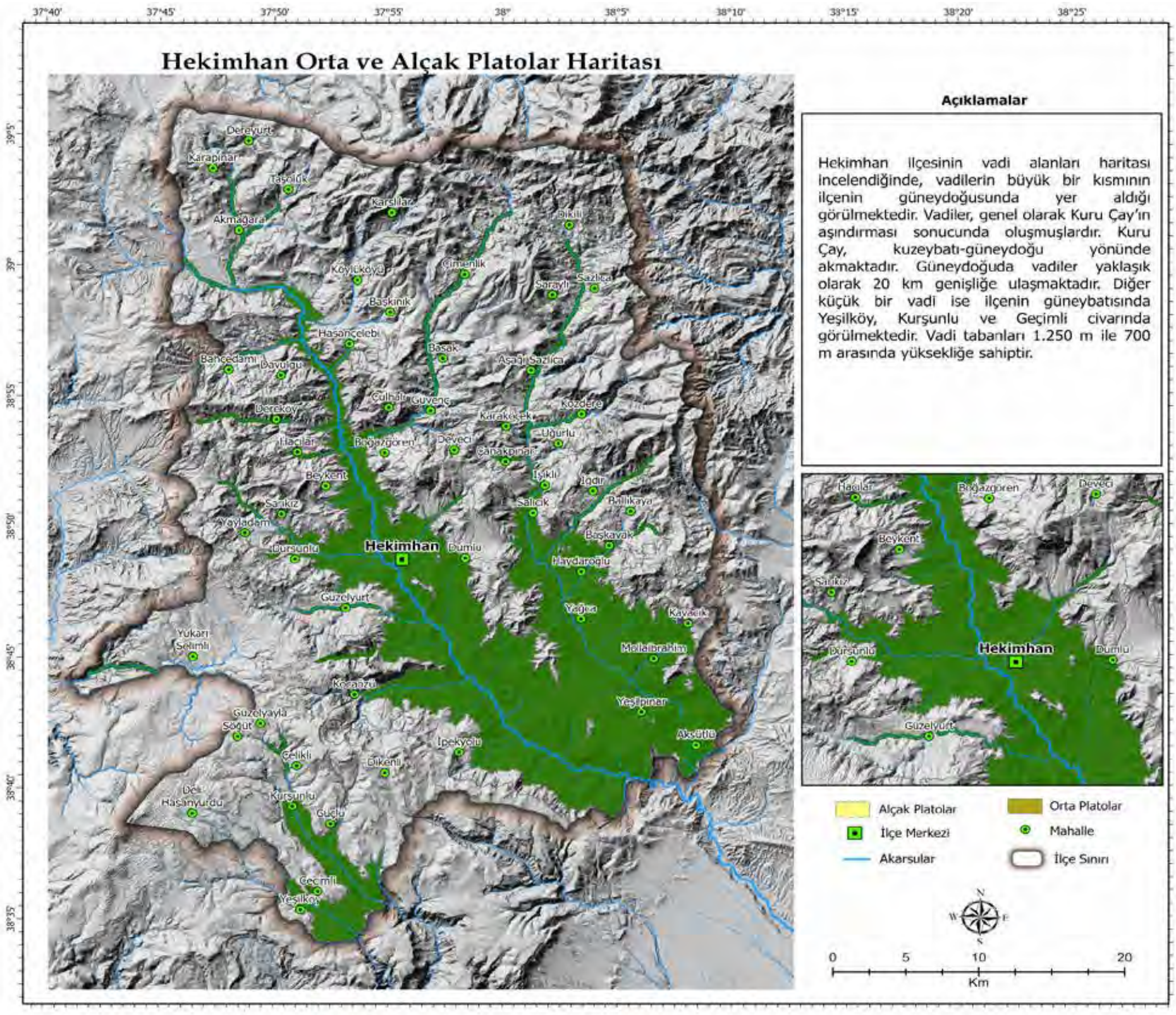
Harita 9: Hekimhan İlçesinin Hidrografya Haritası.



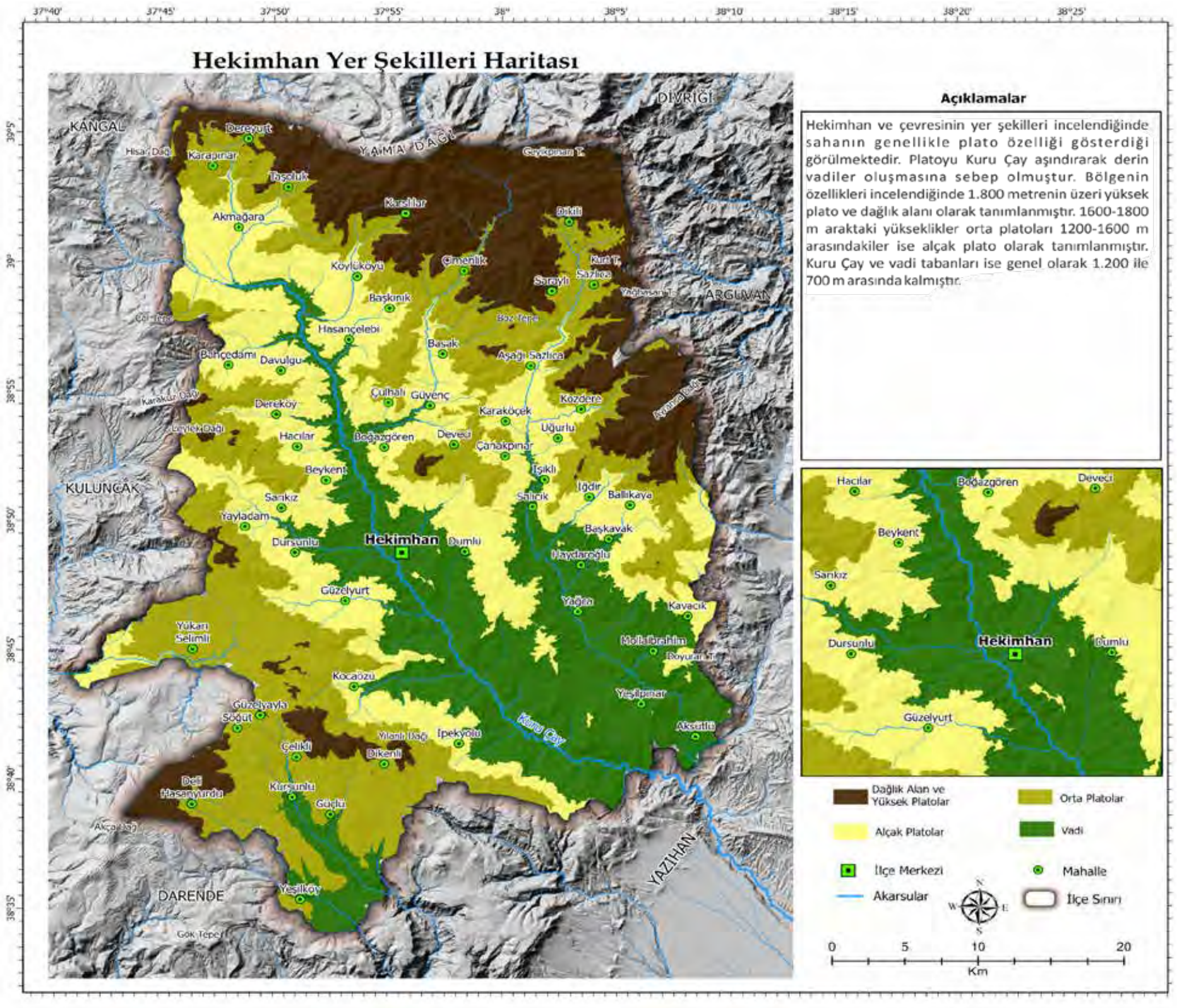
Harita 10: Hekimhan Dağ ve Yüksek Platolar Haritası.



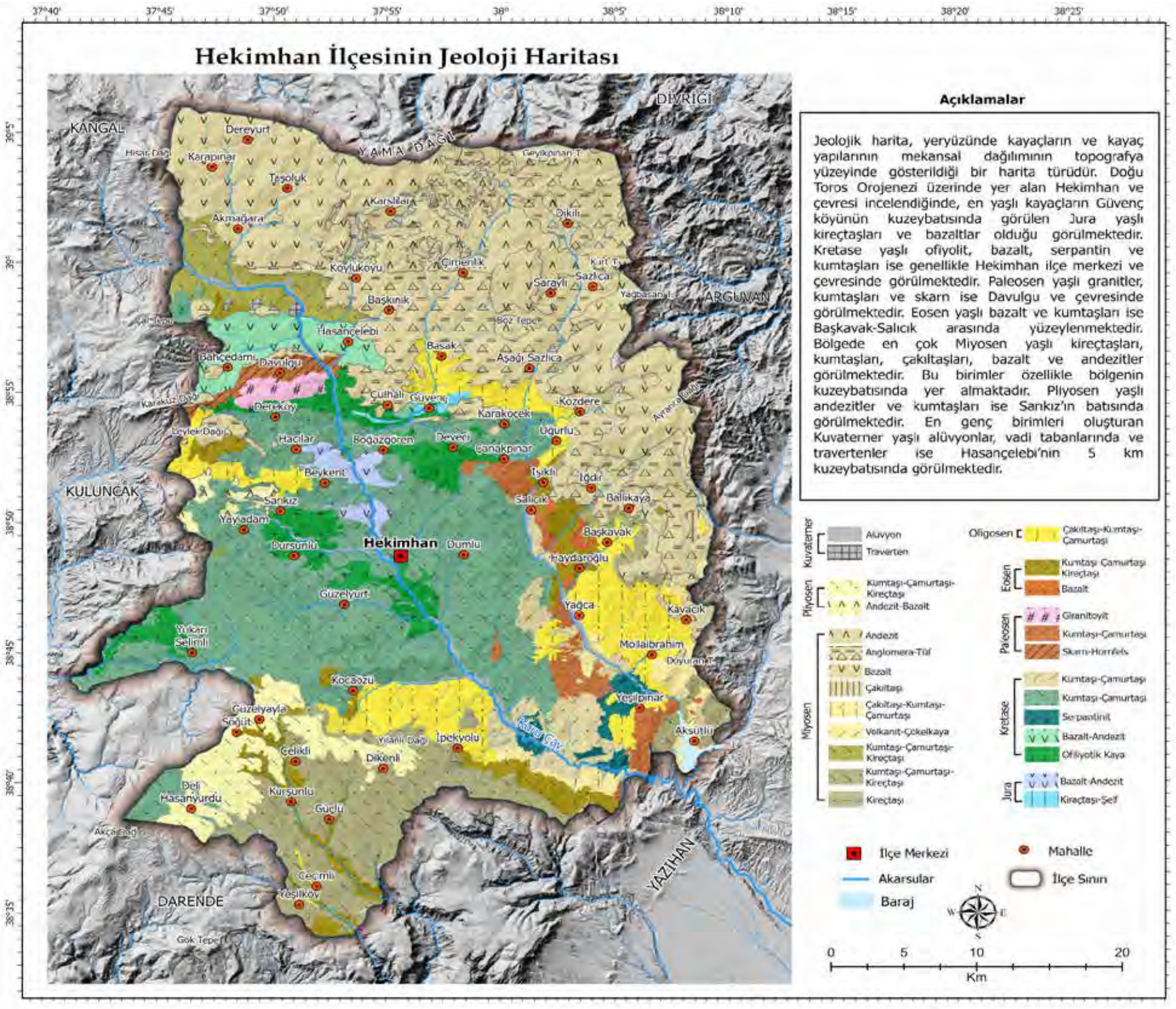
Harita 11: Hekimhan Orta ve Alçak Platolar Haritası.



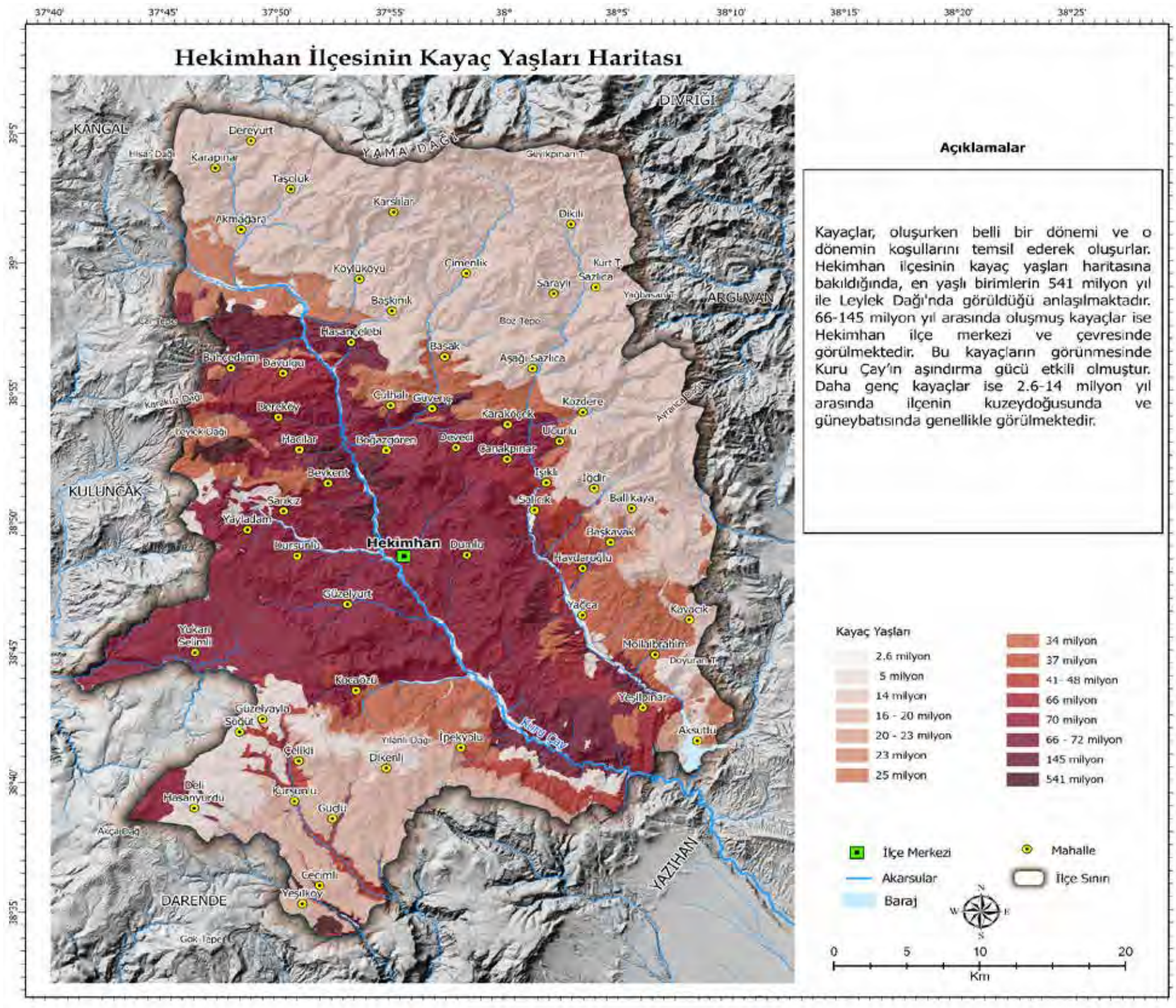
Harita 12: Hekimhan İlçesinin Vadi Alanları Haritası.



Harita 13: Hekimhan İlçesinin Yer Şekilleri Haritası.



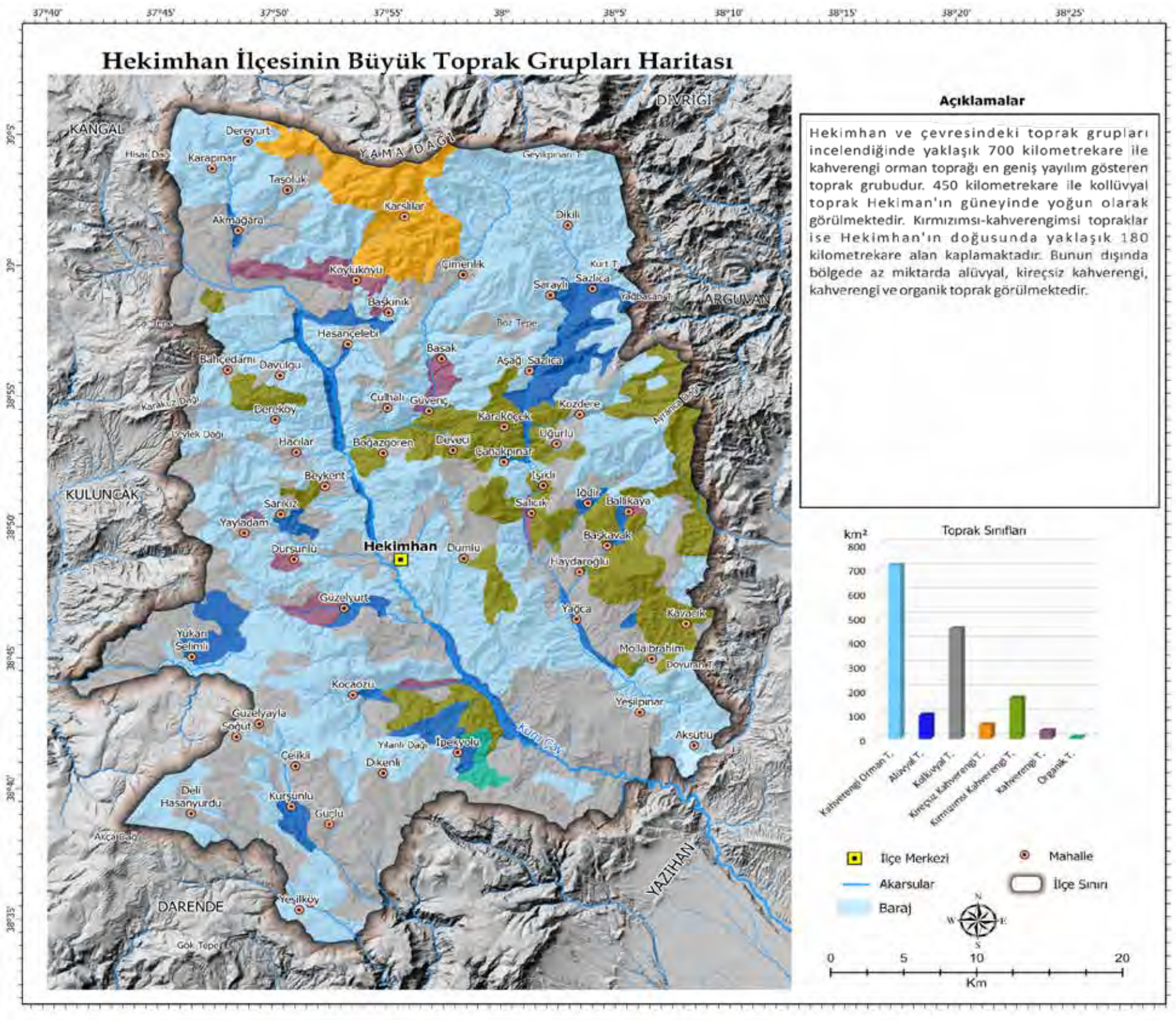
Harita 14: Hekimhan İlçesinin Jeoloji Haritası.



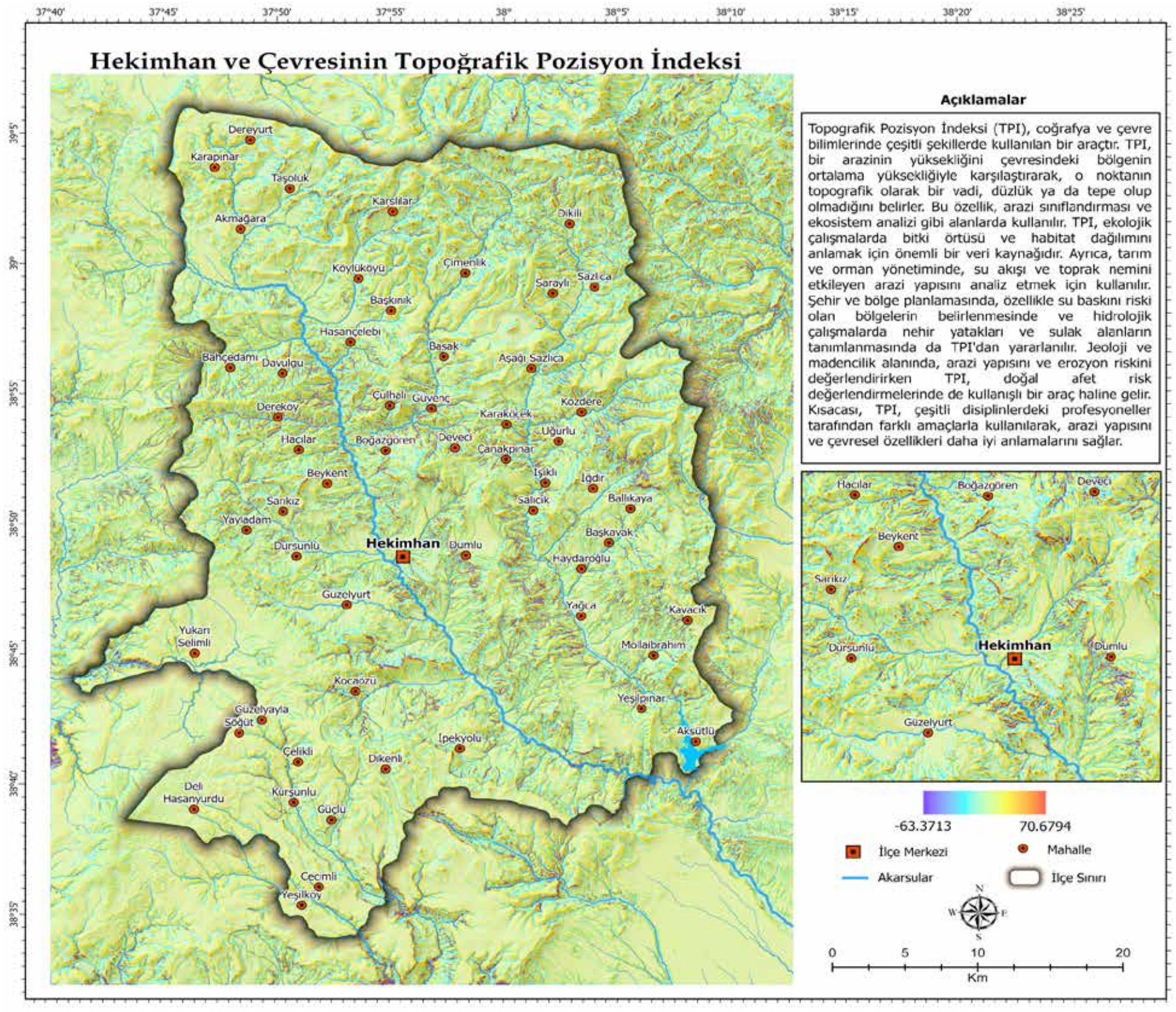
Açıklamalar

Kayaçlar, oluşurken belli bir dönemi ve o dönemin koşullarını temsil ederek oluşurlar. Hekimhan ilçesinin kayaç yaşları haritasına bakıldığında, en yaşlı birimlerin 541 milyon yıl ile Leylek Dağı'nda görüldüğü anlaşılmaktadır. 66-145 milyon yıl arasında oluşmuş kayaçlar ise Hekimhan ilçe merkezi ve çevresinde görülmektedir. Bu kayaçların görünmesinde Kuru Çay'ın aşındırma gücü etkili olmuştur. Daha genç kayaçlar ise 2.6-14 milyon yıl arasında ilçenin kuzeydoğusunda ve güneybatısında genellikle görülmektedir.

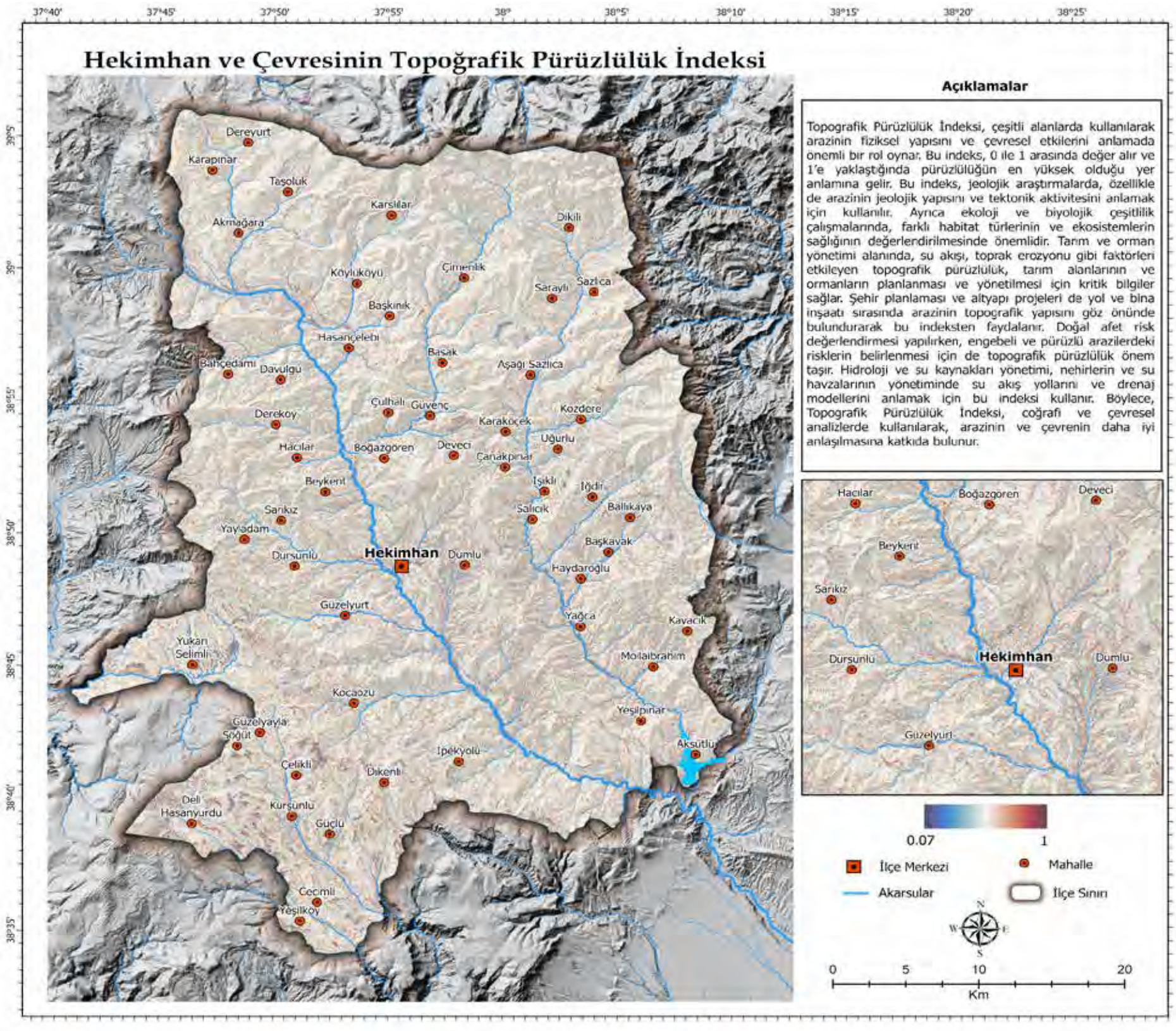
Harita 15: Hekimhan İlçesinin Kayaç Yaşları Haritası.



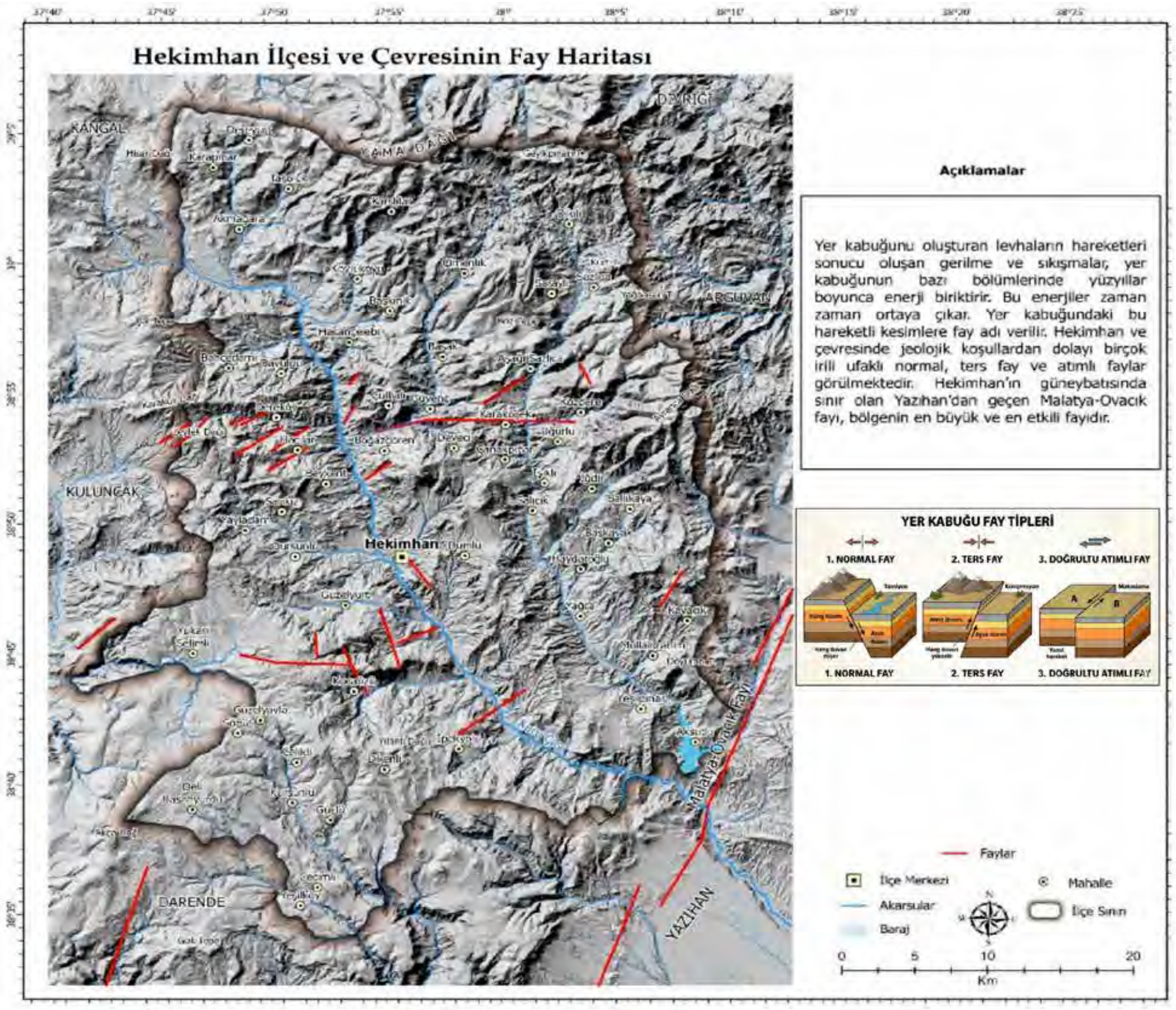
Harita 16: Hekimhan İlçesinin Büyük Toprak Grupları Haritası.



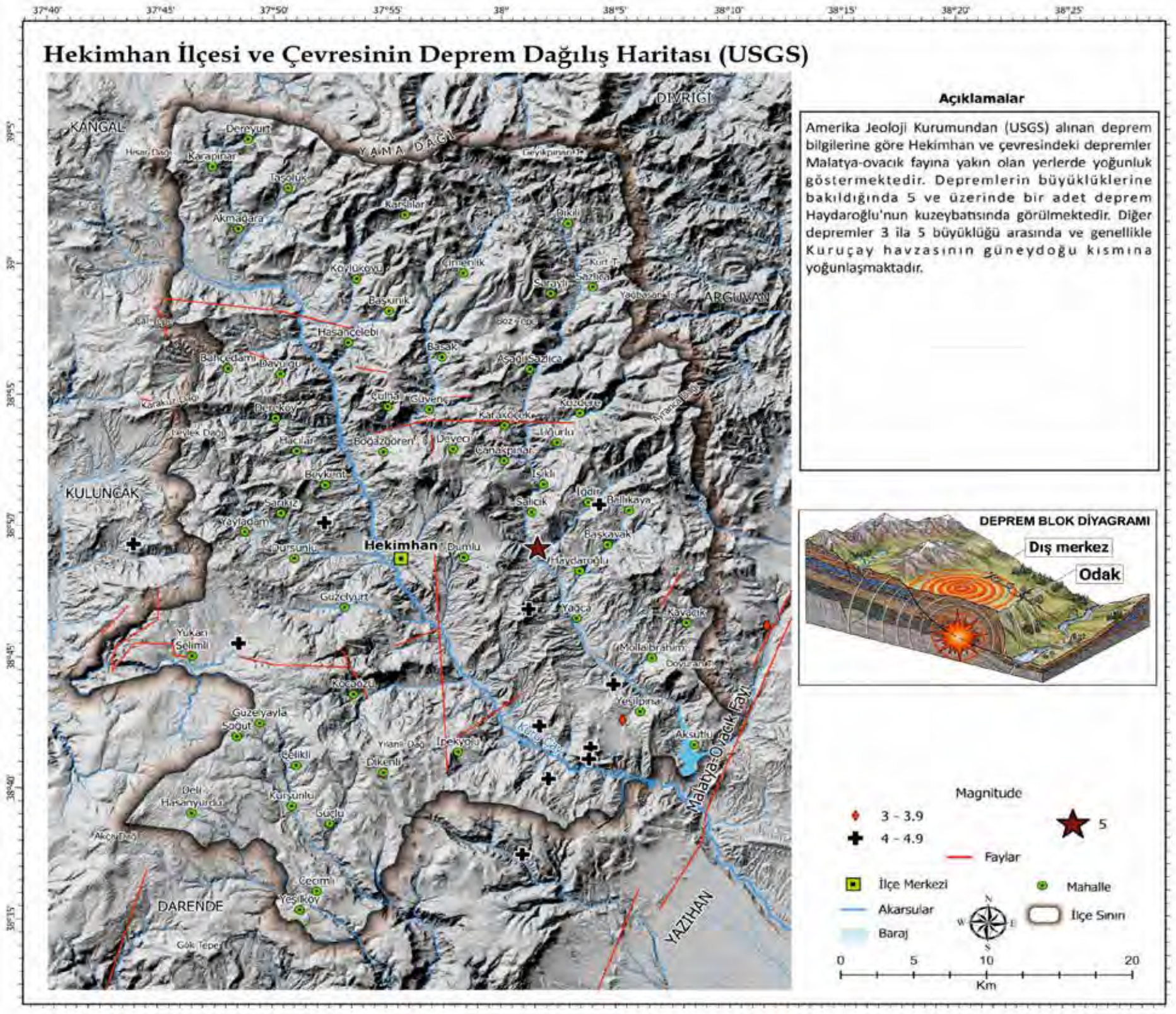
Harita 17: Hekimhan ve Çevresinin Topoğrafik Pozisyon İndeksi Haritası.



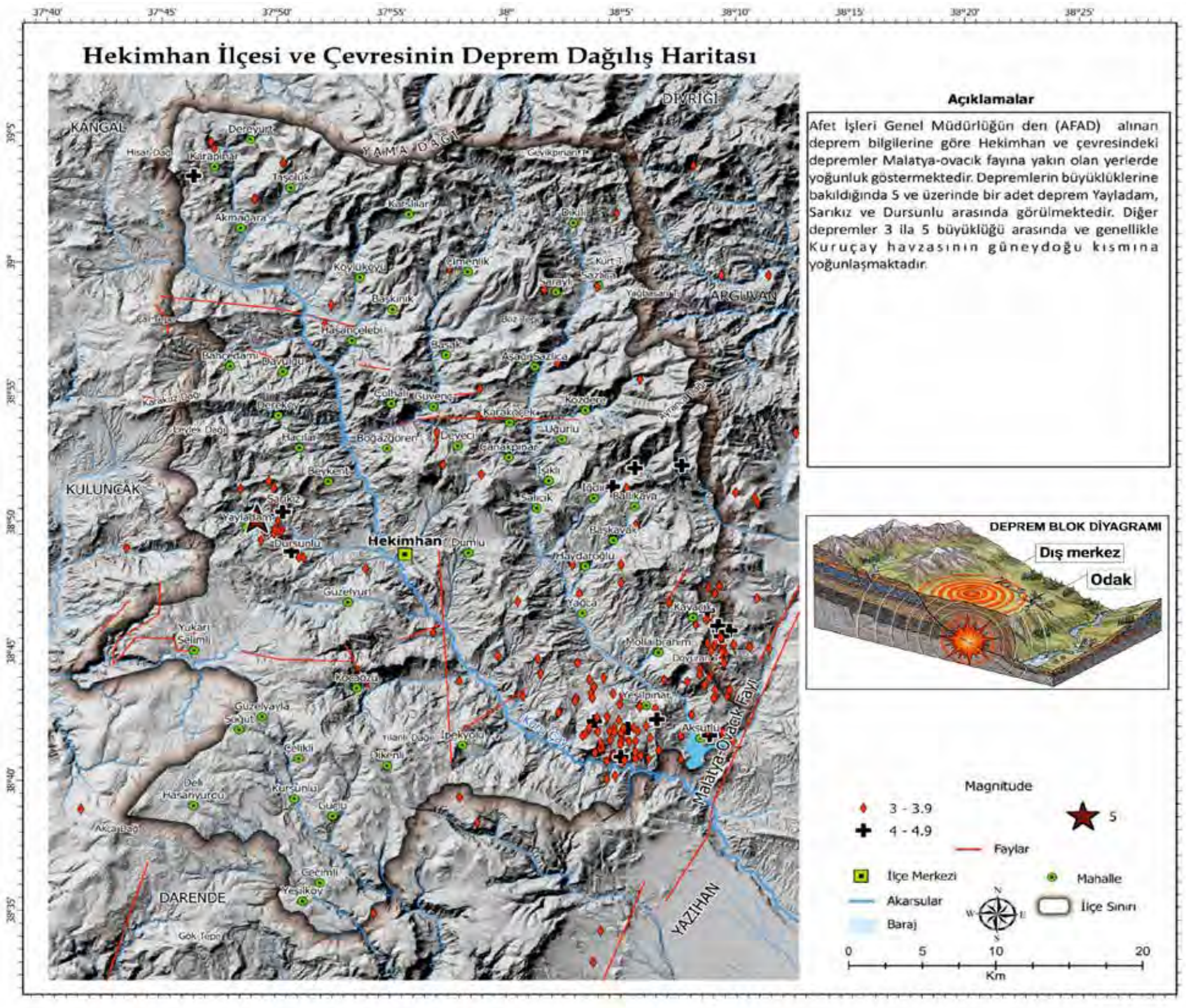
Harita 18: Hekimhan ve Çevresinin Topoğrafik Pürüzlülük İndeksi Haritası.



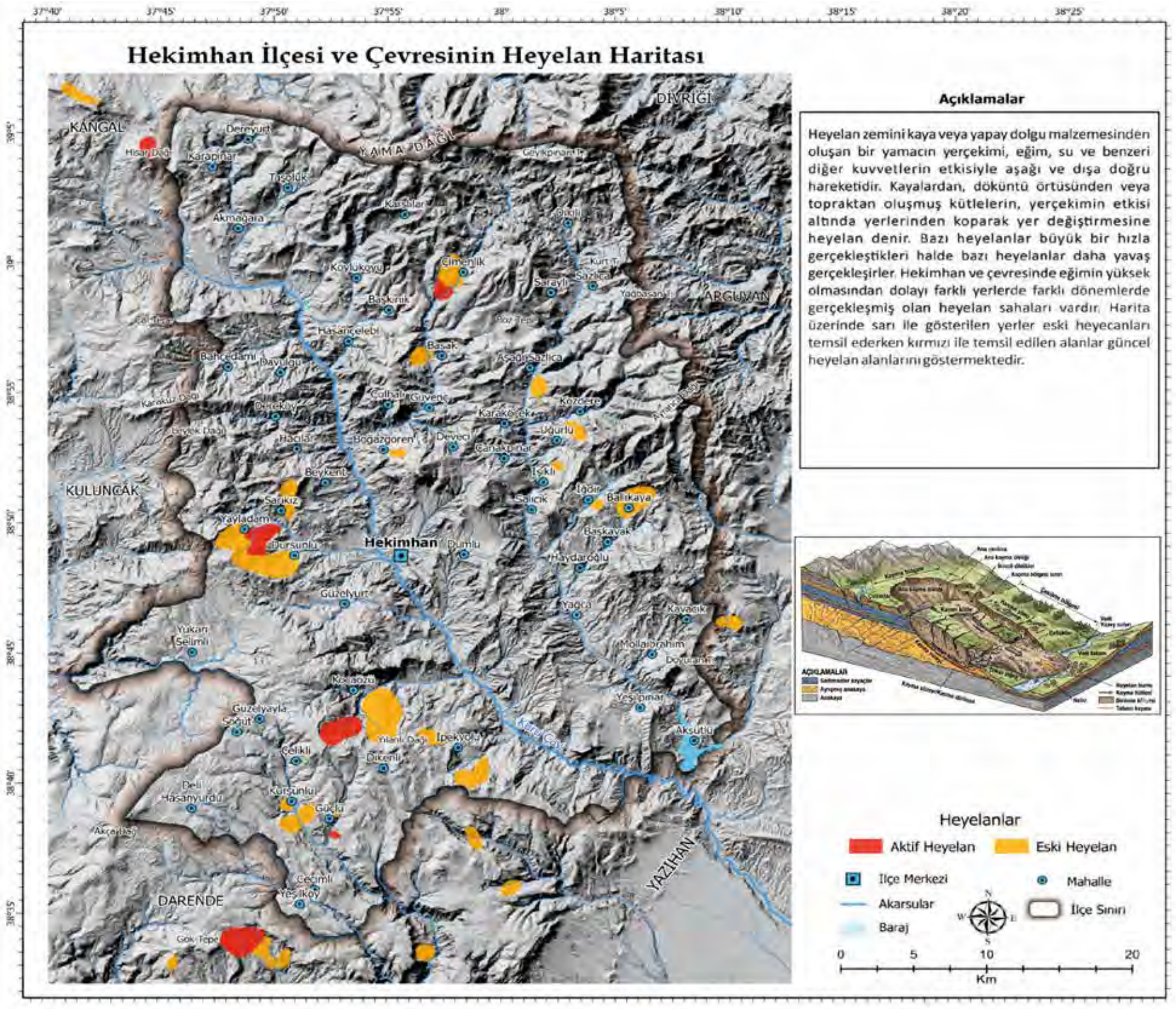
Harita 19: Hekimhan İlçesi ve Çevresinin Fay Haritası.



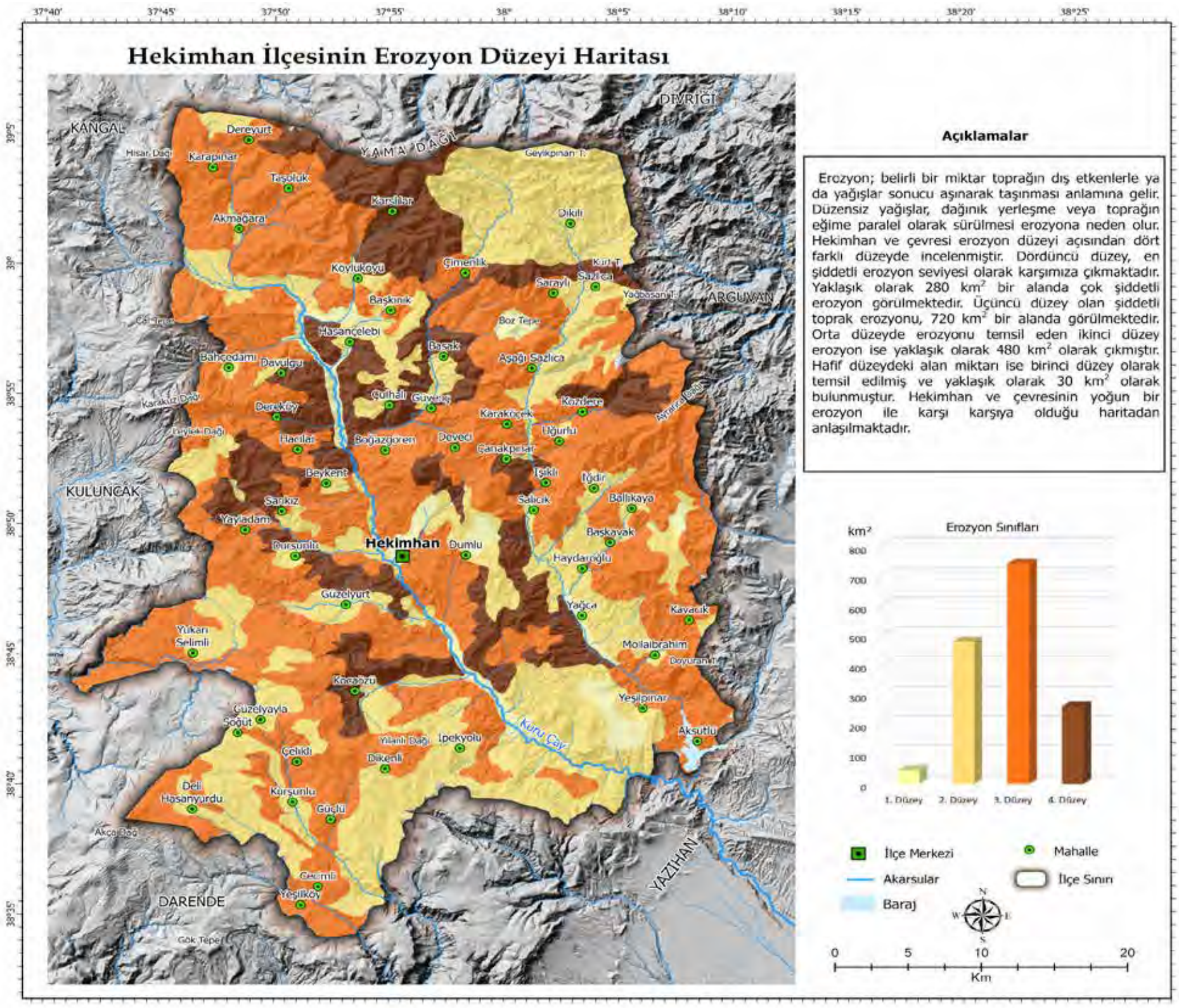
Harita 20: Hekimhan İlçesi ve Çevresinin Deprem Dağılış Haritası (USGS).



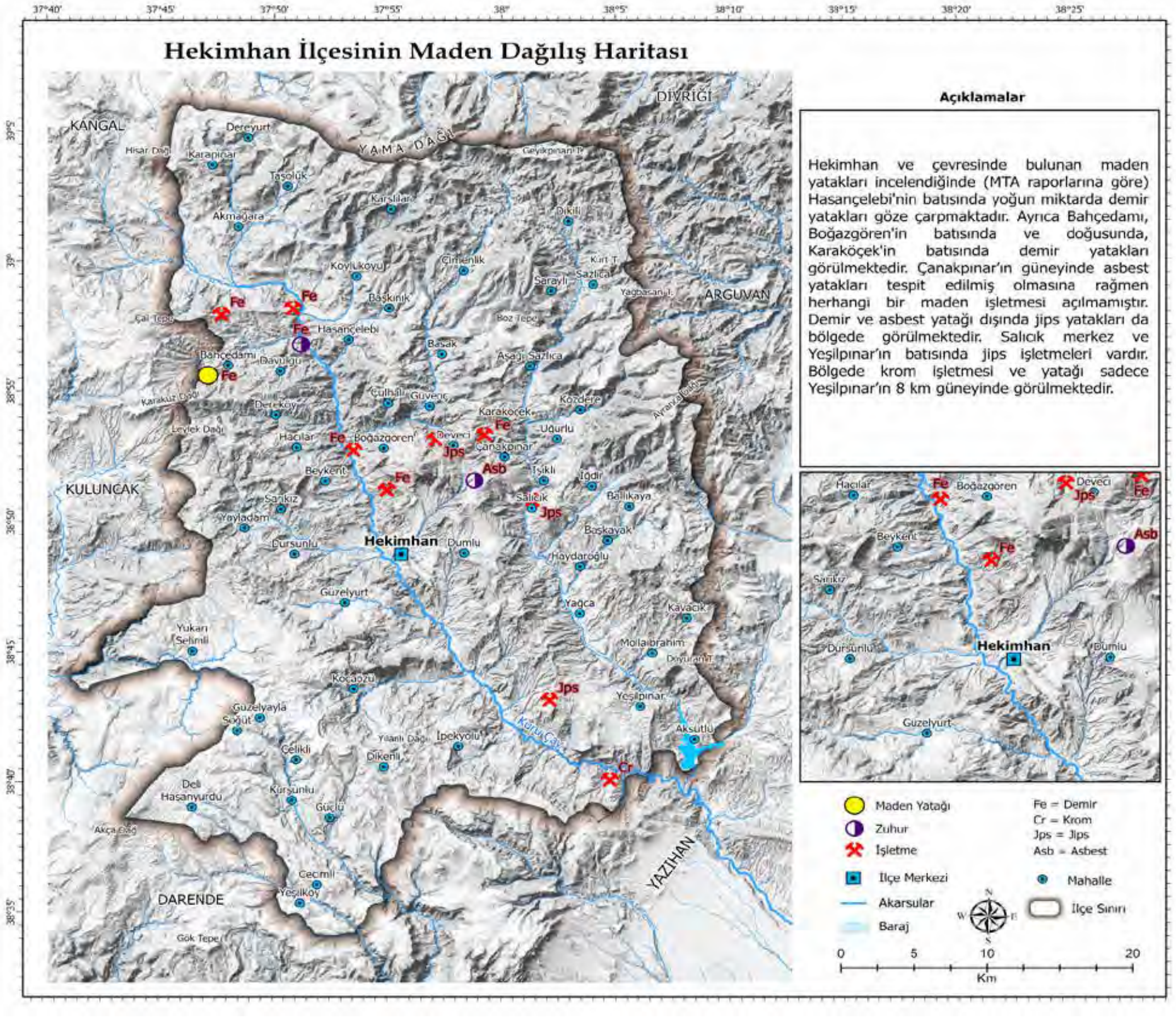
Harita 21: Hekimhan İlçesi ve Çevresinin Deprem Dağılış Haritası (AFAD).



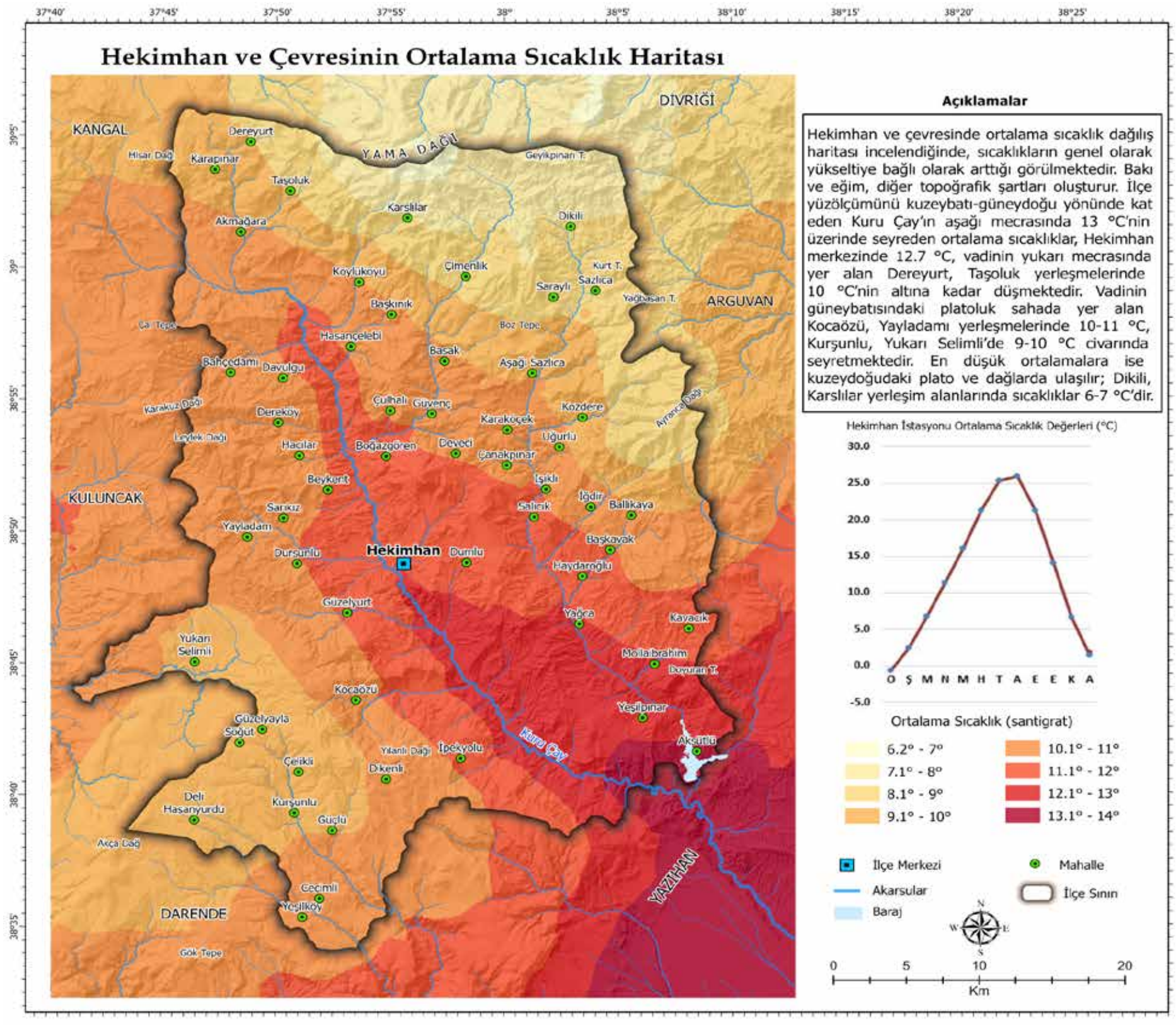
Harita 22: Hekimhan İlçesi ve Çevresinin Heyelan Haritası.



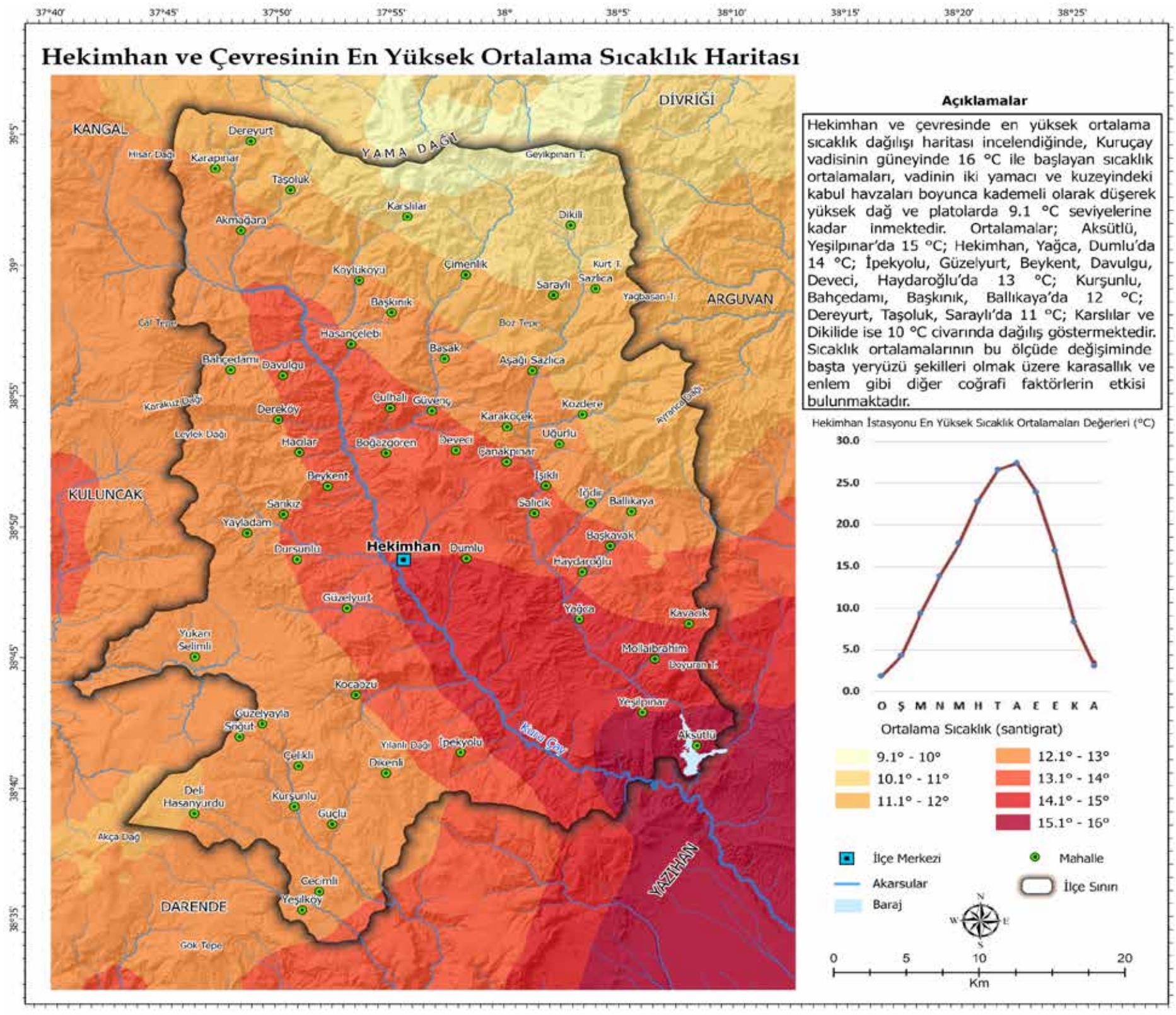
Harita 23: Hekimhan İlçesinin Erozyon Haritası.



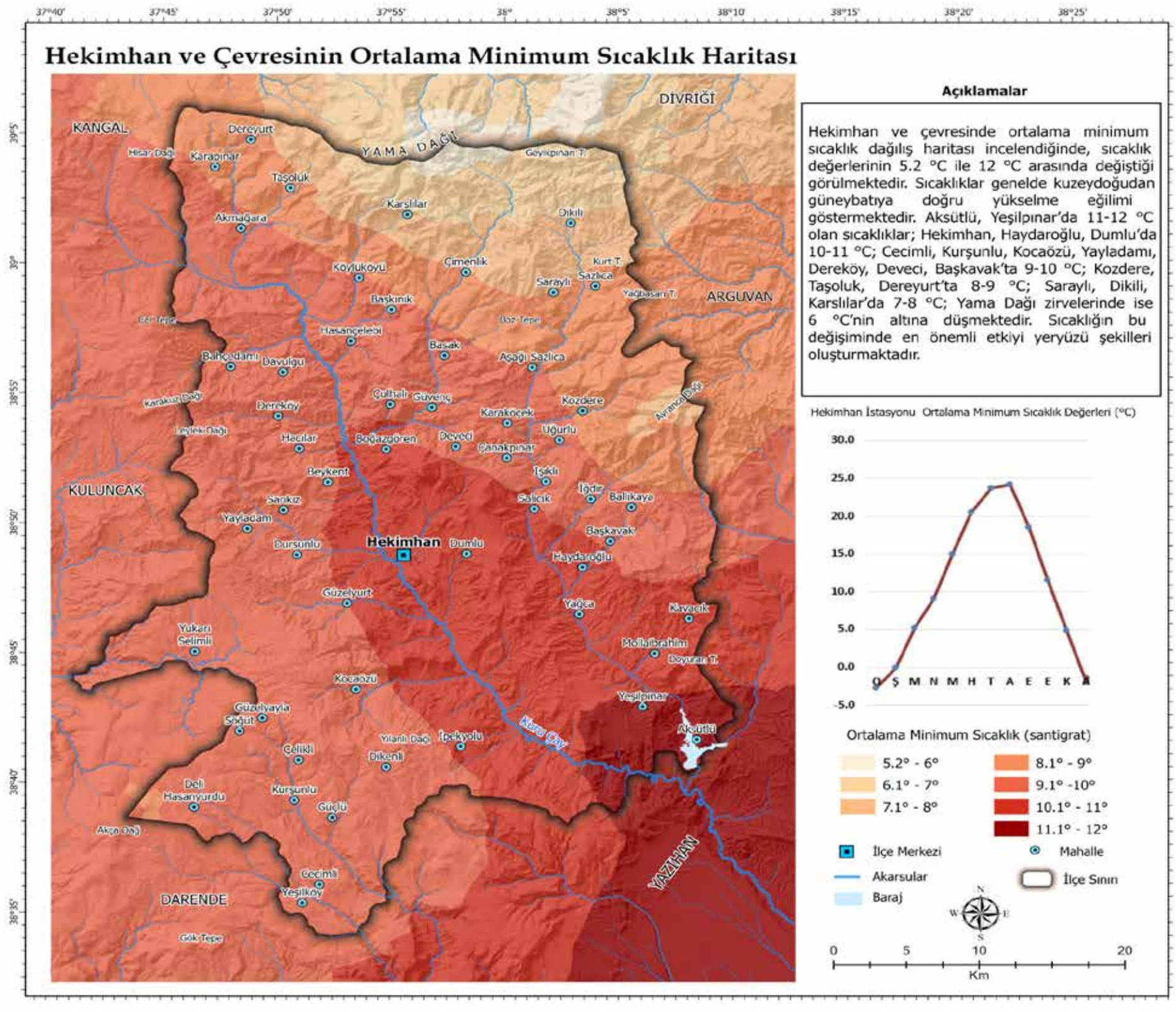
Harita 24: Hekimhan İlçesinin Maden Dağılış Haritası.



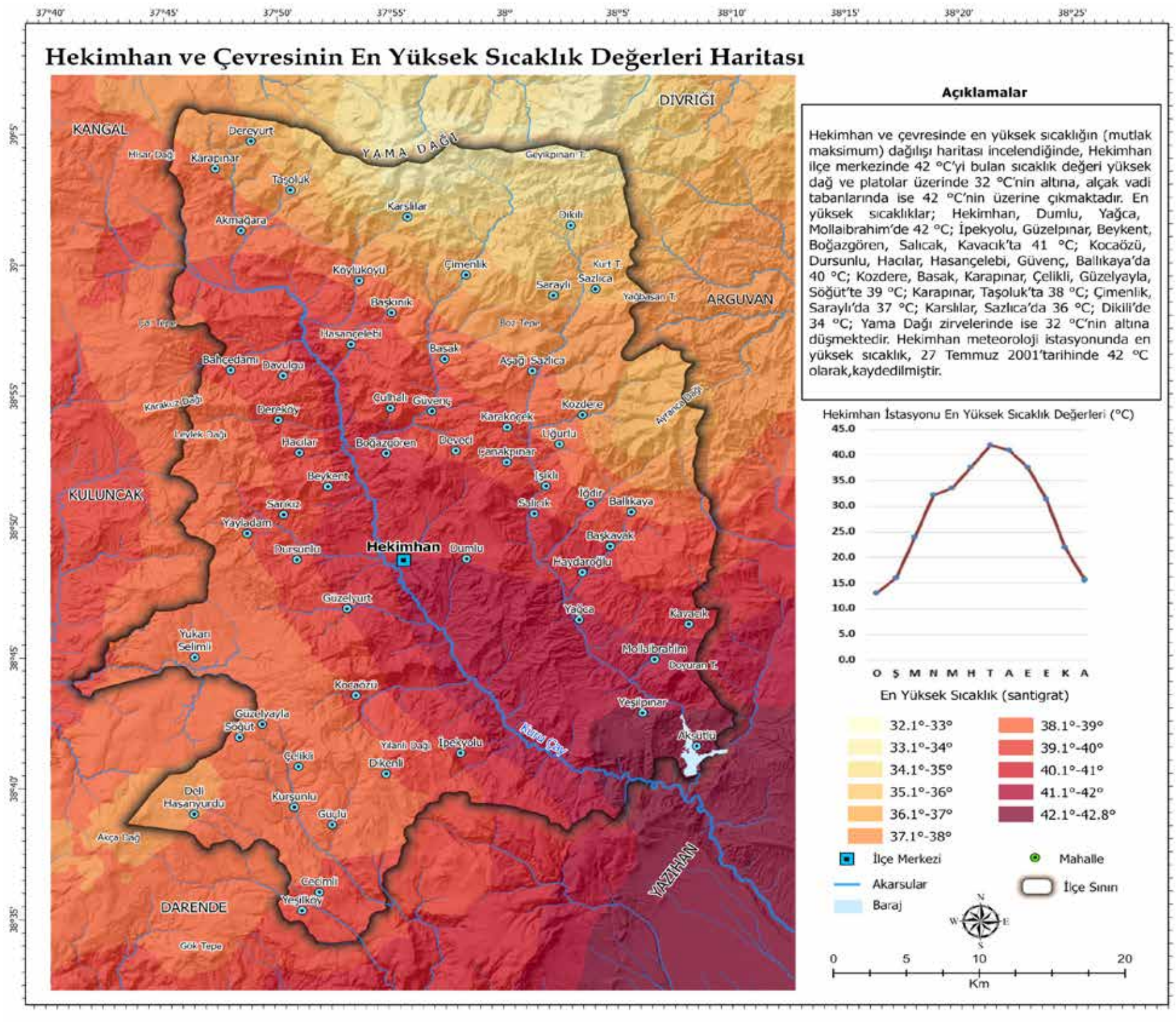
Harita 25: Hekimhan İlçesi ve Çevresinin Ortalama Sıcaklık Haritası.



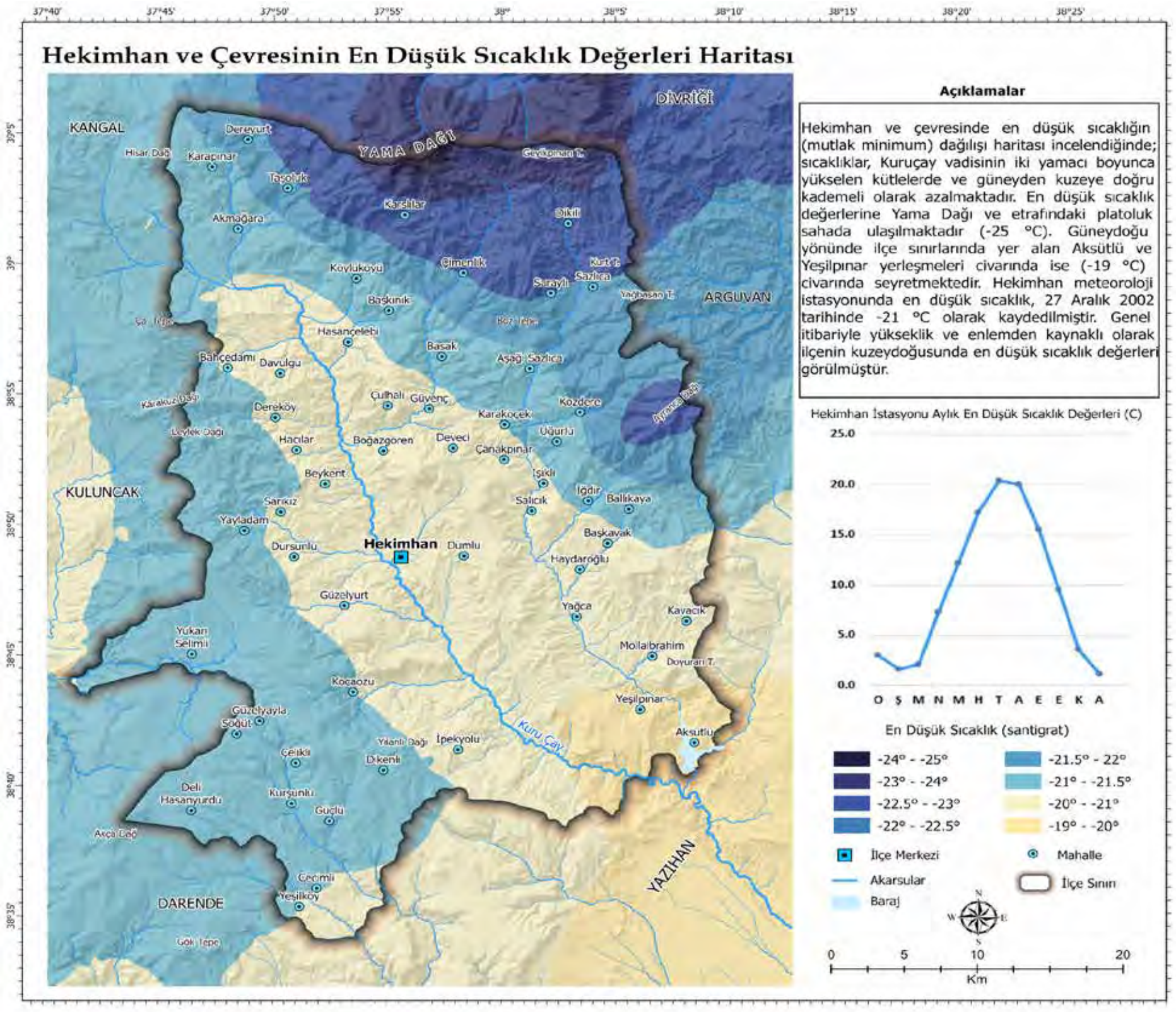
Harita 26: Hekimhan İlçesi ve Çevresinin En Yüksek Ortalama Sıcaklık Haritası.



Harita 27: Hekimhan İlçesi ve Çevresinin Ortalama Minimum Sıcaklık Haritası.



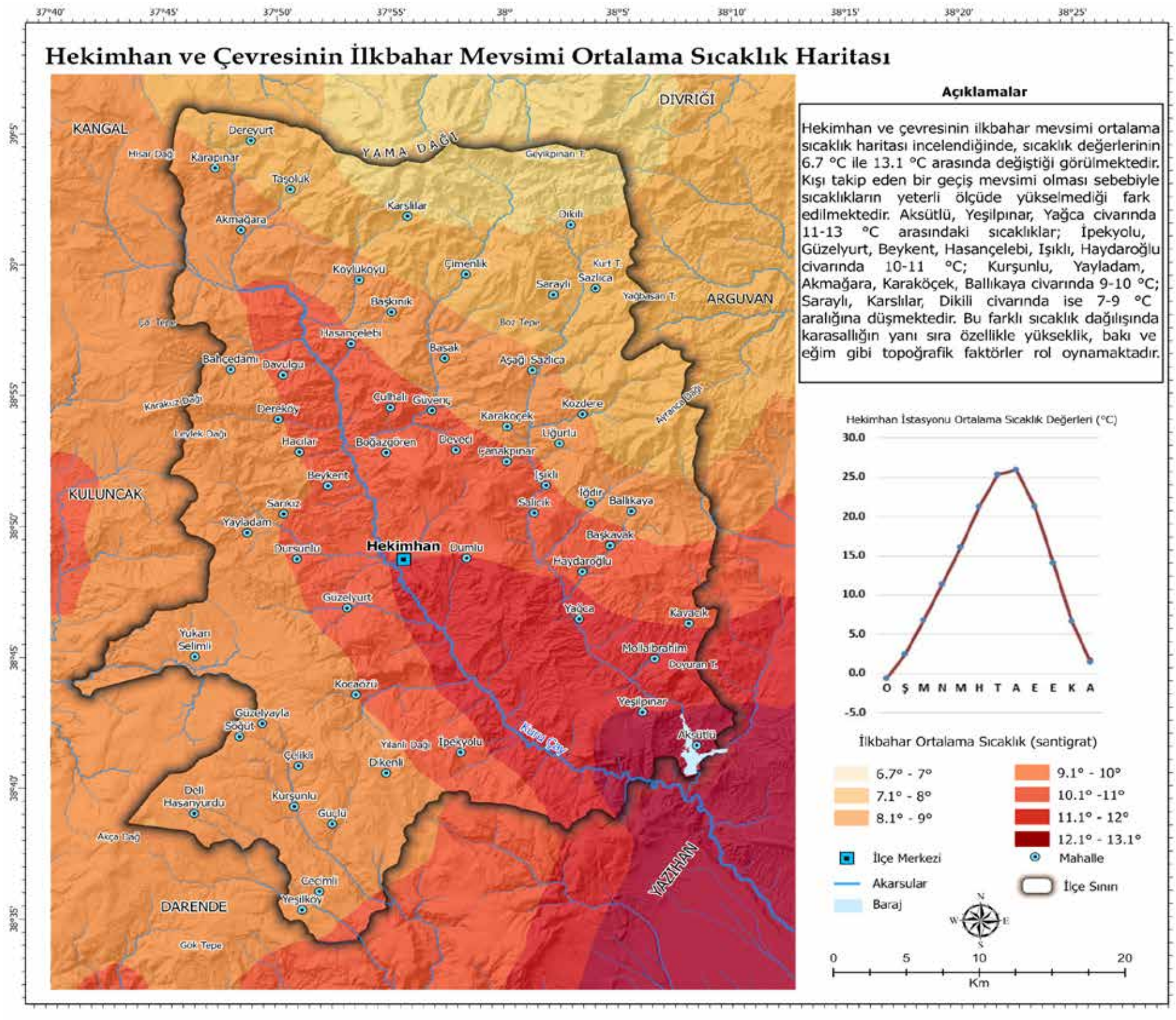
Harita 28: Hekimhan İlçesi ve Çevresinin En Yüksek Sıcaklık Değerleri Haritası.



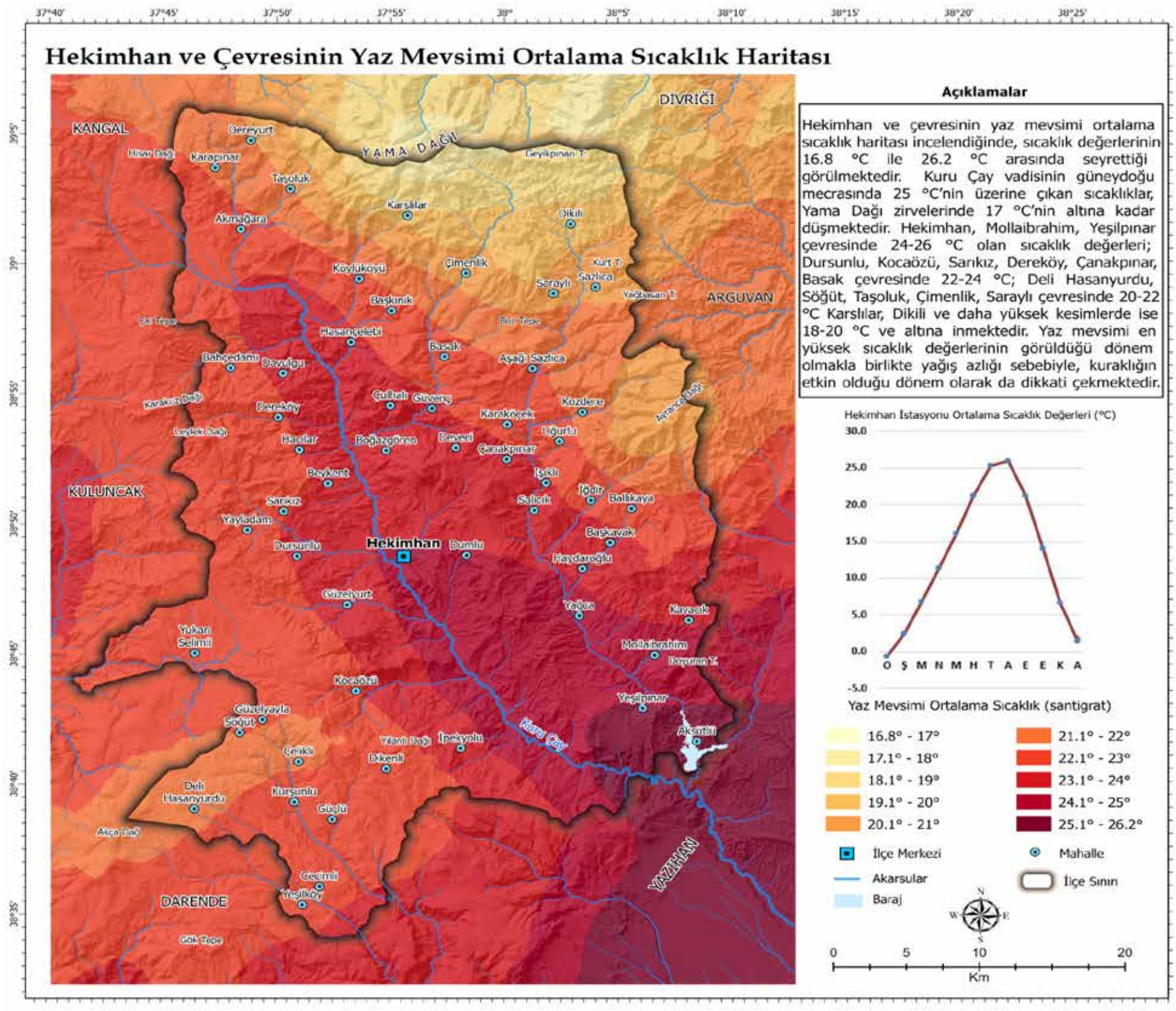
Açıklamalar

Hekimhan ve çevresinde en düşük sıcaklığın (mutlak minimum) dağılışı haritası incelendiğinde; sıcaklıklar, Kuruçay vadisinin iki yamacı boyunca yükselen kütlelerde ve güneyden kuzeye doğru kademeli olarak azalmaktadır. En düşük sıcaklık değerlerine Yama Dağı ve etrafındaki platoluk sahada ulaşılmaktadır (-25 °C). Güneydoğu yönünde ilçe sınırlarında yer alan Aksütlü ve Yeşilpınar yerleşmeleri civarında ise (-19 °C) civarında seyretmektedir. Hekimhan meteoroloji istasyonunda en düşük sıcaklık, 27 Aralık 2002 tarihinde -21 °C olarak kaydedilmiştir. Genel itibariyle yükseklik ve enlemden kaynaklı olarak ilçenin kuzeydoğusunda en düşük sıcaklık değerleri görülmüştür.

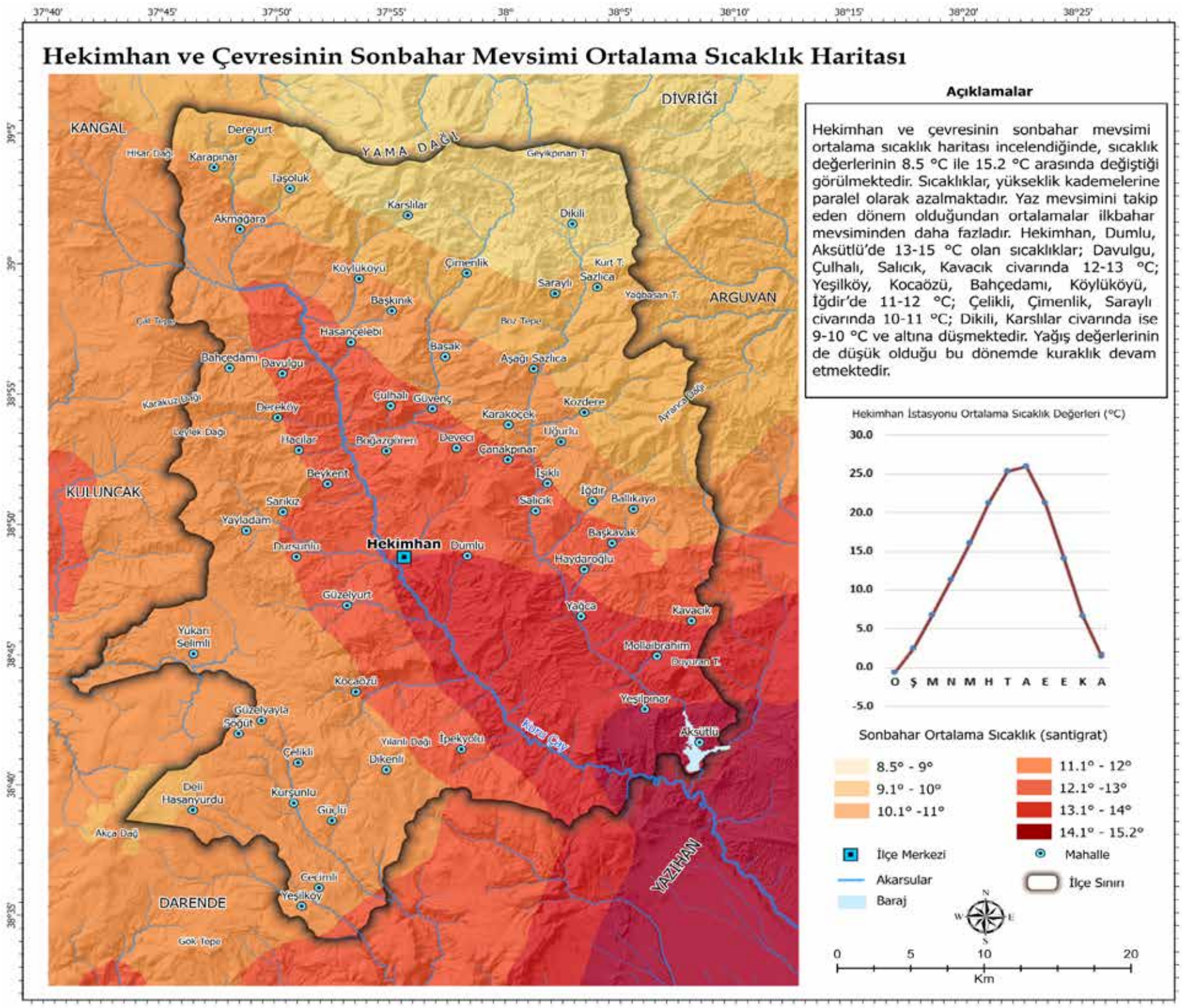
Harita 29: Hekimhan İlçesi ve Çevresinin En Düşük Sıcaklık Değerleri Haritası.



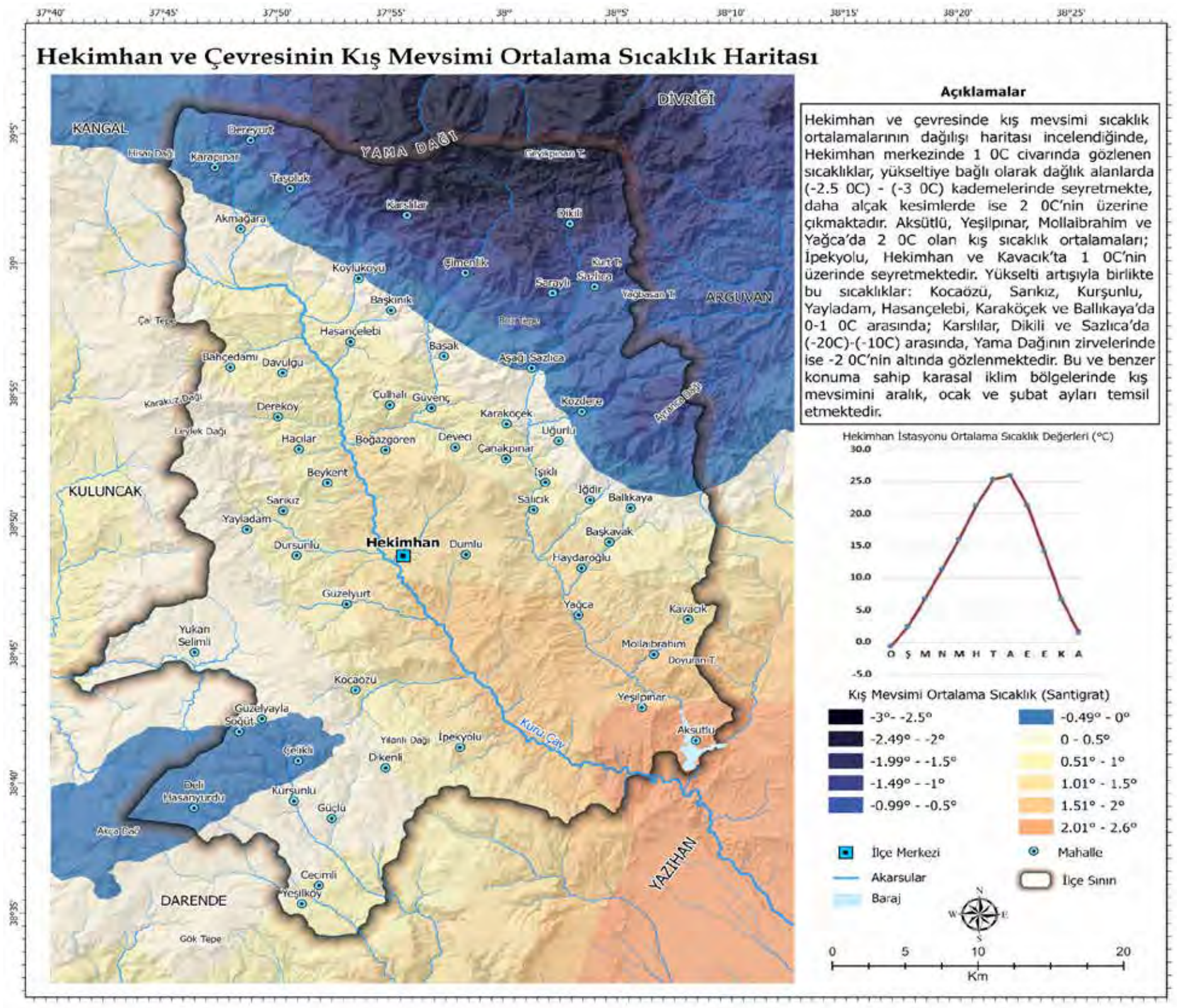
Harita 30: Hekimhan İlçesi ve Çevresinin İlkbahar Dönemi Ortalama Sıcaklık Haritası.



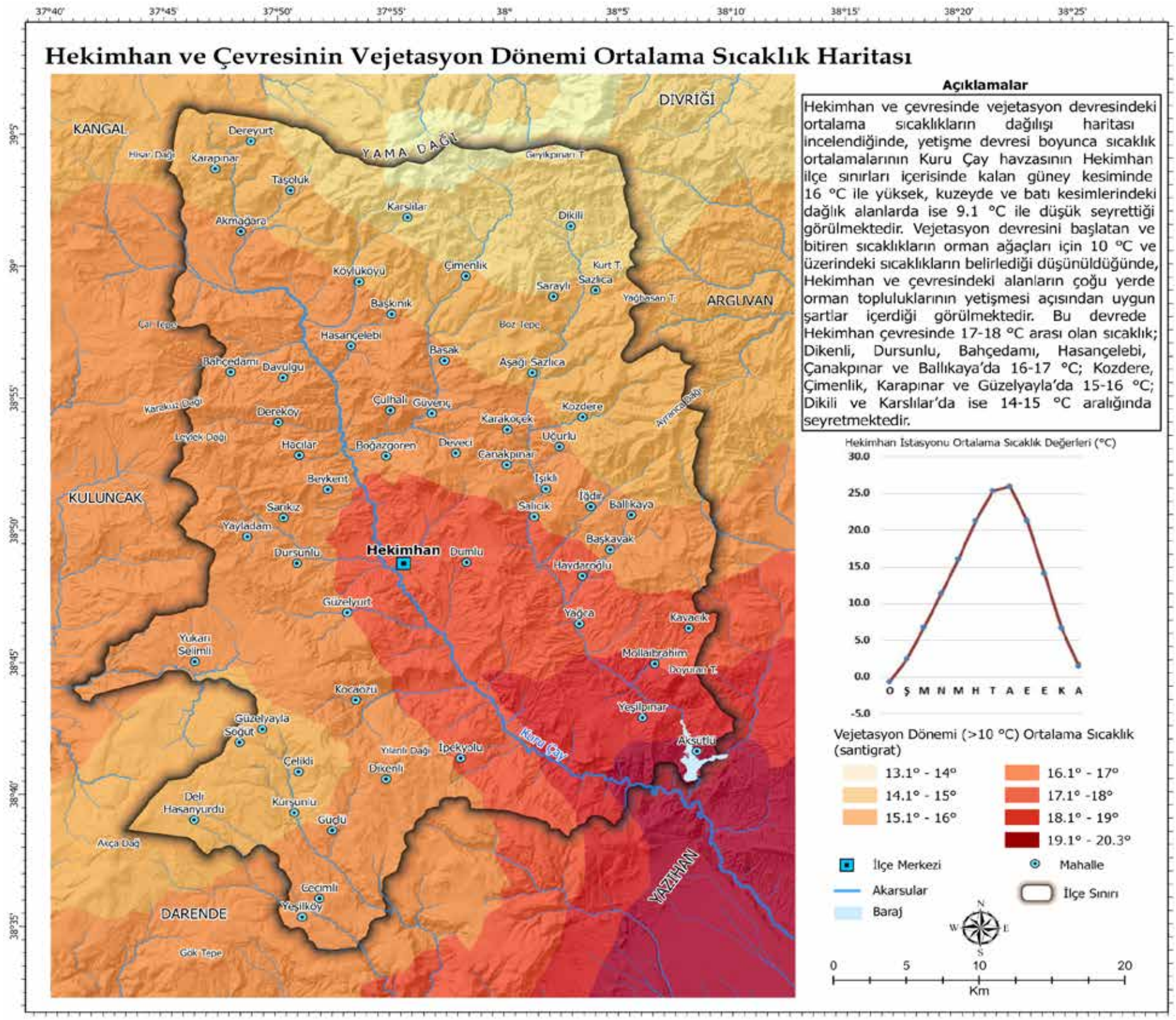
Harita 31: Hekimhan İlçesi ve Çevresinin Yaz Dönemi Ortalama Sıcaklık Haritası.



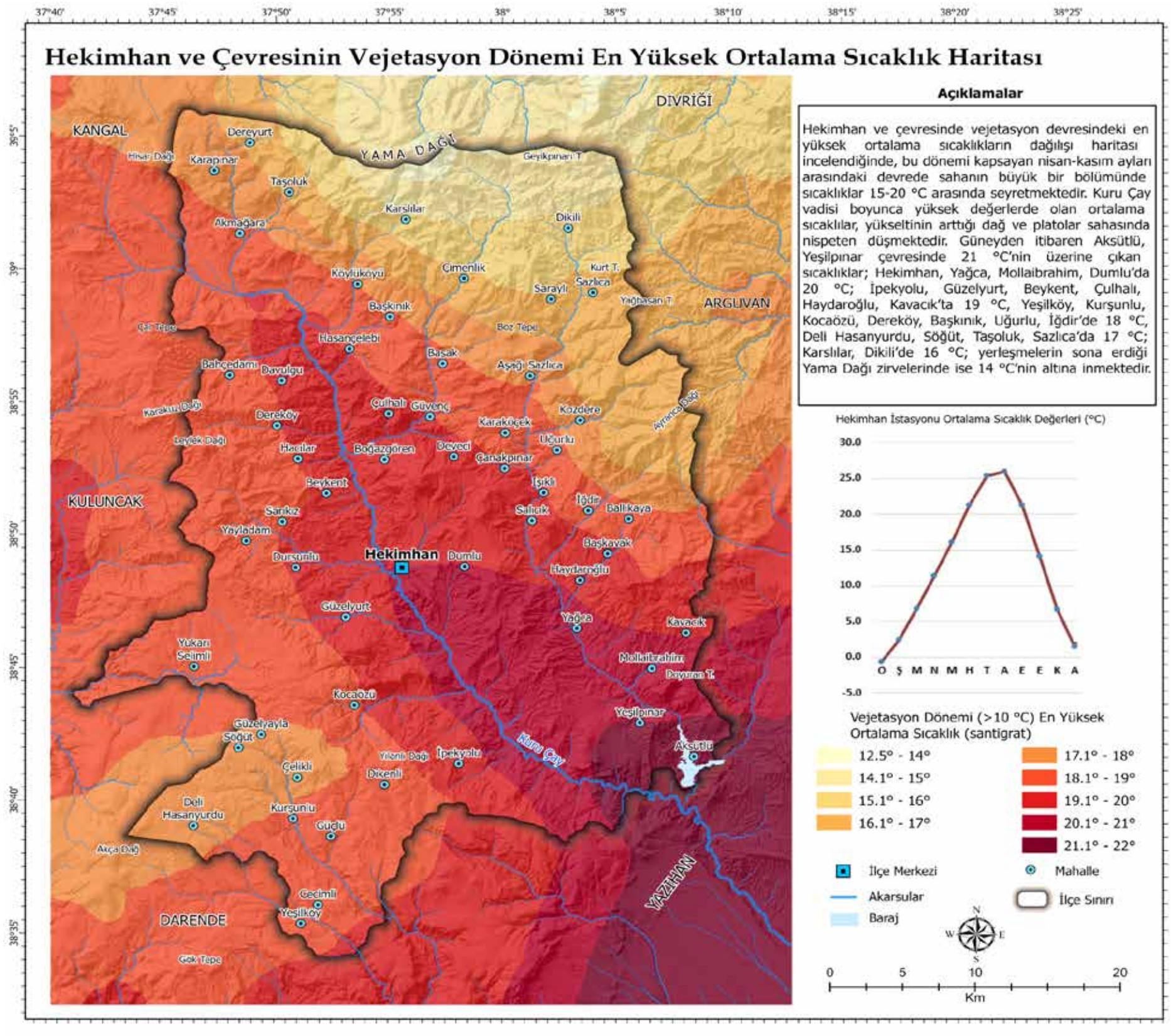
Harita 32: Hekimhan İlçesi ve Çevresinin Sonbahar Dönemi Ortalama Sıcaklık Haritası.



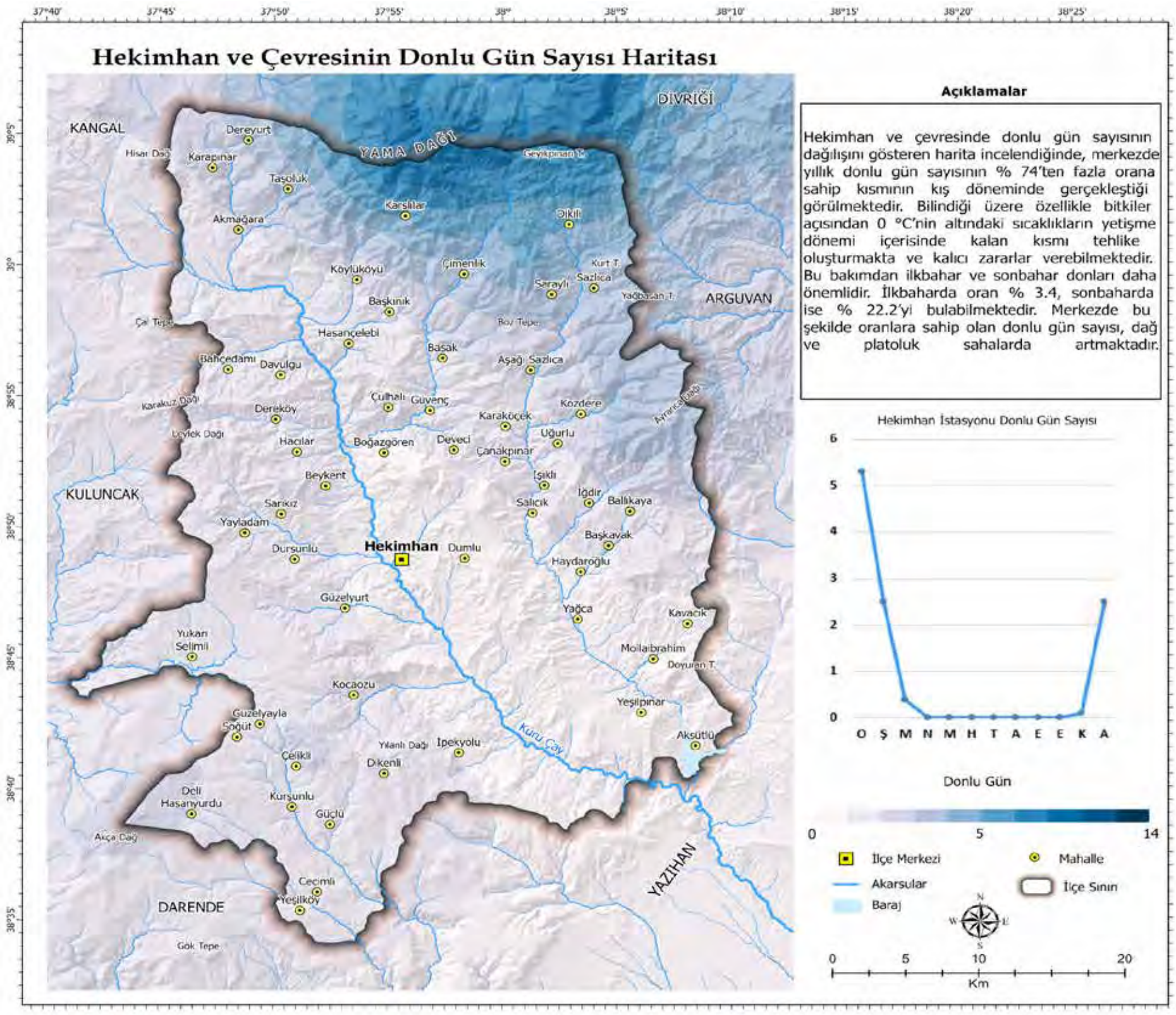
Harita 33: Hekimhan İlçesi ve Çevresinin Kış Dönemi Ortalama Sıcaklık Haritası.



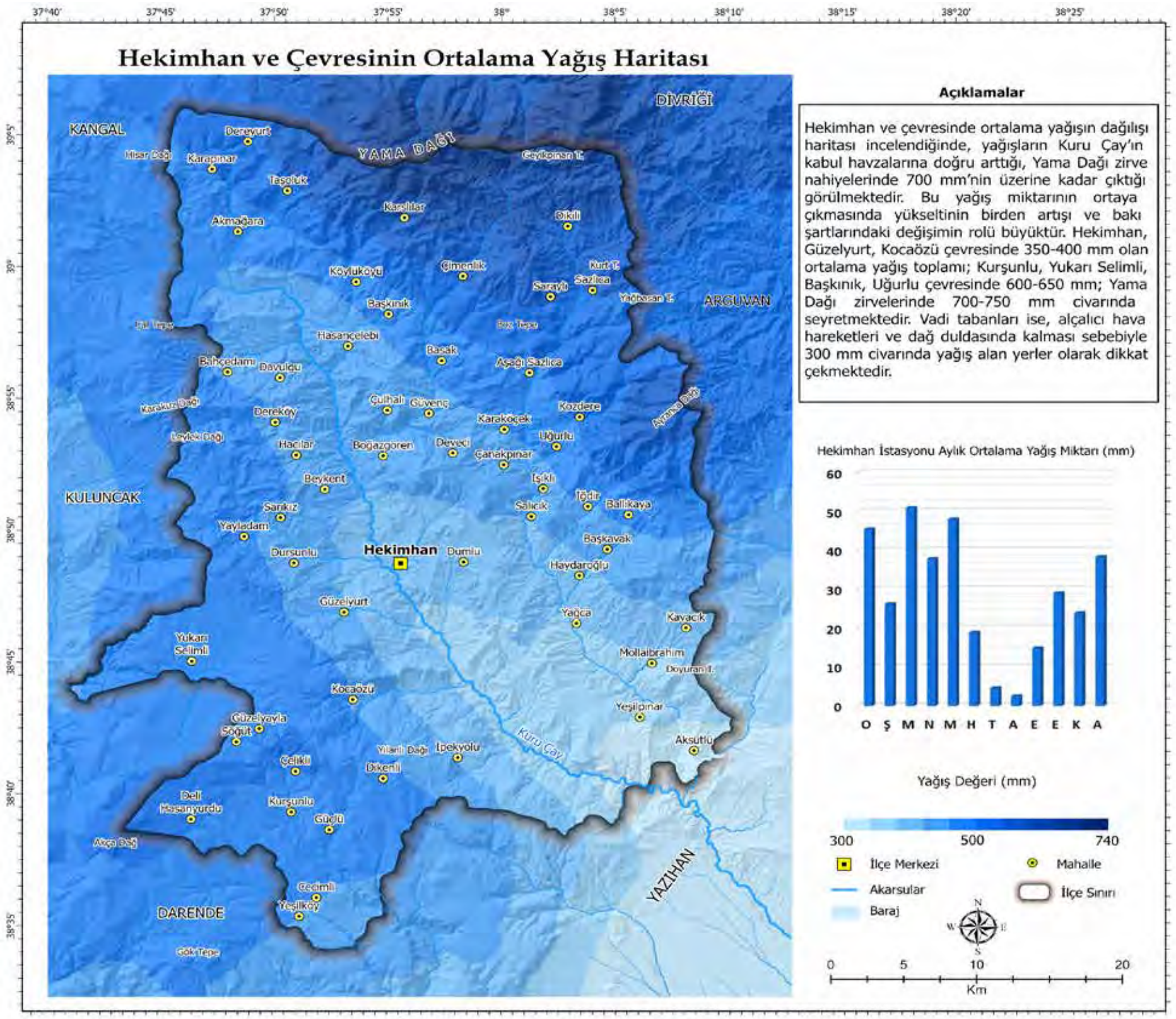
Harita 34: Hekimhan İlçesi ve Çevresinin Vejetasyon Dönemi Ortalama Sıcaklık Haritası.



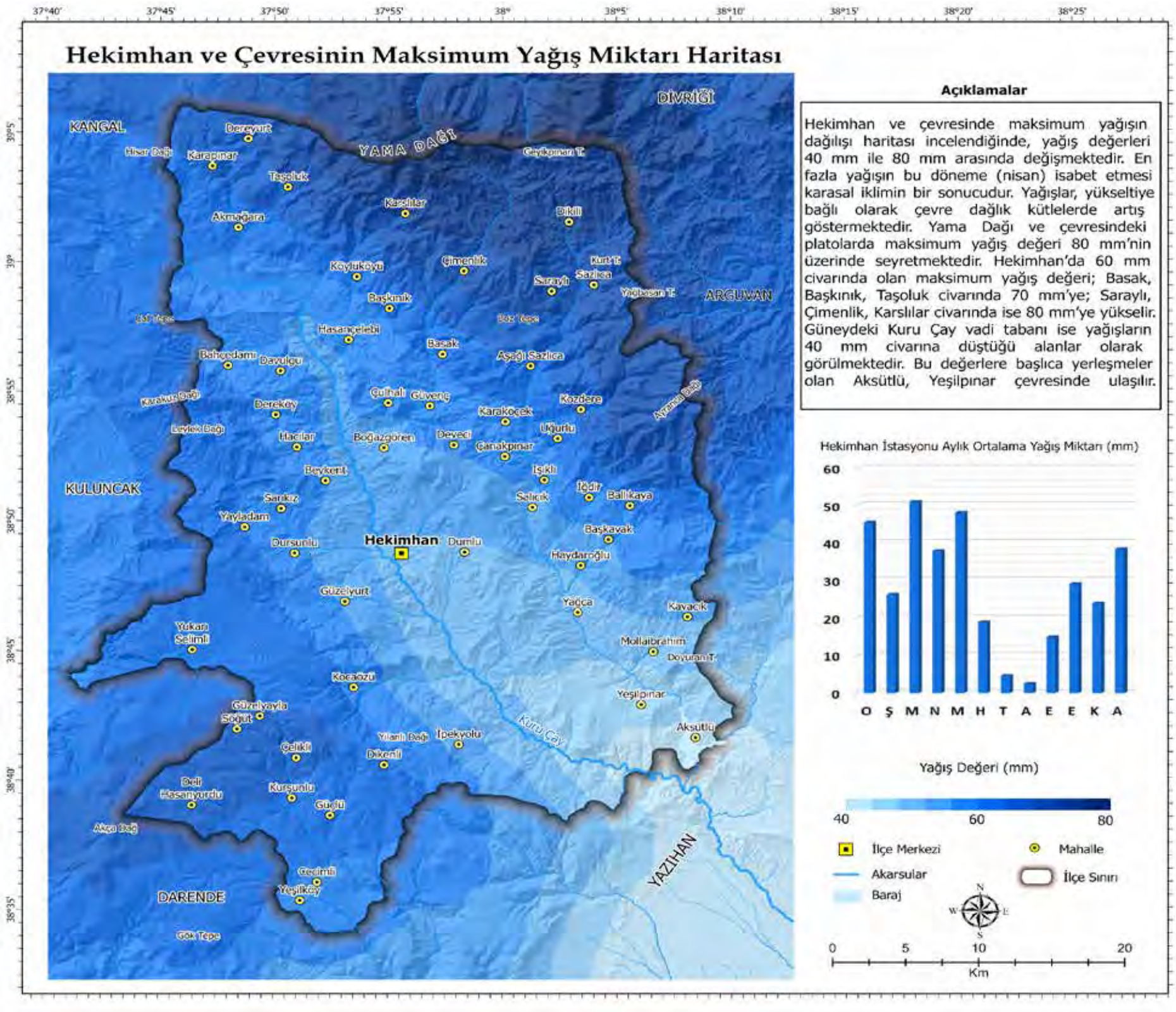
Harita 35: Hekimhan İlçesi ve Çevresinin Vejetasyon Dönemi En Yüksek Ortalama Sıcaklık Haritası.



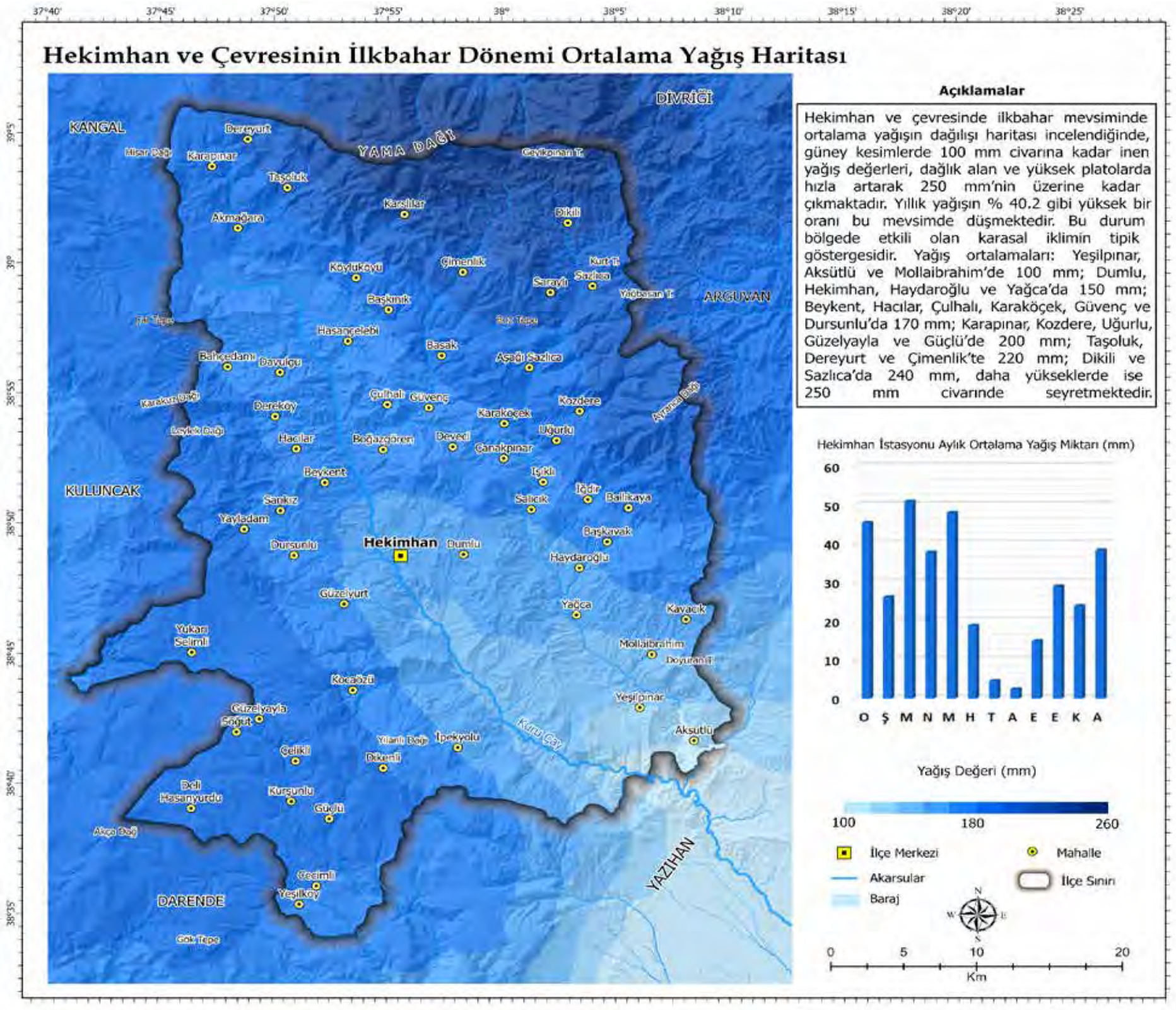
Harita 36: Hekimhan İlçesi ve Çevresinin Donlu Gün Sayısı Haritası.



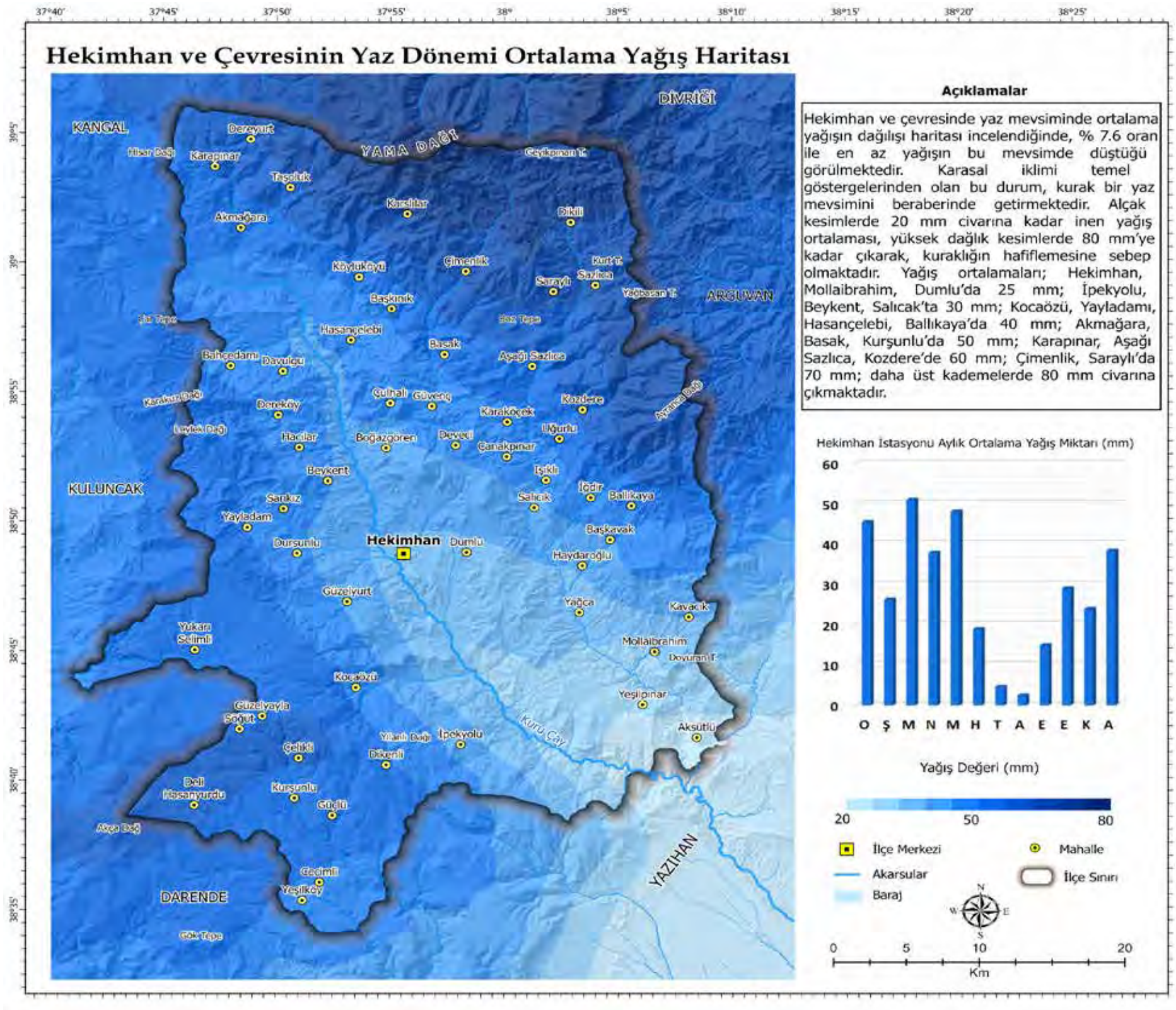
Harita 37: Hekimhan İlçesi ve Çevresinin Ortalama Yağış Haritası.



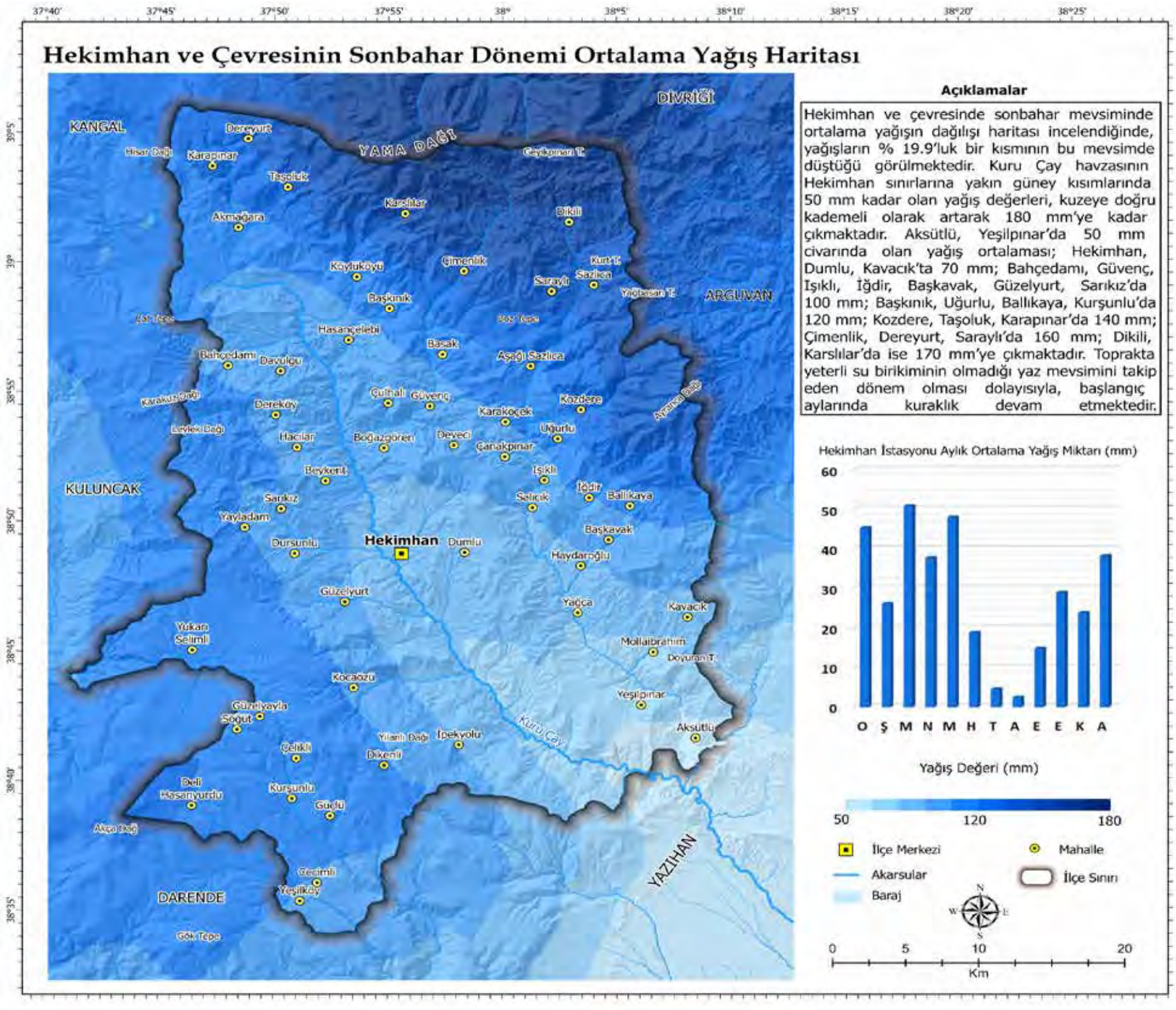
Harita 38: Hekimhan İlçesi ve Çevresinin Maksimum Yağış Miktarı Haritası.



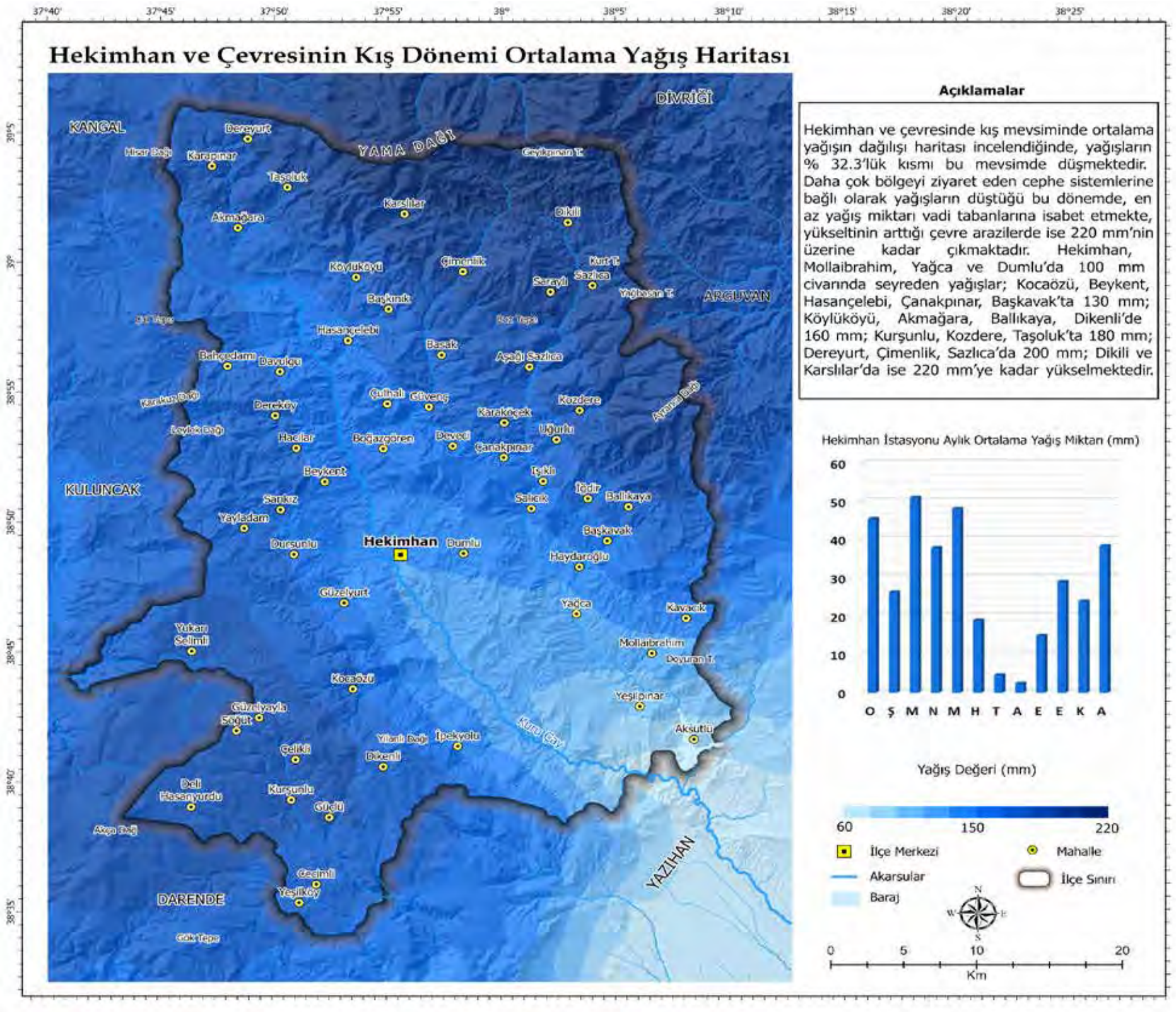
Harita 39: Hekimhan İlçesi ve Çevresinin İlkbahar Dönemi Ortalama Yağış Haritası.



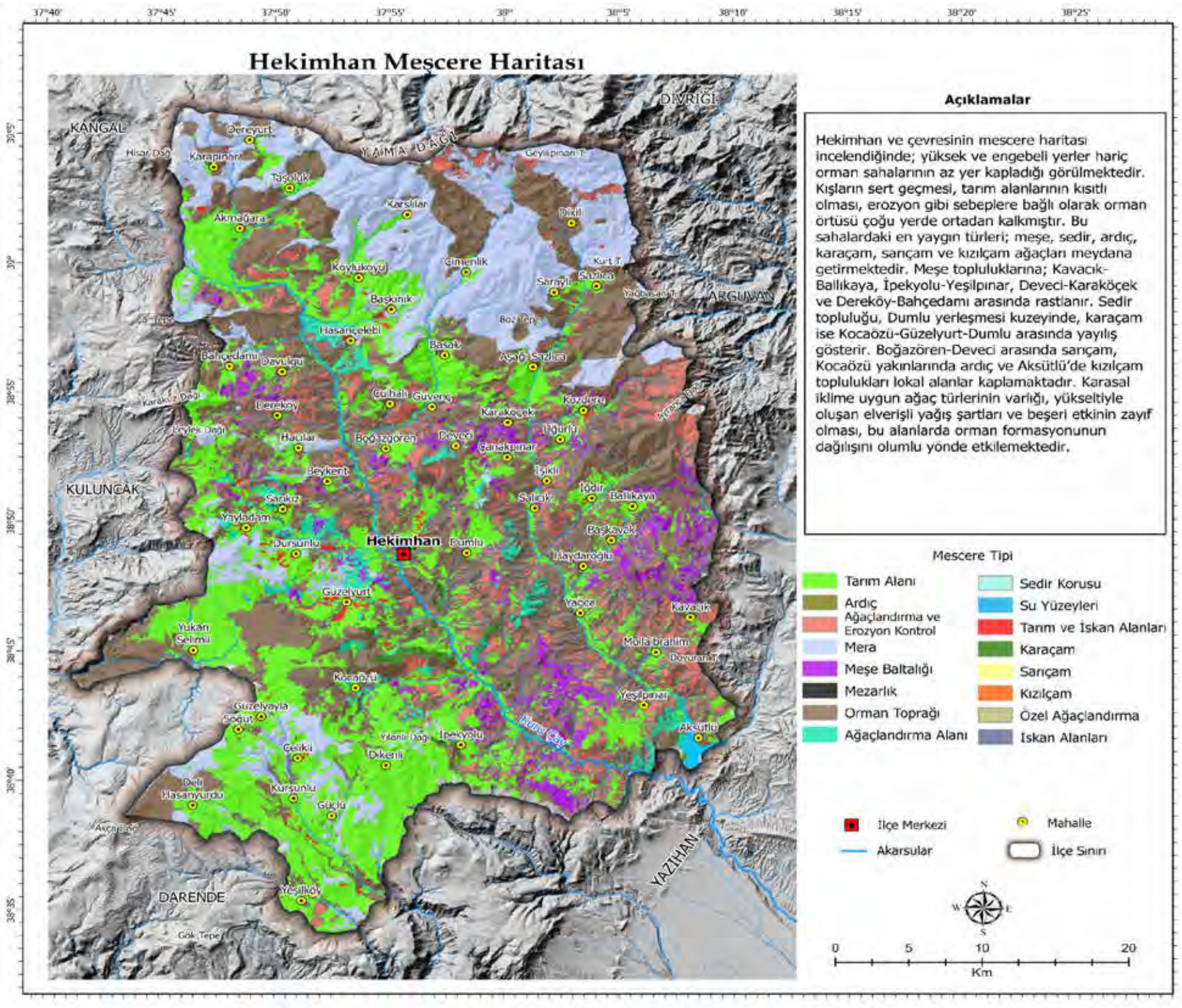
Harita 40: Hekimhan İlçesi ve Çevresinin Yaz Dönemi Ortalama Yağış Haritası.



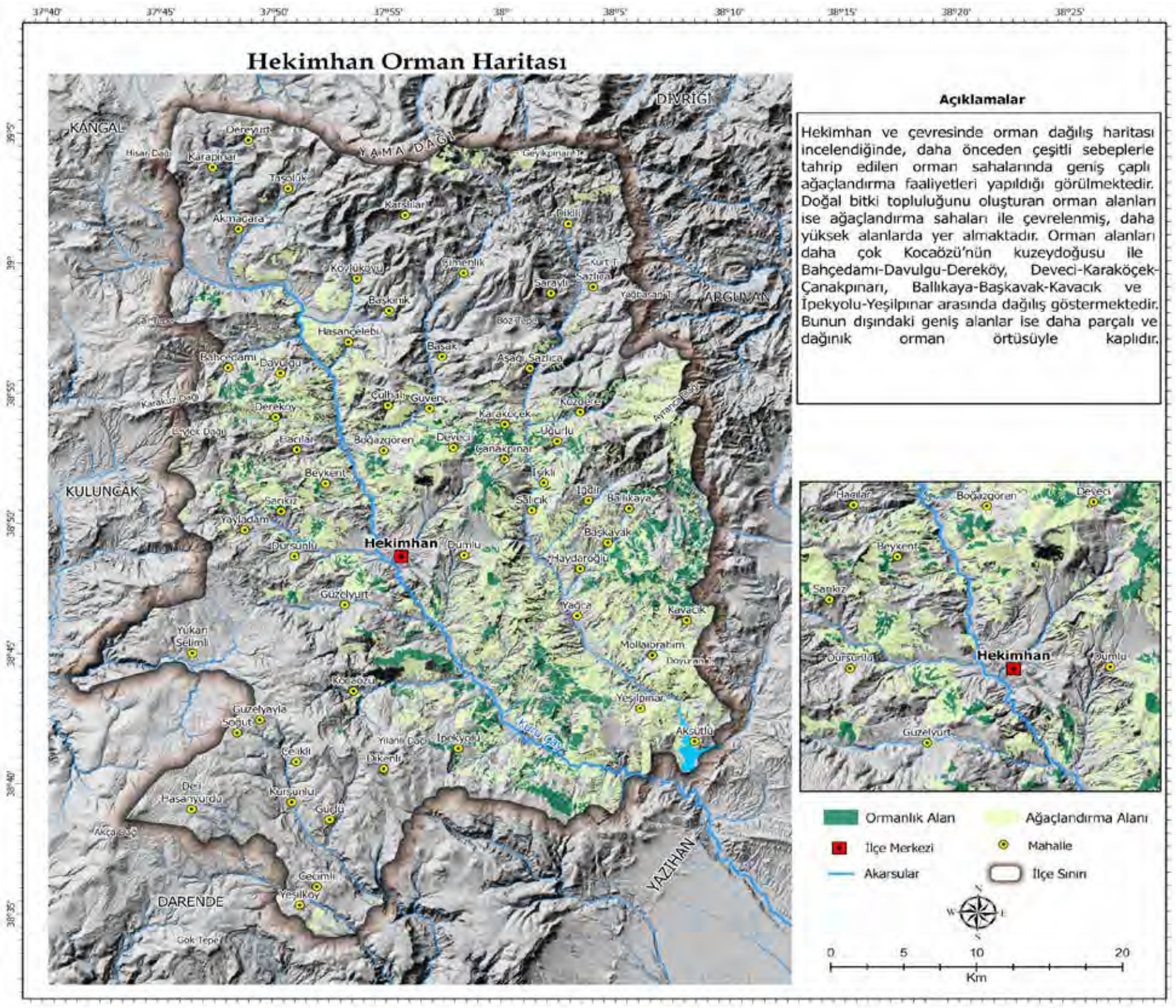
Harita 41: Hekimhan İlçesi ve Çevresinin Sonbahar Dönemi Ortalama Yağış Haritası.



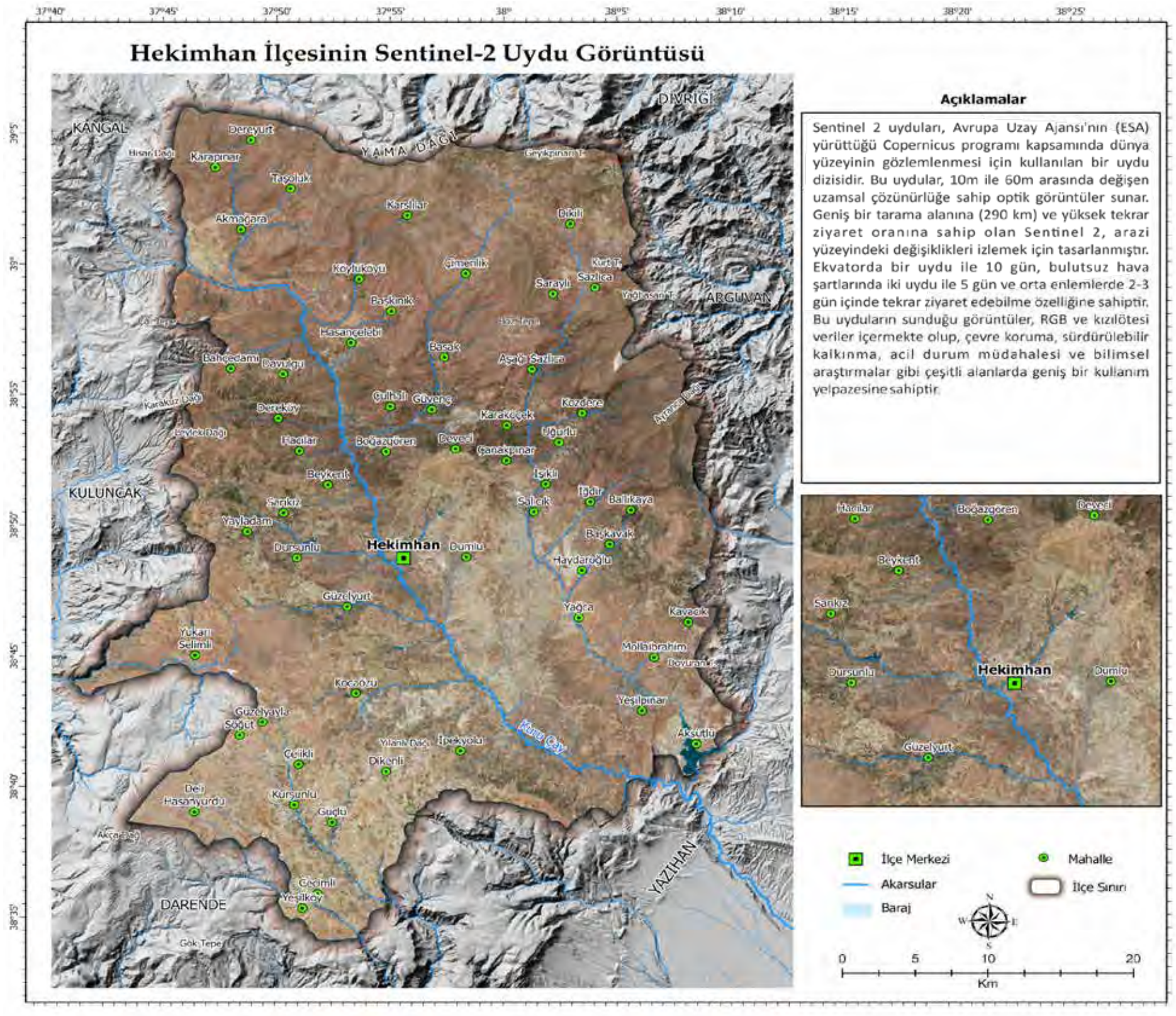
Harita 42: Hekimhan İlçesi ve Çevresinin Kış Dönemi Ortalama Yağış Haritası.



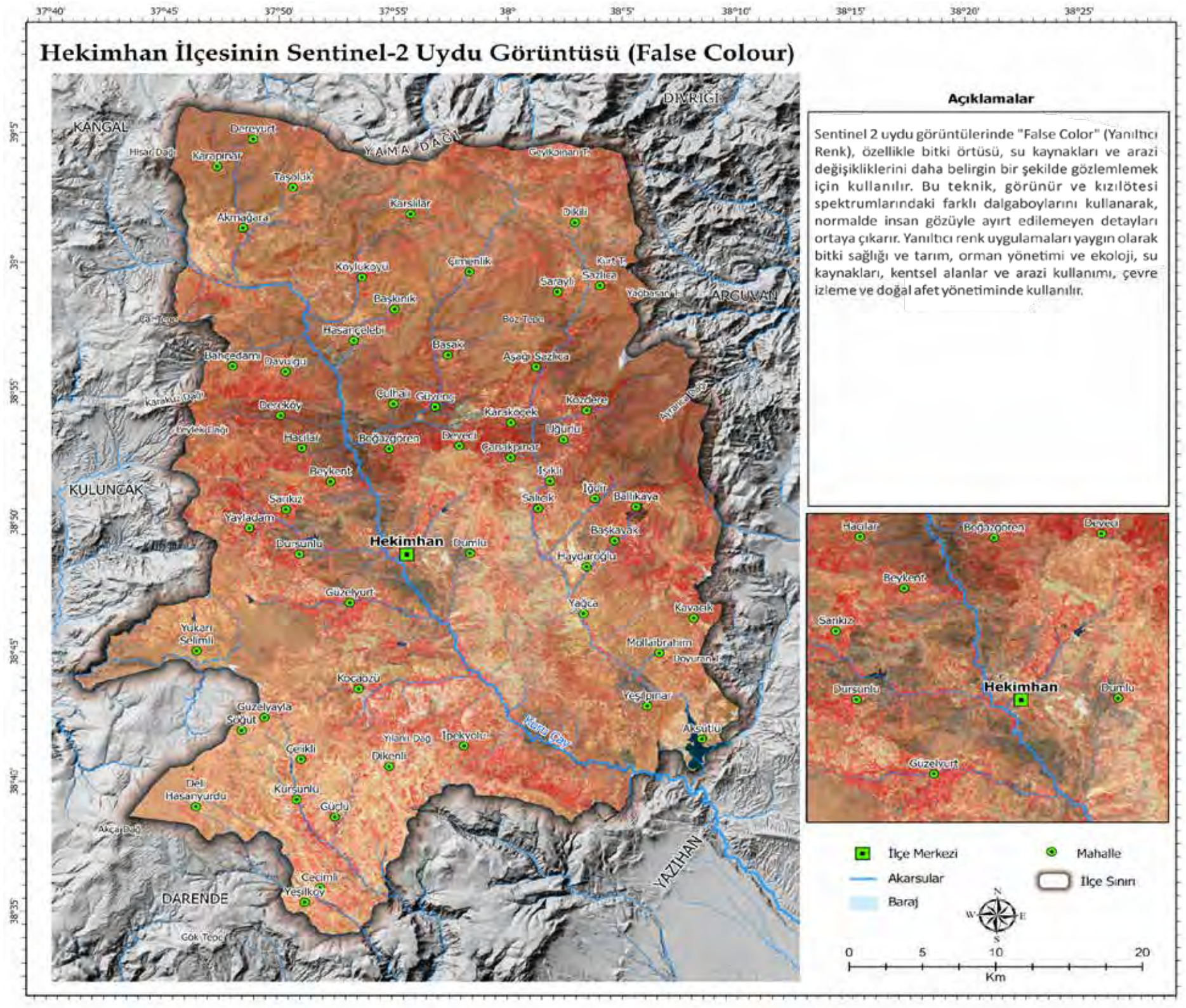
Harita 43: Hekimhan İlçesinin Meşcere Haritası.



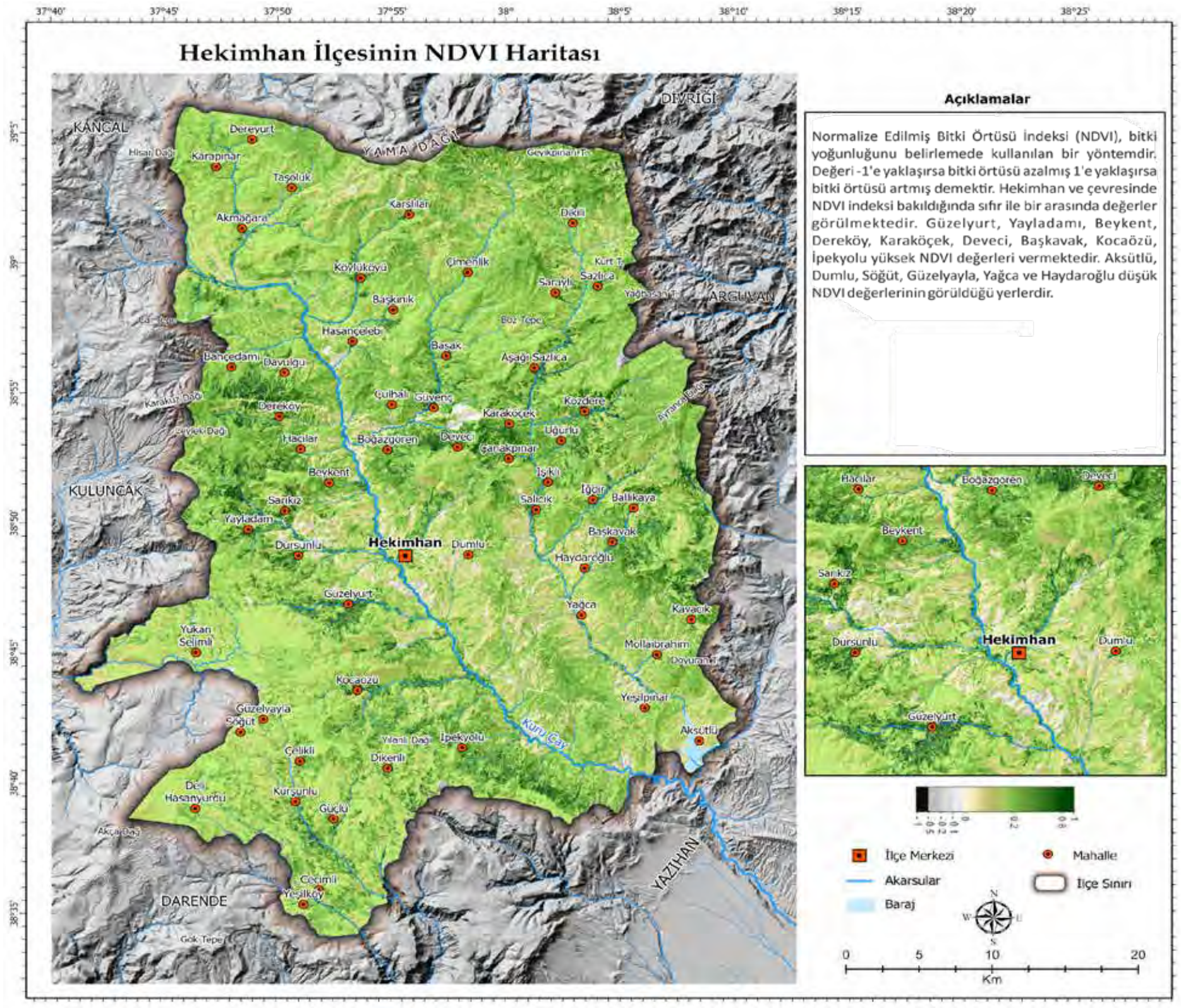
Harita 44: Hekimhan İlçesinin Orman Haritası.



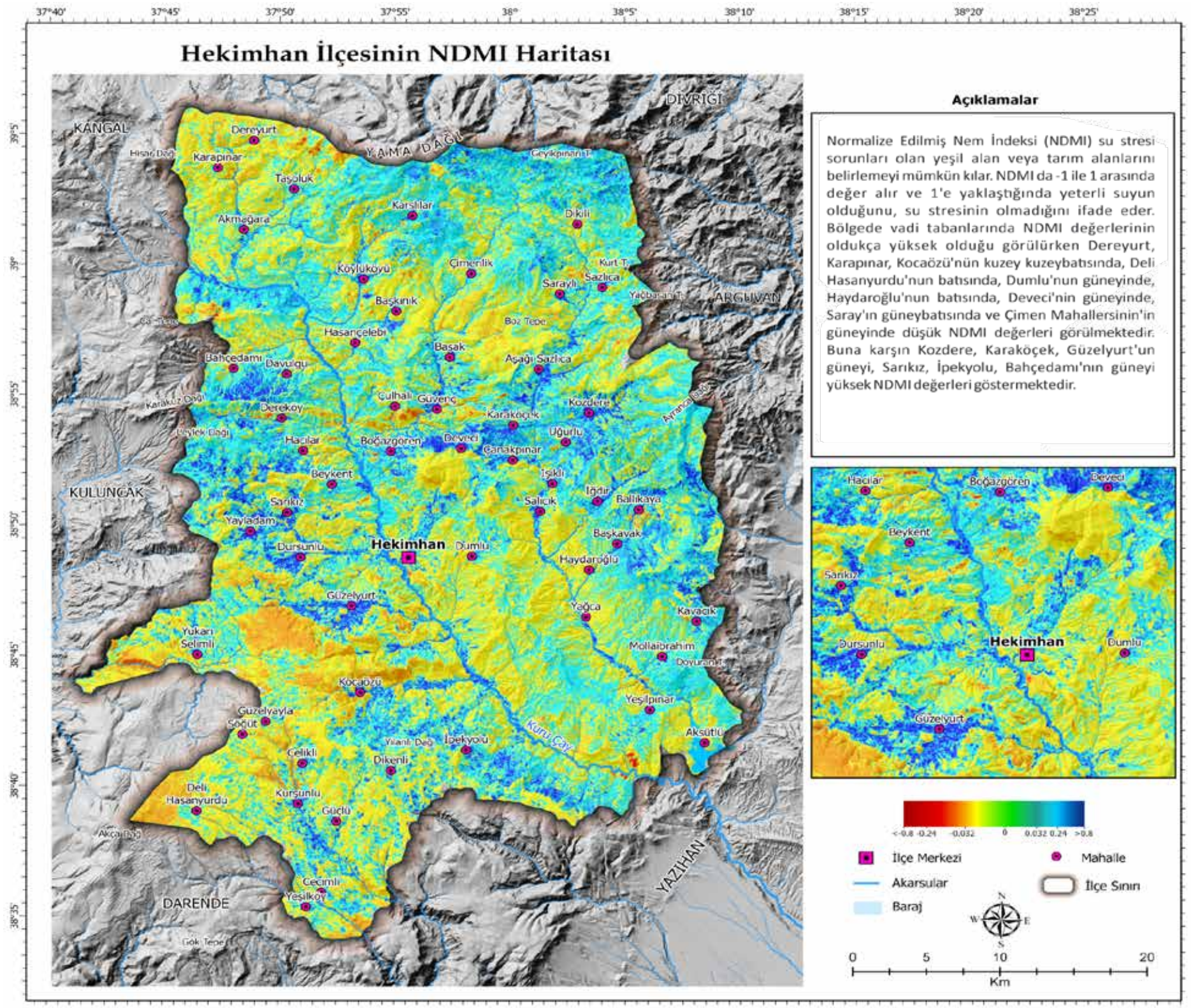
Harita 45: Hekimhan İlçesinin Sentinel-2 Uydu Görüntüsü.



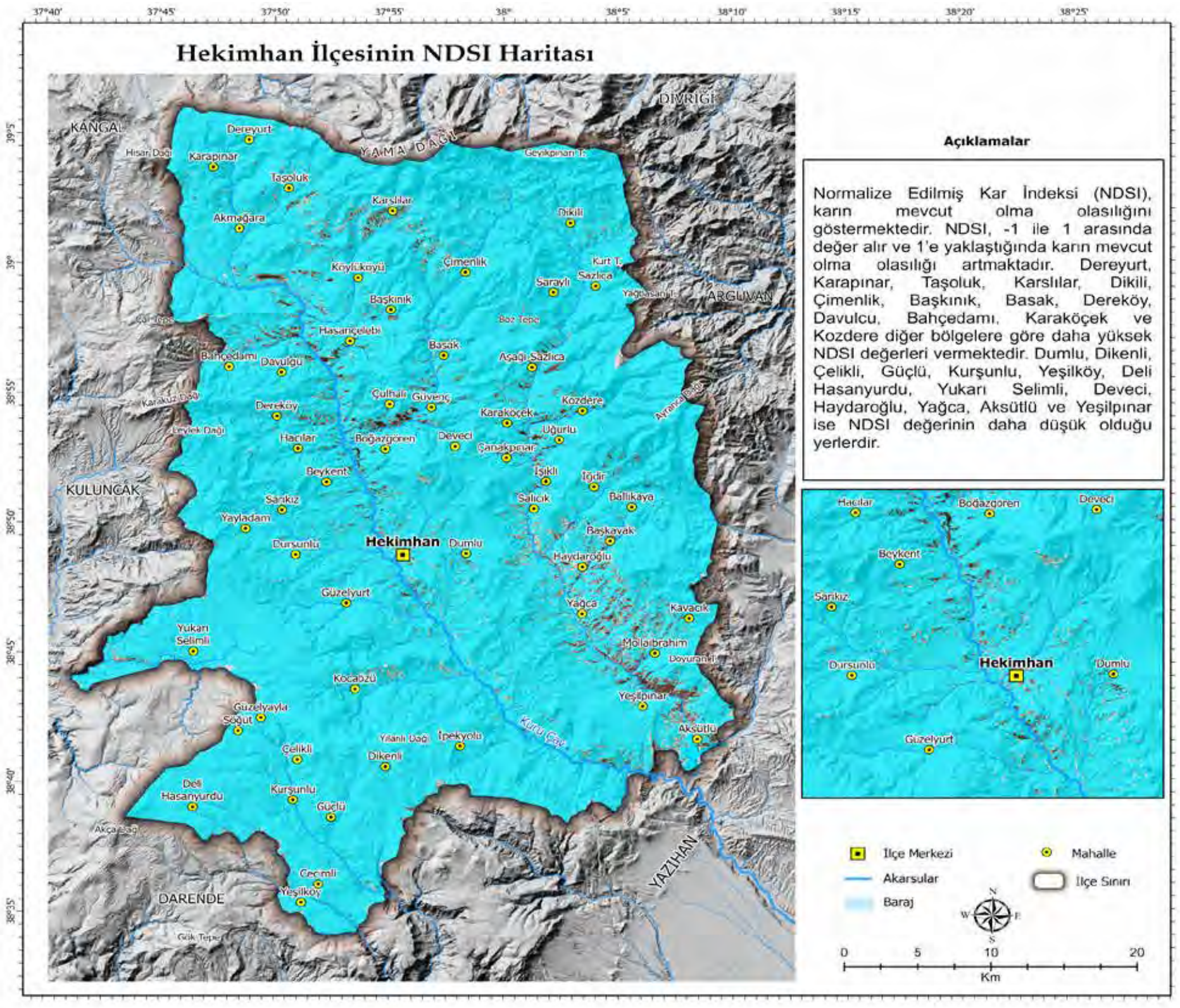
Harita 46: Hekimhan İlçesinin Sentinel-2 Uydu Görüntüsü (False Colour).



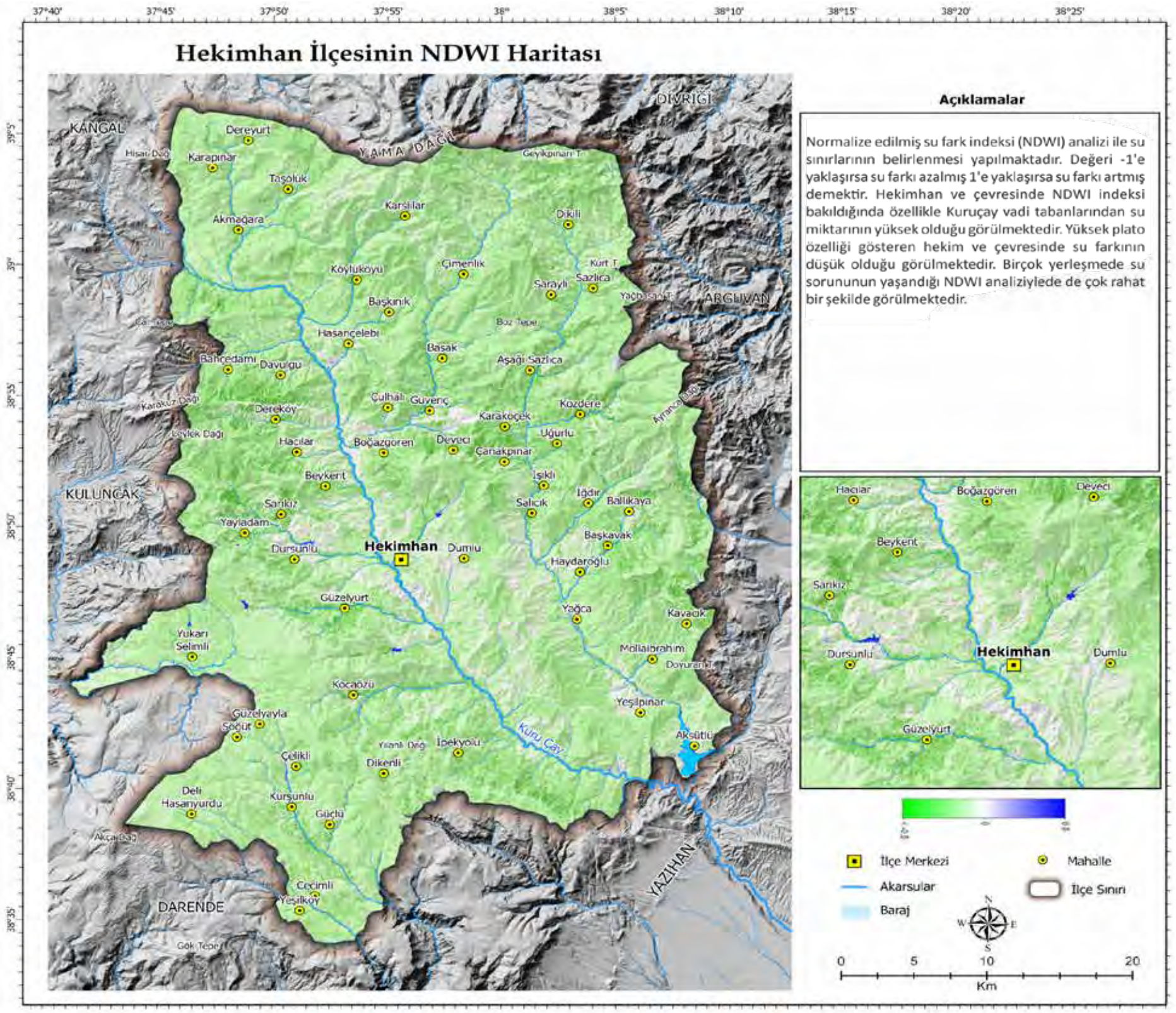
Harita 47: Hekimhan İlçesinin NDVI Haritası.



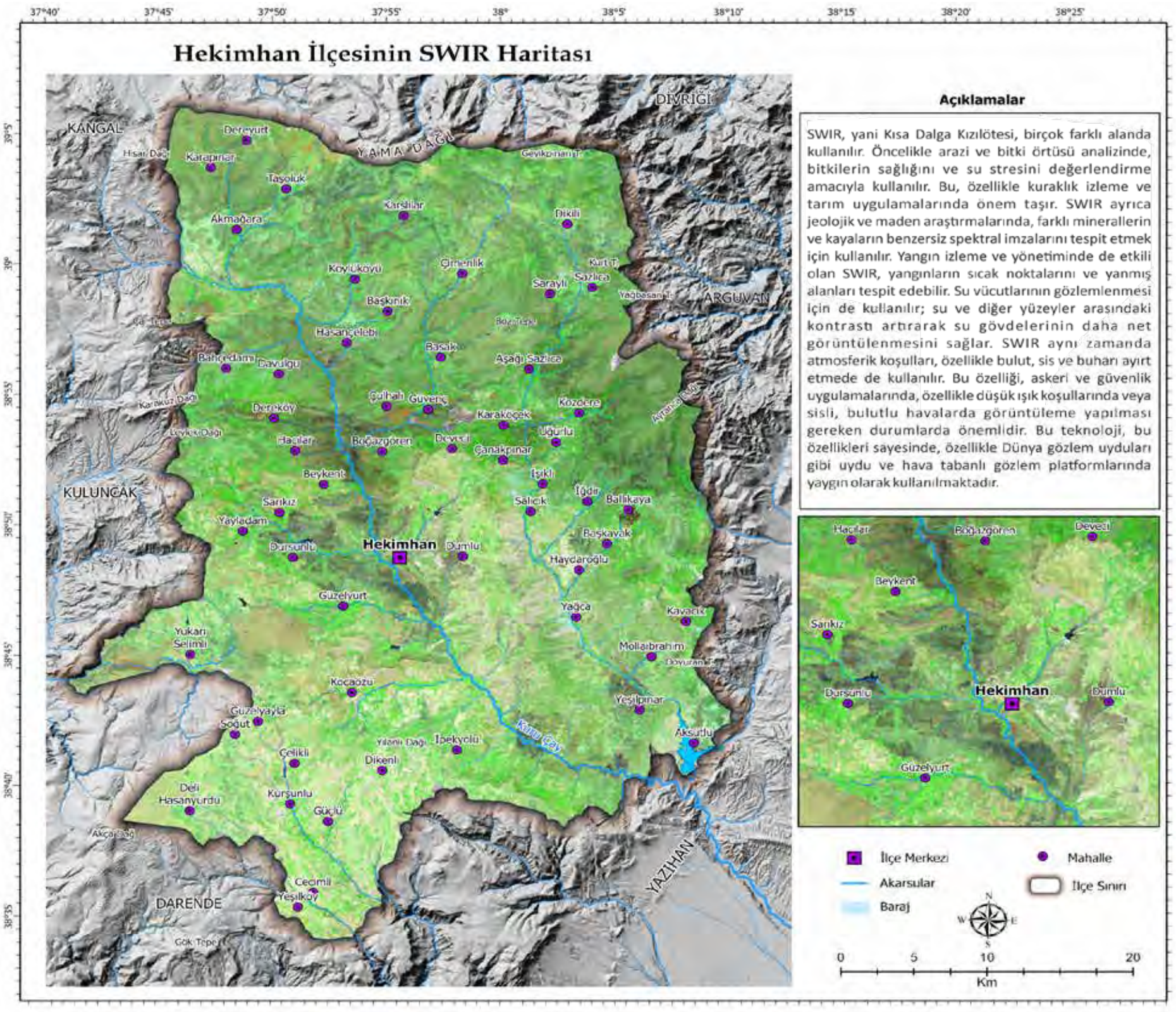
Harita 48: Hekimhan İlçesinin NDMI Haritası.



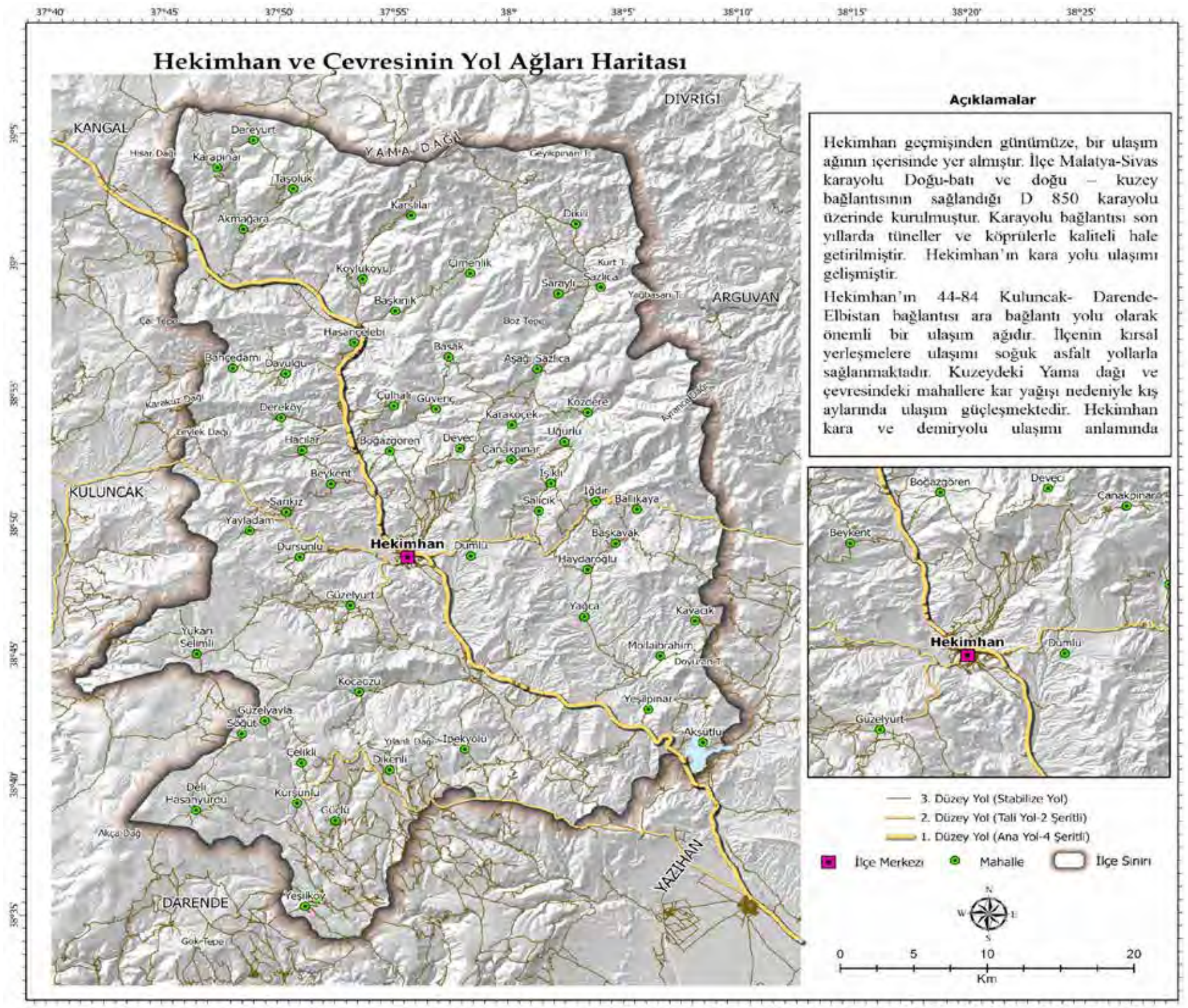
Harita 49: Hekimhan İlçesinin NDSI Haritası.



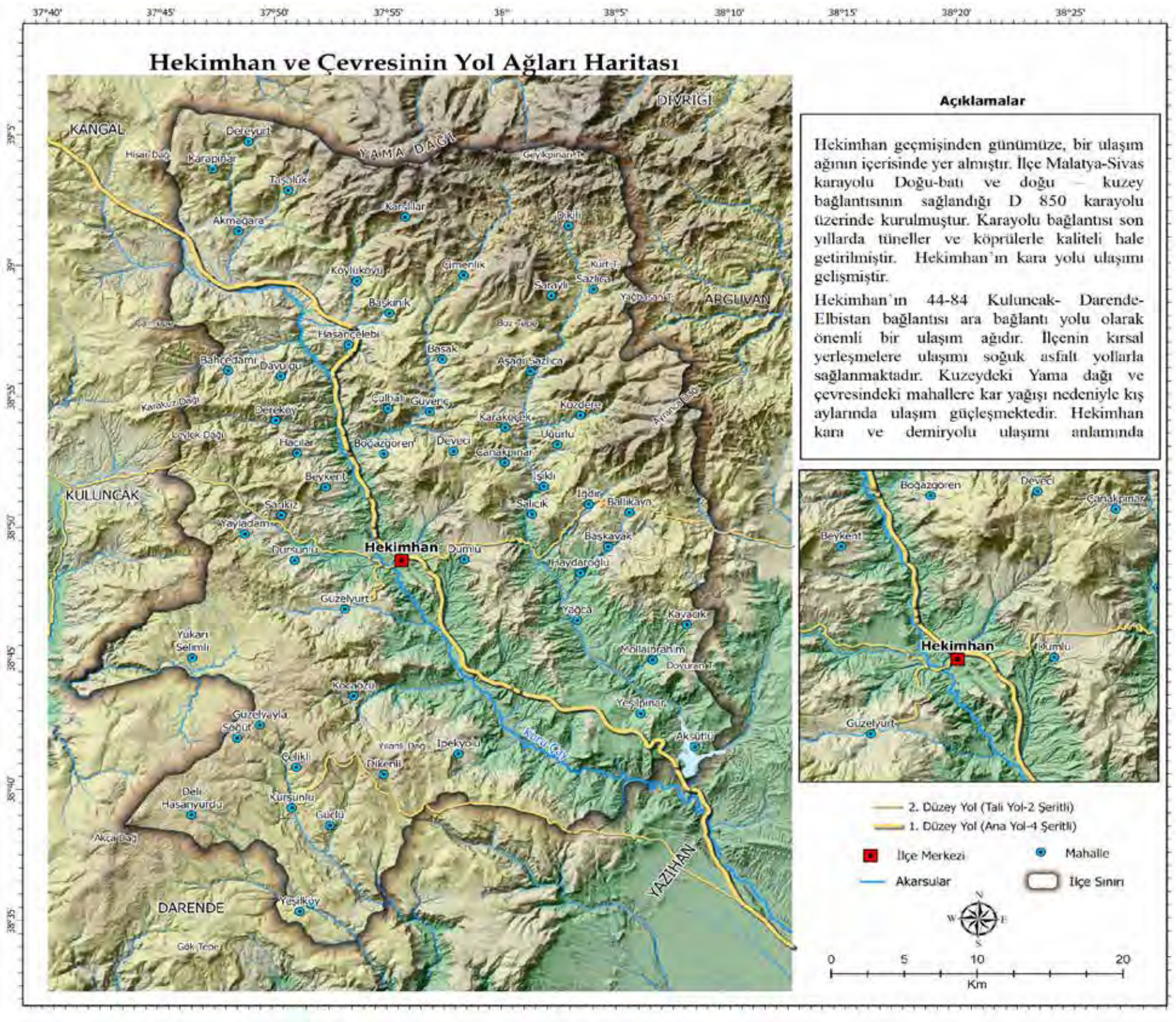
Harita 50: Hekimhan İlçesinin NDWI Haritası.



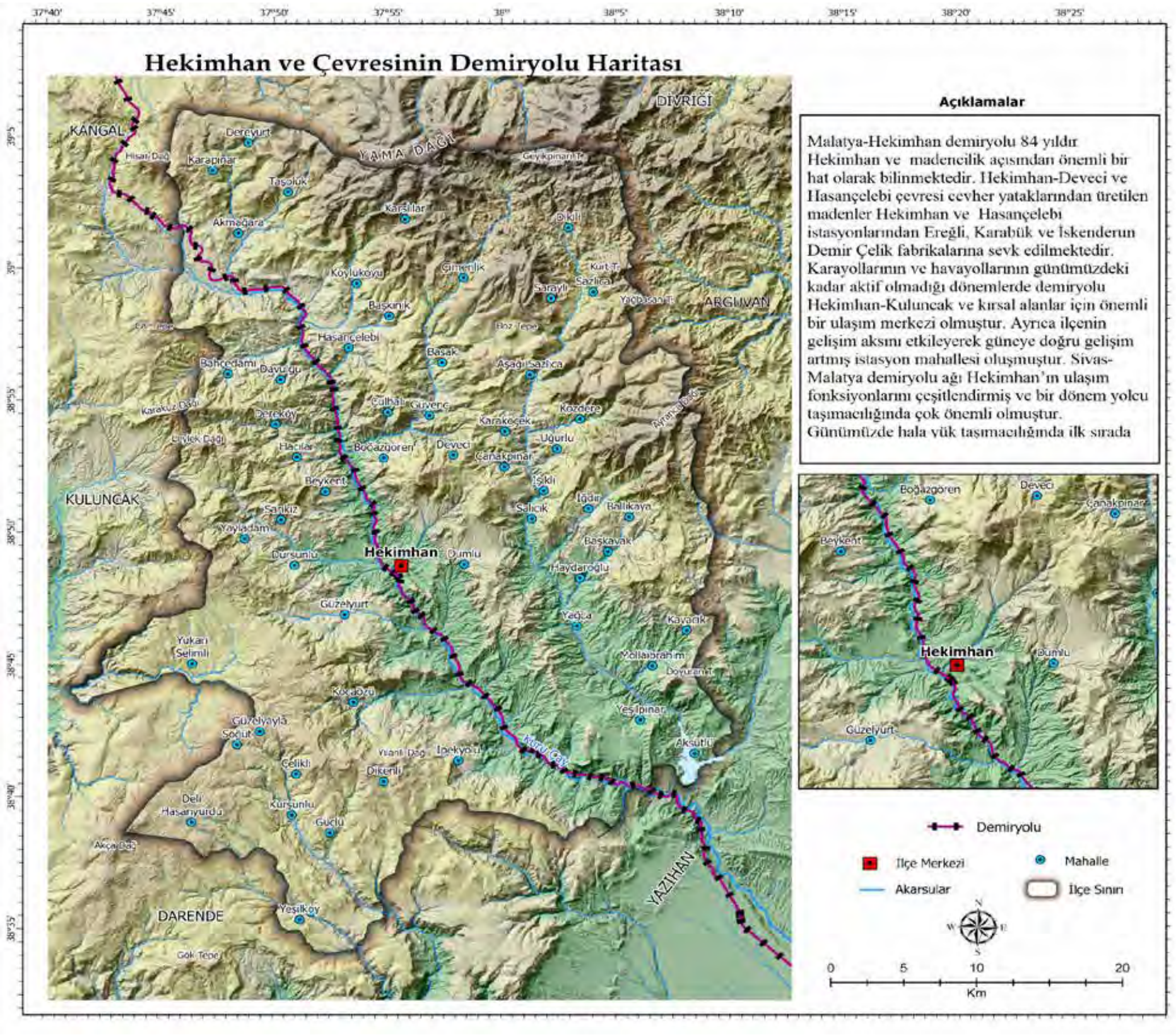
Harita 51: Hekimhan İlçesinin SWIR Haritası.



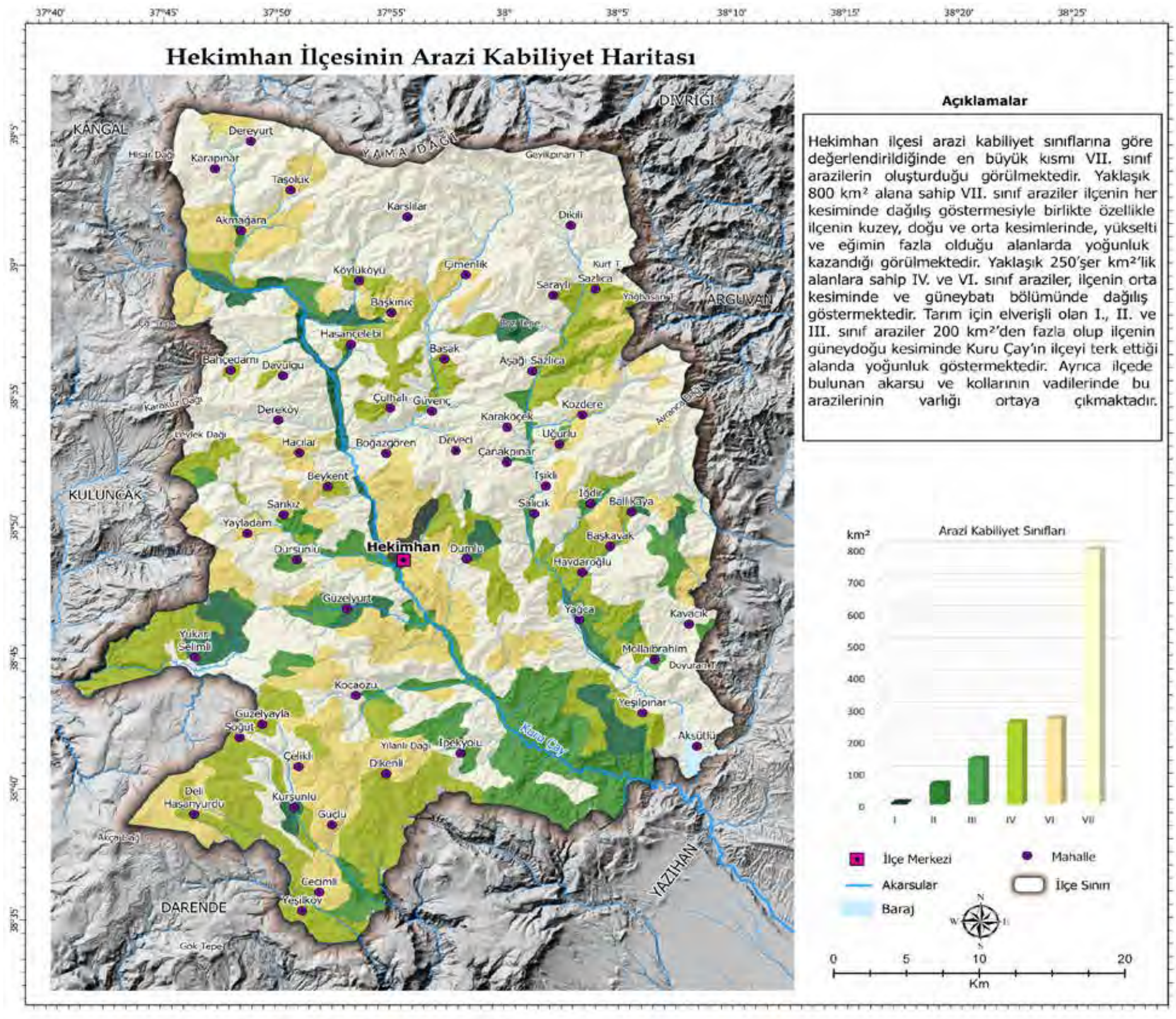
Harita 52: Hekimhan İlçesi ve Çevresinin Yol Ağları Haritası.



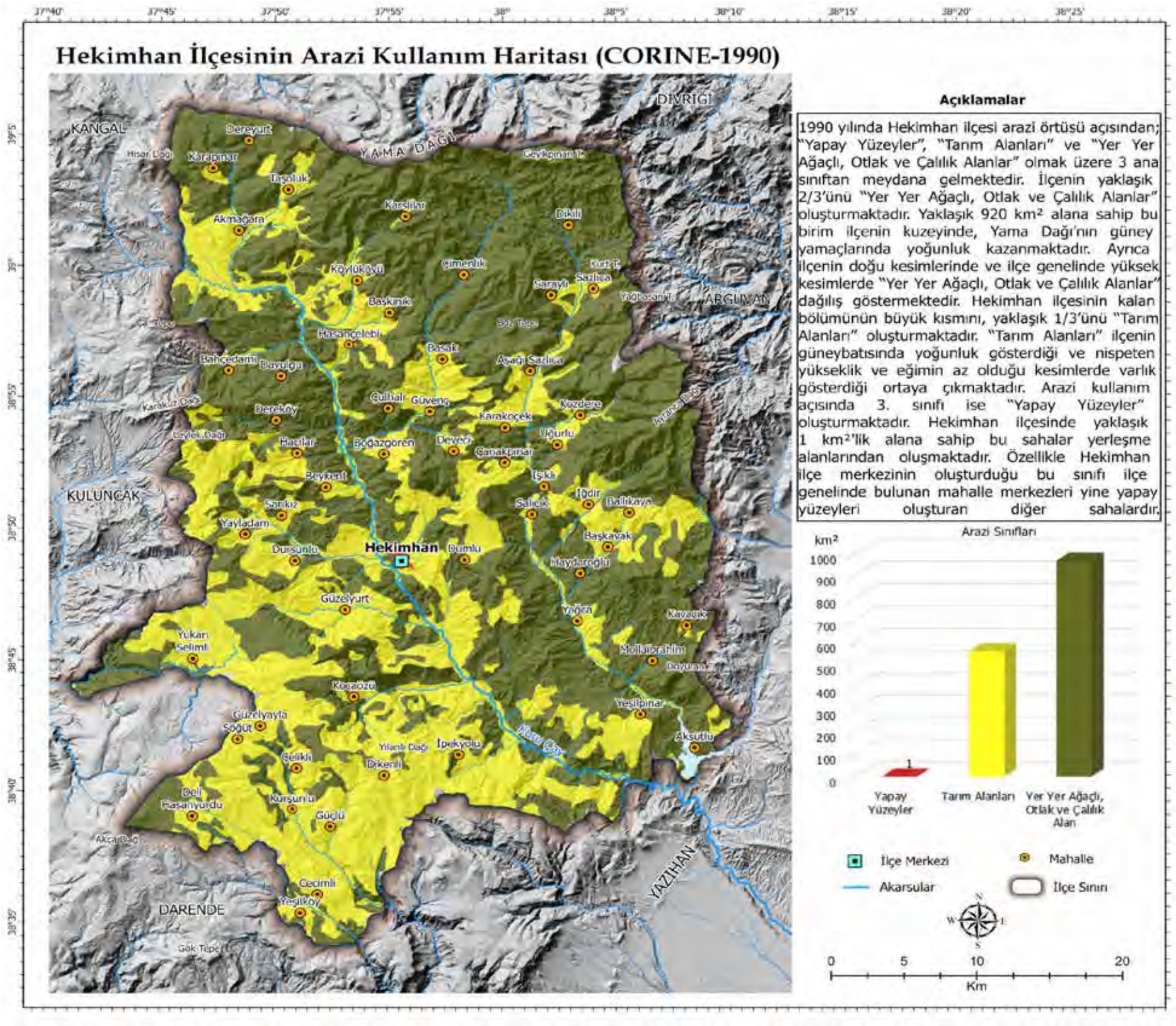
Harita 53: Hekimhan İlçesi ve Çevresinin Ana Yol Ağları Haritası.



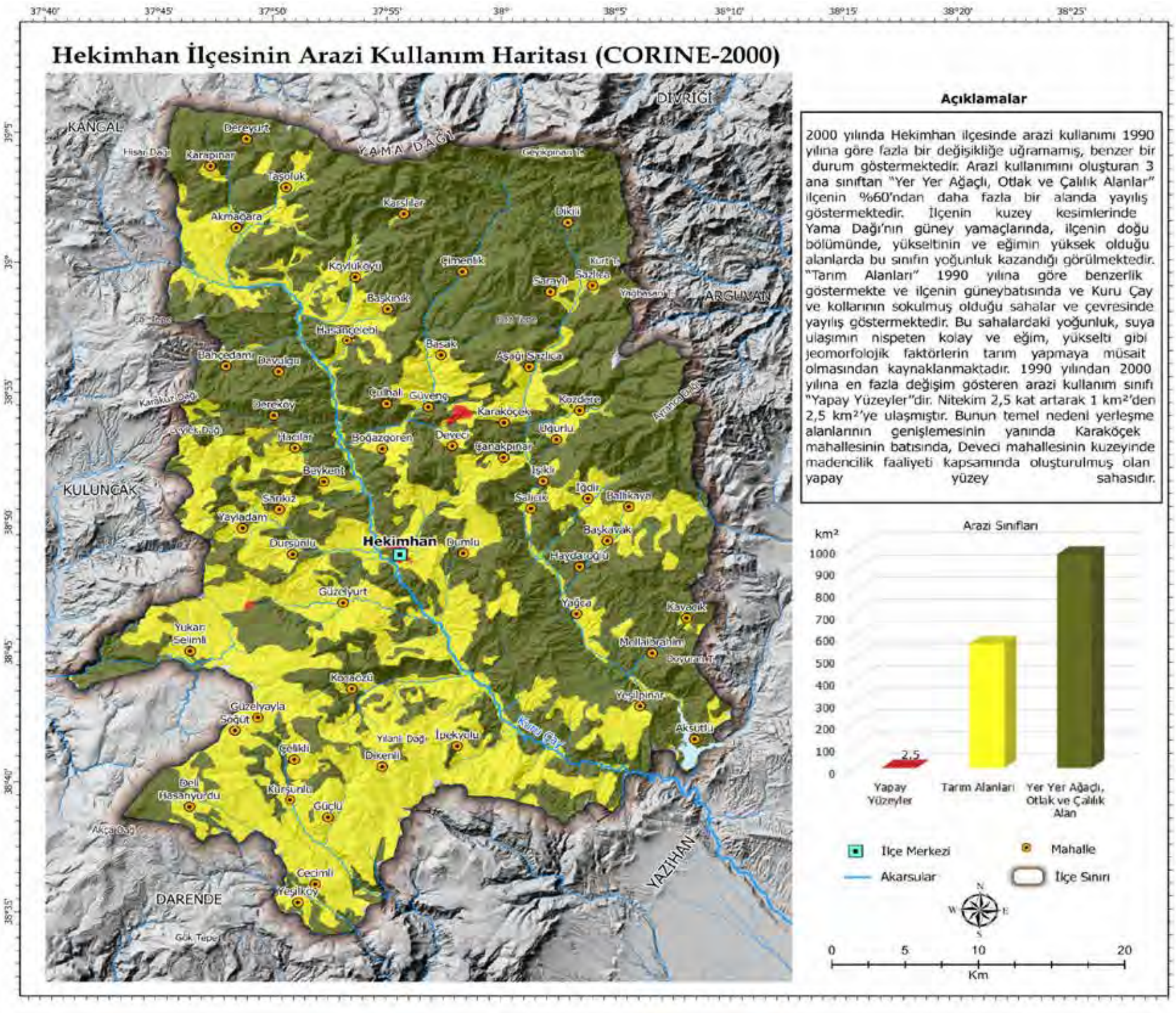
Harita 54: Hekimhan İlçesi ve Çevresinin Demiryolu Haritası.



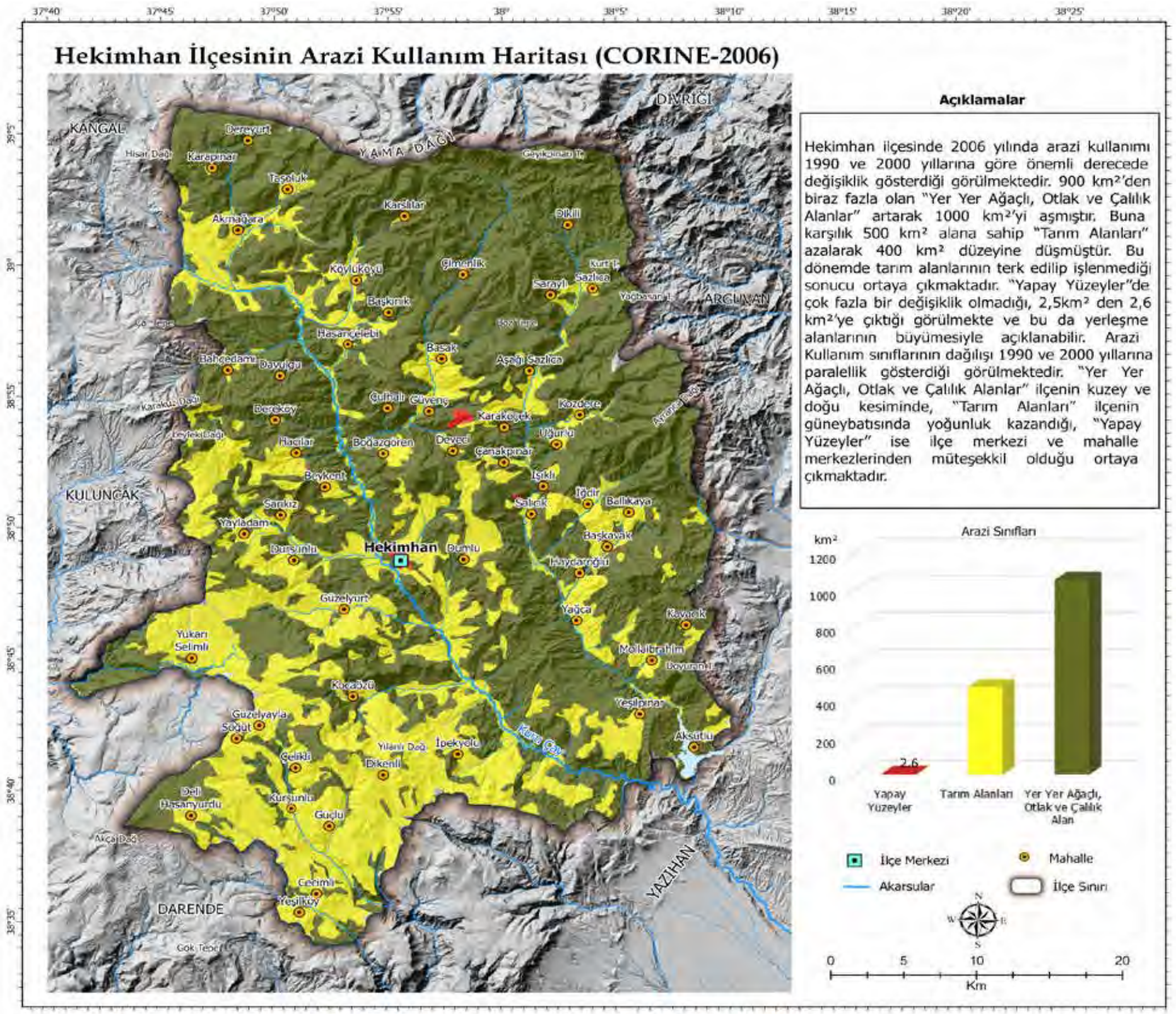
Harita 55: Hekimhan İlçesinin Arazi Kabiliyet Haritası.



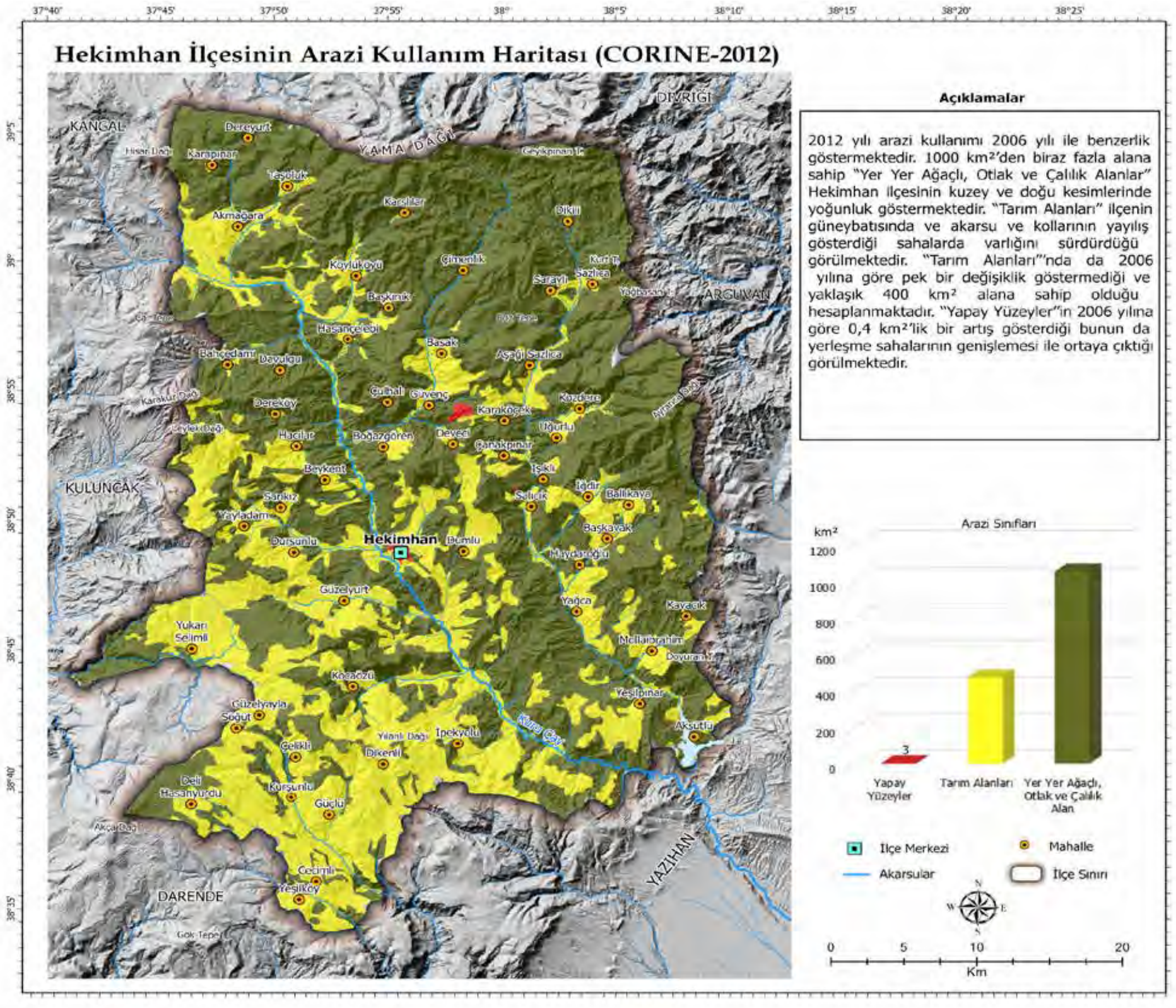
Harita 56: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 1990).



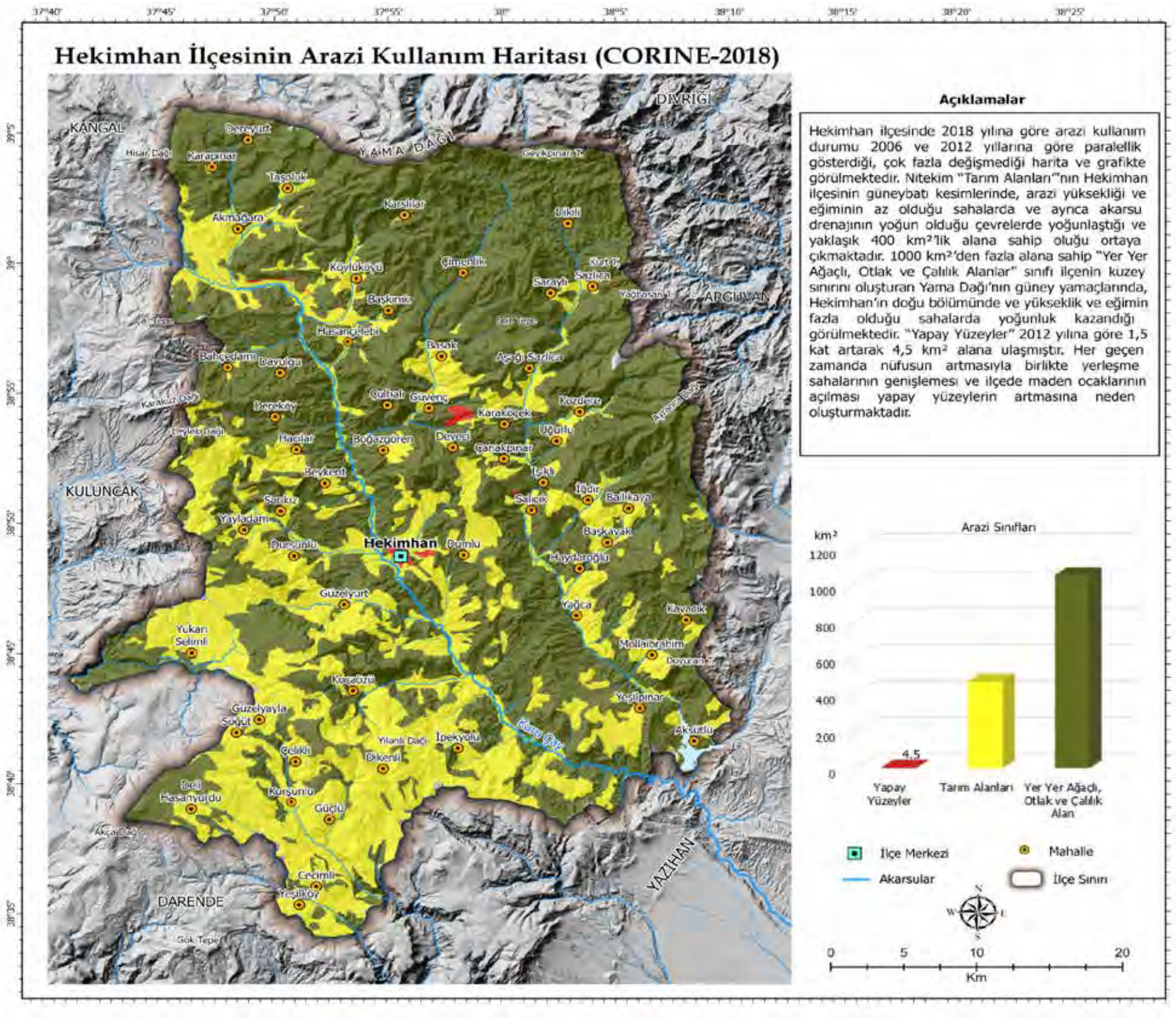
Harita 57: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 2000).



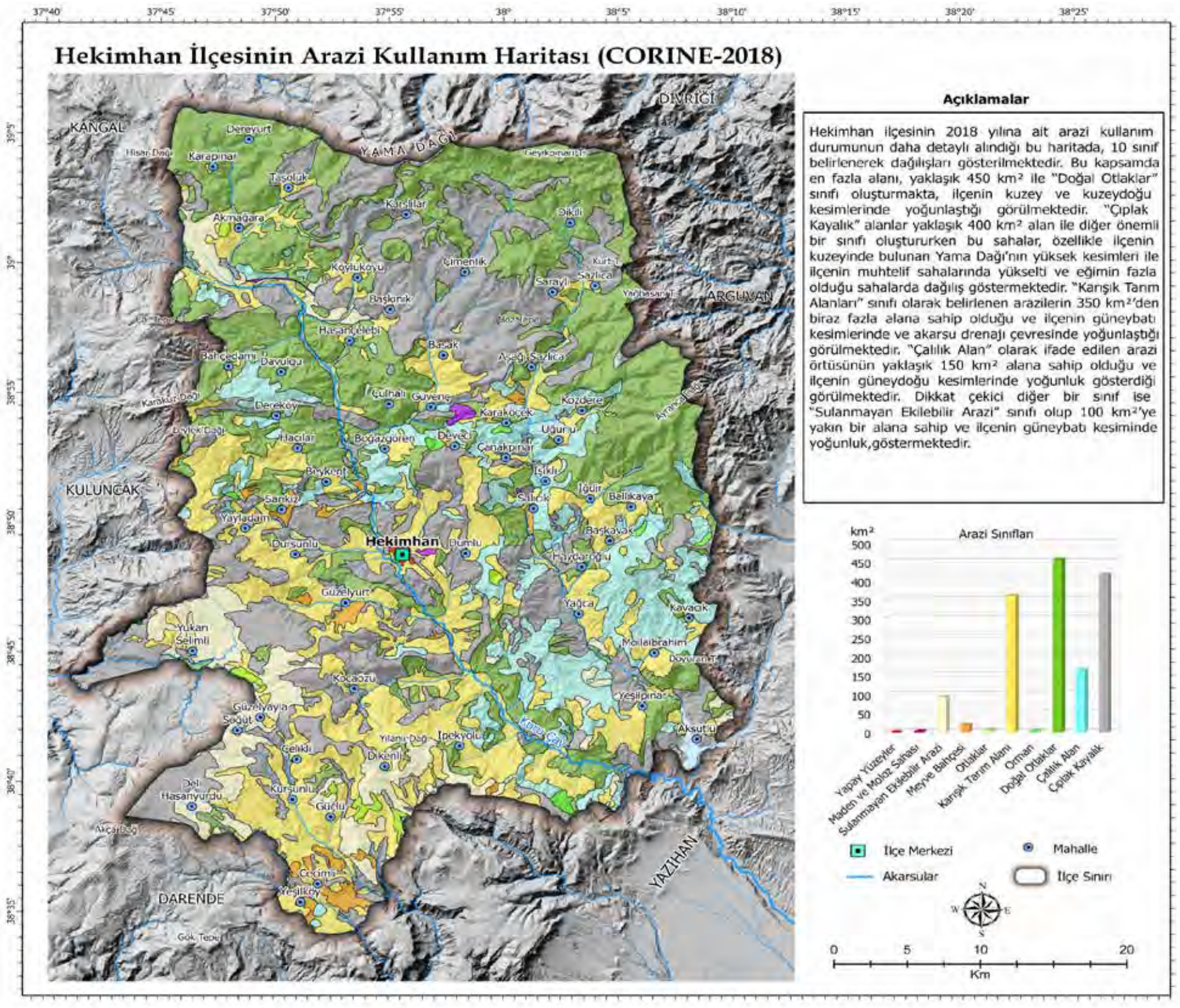
Harita 58: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 2006).



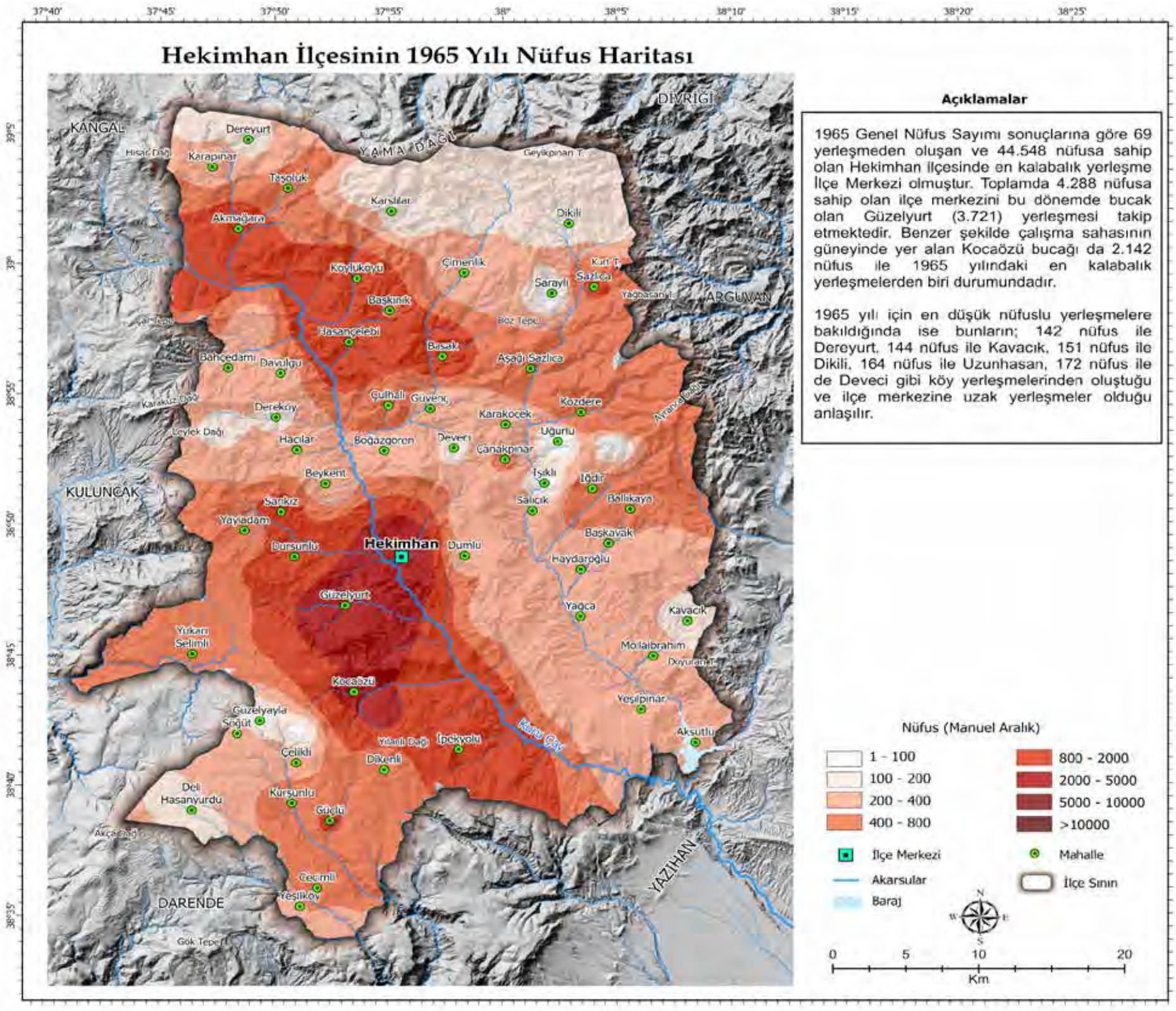
Harita 59: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 2012).



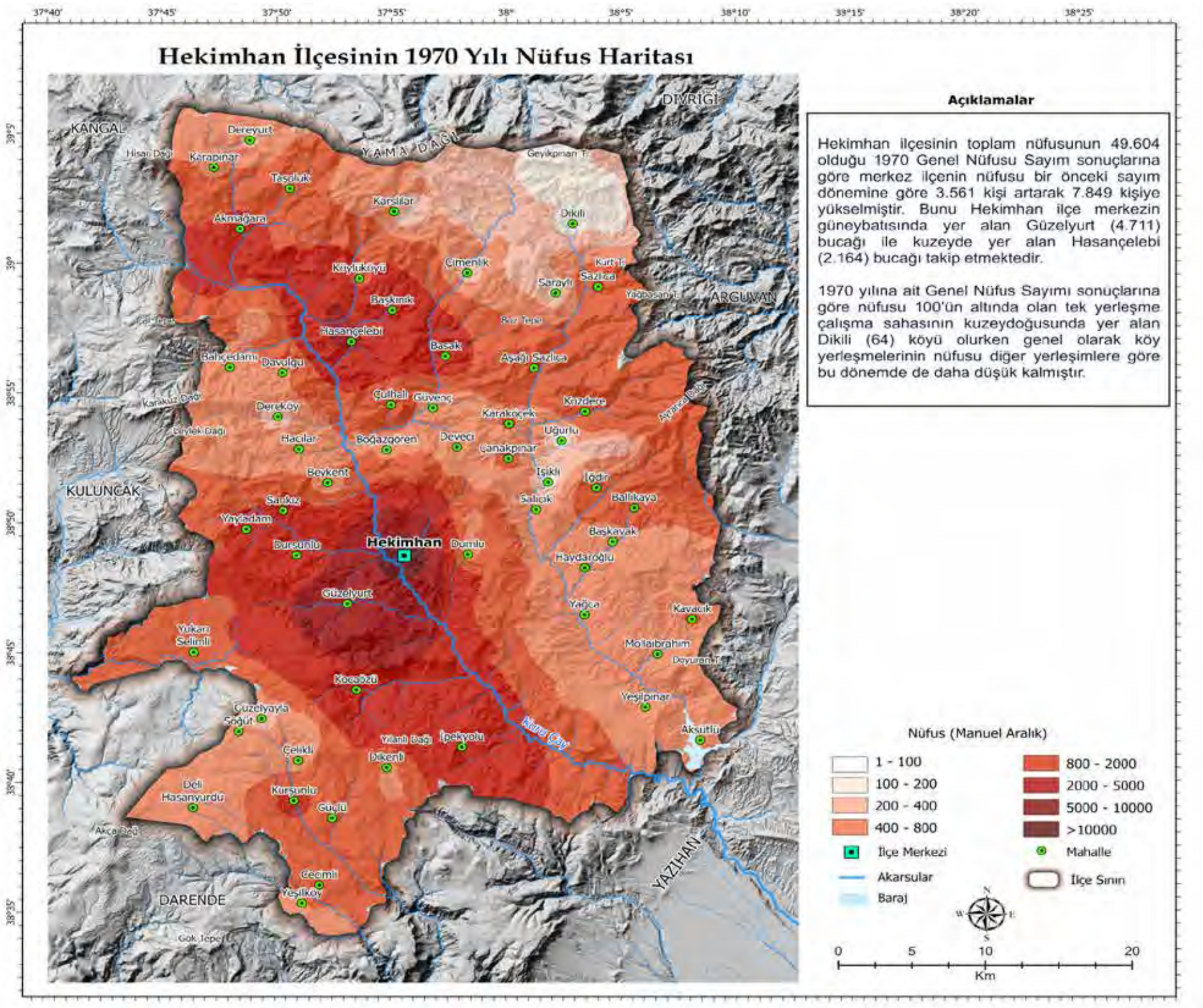
Harita 60: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 2018).



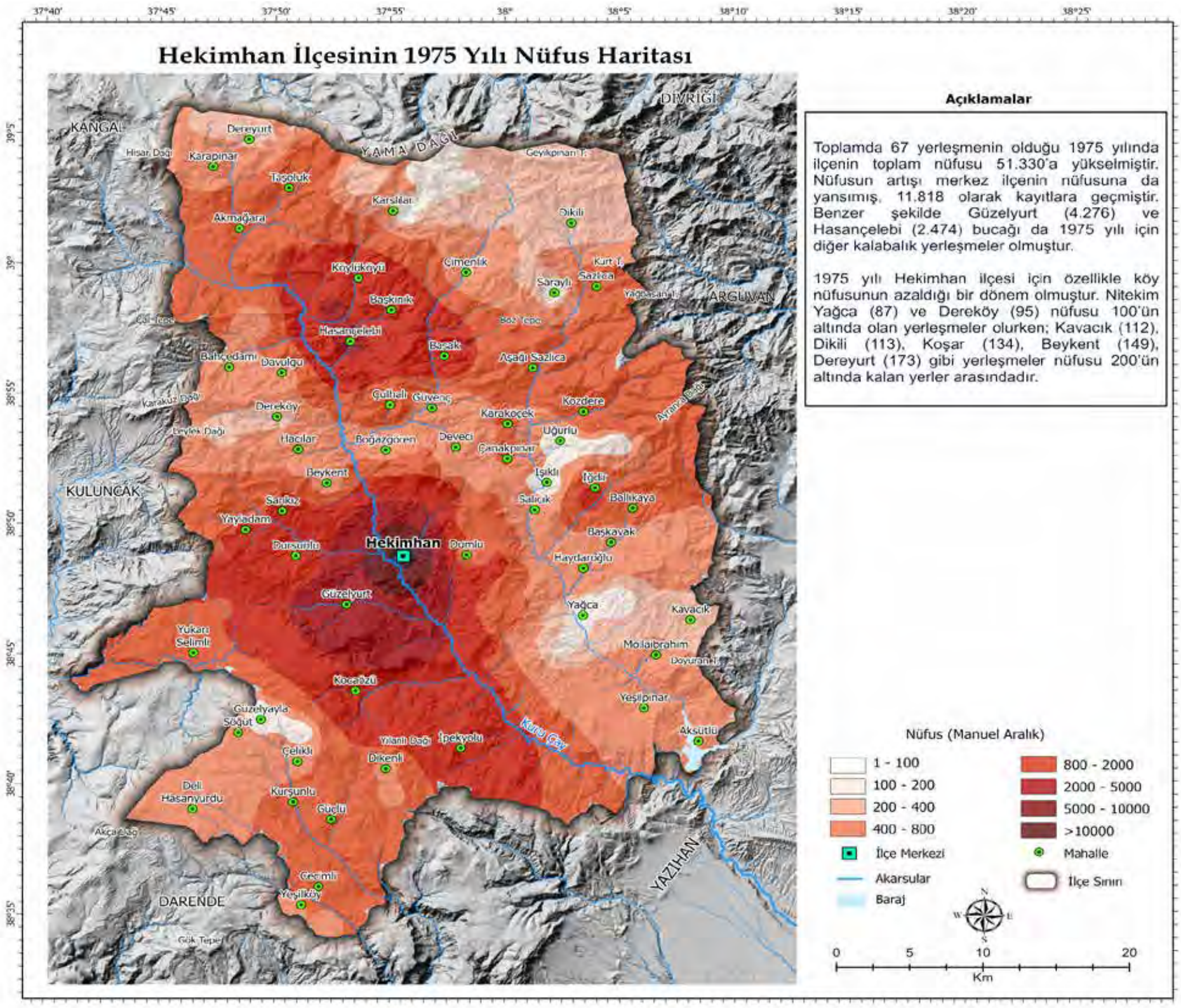
Harita 61: Hekimhan İlçesinin Arazi Kullanım Haritası (CORINE- 2018 Detaylı).



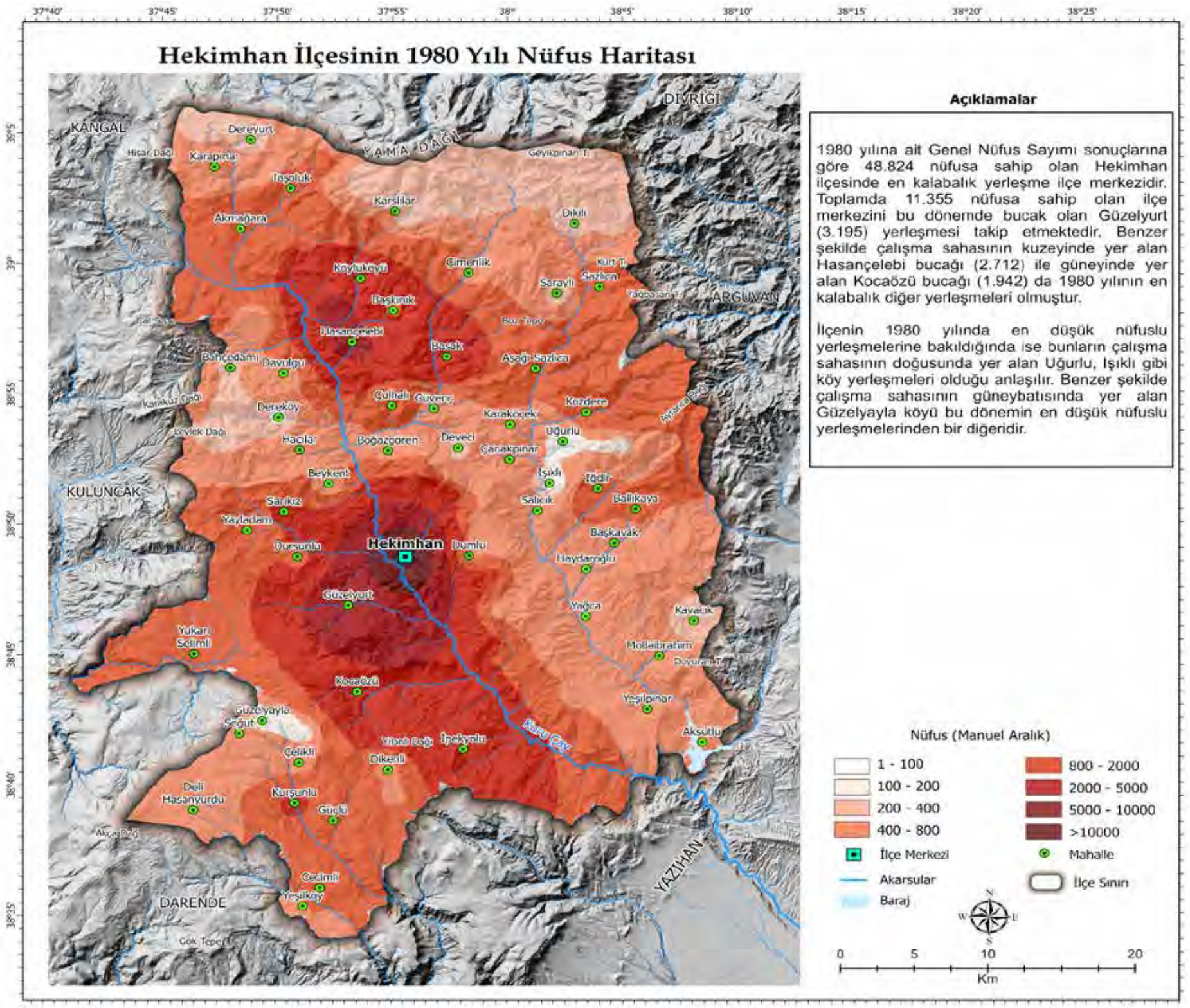
Harita 62: Hekimhan İlçesinin 1965 Yılı Nüfus Haritası.



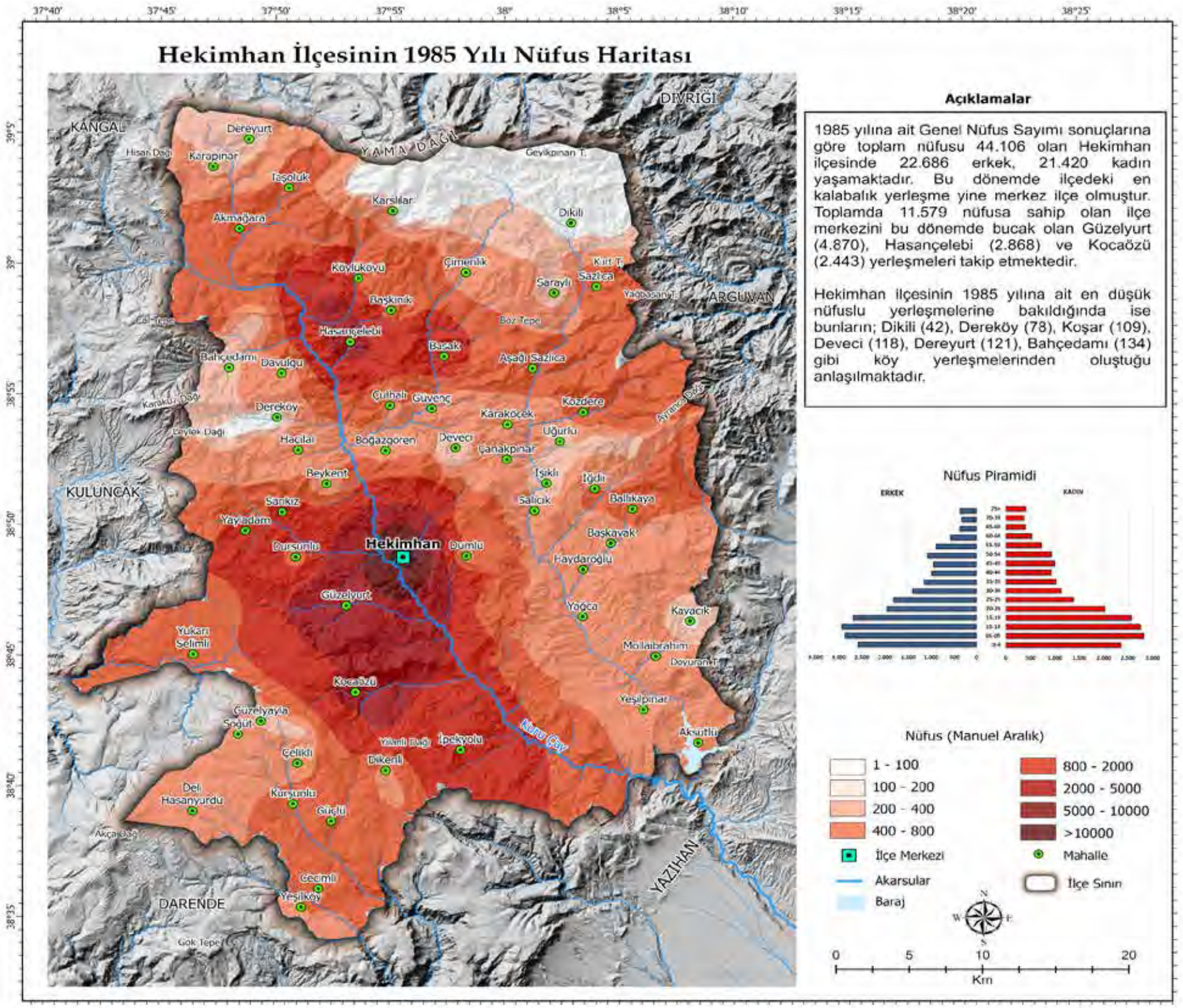
Harita 63: Hekimhan İlçesinin 1970 Yılı Nüfus Haritası.



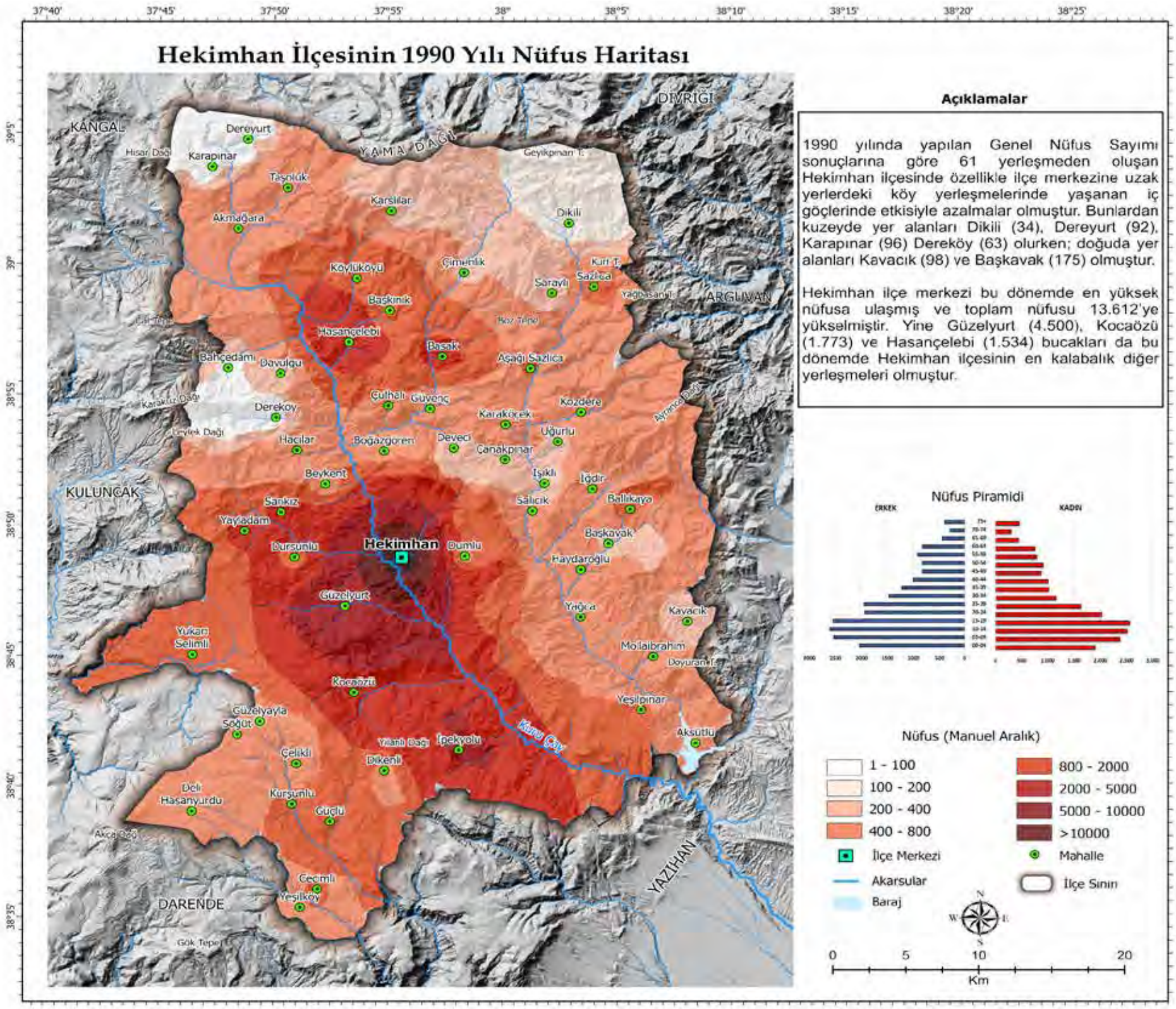
Harita 64: Hekimhan İlçesinin 1975 Yılı Nüfus Haritası.



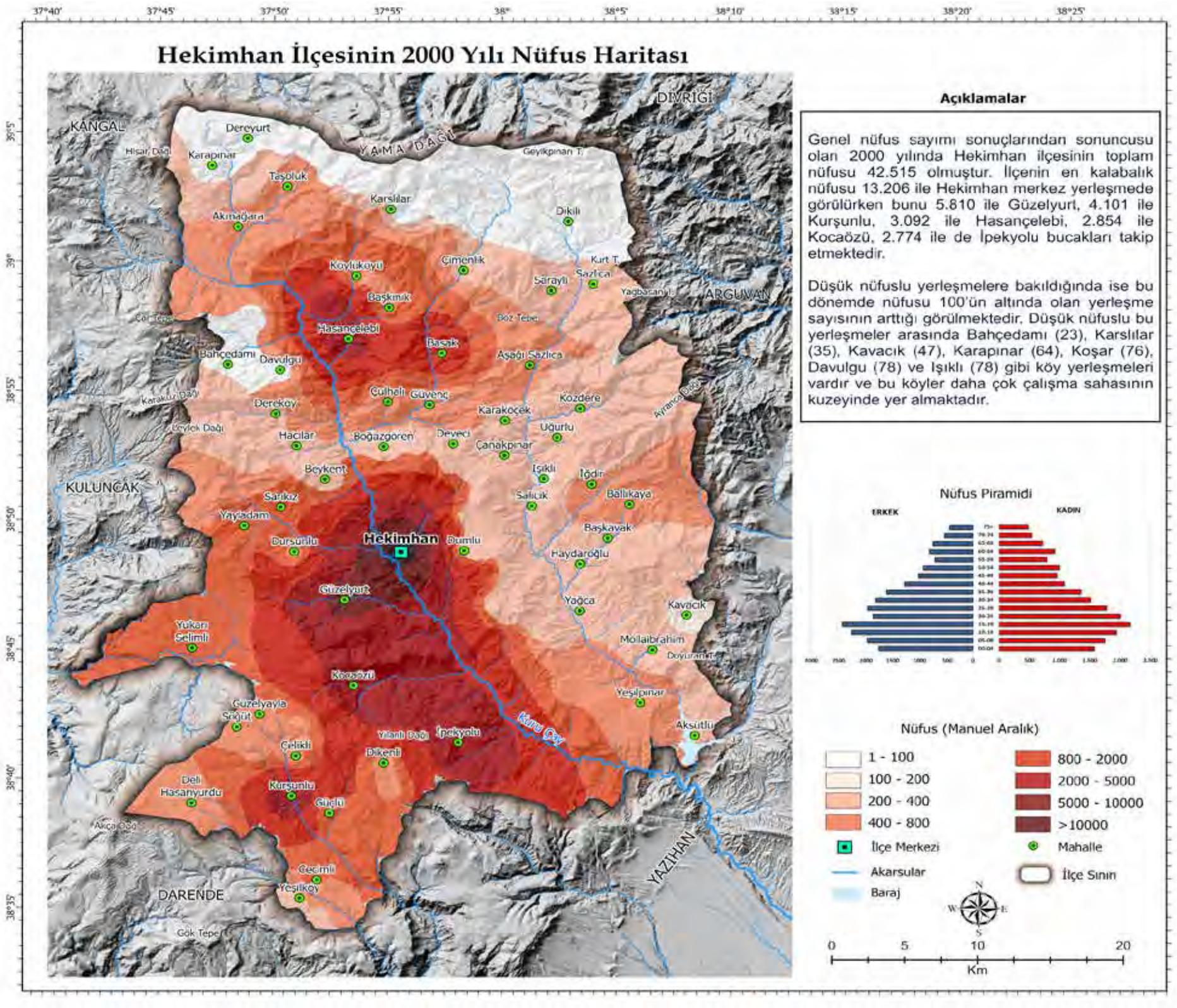
Harita 65: Hekimhan İlçesinin 1980 Yılı Nüfus Haritası.



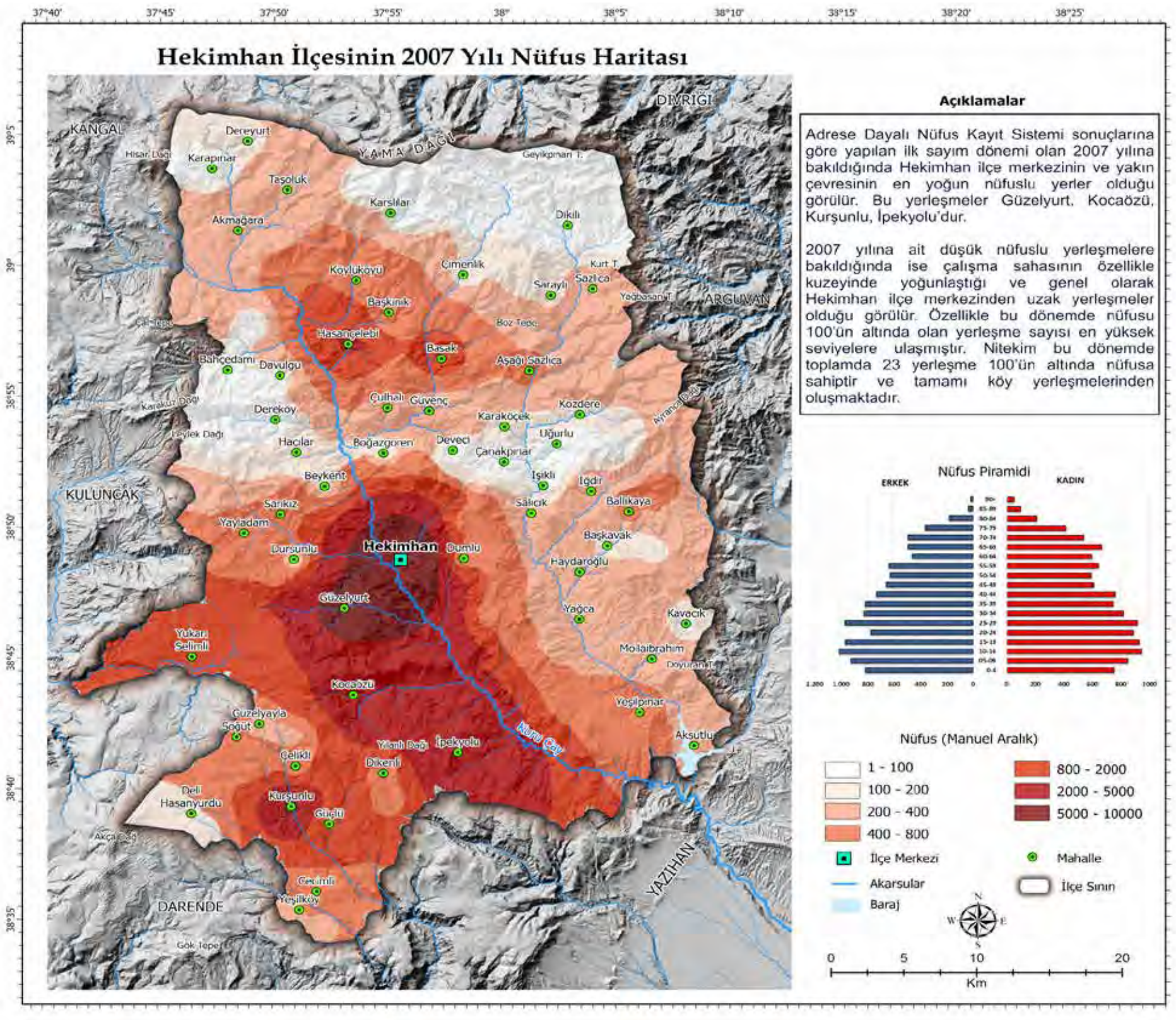
Harita 66: Hekimhan İlçesinin 1985 Yılı Nüfus Haritası.



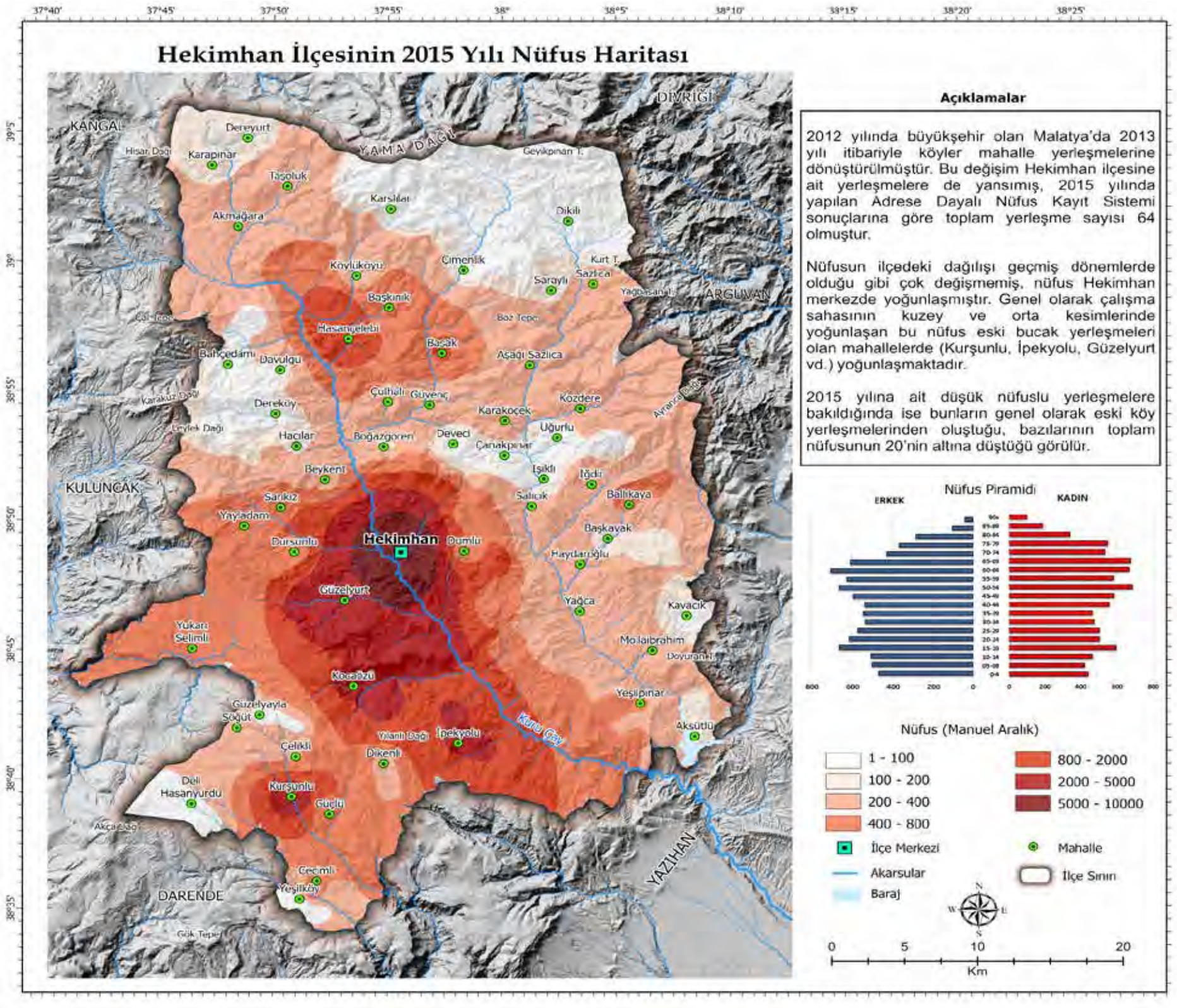
Harita 67: Hekimhan İlçesinin 1990 Yılı Nüfus Haritası.



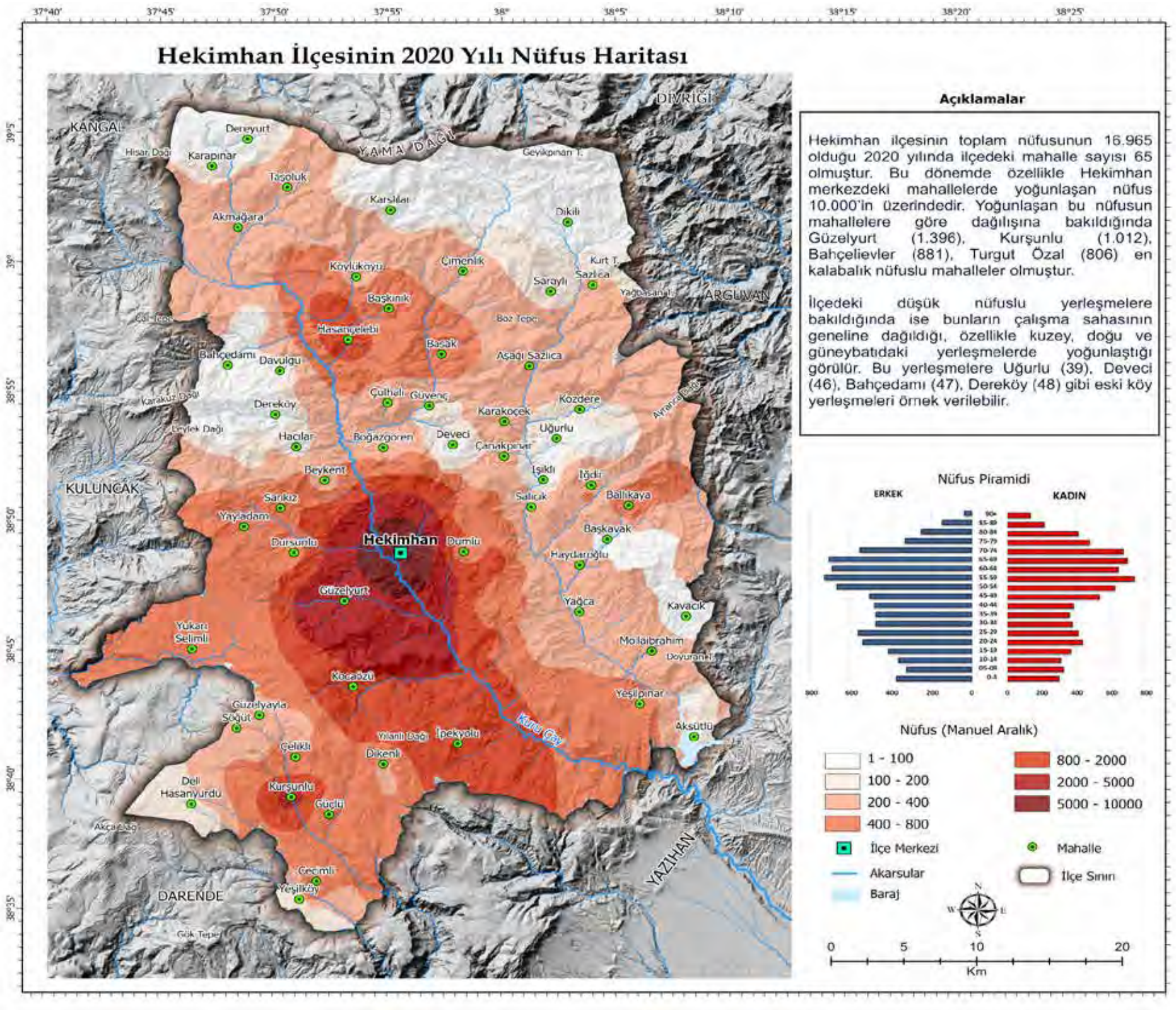
Harita 68: Hekimhan İlçesinin 2000 Yılı Nüfus Haritası.



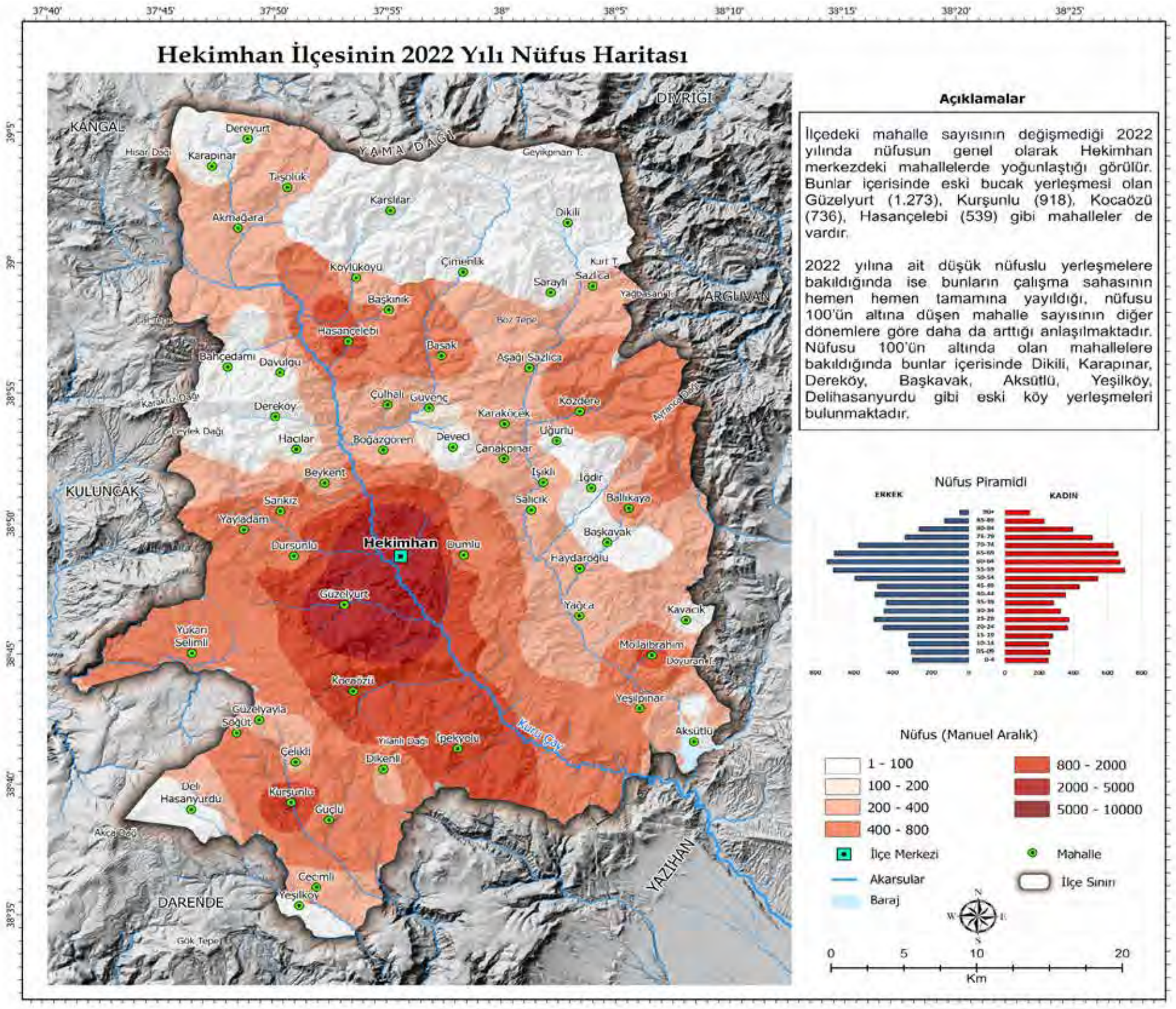
Harita 69: Hekimhan İlçesinin 2007 Yılı Nüfus Haritası.



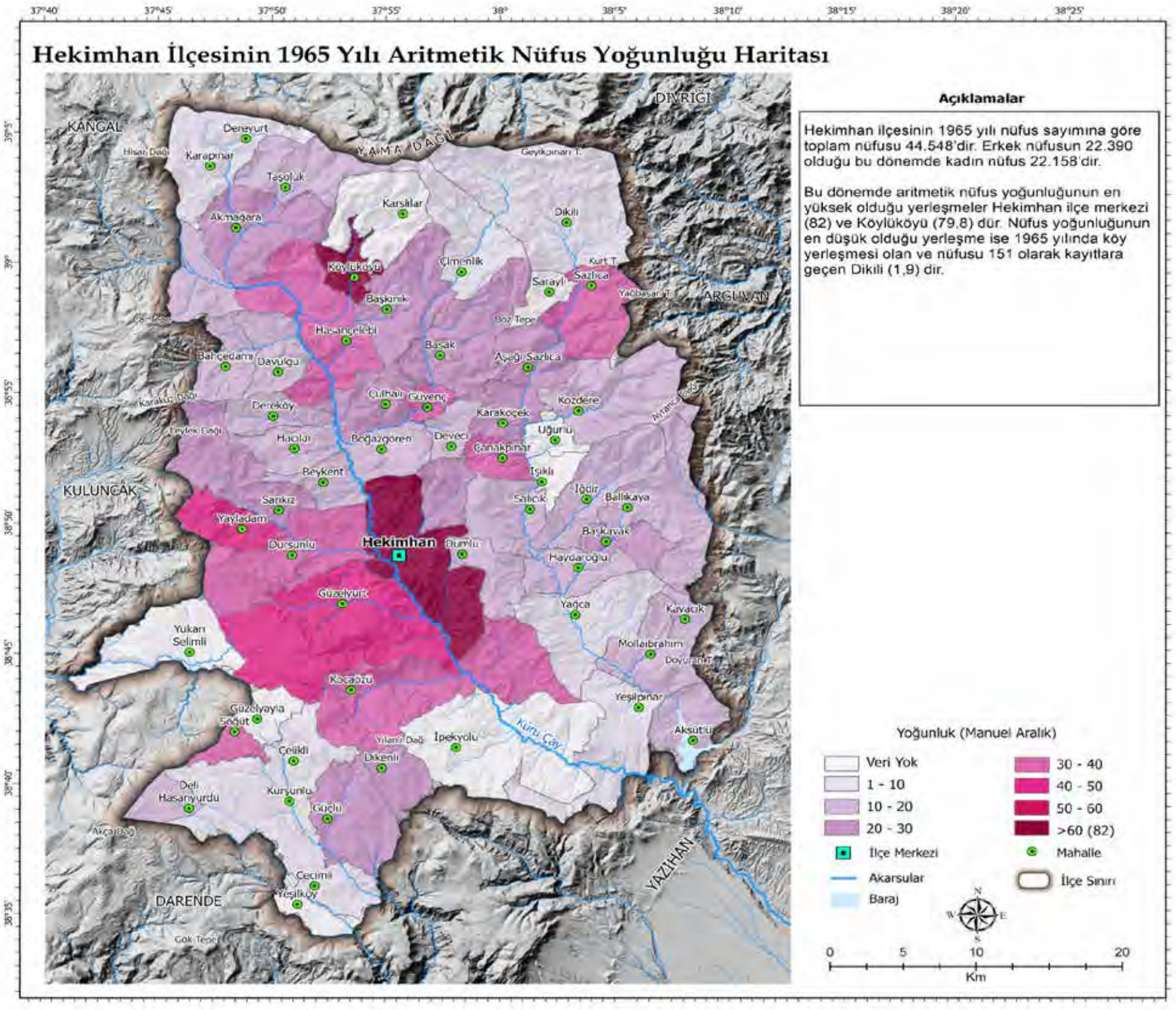
Harita 70: Hekimhan İlçesinin 2015 Yılı Nüfus Haritası.



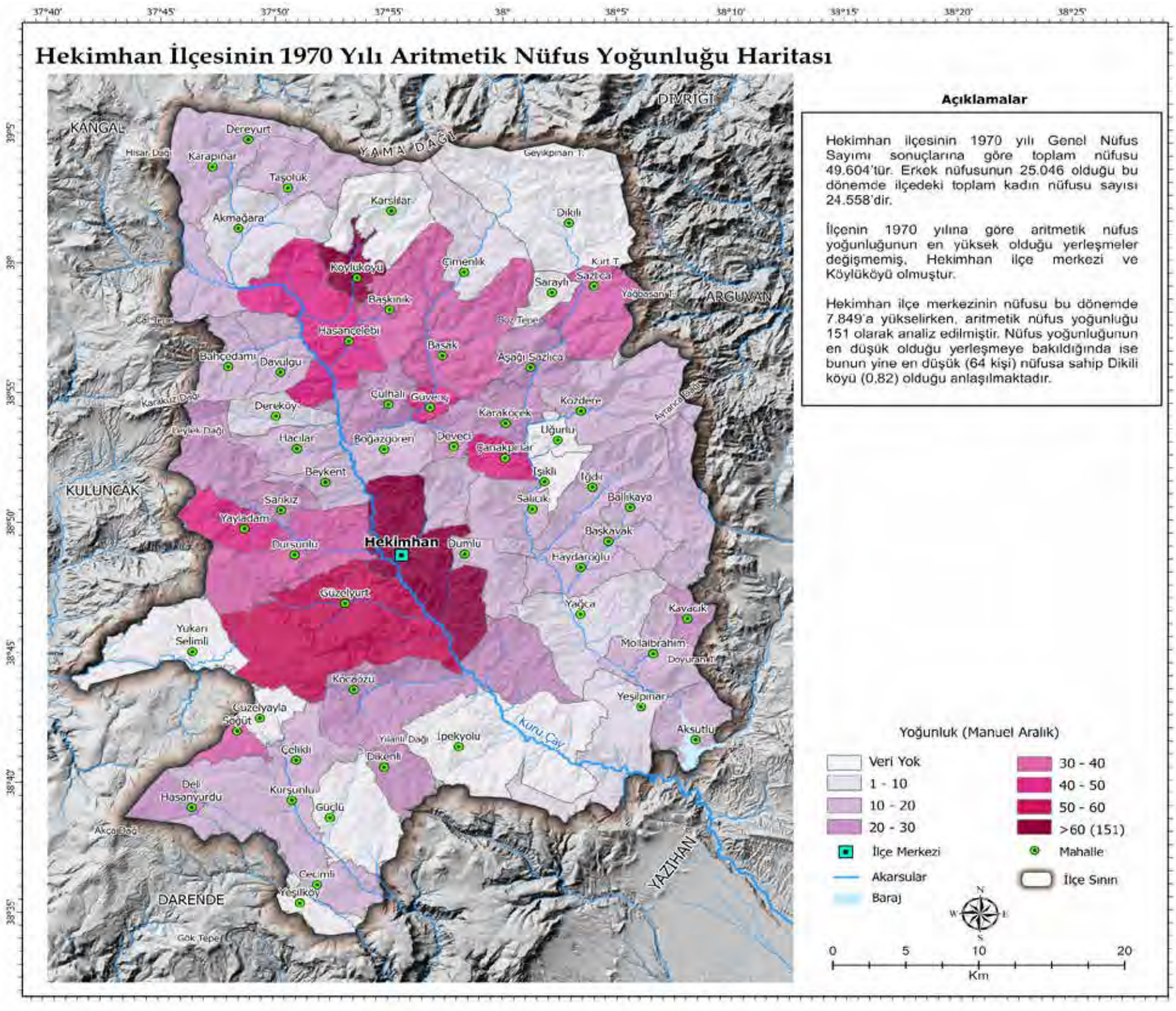
Harita 71: Hekimhan İlçesinin 2020 Yılı Nüfus Haritası.



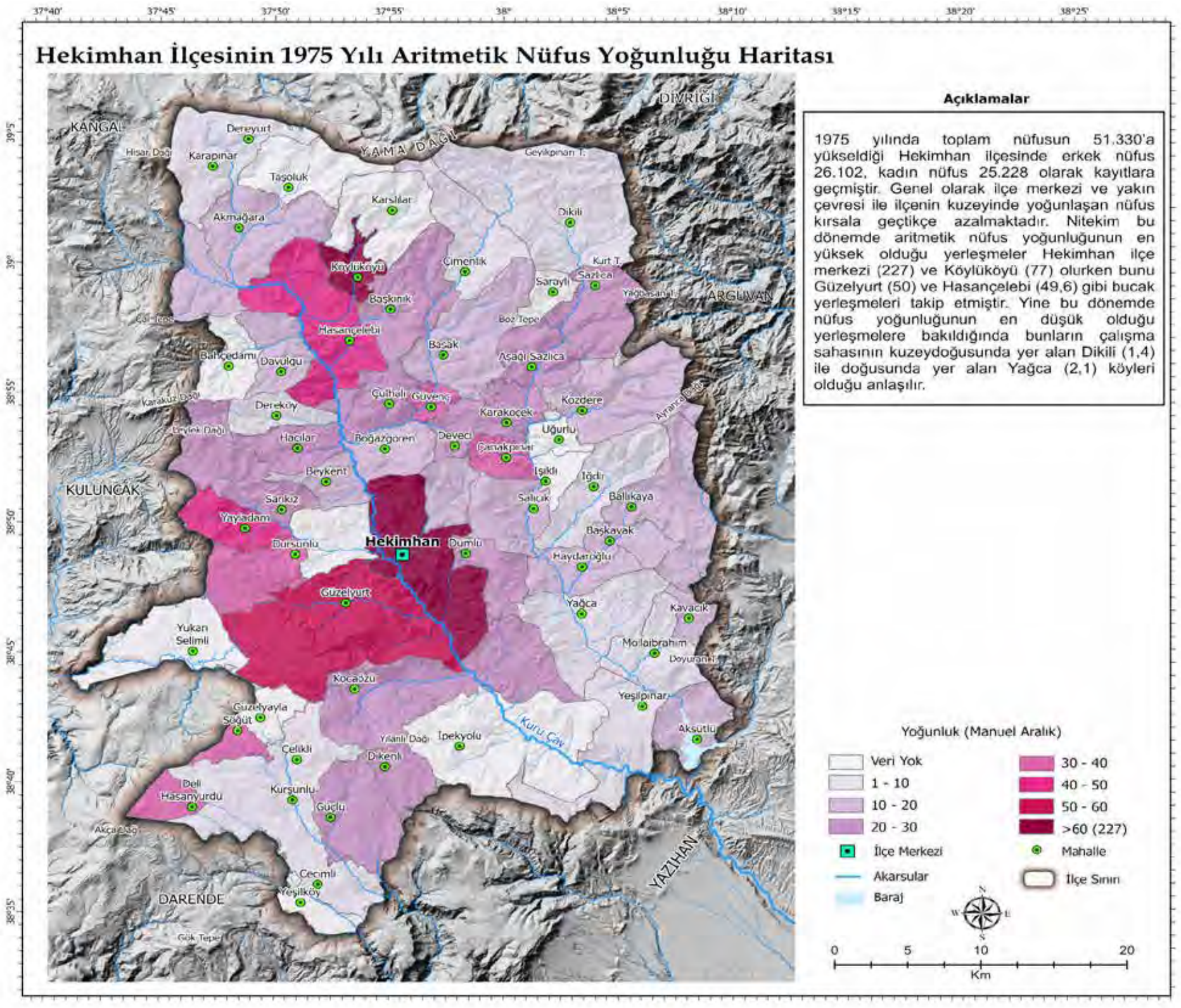
Harita 72: Hekimhan İlçesinin 2022 Yılı Nüfus Haritası.



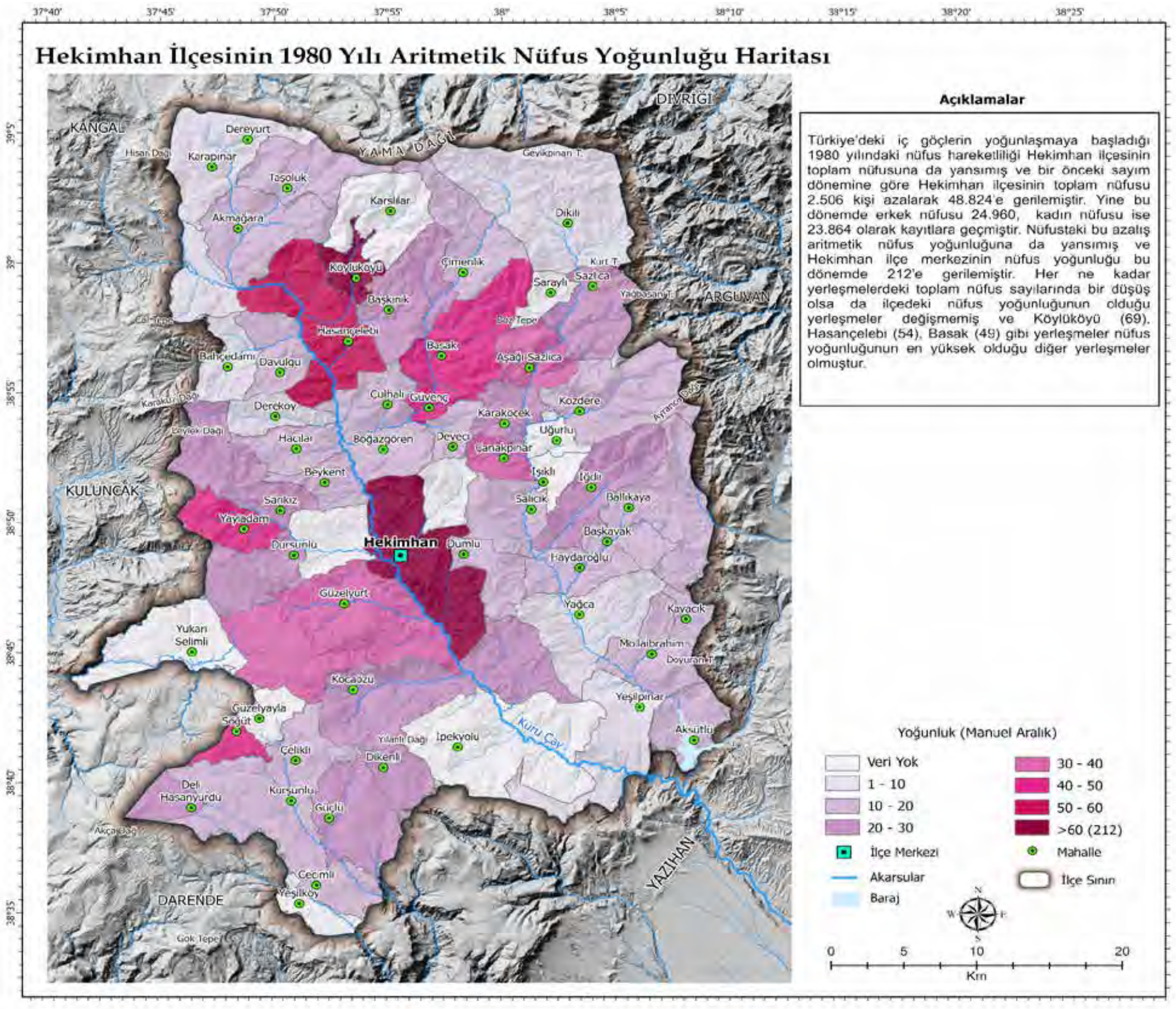
Harita 73: Hekimhan İlçesinin 1965 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



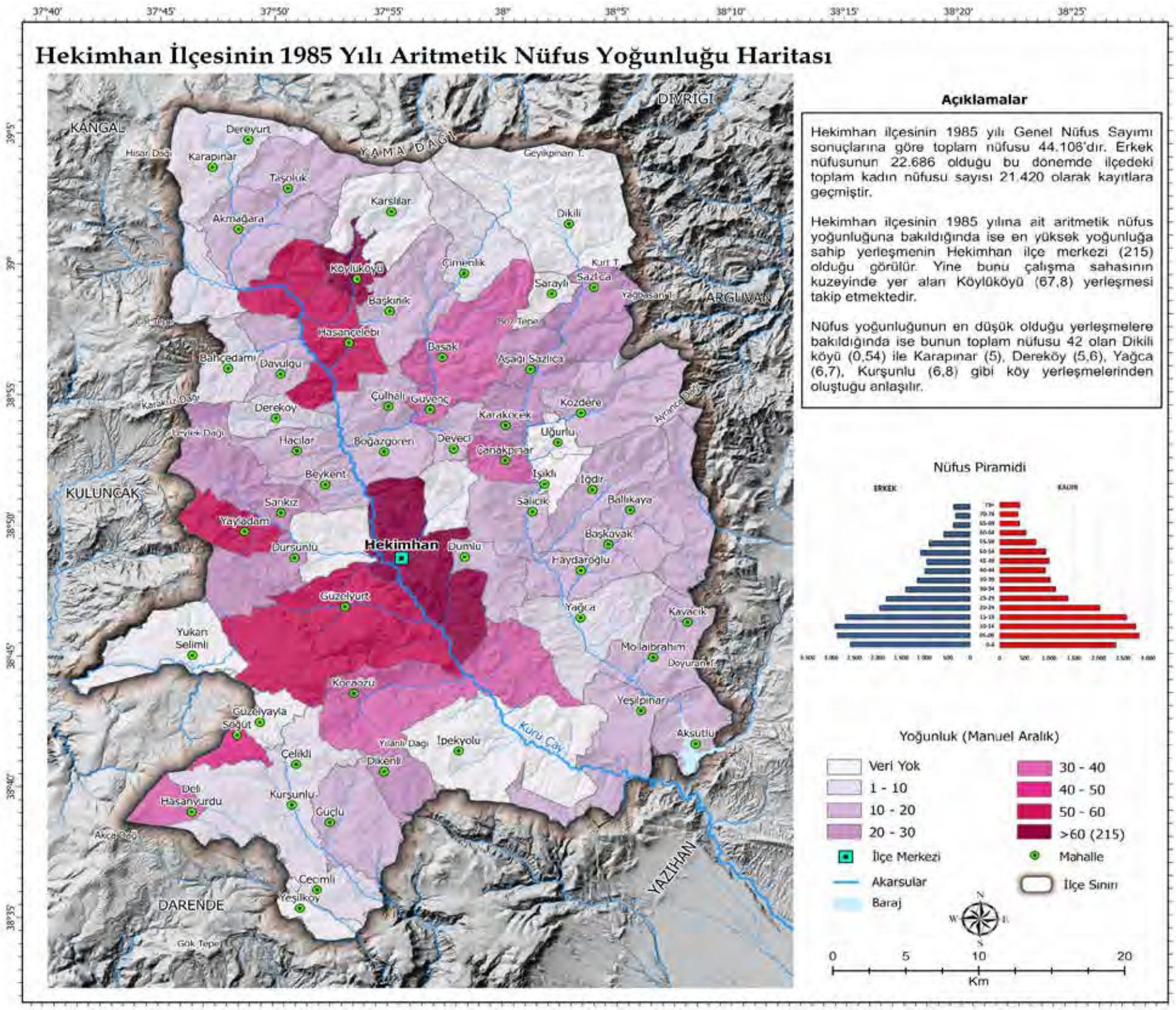
Harita 74: Hekimhan İlçesinin 1970 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



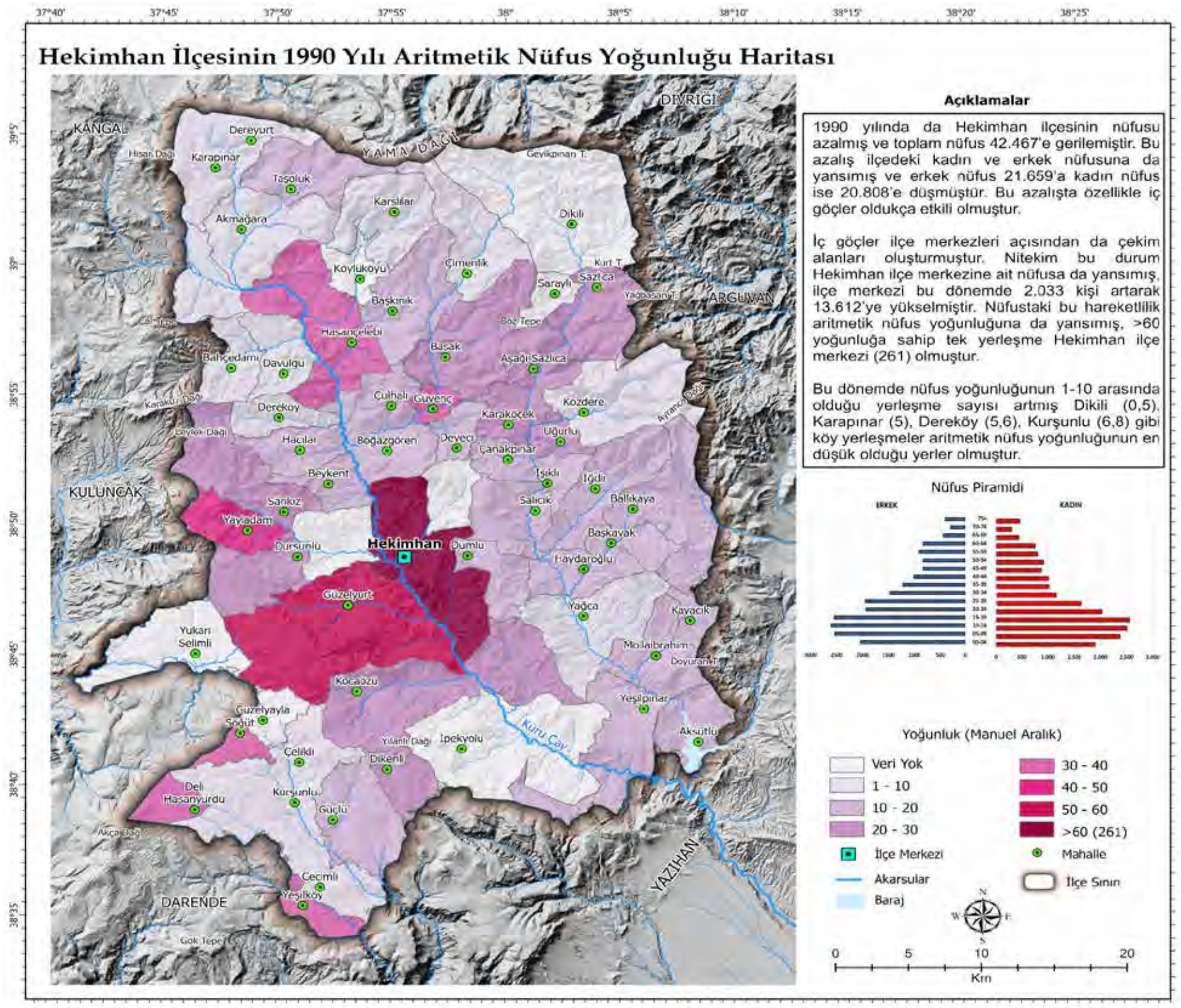
Harita 75: Hekimhan İlçesinin 1975 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



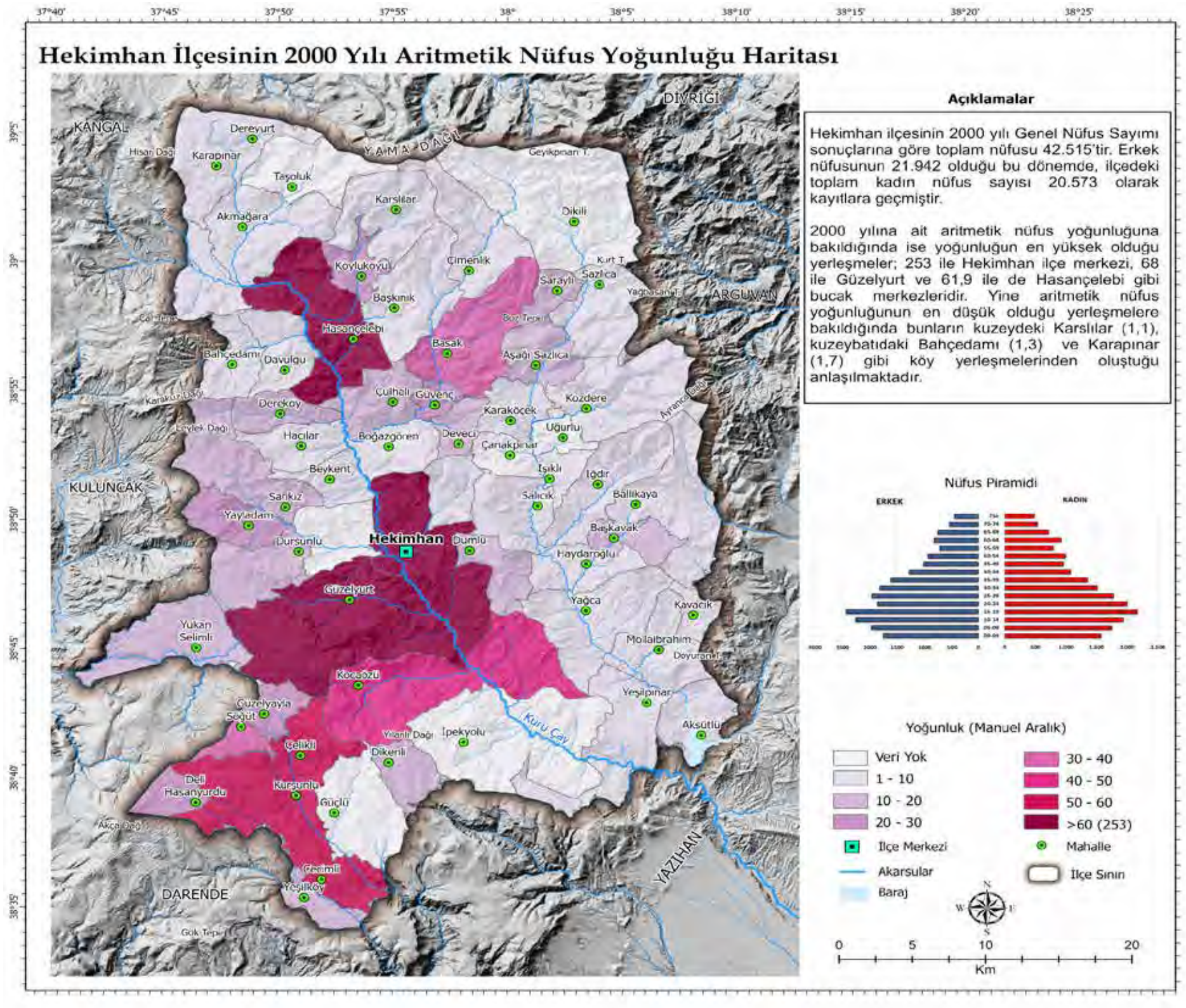
Harita 76: Hekimhan İlçesinin 1980 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



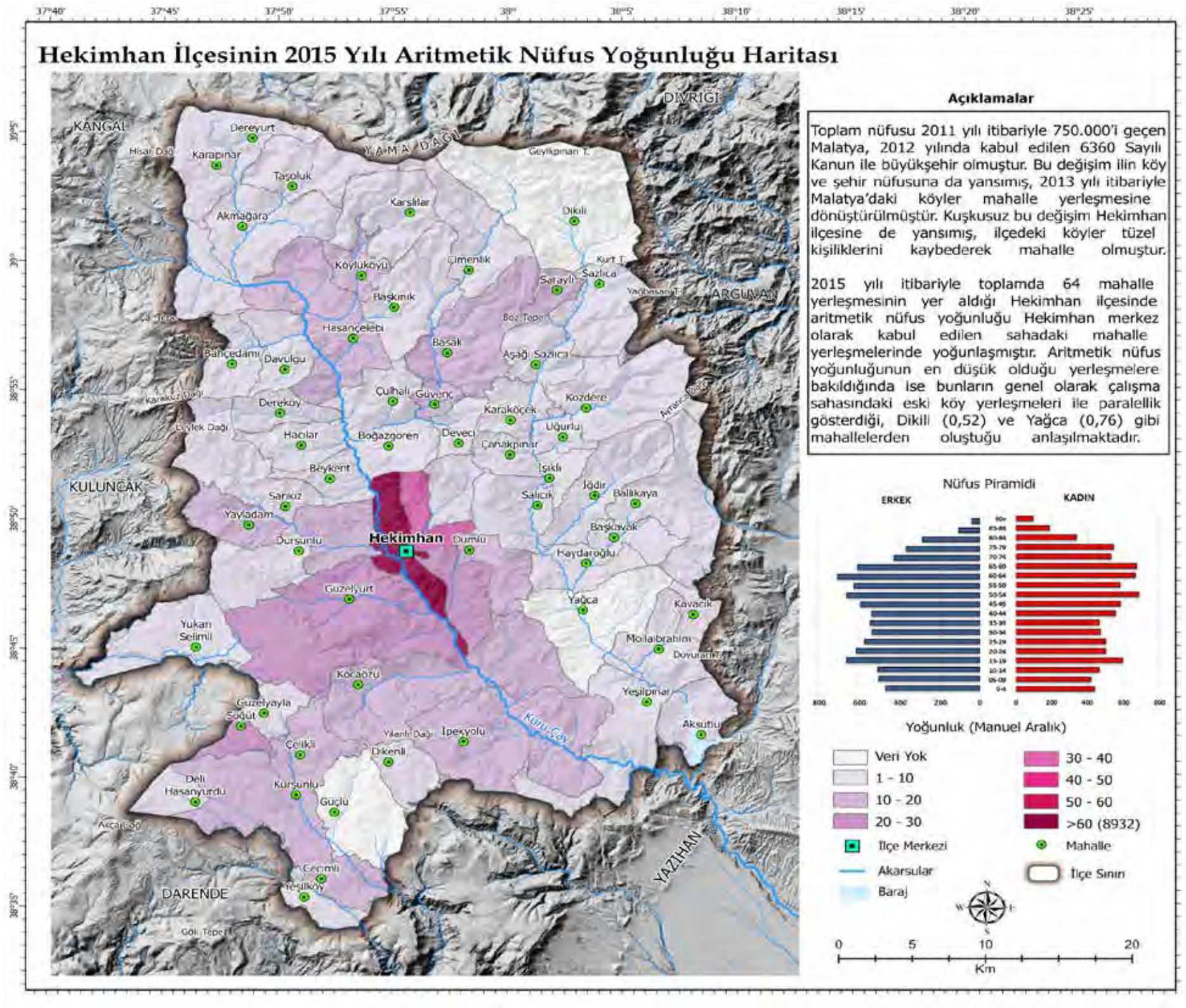
Harita 77: Hekimhan İlçesinin 1985 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



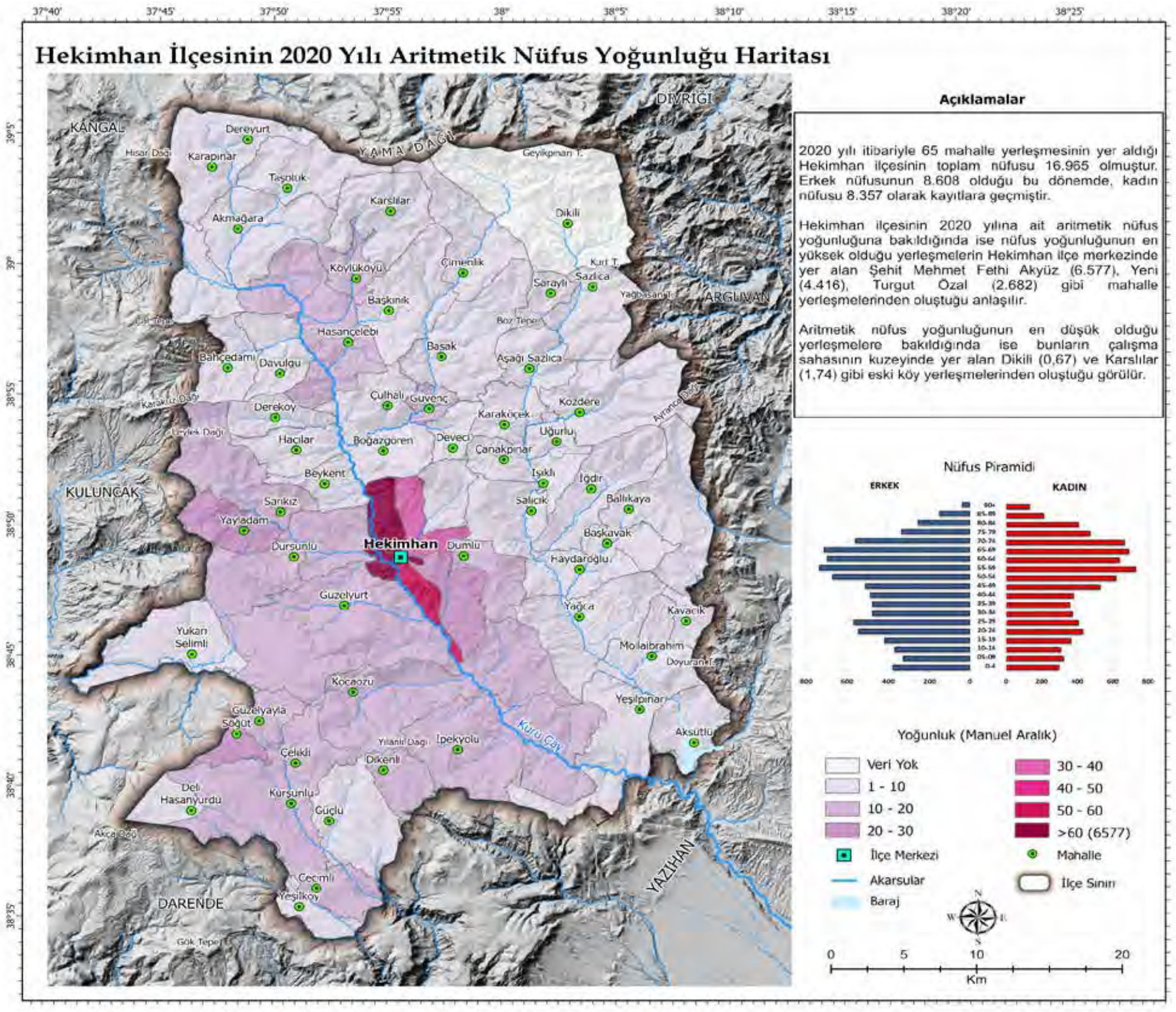
Harita 78: Hekimhan İlçesinin 1990 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



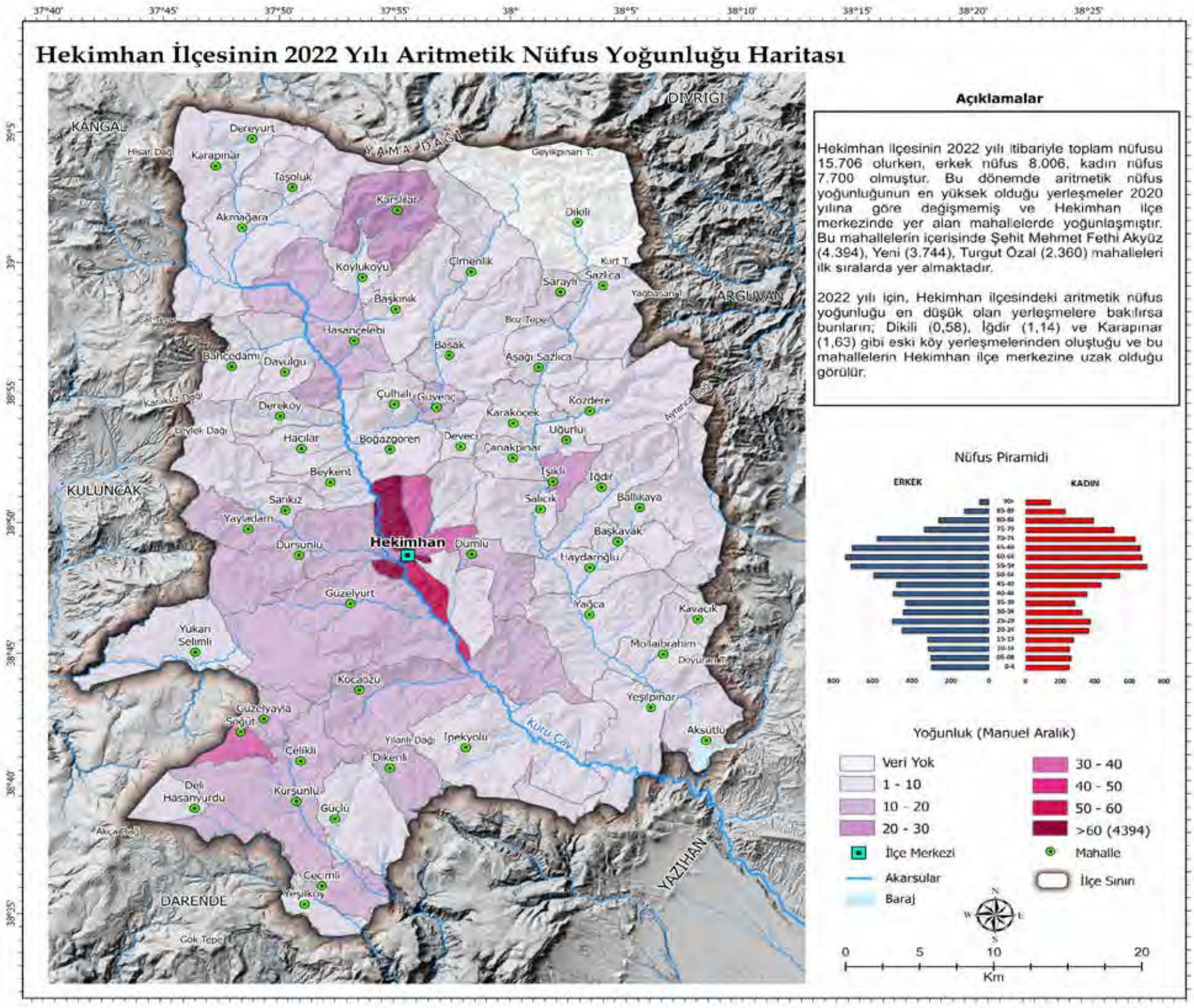
Harita 79: Hekimhan İlçesinin 2000 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



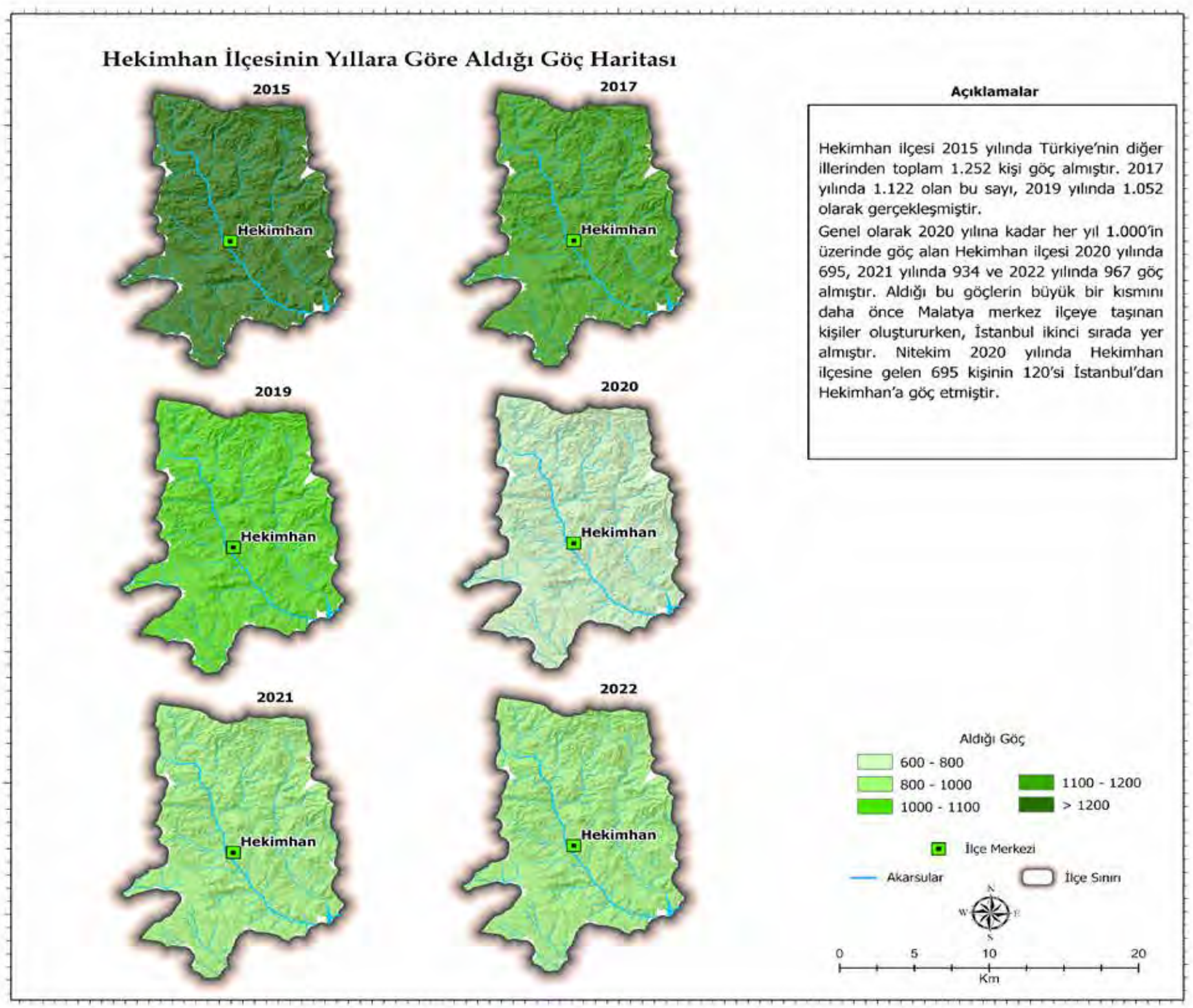
Harita 80: Hekimhan İlçesinin 2015 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



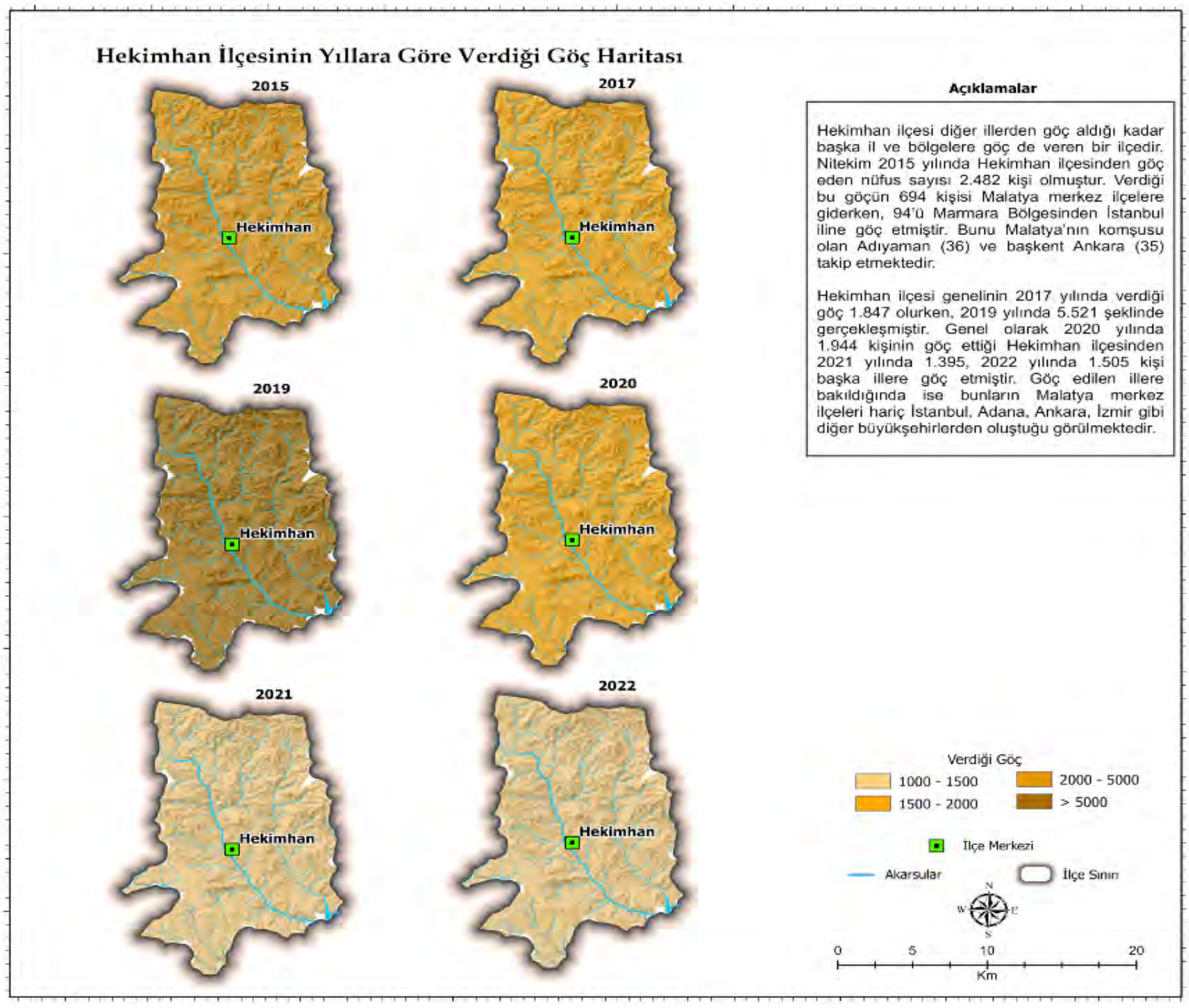
Harita 81: Hekimhan İlçesinin 2020 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



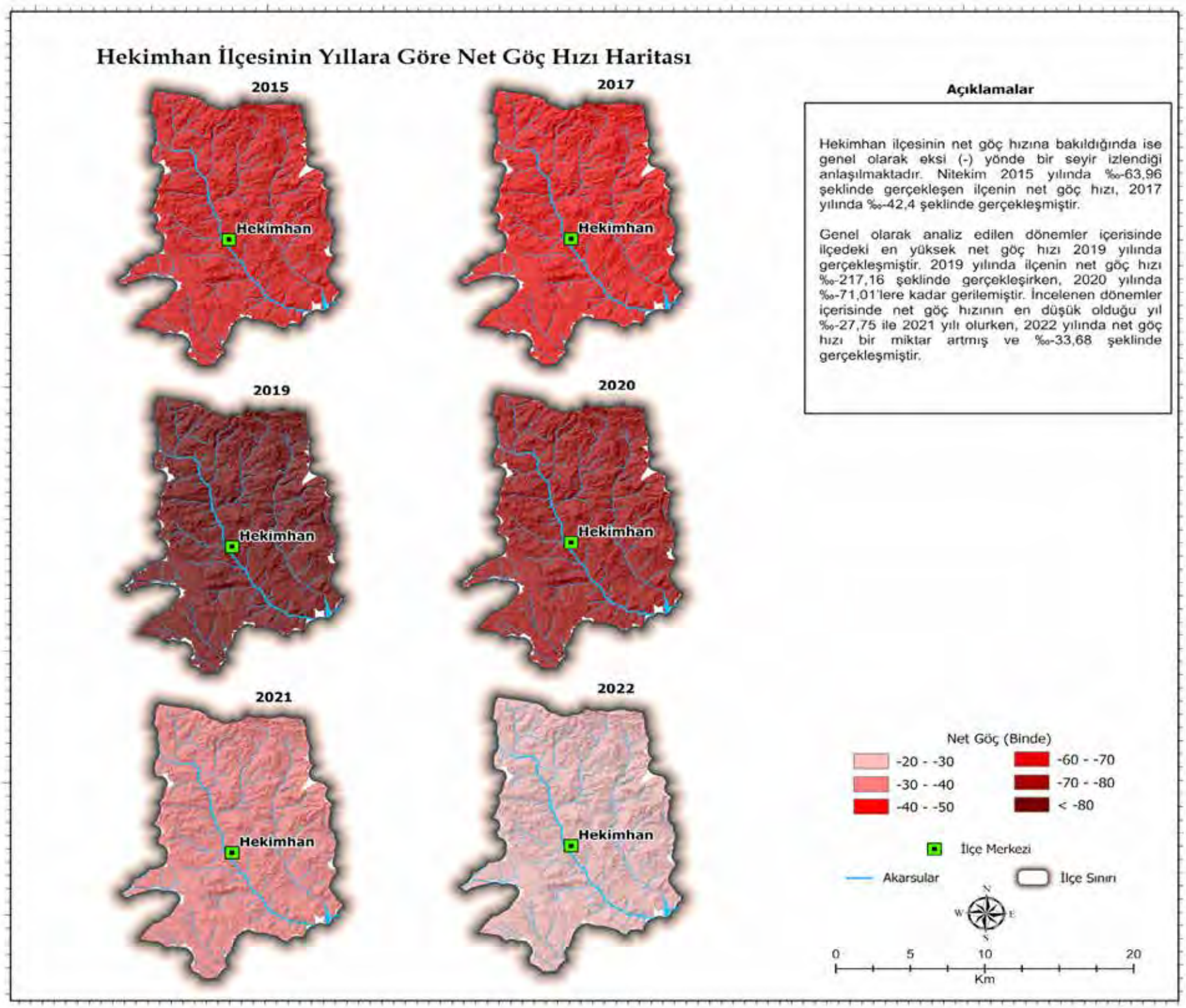
Harita 82: Hekimhan İlçesinin 2022 Yılı Aritmetik Nüfus Yoğunluğu Haritası.



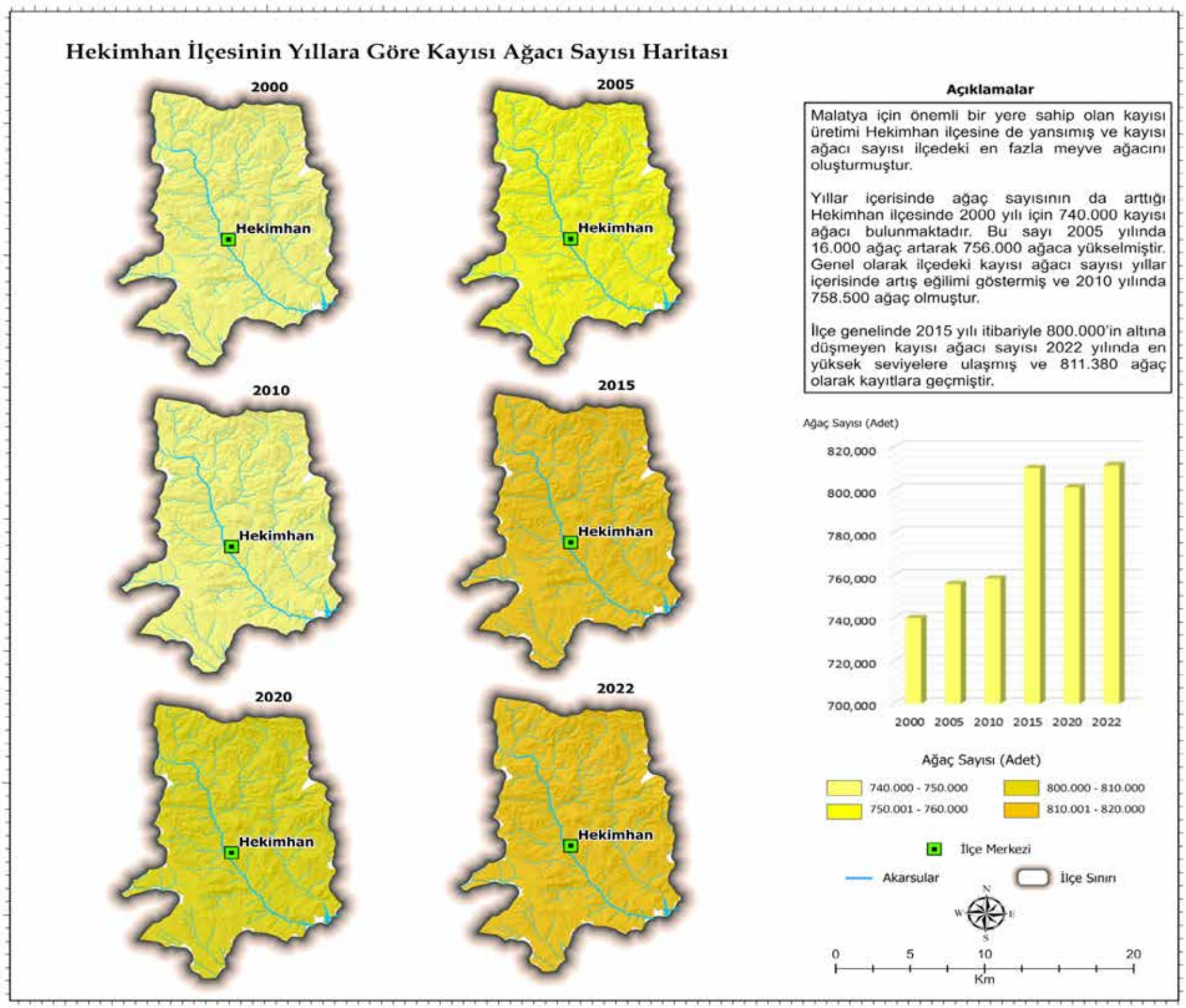
Harita 83: Hekimhan İlçesinin Yıllara Göre Aldığı Göç Haritası.



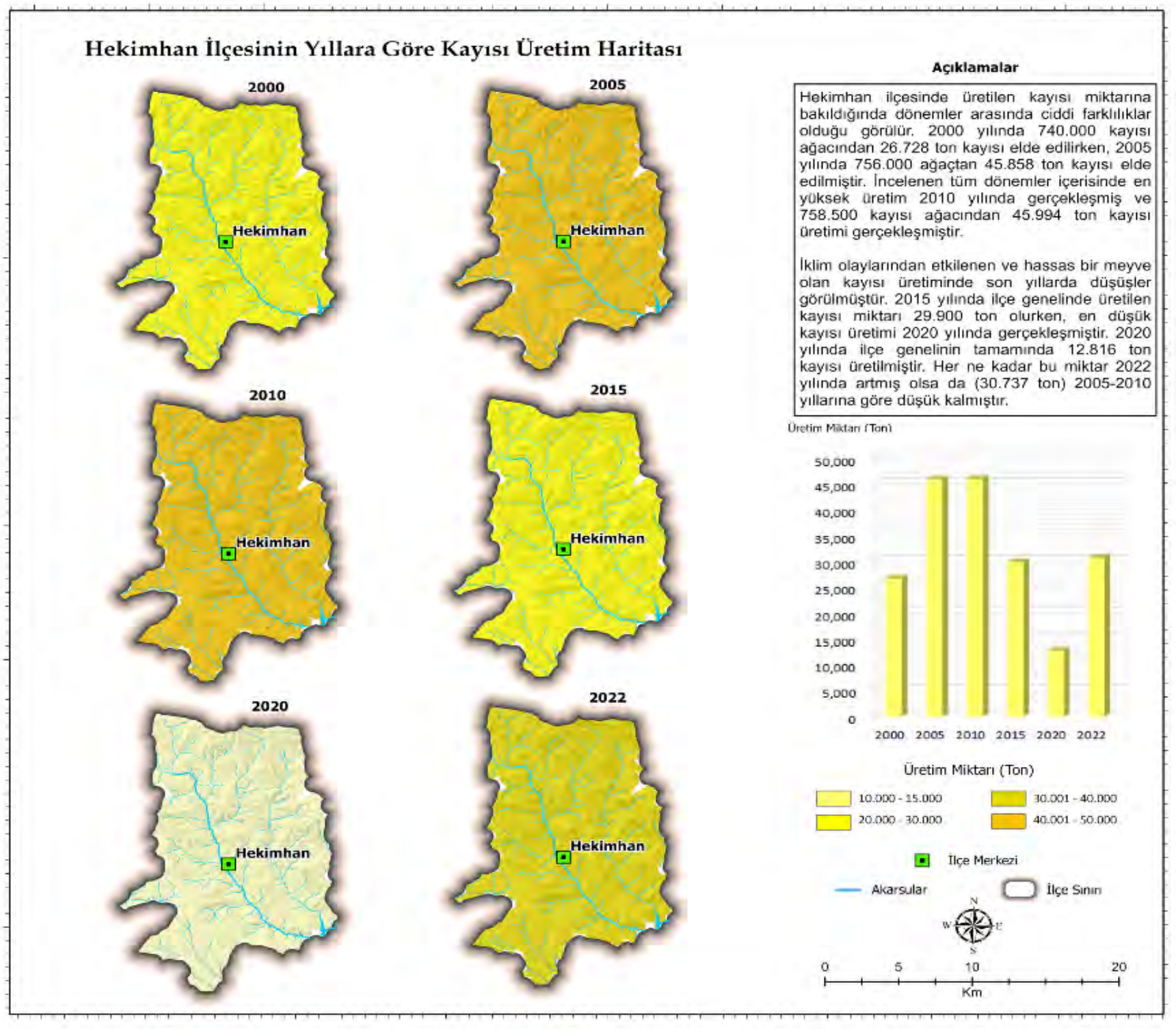
Harita 84: Hekimhan İlçesinin Yıllara Göre Verdiği Göç Haritası.



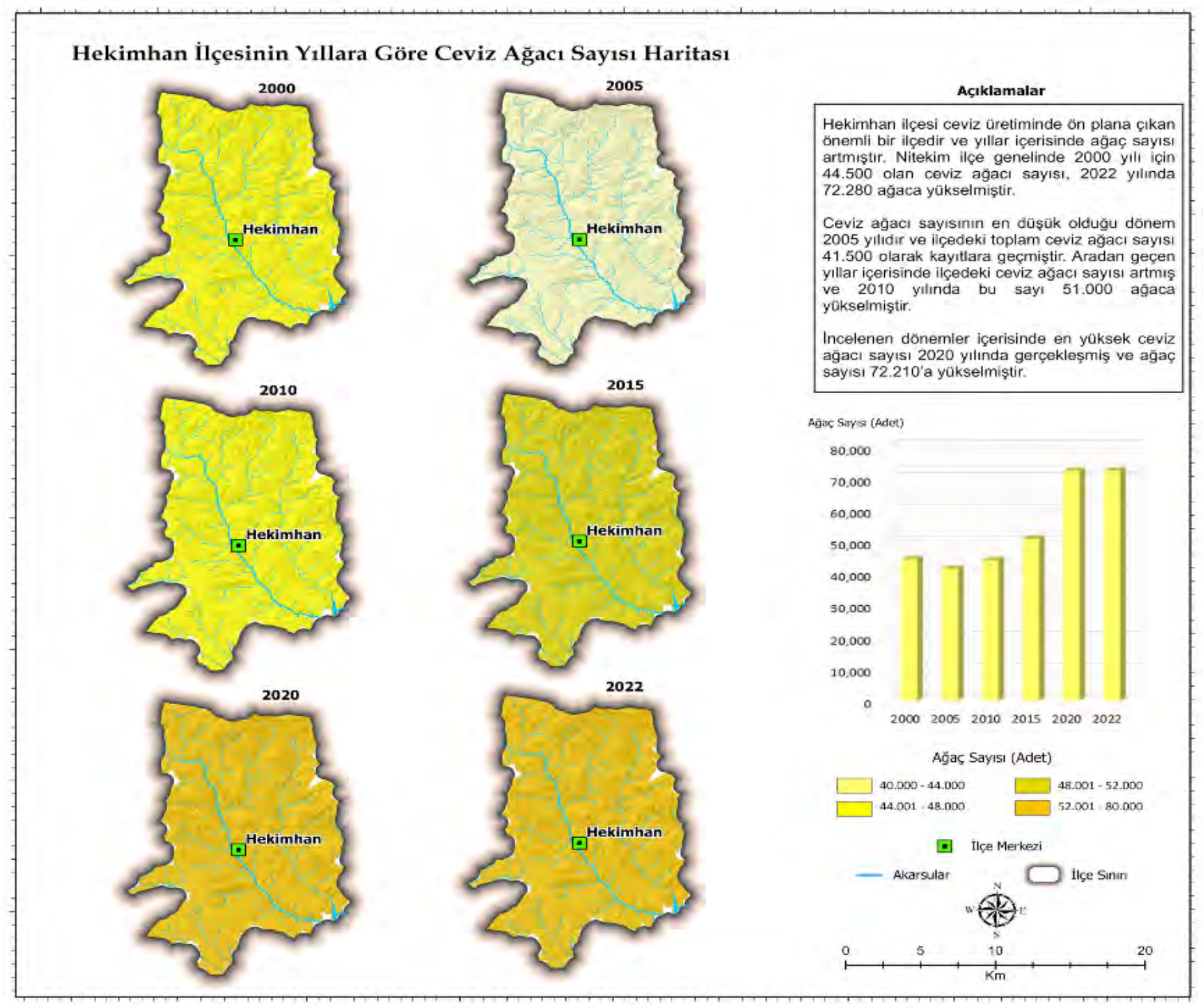
Harita 85: Hekimhan İlçesinin Yıllara Göre Net Göç Hızı Haritası.



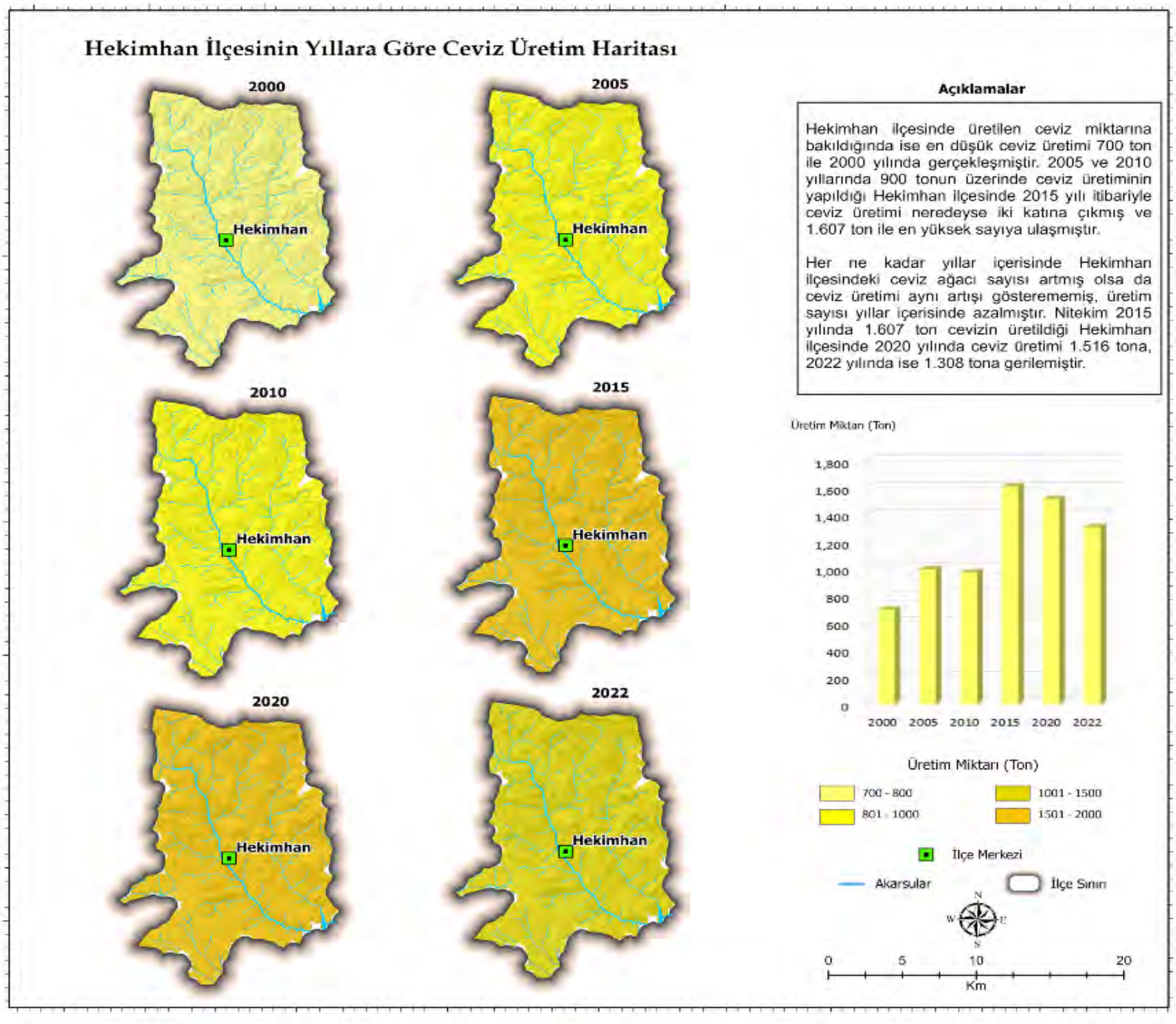
Harita 86: Hekimhan İlçesinin Yıllara Göre Kayısı Ağaç Sayısı Haritası.



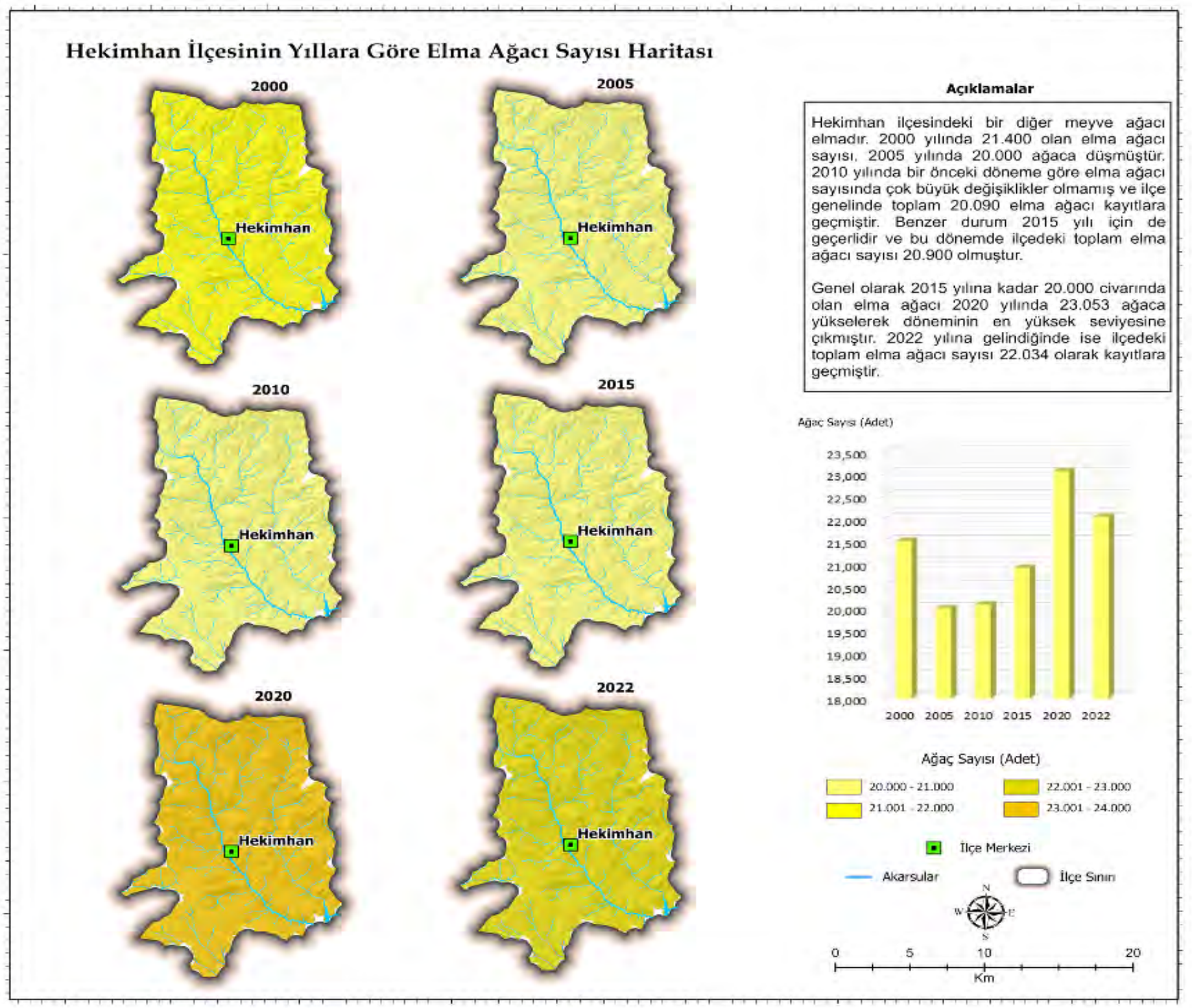
Harita 87: Hekimhan İlçesinin Yıllara Göre Kayısı Üretim Haritası.



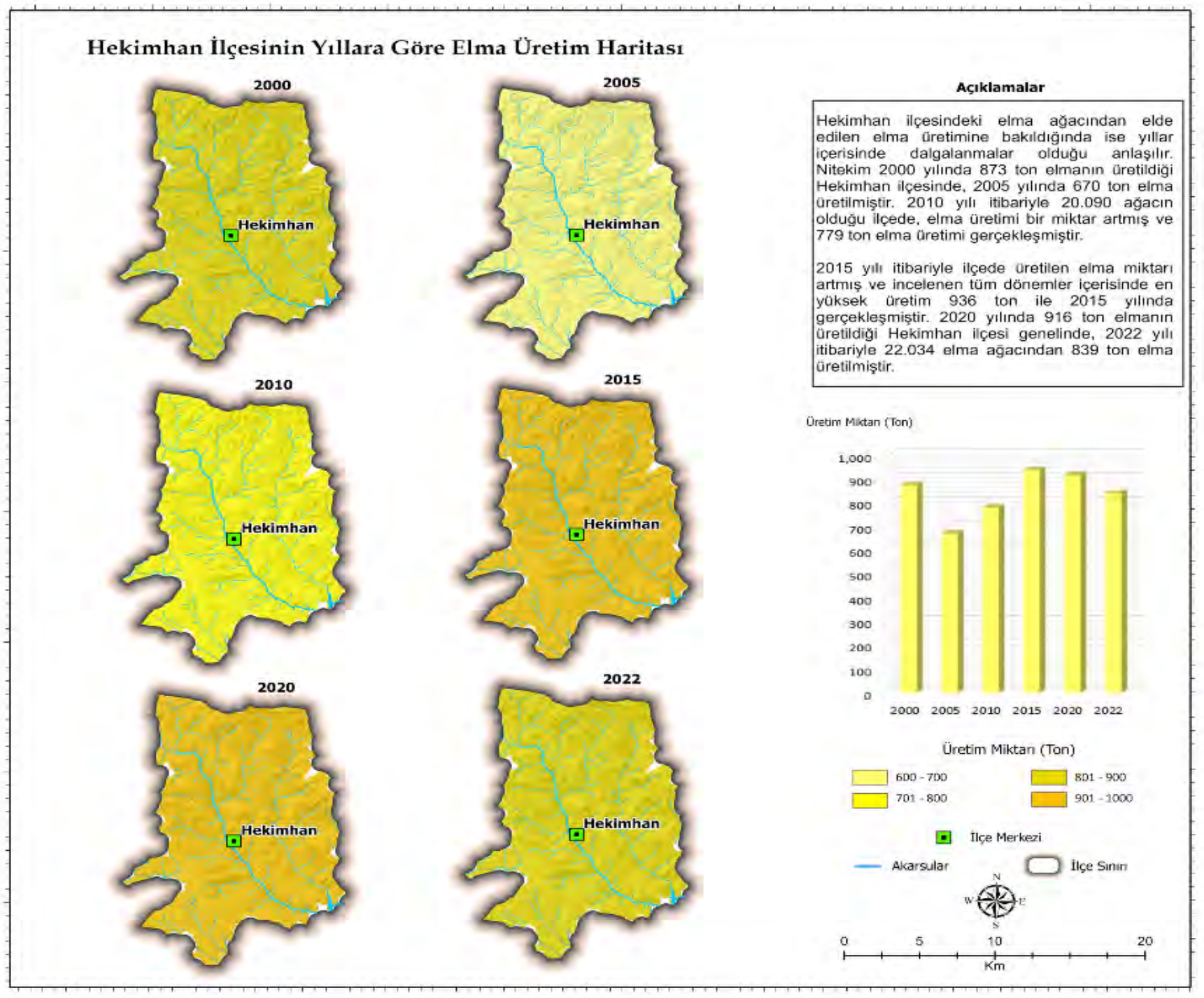
Harita 88: Hekimhan İlçesinin Yıllara Göre Ceviz Ağaç Sayısı Haritası.



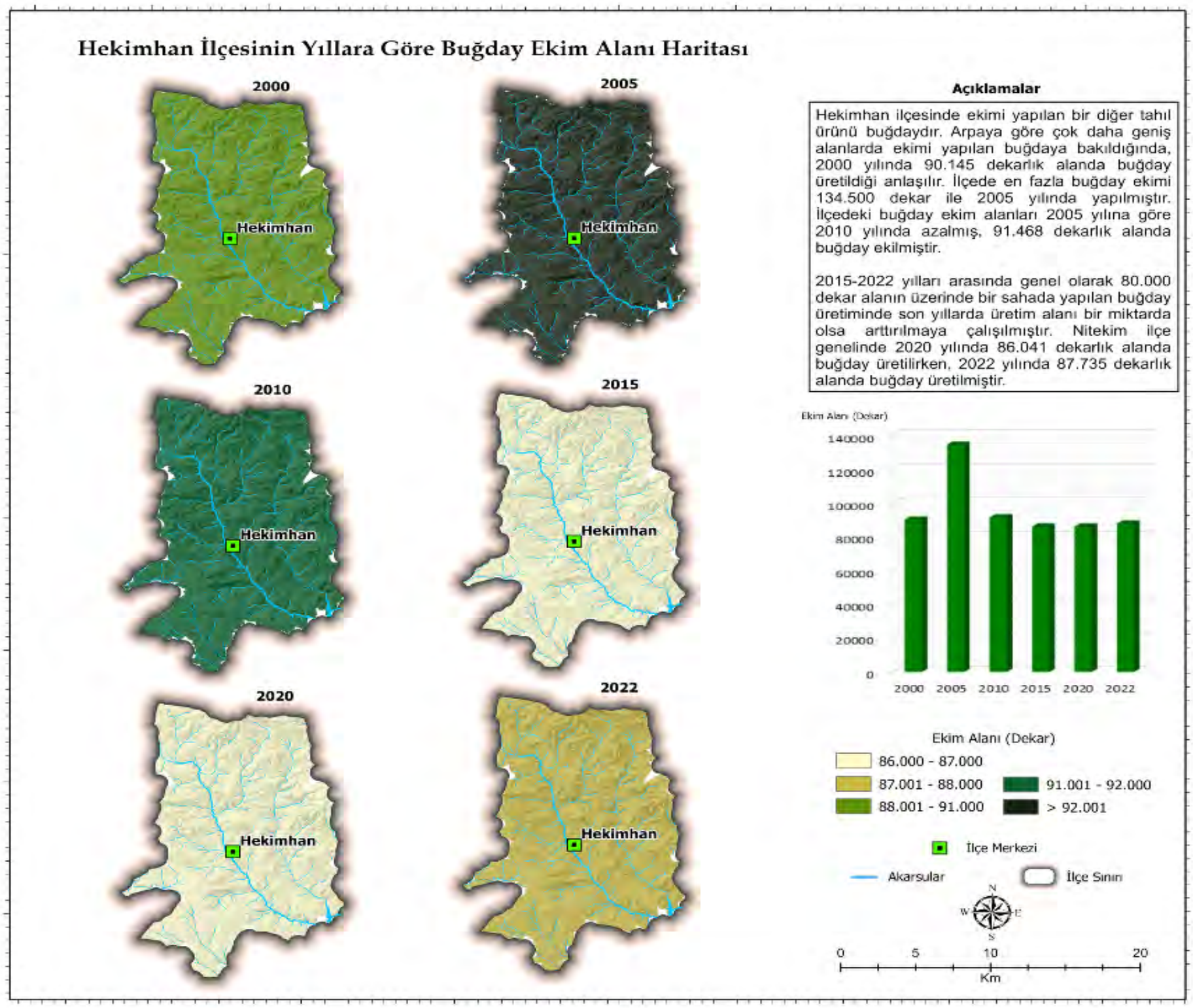
Harita 89: Hekimhan İlçesinin Yıllara Göre Ceviz Üretim Haritası.



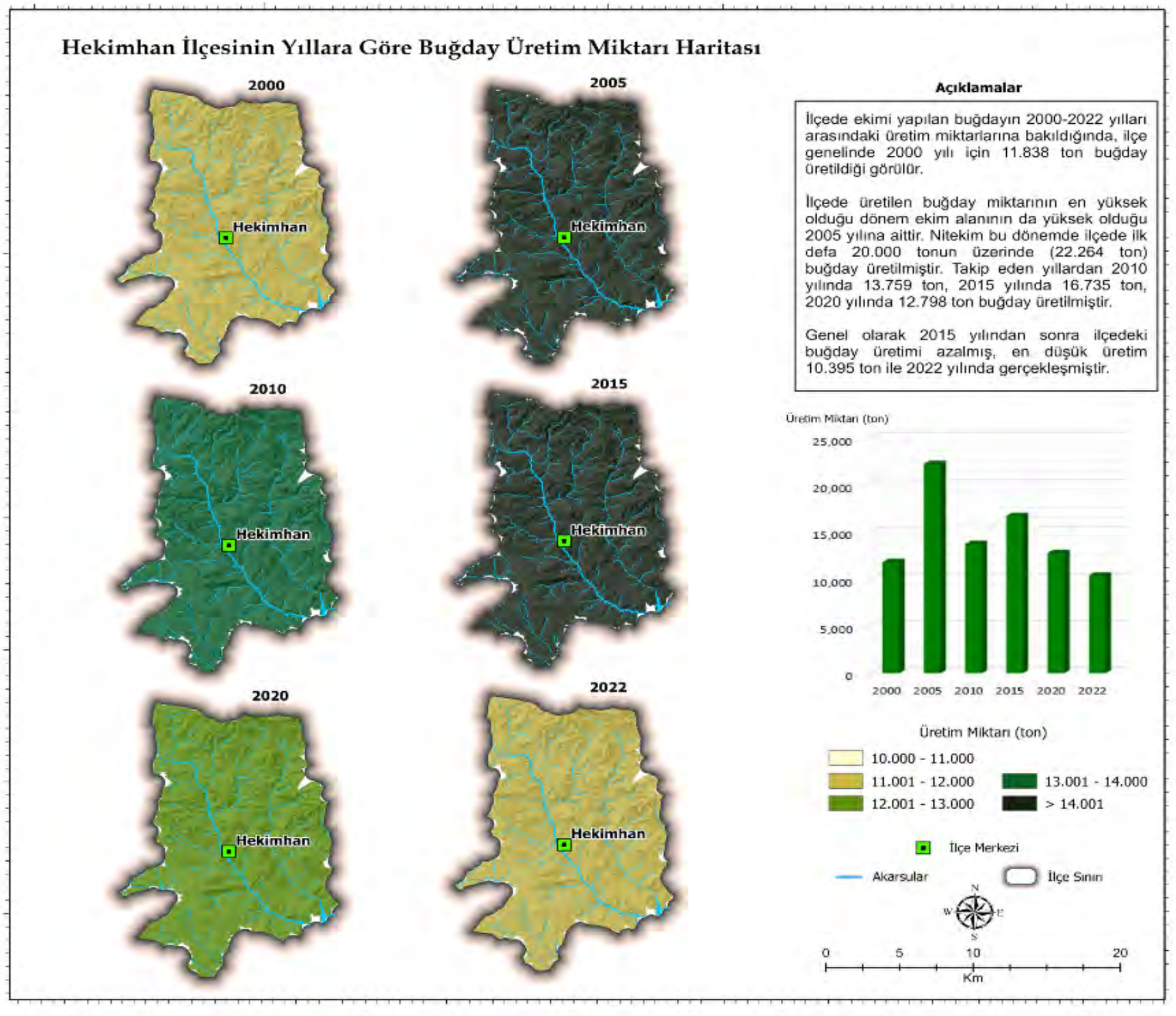
Harita 90: Hekimhan İlçesinin Yıllara Göre Elma Ağaç Sayısı Haritası.



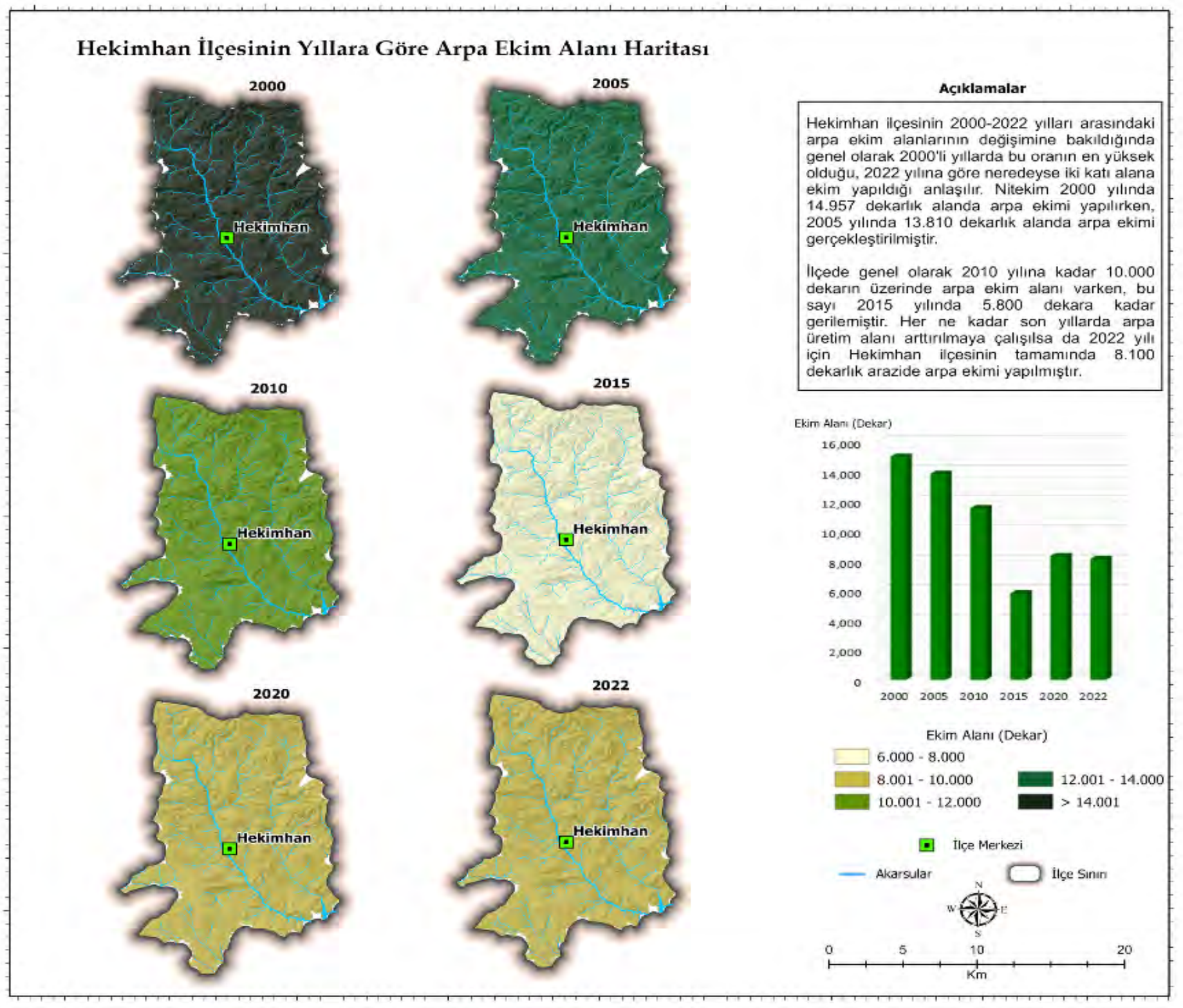
Harita 91: Hekimhan İlçesinin Yıllara Göre Elma Üretim Haritası.



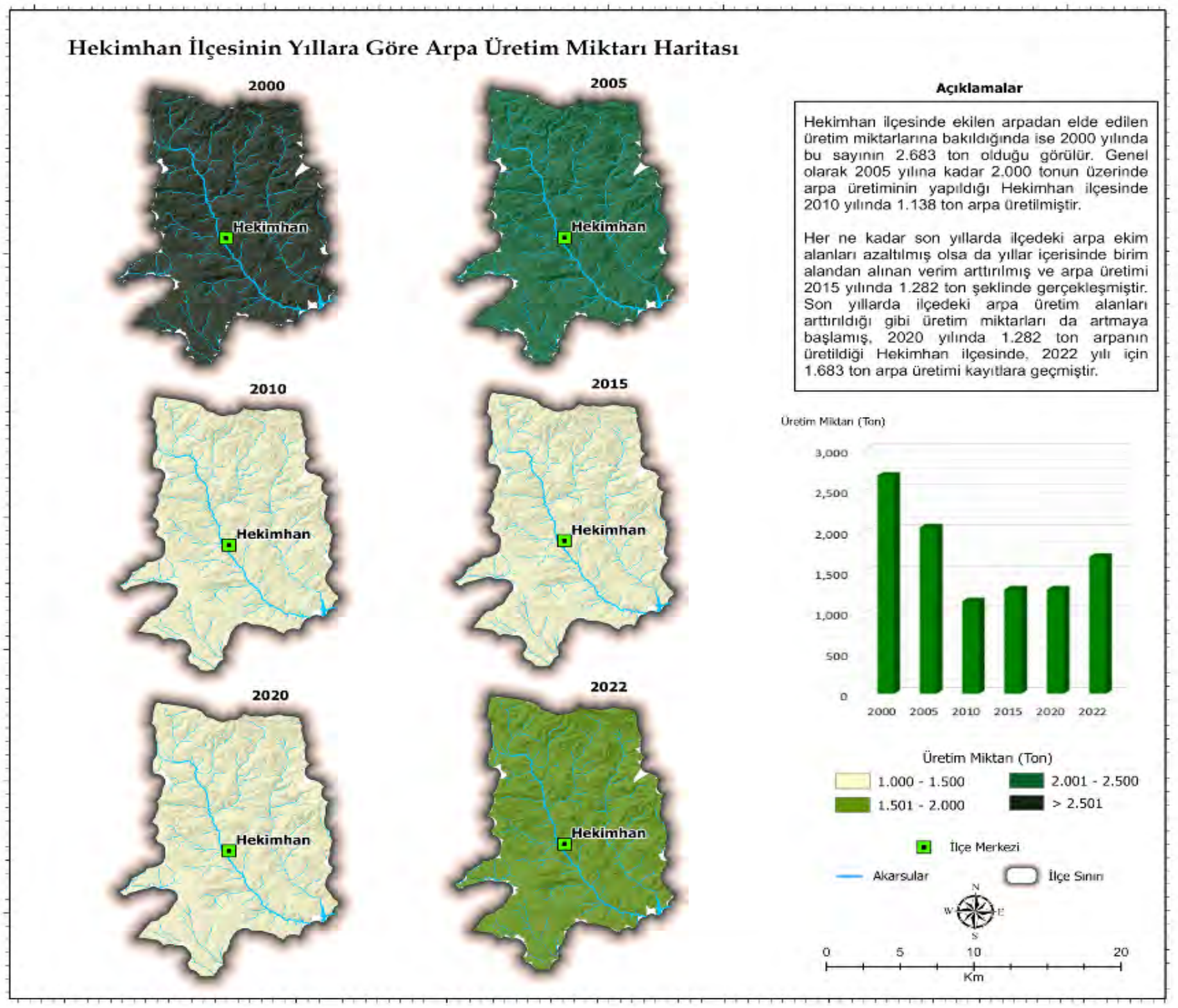
Harita 92: Hekimhan İlçesinin Yıllara Göre Buğday Ekim Alanı Haritası.



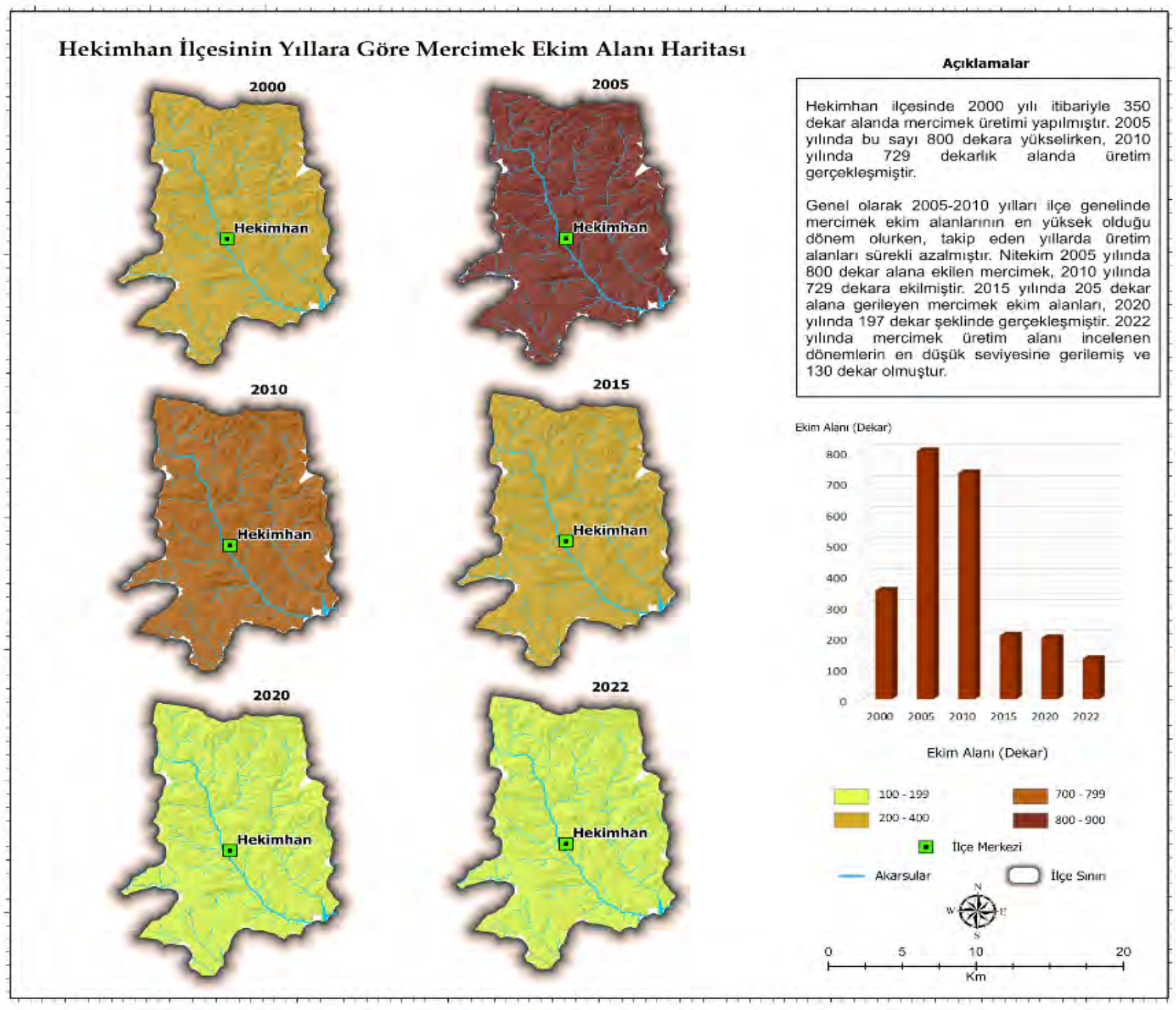
Harita 93: Hekimhan İlçesinin Yıllara Göre Buğday Üretim Miktarı Haritası.



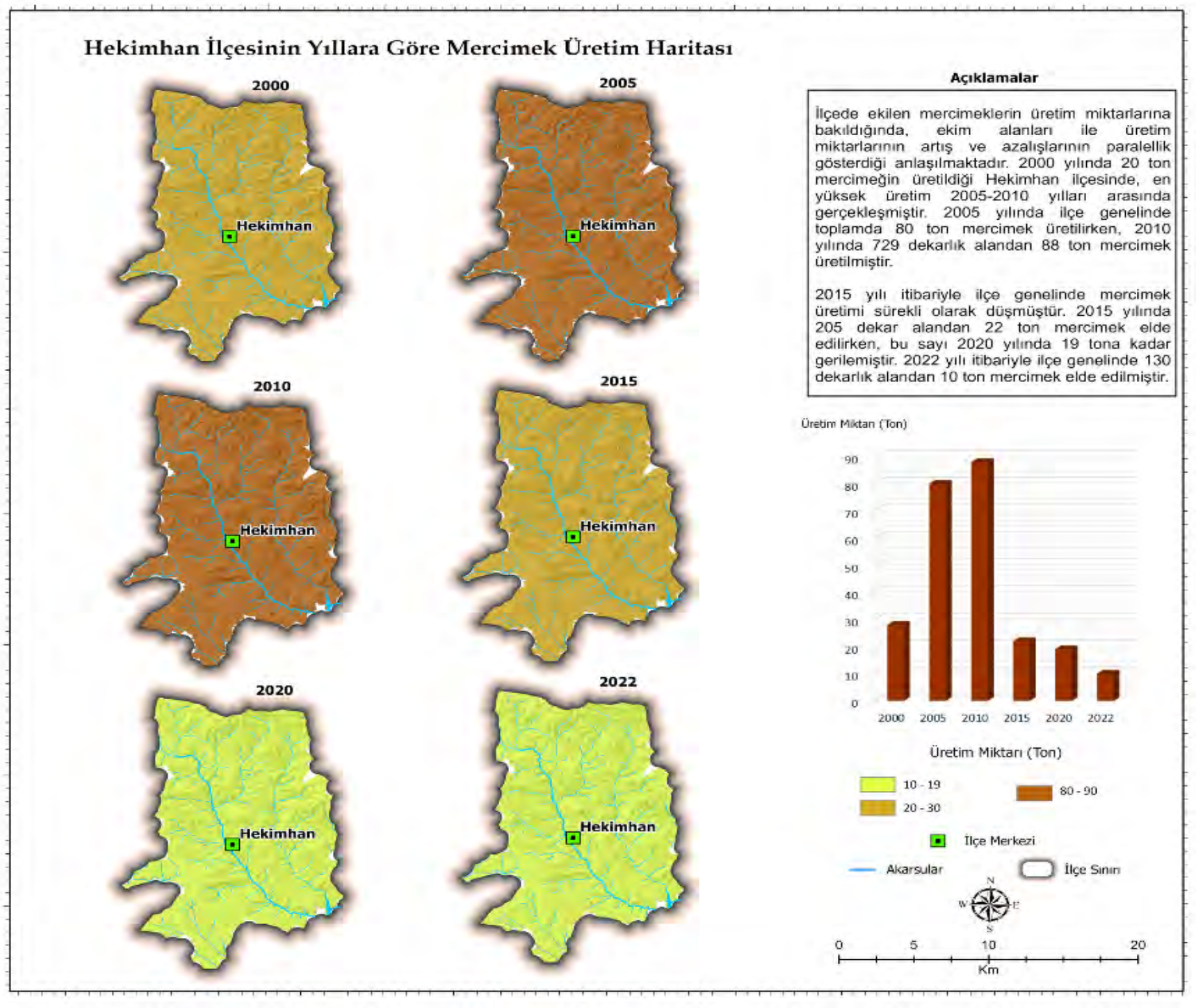
Harita 94: Hekimhan İlçesinin Yıllara Göre Arpa Ekim Alanı Haritası.



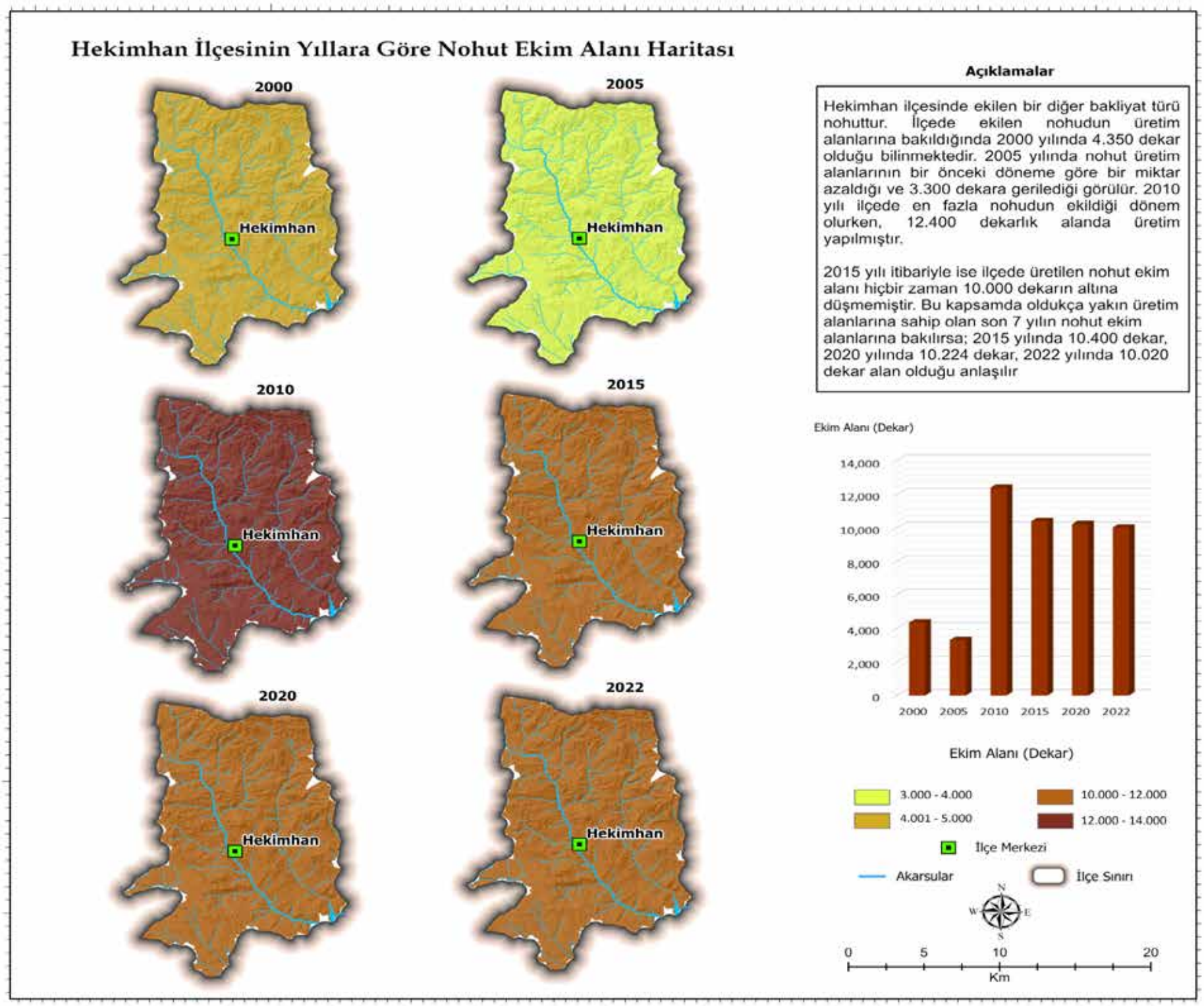
Harita 95: Hekimhan İlçesinin Yıllara Göre Arpa Üretim Miktarı Haritası.



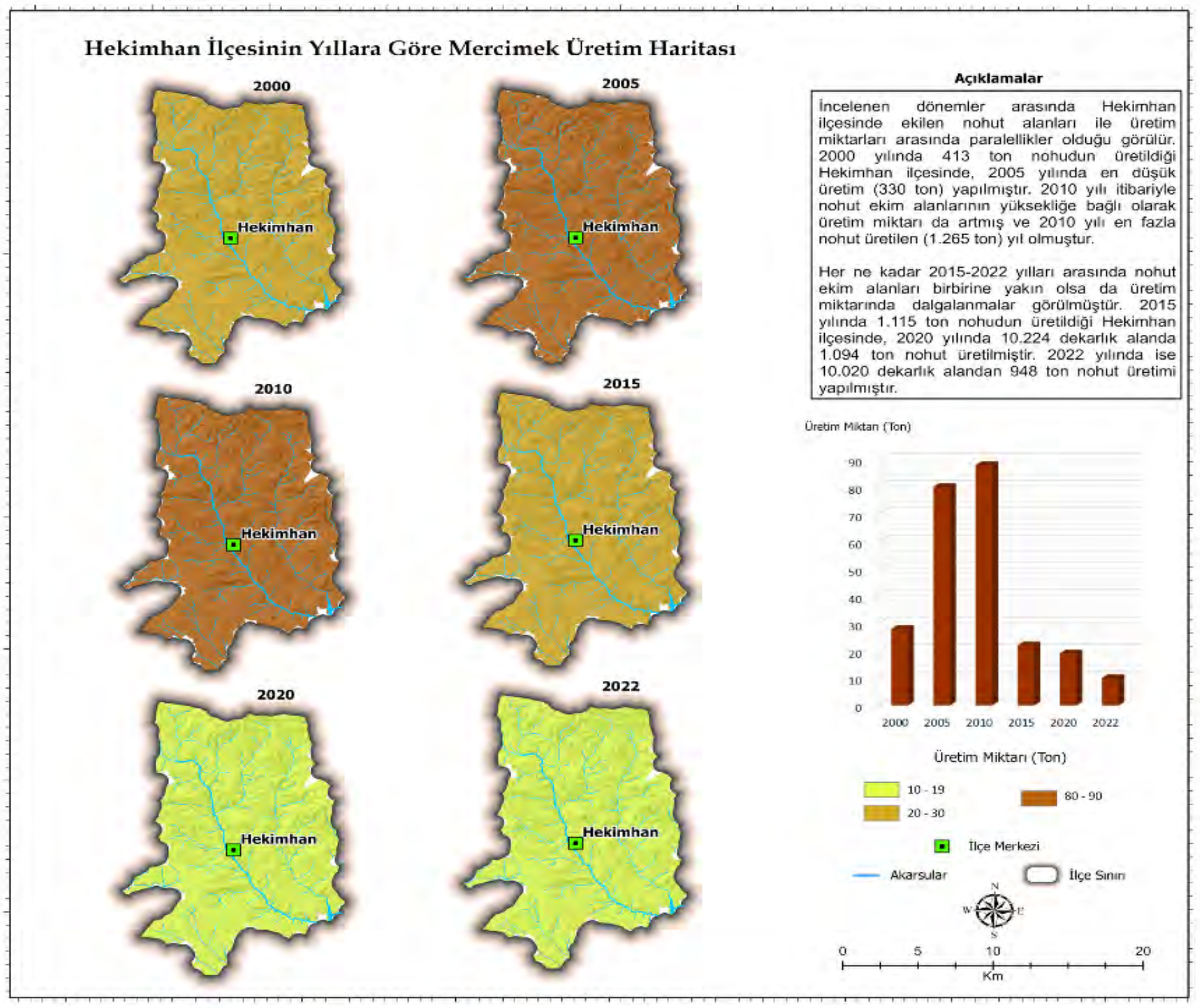
Harita 96: Hekimhan İlçesinin Yıllara Göre Mercimek Ekim Alanı Haritası.



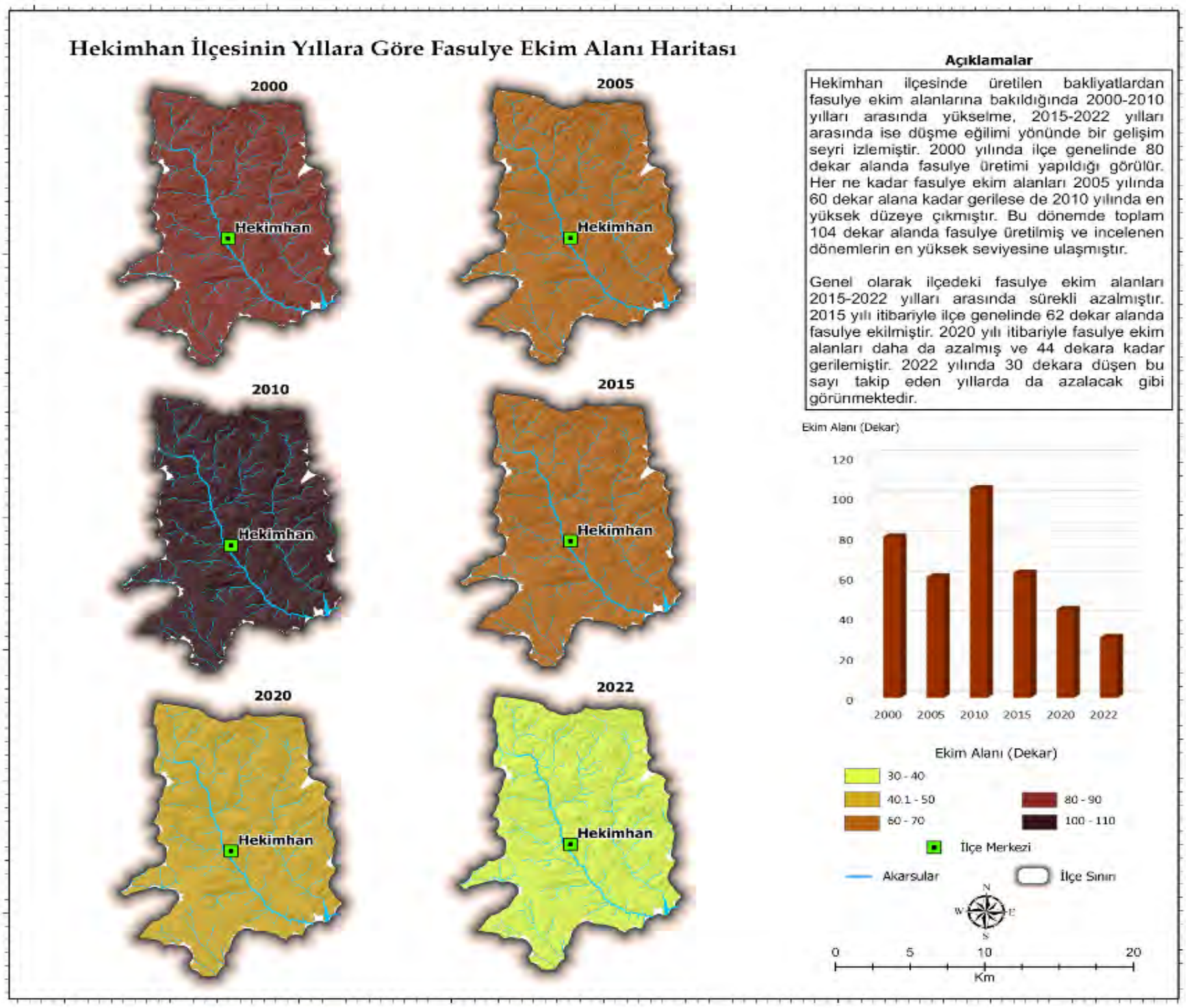
Harita 97: Hekimhan İlçesinin Yıllara Göre Mercimek Üretim Miktarı Haritası.



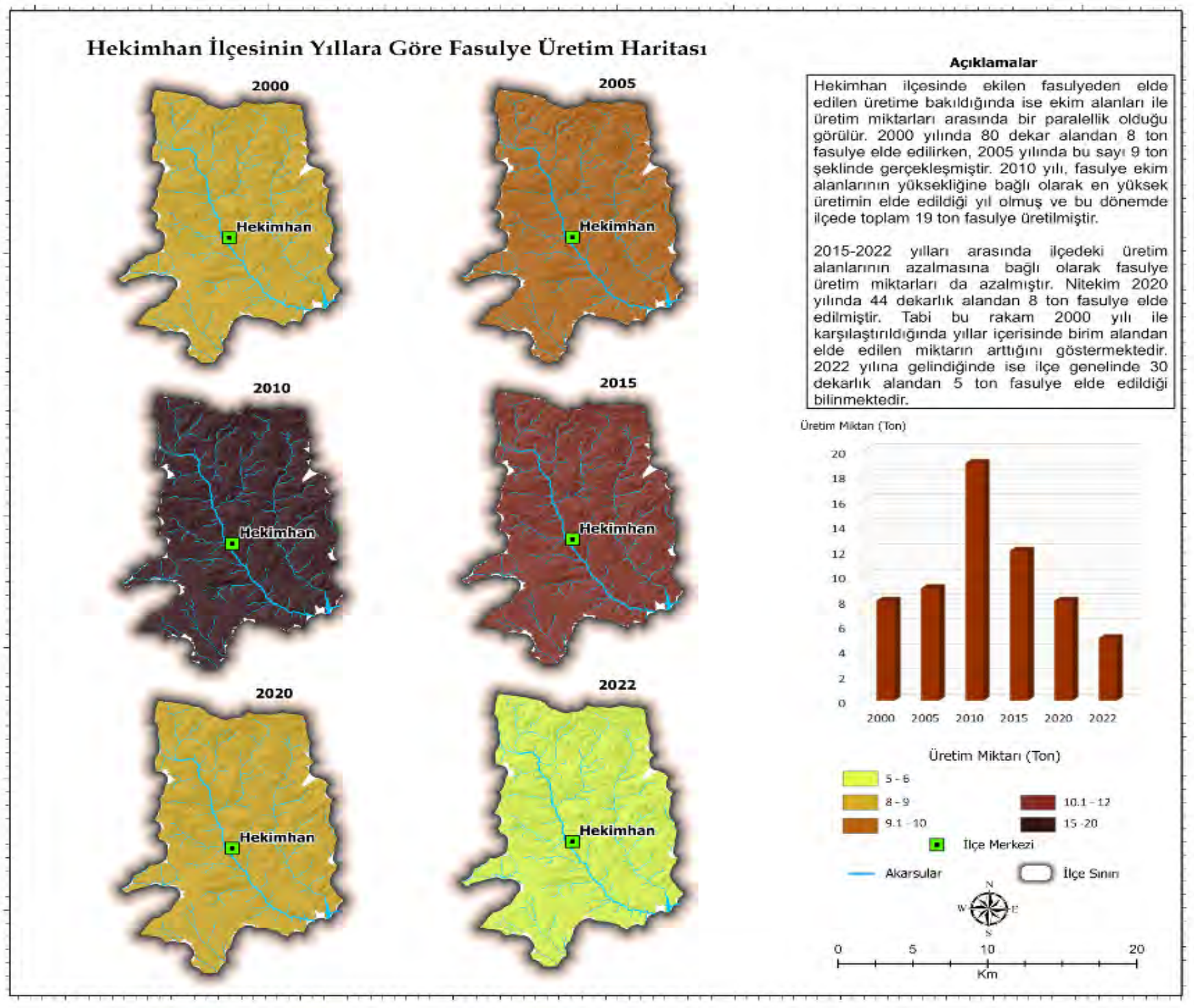
Harita 98: Hekimhan İlçesinin Yıllara Göre Nohut Ekim Alanı Haritası.



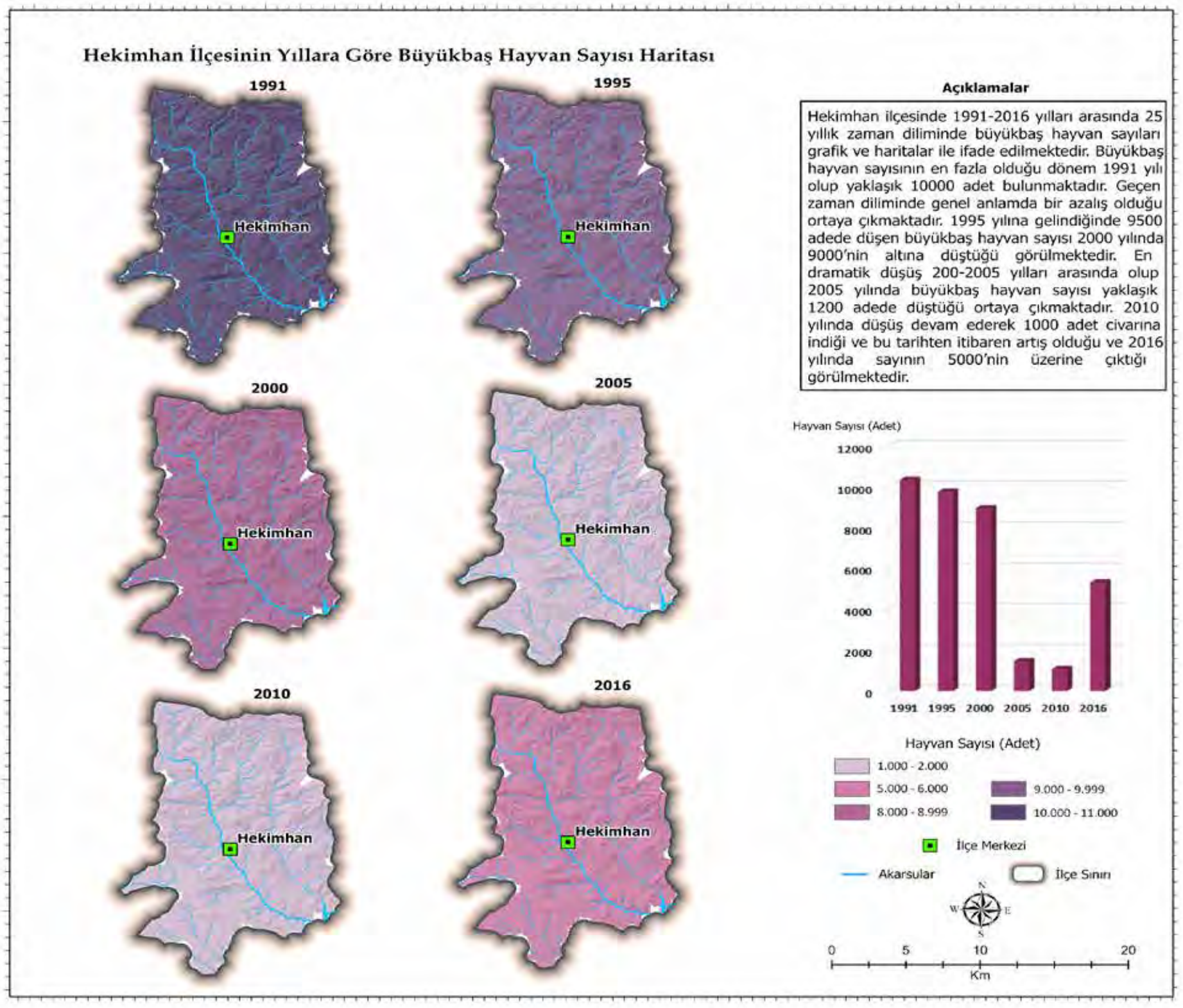
Harita 99: Hekimhan İlçesinin Yıllara Göre Nohut Üretim Miktarı Haritası.



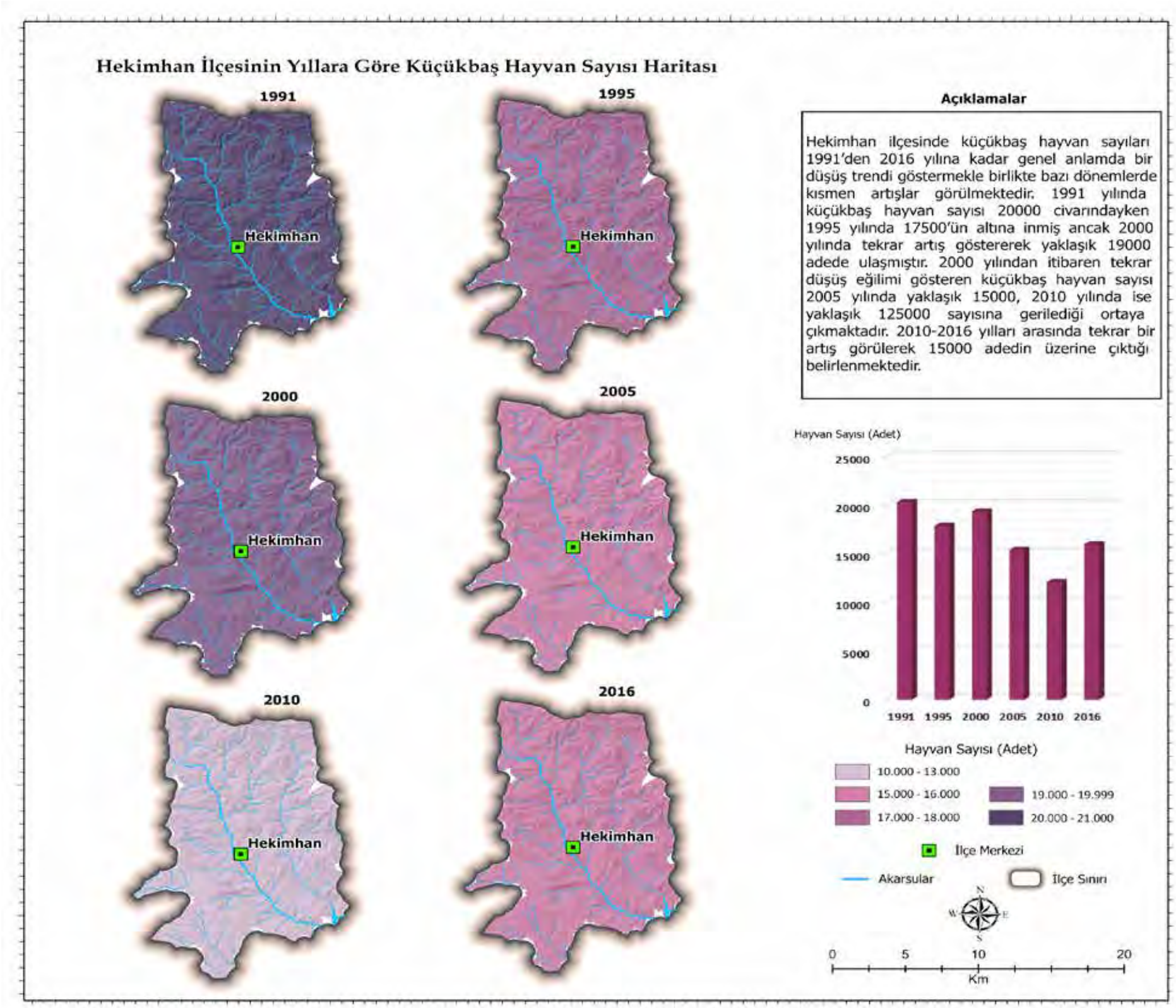
Harita 100: Hekimhan İlçesinin Yıllara Göre Fasulye Ekim Alanı Haritası.



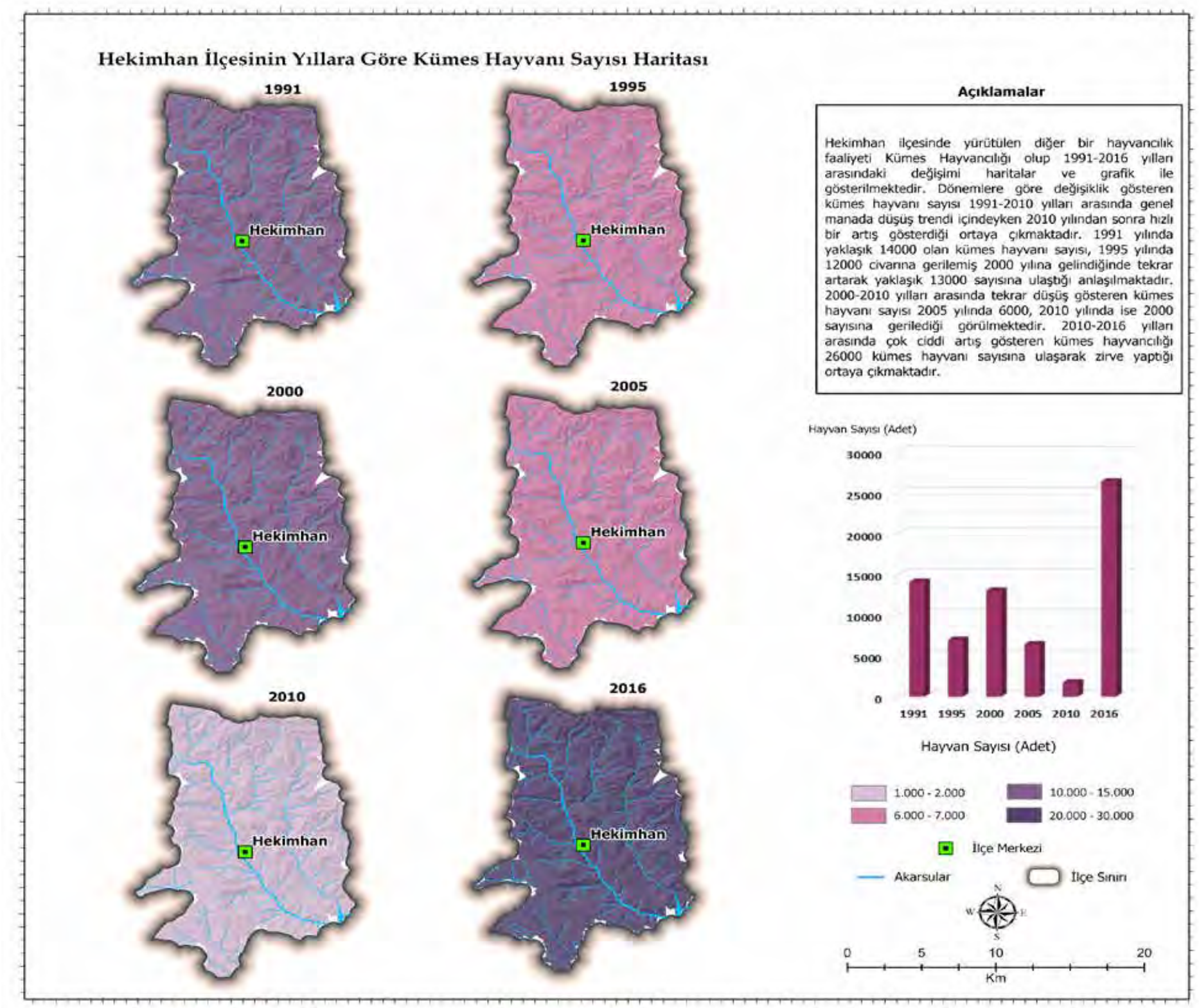
Harita 101: Hekimhan İlçesinin Yıllara Göre Fasulye Üretim Miktarı Haritası.



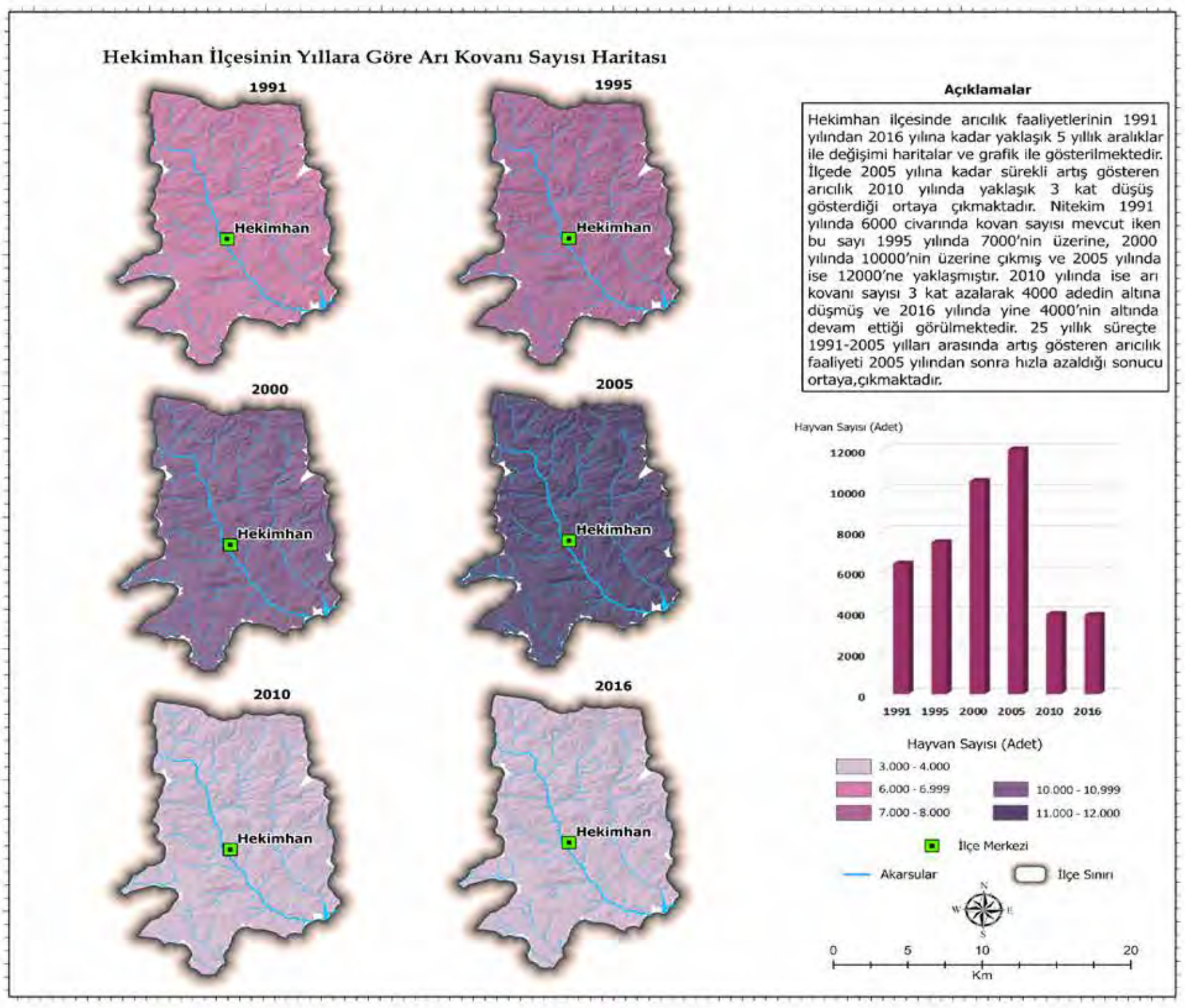
Harita 102: Hekimhan İlçesinin Yıllara Göre Büyükbaş Hayvan Sayısı Haritası.



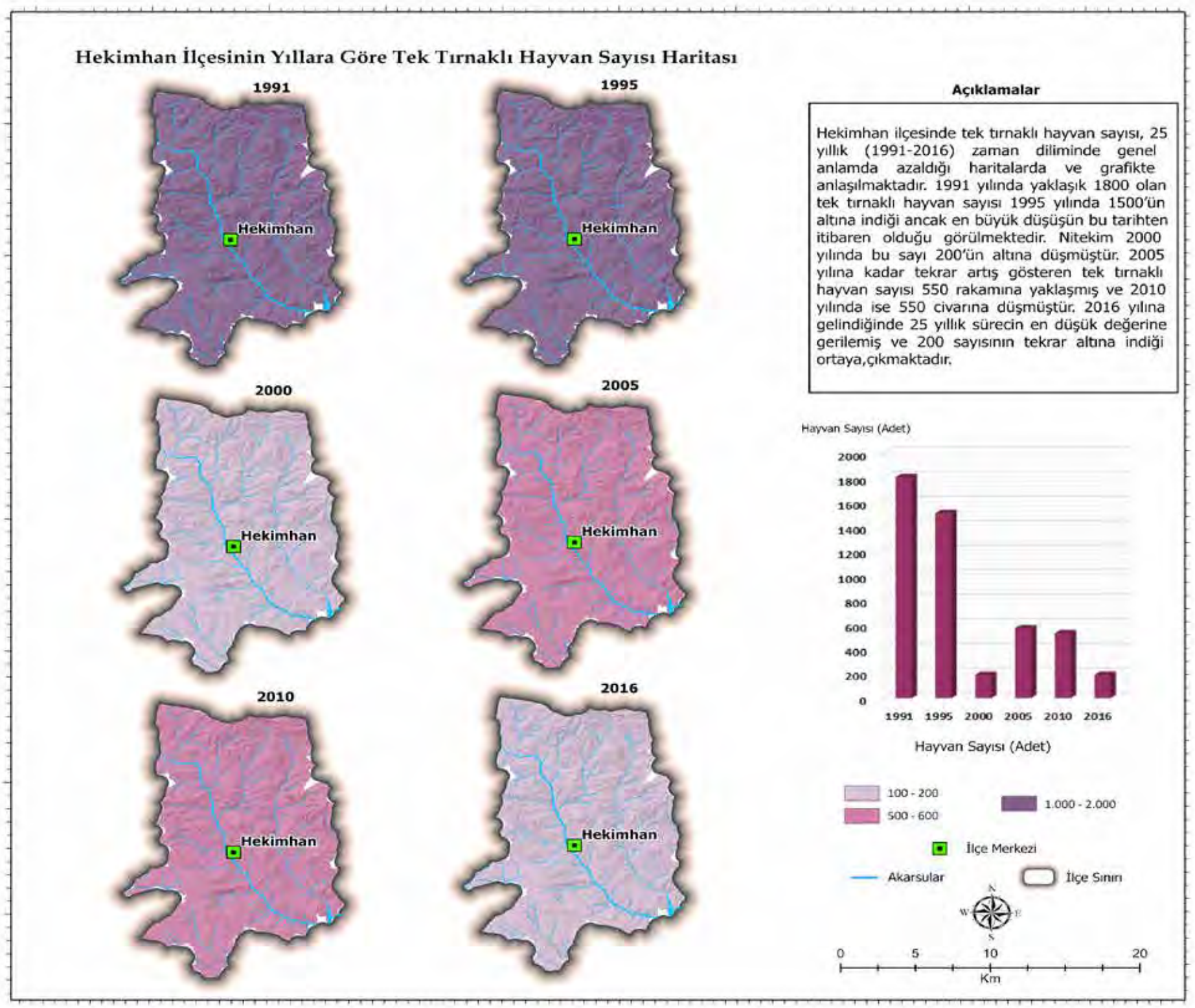
Harita 103: Hekimhan İlçesinin Yıllara Göre Küçükbaş Hayvan Sayısı Haritası.



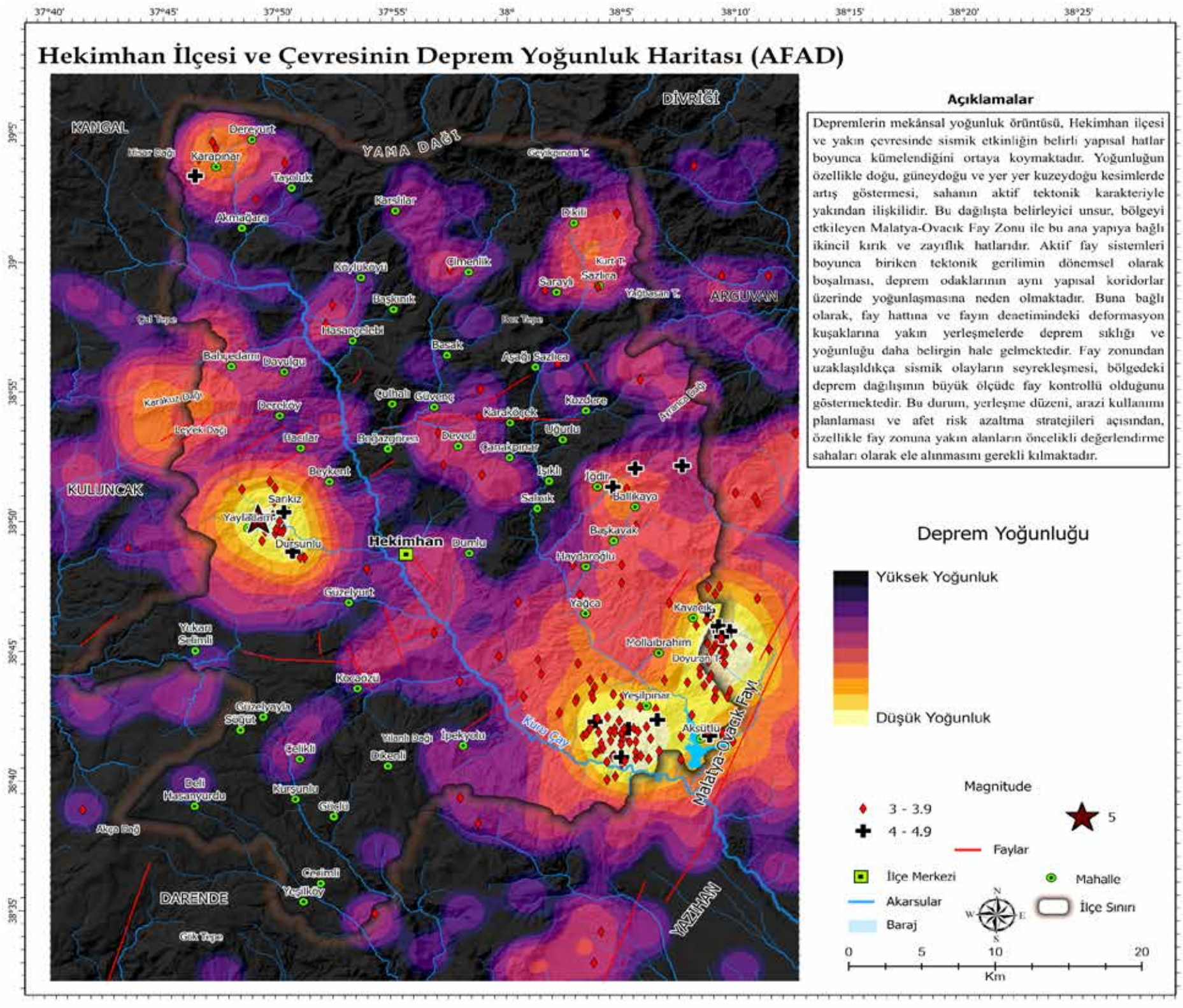
Harita 104: Hekimhan İlçesinin Yıllara Göre Kümes Hayvanı Sayısı Haritası.



Harita 105: Hekimhan İlçesinin Yıllara Göre Arı Kovanı Sayısı Haritası.



Harita 106: Hekimhan İlçesinin Yıllara Göre Tek Tırnaklı Hayvan Sayısı Haritası.



Harita 107: Hekimhan ve Çevresinin Deprem Yoğunluk Haritası.

Harita 108: Hekimhan İlçesinin Vintage Tasarım Haritası.

Foto 1: Hekimhan-Sivas yolu kuzeyinde Yamadağı yamaçlarında kurulan Karapınar köyünden bir görüntü (2025 Nüfusu 72 Kişi).

Photo 1*: A view from Karapınar Village, established on the slopes of Yamadağı to the north of the Hekimhan-Sivas road (2025 Population: 72 people).*

Foto 2: Hekimhan terk edilmiş köy yapısına örnek Dereyurt-Karapınar Köyünden bir görüntü (2025 Nüfusu 72 Kişi).

***Photo 2**: A view from Dereyurt-Karapınar Village, an example of an abandoned village structure in Hekimhan (2025 Population: 72 people).*

Foto 3: Hekimhan-Sivas yolu kuzeyinde Yamadağı yamaçlarında kurulan adını köyün ortasındaki tarihi taş oluklu bir çeşmesi olan,Taşoluk köyümden bir görüntü

***Photo 3**: A view from Taşoluk Village, which was established on the slopes of Yamadağı to the north of the Hekimhan – Sivas road and named after its historic stone-trough fountain located in the center of the village.*

Foto 4: Hekimhan-Sivas yolu kuzeyinde, Yamadağı batı yamaçlarında kurulan, Hekimhan idari sınırını oluşturan son yerleşme olan Akmağradan köyünden bir görüntü

Photo 4: *A view from Akmağra Village, the last settlement forming the Hekimhan administrative border, established on the western slopes of Yamadağı to the north of the Hekimhan – Sivas road.*

Foto 5: Hekimhan-Sivas yolu kuzeyinde, Yamadağı batı yamaçlarında kurulan Köylü köyünün Mezrasından bir görüntü (2025 Nüfusu 154 Kişi).

Photo 5: *A view from the hamlet of Köylü Village, established on the western slopes of Yamadağı to the north of the Hekimhan – Sivas road (2026 Population: 154 people).*

Foto 6: Hekimhan – Sivas yolu kuzeyinde, Yamadağı batı yamaçlarında kurulan Köylü köyü Köyünden bir görüntü (2025 Nüfusu 154 Kişi).

***Photo 6**: A view from Köylü Village, established on the western slopes of Yamadağı to the north of the Hekimhan – Sivas road (2026 Population: 154 people).*

Foto 7: Hekimhan kuzeyinde Yamadağı doruklarına yakın vadi yamacında 1800 m yükseltide olan Karslılar köyünden bir görünüm (2025 Nüfusu 43 kişi).

Photo 7*: A view from Karslılar Village, located at an altitude of 1800 m on a valley slope near the peaks of Yamadağı, north of Hekimhan. (2025 Population: 43 people)*

Foto 8: Hekimhan kuzeybatısında kurulmuş olan Dereyurt köyünden bir görünüm (2025 Nüfusu 43 kişi).

Photo 8*: A view from Dereyurt Village, established in the northwest of Hekimhan (2025 Population: 43 people)*

Foto 9: Hekimhan ve Hasançelebi kasabası kuzeyinde bulunan Başkınık köyünden bir görüntü (2025 Nüfusu 191 Kişi).

Photo 9*: A view from Başkınık Village, located to the north of Hekimhan and the town of Hasançelebi (2025 Population: 191 people).*

Foto 10: Hekimhan kuzeyinde Yamadağlarının üzerinde kurulu Çimenlik köy Yolu üzerindeki mesire alanı ve gölden bir görüntü

Photo 10*: A view of the recreation area and the lake on the Çimenlik Village road, established on the Yamadağı Mountains to the north of Hekimhan*.

Foto 11: Hekimhan kuzeyinde Yamadağlarının üzerinde kurulu Çimenlik köyünden bir başka görüntü (2025 Nüfusu 120 Kişi).

Photo 11*: Another view from Çimenlik Village, established on the Yamadağı Mountains to the north of Hekimhan (2025 Population: 120 people).*

Foto 12: Hekimhan kuzeyinde Yamadağlarının üzerinde kurulu Çimenlik köyünden bir başka görüntü (2025 Nüfusu 120 Kişi).

Photo 12*: Another view from Çimenlik Village, established on the Yamadağı Mountains to the north of Hekimhan (2025 Population: 120 people).*

Foto 13: Hekimhan idari alanının kuzeyinde Yama Dağları kütlesi üzerinde kurulan bir yerleşme olan Dikili köyünden bir görünüm (2025 Nüfusu 49 Kişi).

Photo 13*: A view from Dikili Village, a settlement established on the Yamadağı mountain mass in the north of the Hekimhan administrative area (2025 Population: 49 people).*

Foto 14. Hekimhan kuzeyinde Yama Dağlarının güney yamaçlarında kurulu Saraylı köyünden bir görüntü. Yöre halkı Yukarı Saz olarak bilir (2025 Nüfusu 79 kişi).

***Photo 14**: A view from Saraylı Village, established on the southern slopes of the Yamadağı Mountains to the north of Hekimhan. The local people know it as 'Yukarı Saz' (2025 Population: 79 people).*

Foto 15: Foto 14. Hekimhan kuzeyinde Yama Dağlarının güney yamaçlarında kurulu Aşağı Sazlıca köyünden bir görüntü. Köy yöre halkı arasında Aşağı Saz köyü olarak bilinir (2025 Nüfusu 161 kişi).

Photo 15*: A view from Aşağı Sazlıca Village, established on the southern slopes of the Yamadağı Mountains to the north of Hekimhan. The village is known among the local people as 'Aşağı Saz'. (2025 Population: 161 people)*

Foto 16: Foto 14. Hekimhan kuzeyinde demir madeni yataklarının kuzey yamaçlarında kurulu Karaköçek köyü. Yerleşme adını demir madeni yataklarından dolayı arazinin renginden karaköçek adını almıştır . (2025 Nüfusu 123 kişi).

***Photo 16**: Karaköçek Village, established on the northern slopes of the iron ore deposits to the north of Hekimhan. The settlement was named 'Karaköçek' due to the color of the land resulting from the iron ore deposits (2025 Population: 123 people).*

Foto 17: Hekimhan Deveci demir madeni yataklarının kuzeyin de kurulmuş bir yerleşmedir. Başak köyü yöre halkı ve yakın çevrede Basak olarak bilinir . (2025 Nüfusu 389 kişi).

Photo 17*: It is a settlement established to the north of the Hekimhan Deveci iron ore deposits. Başak Village is known as 'Basak' among the local people and in the nearby surroundings (2025 Population: 389 people).*

Foto 18: Hekimhan'ın kuzeybatısında Güvenç köyü Güvenç akarsu vadisinde kurulmuştur. Köyün çevresi demir madeni olmak üzere birçok maden karmaşığı bakımından zengindir. Maden işletmeciliği köy yerleşmesinde veya yakın çevresinde çevresel sorunları zaman zaman oluşturmaktadır (2025 Nüfusu 116 kişi).

***Photo 18**: Güvenç Village is established in the Güvenç river valley to the northwest of Hekimhan. The surroundings of the village are rich in various mineral complexes, particularly iron ore. Mining operations occasionally cause environmental problems in the village settlement and its immediate vicinity (2025 Population: 116 people).*

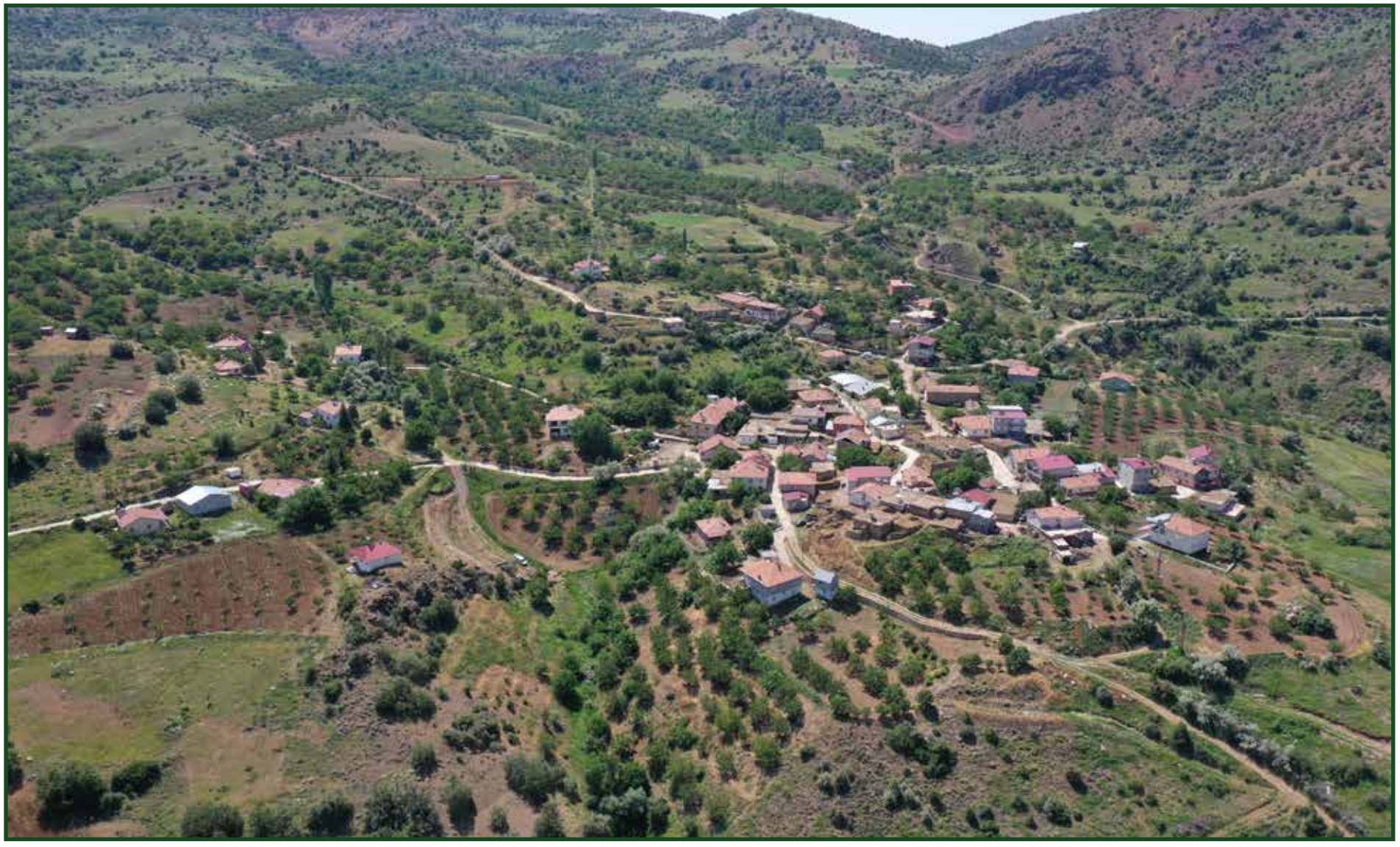


Foto 19: Hekimhanın kuzeybatısında Boğazgören köyü kurulmuştur. Köyün çevresi demir madeni olmak üzere birçok maden karmaşığı bakımından zengindir. Maden işletmeciliği köy yerleşmesinde ve yakın çevresinde çevresel sorunları zaman zaman oluşturmaktadır. Boğazgören yöre ve çevresinde Şırzı olarak bilinir (2025 Nüfusu 128 kişi).

Photo 19*: Boğazgören Village is established to the northwest of Hekimhan. The surroundings of the village are rich in various mineral complexes, particularly iron ore. Mining operations occasionally cause environmental problems in the village settlement and its immediate vicinity. Boğazgören is known as 'Şırzı' in the region and its surroundings (2025 Population: 128 people).*

Foto 20: Hekimhan'ın kuzeyinde sırtını Zurbahan Dağına vererek kurulmuştur. Köyün çevresi demir madeni olmak üzere birçok farklı madenler bakımından zengindir. Maden işletmeciliği köy yerleşmesinde ve yakın çevresinde çevresel sorunları zaman zaman oluşturmaktadır. Deveci arazilerinin büyük bölümü istimlak edilerek maden sahası ilan edilmiştir. Deveci köyü madenciliğin kıskacında yok olmak üzere bir yerleşmedir (2025 Nüfusu 67 kişi).

Photo 20: *Deveci Village was established to the north of Hekimhan, with its back against Mount Zurbahan. The surroundings of the village are rich in many different minerals, particularly iron ore. Mining operations occasionally cause environmental problems in the village settlement and its immediate vicinity. A large portion of the Deveci lands has been expropriated and declared a mining area. Deveci is a settlement on the verge of disappearing under the pressure of mining activities (2025 Population: 67 people).*

Foto 21: Hekimhan idari alanının kuzeydoğusunda kurulan Kozdere köyünden bir görünüm (2025 Nüfusu 49 Kişi).

Photo 21: *A view from Kozdere Village, established in the northeast of the Hekimhan administrative area (2025 Population: 49 people).*

Foto 22: Hekimhan idari alanının doğusunda kurulan bir yerleşme olan Uğurlu köyünden bir görünüm. Yörede Üğürcük olarak bilinir (2025 Nüfusu 49 Kişi).

Photo 22: *A view from Uğurlu Village, a settlement established in the east of the Hekimhan administrative area. It is known as 'Üğürcük' in the region. (2025 Population: 49 people)*

Foto 23: Hekimhan idari alanının kuzeyinde yamaçta kurulan bir yerleşme Çanakpınar köyünden bir görünüm. Yörede Baltacıbaşı olarak bilinir (2025 Nüfusu 94 kişi).

Photo 23: *A view from Çanakpınar Village, a settlement established on a slope in the north of the Hekimhan administrative area. It is known as 'Baltacıbaşı' in the region. (2025 Population: 94 people)*

Foto 24: Hekimhan idari alanının kuzeyinde kurulan bir yerleşme Işıklı köyünden bir görünüm. Yöre halkı İşlaman olarak bilmektedir (2025 Nüfusu 48 kişi).

Photo 24: *A view from Işıklı Village, a settlement established in the north of the Hekimhan administrative area. The local people know it as 'İşlaman' (2025 Population: 48 people).*

Foto 25: Hekimhan idari alanının kuzeydoğusunda yamaçta kurulan bir yerleşmeye örnek İğdir köyünden bir görüntü. Yerel halk ve çevrede bu şekilde bilinmektedir (2025 Nüfusu 229 kişi).

Photo 25: *A view from İğdir Village, an example of a settlement established on a slope in the northeast of the Hekimhan administrative area. It is known as such among the local people and in the surroundings (2025 Population: 229 people).*

FOTO 26: Hekimhan ile merkezinin alanının kuzeydoğusunda yamaçta kurulan iki ayrı yerleşmeden oluşan Salıcık köyünden bir görüntü. Yerleşme aynı zamanda Hekimhan-Arguvan ilçelerini birbirine bağlayan ara yol üzerinde kurulmuştur (2025 NÜFUSU 145 KİŞİ).

Photo 26: *A view from Salıcık Village, which consists of two separate settlements established on a slope in the northeast of the Hekimhan district center. The settlement is also established on the connecting road between the Hekimhan and Arguvan districts (2025 Population: 145 people).*

Foto 27: Hekimhan idari alanının kuzeydoğusunda, Deveci-Maden yolu üzerinde kurulan ve eski adıyla Ayazlı olarak bilinen eski bir yerleşim alanına örnek Dumlu köyünden bir görüntü. Dumlu köyü, Büyükşehir Yasası'ndan önce idari olarak köy statüsünde yönetilmekteydi (2025 nüfusu 182 kişi).

Photo 27: *A view from the village of Dumlu, formerly known as Ayazlı, exemplifying an old settlement established along the Deveci Mine route in the northeast of the Hekimhan administrative district. Prior to the Metropolitan Municipality Law, Dumlu was administratively governed under village status (2025 population: 182 people).*

Foto 28: Hekimhan idari alanının kuzeyi Kuruçay ve yan kollarının oluşturduğu vadi ve vadi yamacında kurulan eski bir yerleşim alanına örnek Hasançelebi kasabasından bir görüntü. Hasançelebi kasabası Büyükşehir Yasasından önce idari olarak belediye ile yönetilmekteydi (2025 Nüfusu 556 kişi).

Photo 28: *A view from Hasançelebi town, an example of an old settlement area established on the valley and valley slopes formed by the Kuruçay and its branches in the north of the Hekimhan administrative area. Hasançelebi town was administratively managed as a Municipality before the Metropolitan Law (2025 Population: 556 people).*

Foto 29. Hekimhan idari alanının kuzeybatısında kurulan Bahçedamı köyünden bir görüntü (2025 Nüfusu 60 kişi).

Photo 29: *A view from Bahçedamı Village, established in the northwest of the Hekimhan administrative area (2025 Population: 60 people).*

Foto 30: Hekimhan idari alanının kuzeybatısında kurulan Davulgu köyünden bir görünüm (2025 Nüfusu 57 kişi).

Photo 30: *A view from Davulgu Village, established in the northwest of the Hekimhan administrative area (2025 Population: 57 people).*

Foto 31: Hekimhan idari alanının kuzeybatısında vadi yamacında kurulan Dereköy köyünden bir görüntü (2025 Nüfusu 49 kişi).

Photo 31: *A view from Dereköy Village, established on a valley slope in the northwest of the Hekimhan administrative area (2025 Population: 49 people).*

Foto 32: Hekimhan idari alanının kuzeybatısında kurulan Hacılar köyünden bir görüntü (2025 Nüfusu 84 Kişi).

Photo 32: *A view from Hacılar Village, established in the northwest of the Hekimhan administrative area (2025 Population: 84 people).*

Foto 33: Hekimhan idari alanının batısında yamaç yerleşmesine örnek Sarıkız köyünden bir görüntü (2025 Nüfusu 359 Kişi).

Photo 33: *A view from Sarıkız Village, an example of a slope settlement established in the west of the Hekimhan administrative area (2025 Population: 359 people).*

Foto 34: Foto 34: Hekimhan idari alanının batısında yamaç yerleşmesine örnek Sarıkız köyünden bir başka görüntü (2025 Nüfusu 359 Kişi).

Photo 34: *Another view from Sarıkız Village, an example of a slope settlement established in the west of the Hekimhan administrative area(2025 Population: 359 people).*

Foto 35: Hekimhan idari alanının batısında yamaçlarda kurulan dağınık yerleşmeye örnek Yayladamı köyünden bir görüntü. Yöre halkı Ziyelli olarak bilir. (2025 Nüfusu 272 kişi).

Photo 35: *A view from Yayladamı Village, an example of a dispersed settlement established on slopes in the west of the Hekimhan administrative area. It is known as 'Ziyelli' among the local people (2025 Population: 272 people).*

Foto 36: Hekimhan idari alanının batısında yamaç yerleşmesine güzel bir örnek, ayrıca dağınık yerleşme özelliği de gösteren Dursunlu köyünden bir görüntü (2025 Nüfusu 404 kişi).

Photo 36: *A view from Dursunlu Village, a fine example of a slope settlement in the west of the Hekimhan administrative area, which also exhibits the characteristics of a dispersed settlement (2025 Population: 404 people).*

Foto 37: Hekimhan ilçe merkezinin batısında Karadere Çayı'nın vadi yamaçlarında ve vadisinde kurulan Karadere köyünden bir görüntü (2025 Nüfusu 230 kişi).

Photo 37: *A view from Karadere Village, established on the valley slopes and in the valley of the Karadere stream to the west of the Hekimhan district center (2025 Population: 230 people).*

Foto 38: Hekimhan ilçe merkezinin güneyinde kurulan Dikenli köyünden bir görüntü (2025 Nüfusu 183 kişi).

Photo 38: *A view from Dikenli Village, established in the south of the Hekimhan district center (2025 Population: 183 people).*

Foto 39: Hekimhan ilçe merkezinin güneyinde kurulan Kurşunlu köyünden bir görüntü. Kurşunlu, Büyükşehir Yasasından önce idari olarak belediye ile yönetilmekteydi (2025 Nüfusu 1003 kişi).

Photo 39: *A view from Kurşunlu Village, established in the south of the Hekimhan district center. Kurşunlu was administratively managed as a Municipality before the Metropolitan Law. (2025 Population: 1,003 people)*

Foto 40: Hekimhan ilçe merkezinin güneyinde kurulan Güçlü köyünden bir görüntü. Yörede Gelengeç olarak bilinir (2025 Nüfusu 243 kişi).

Photo 40: *A view from Güçlü Village, established in the south of the Hekimhan district center. It is known as 'Gelengeç' in the region (2025 Population: 243 people).*

Foto 41: Hekimhan ilçe merkezinin güneyinde kurulan Yeşilköy köyünden bir görüntü. Yörede Havalun- Cecimli olarak bilinir (2025 Nüfusu 183 kişi).

Photo 41: *A view from Yeşilköy Village, established in the south of the Hekimhan district center. It is known as 'Havalun-Cecimli' in the region (2025 Population: 183 people).*

Foto 42: Hekimhan ilçe merkezinin güneyinde kurulan Delihasanyurdu köyünden bir görüntü. (2025 Nüfusu 131 kişi)

Photo 42: *A view from Delihasanyurdu Village, established in the south of the Hekimhan district center (2025 Population: 131 people).*

Foto 43 : Hekimhan ilçe merkezinin güneybatısında, plato üzerinde kurulan Söğüt köyünden bir görüntü. (2025 Nüfusu 178 kişi)

Photo 43: *A view from Söğüt Village, established on a plateau in the southwest of the Hekimhan district center (2025 Population: 178 people).*

Foto 44: Hekimhan ilçe merkezinin güneybatısında, plato üzerinde kurulan Söğüt köyünden bir başka görünüm. (2025 Nüfusu 178 kişi)

Photo 44: *Another view from Söğüt Village, established on a plateau in the southwest of the Hekimhan district center (2025 Population: 178 people).*

Foto 45: Hekimhan ilçe merkezinin batısında Kurşunlu platosu üzerinde kurulan Yukarı Selimli köyünden bir görüntü. (2025 Nüfusu 209 kişi)

Photo 45: *A view from Yukarı Selimli Village, established on the Kurşunlu Plateau to the west of the Hekimhan district center (2025 Population: 209 people).*

Foto 46: Hekimhan ilçe merkezinin güneybatısında Kurşunlu Platosu üzerinde kurulan Güzelyayla köyünden bir görüntü. Yöre halkı tarafından Kızılyatak olarak bilinir (2025 Nüfusu 145 kişi).

Photo 46: *A view from Güzelyayla Village, established on the Kurşunlu Plateau to the southwest of the Hekimhan district center. It is known as 'Kızılyatak' by the local people (2025 Population: 145 people).*

Foto 47: Hekimhan ilçe merkezinin güneydoğusunda Yağca Çayı vadi yamaçlarında kurulan Mollaibrahim köyünden bir görüntü. Yöre halkı tarafından Dostal olarak bilinir (2025 Nüfusu 167 kişi)

Photo 47: *A view from Mollaibrahim Village, established on the valley slopes of the Yağca stream to the southeast of the Hekimhan district center. It is known as 'Dostal' by the local people (2025 Population: 167 people).*

Foto 48: Hekimhan ilçe merkezinin doğusunda kurulan Kavacık yerleşmesinden bir görüntü. (Nüfusu 46 Kişi).

Photo 48: *A view from Kavacık settlement, established in the east of the Hekimhan district center (Population: 46 people).*

Foto 49: Hekimhan ilçe merkezinin güneydoğusunda Yağca Çayı vadisinde kurulan Yağca köyünden bir görüntü (2025 Nüfusu 115 kişi).

Photo 49:*A view from Yağca Village, established in the Yağca stream valley to the southeast of the Hekimhan district center (2025 Population: 115 people).*

Foto 50 : Hekimhan ilçe merkezinin doğusunda bulunan Haydaroğlu köyünden bir görüntü. Yöre halkı tarafından Palaz olarak bilinir (2025 Nüfusu 116 kişi).

Photo 50:*A view from Haydaroğlu Village, located in the east of the Hekimhan district center. It is known as 'Palaz' by the local people (2025 Population: 116 people).*

Foto 51: Hekimhan ilçe merkezinin doğusunda Başkavak köyünden bir görüntü. Yöre halkı tarafından Mihail olarak bilinir (2025 Nüfusu 77 kişi)**.**

Photo 51:*A view from Başkavak Village, located in the east of the Hekimhan district center. It is known as 'Mihail' by the local people (2025 Population: 77 people).*

Foto 52: Hekimhan ilçe merkezinin batısında plato üzerinde kurulan köyünden bir görüntü. Güzelyurt kasabası Büyükşehir Yasasından önce idari olarak Belediye ile yönetilmekteydi. Yörede Cüzüngüt olarak bilinir (2025 Nüfusu 1236 kişi).

Photo 52:A *view from Güzelyurt, established on a plateau to the west of the Hekimhan district center. Before the Metropolitan Law, the town of Güzelyurt was administratively managed as a municipality. It is known as 'Cüzüngüt' in the region (2025 Population: 1,236 people).*

Foto 53: Hekimhan ilçe merkezinin batısında plato üzerinde kurulan köyünden bir başka görünüm. Güzelyurt kasabası Büyükşehir Yasasından önce idari olarak Belediye ile yönetilmekteydi. Yörede Cüzüngüt olarak bilinir (2025 Nüfusu 1236 kişi).

Photo 53:*Another view from Güzelyurt, established on a plateau to the west of the Hekimhan district center. Before the Metropolitan Law, the town of Güzelyurt was administratively managed as a municipality. It is known as 'Cüzüngüt' in the region (2025 Population: 1,236 people).*

Foto 54: Yeşilpınar köyü Hekimhan idari alanının güneydoğusunda yer almaktadır. (2025 Nüfusu 260 Kişi) Yörede Dostal olarak bilinir.

Photo 54:*Yeşilpınar Village is located in the southeast of the Hekimhan administrative area. It is known as 'Dostal' in the region (2025 Population: 260 people).*

Foto 55: Aksütlü köyü Hekimhan ilçe merkezinin güneydoğusunda bulunur. Boztepe Göleti'nin kuzey yamaçlarında kurulmuştur. (2025 Nüfusu 95 kişi)

Photo 55:*Aksütlü Village is located in the southeast of the Hekimhan district center. It was established on the northern slopes of the Boztepe pond (2025 Population: 95 people).*

.**Foto 56**: Hekimhan'ın güneyinde yer alır. Girmana köyünün bir mahallesi Akpınar'dan bir görümüm (Girmana Nüfusu 816).

Photo 56: *It is located in the south of Hekimhan. A view from Akpınar, a neighborhood of Girmana Village (Girmana Population: 816)*

Foto 57: Hekimhan'ın güneyinde yer alır. Girmana köyünden bir görümüm. (Girmana Nüfusu 816) Girmana kasabası Büyükşehir Yasasından önce idari olarak Belediye ile yönetilmekteydi. Yörede İpekyol olarak bilinir (2025 Nüfusu 803 kişi).

Photo 57: *It is located in the south of Hekimhan. A view from Girmana Village (Girmana Population: 816) Before the Metropolitan Law, the town of Girmana was administratively managed as a municipality. It is known as 'İpekyol' in the region (2025 Population: 803 people).*

Foto 58: Kocaözü Köyü Hekimhan'ın güneyinde yer alır. Kocaözü köyünün batısından alınan bir görümüm. vadi boyu yerleşmesine güzel bir örnek Kocaözü kasabası Büyükşehir Yasasından önce idari olarak Belediye ile yönetilmekteydi. Yörede koyuuzun olarak bilinir (2025 Nüfusu 866 kişi).

Photo 58: *Kocaözü Village is located in the south of Hekimhan. A view taken from the west of Kocaözü Village; it is a good example of a valley-side settlement. Before the Metropolitan Law, the town of Kocaözü was administratively managed as a municipality. It is known as 'Koyuuzun' in the region (2025 Population: 866 people).*

Foto 59: Kocaözü köyü Hekimhan'ın güneyinde yer alır. Kocaözü köyünün batısından yerleşmenin üst sınırından alınan bir başka görünüm. Kocaözü kasabası Büyükşehir Yasasından önce idari olarak Belediye ile yönetilmekteydi. Yörede Koyuuzun olarak bilinir (2025 Nüfusu 866 kişi).

Foto 59: *Kocaözü Village is located in the south of Hekimhan. Another view taken from the upper boundary of the settlement in the west of Kocaözü Village. Before the Metropolitan Law, the town of Kocaözü was administratively managed as a municipality. It is known as 'Koyuuzun' in the region (2025 Population: 866 people).*

APPENDIX MAPS

Map 1: Location Map of Hekimhan District and its Surroundings.

Map 2: Physical Map of Hekimhan and its Surroundings (Including Neighborhood Boundaries).

When the physical map of Hekimhan and its surroundings is examined, it is observed that it consists of landforms created by the erosion of a high plateau by the Kuru Çay and its tributaries. In Hekimhan, where the elevation varies between 700 and 2,730 m, the highest peaks are Yamadağ and its surrounding hills located in the northeast. The Kuru Çay Stream flows in a northwest-southeast direction. Starting at 1,500 m in the northeast, it continues to flow by eroding down to 700 m in the southeast.

Map 3: Physical Map of Hekimhan and its Surroundings.

When the physical map of Hekimhan and its surroundings is examined, it is observed that it consists of landforms created by the erosion of a high plateau by the Kuruçay and its tributaries. In Hekimhan, where the elevation varies between 700 and 2,730 meters, the highest peaks are Yamadağ and its surrounding hills located in the northeast. The Kuruçay stream flows in a northwest-southeast direction. Starting from 1,500 meters in the northeast, it continues to flow by eroding down to 700 meters in the southeast.

Map 4: Topographic Map of Hekimhan and its Surroundings (100 m).

Topographic maps are maps that show the physical structure of a specific region of the Earth's surface using contour lines, and all features present on the surface (streams, forests, lakes, roads, etc.) are shown on these maps. In topographic maps, it is shown that when contour lines approach each other, the slope increases, and when they move away from each other, the slope decreases or represents flat areas. In the topographic map created with 100 m intervals in Hekimhan and its surroundings, it is observed that the contour lines are closer to each other in the northeast, while they are further apart in the southwest.

Map 5: Topographic Map of Hekimhan and its Surroundings (20 m).

Topographic maps are maps that show the structural form of a specific region of the Earth's surface with contour lines, and all features found on the surface (streams, forests, lakes, roads, etc.) are shown on these maps. While topographic maps show that slopes increase when contour lines approach each other (it is not beautiful at all) if they move away from each other, it indicates that the slope decreases or represents flat areas. In the topographic map created with 20 m intervals in Hekimhan and its surroundings, it is observed that the contour lines are closer to each other in the northeast, while they are further apart from each other in the southwest.

Map 6: Relief Map of Hekimhan and its Surroundings.

Relief maps are maps that reflect the structure of the terrain in three dimensions, just as it appears in nature. On these maps, the land appears three-dimensional, as if viewed from a certain altitude.

When the relief map of Hekimhan and its surroundings is examined, it is observed that the elevation is quite high in the northeast, while it is lower in the southwest. It is seen that while the Kuru çay (Kuru Stream) flows through very deep valleys in the northwest, it flows through a wider valley floor after passing the Hekimhan district center.

Map 7: Slope Map of Hekimhan District.

When the slope map of Hekimhan and its surroundings is examined, it is observed that due to the region being situated on a high plateau, areas with slope values between 0-20 degrees cover approximately 1,000 km². On the other hand, areas between 20-45 degrees cover approximately 300 km². The surroundings of Yamadağ, Kozdere, Kocaözü, and Karslılar are places where the slope is higher.

Map 8: Aspect Map of Hekimhan District.

Aspect (Direction) analysis is applied to represent direction values, calculated relative to the north on a digital elevation model, using thematic intervals. In the aspect maps generated after the analysis, four main directions, the intermediate directions between them, and flat areas are observed according to angular interval values. Aspect is the direction of the slope; it is the determination of orientation based on the highest slope value by evaluating a pixel relative to its neighbors.

When Hekimhan and its surroundings are examined in terms of aspect, it is observed that south, southwest, and west-facing areas are predominant in the regions located to the east of the Kuru Çay valley floor. Conversely, north, northeast, and east-facing inclinations are more common to the west of the Kuru Çay valley floor.

Map 9: Hydrography Map of Hekimhan District.

Hydrography map of Hekimhan and its surroundings shows the water resources, rivers, and springs of the region in detail. One of the most important rivers seen on the map, Kuru Çay, starts from the west of the Hekimhan district center and flows in a northwest-southeast direction. While the bird's-eye distance of Kuru Çay is approximately 30 km, its actual length is more than 50 km. The fact that this river flows in a meandering structure within valleys increases its length.

Many small rivers and temporary streams are also indicated on the map. These streams connect to the river from the hills around Kuru Çay and dry up completely during the summer months. Springs are among the most important water resources in the region. Springs can be formed by water emerging from places where geologically impermeable layers intersect with the topography, as well as in areas with fault fractures. It has been determined that there are more than 300 springs in the region, but many of these springs dry up during the summer months. Blue dots on the map represent the spring locations.

Map 10: Map of Mountains and High Plateaus of Hekimhan.

When the mountains and high plateaus of Hekimhan and its surroundings are examined, areas above 1,700 meters are geomorphologically classified as high plateaus. Located to the northwest of Hekimhan district, Yamadağ, which developed over the Yamadağ volcanics, constitutes the highest points of the region. Additionally, Yılanlı Mountain and Deli Hasanyurdu, located to the southwest of the district, form the region's highest plateau and mountains with elevations exceeding 1,700 meters. Small areas at an altitude of 1,700 meters are also observed in various places; the areas to the southwest of Yayladam and Deveci can be given as examples of these.

Map 11: Map of Middle and Low Plateaus of Hekimhan.

When the middle and low plateaus of Hekimhan and its surroundings are examined, areas between 1250-1700 meters geomorphologically have been evaluated as middle-low plateaus. The plateaus extending from the northwest to the southeast of the Hekimhan district have been eroded by Kuruçay.

Map 12: Map of Valley Areas of Hekimhan District.

When the valley areas map of the Hekimhan district is examined, it is observed that the majority of the valleys are located in the southeast of the district. The valleys were generally formed as a result of erosion by Kuru Çay. Kuru Çay flows in a northwest-southeast direction. In the southeast, the valleys reach a width of approximately 20 km. Another small valley is seen in the southwest of the district, around Yeşilköy, Kurşunlu, and Geçimli. Valley floors have an elevation between 1,250 m and 700 m.

Map 13: Landforms Map of Hekimhan District.

An analysis of the geomorphological characteristics of Hekimhan and its surroundings reveals that the region generally exhibits the features of a plateau. The Kuru Çay stream has incised this plateau, leading to the formation of deep valleys. Based on regional assessments, areas exceeding an elevation of 1,800 meters are classified as high plateaus and mountainous terrains. Elevations ranging between 1,600 and 1,800 meters are defined as middle plateaus, while those between 1,200 and 1,600 meters are categorized as low plateaus. The Kuru Çay stream and the associated valley floors generally lie at elevations between 700 and 1,200 meters.

Map 14: Geology Map of Hekimhan District.

A geological map is a type of map that shows the spatial distribution of rocks and rock structures on the topographic surface. When Hekimhan and its surroundings, located on the East Taurus Orogeny, are examined, it is observed that the oldest rocks are Jurassic-aged limestones and basalts seen to the northwest of Güvenç village. Cretaceous-aged ophiolite, basalt, serpentine, and sandstones are generally seen in and around the Hekimhan district center. Paleocene-aged granites, sandstones, and skarn are found in Davulgu and its vicinity. Eocene-aged basalt and sandstones surface between Başkavak and Salıcık.

In the region, Miocene-aged limestones, sandstones, conglomerates, basalts, and andesites are most commonly observed. These units are particularly located in the northwest of the region. Pliocene-aged andesites and sandstones are seen to the west of Sarıkız. The youngest units, Quaternary-aged alluviums, are found in valley floors, while travertines are observed 5 km northwest of Hasançelebi.

Map 15: Rock Ages Map of Hekimhan District.

Rocks form by representing a specific period and the conditions of that period. When looking at the rock age map of the Hekimhan district, it is understood that the oldest units are found on Leylek Mountain, dating back 541 million years.

Rocks formed between 66 and 145 million years ago are seen in and around the Hekimhan district center. The erosive power of the Kuru Çay (Kuru Stream) has been influential in the exposure of these rocks. Younger rocks, dating between 2.6 and 14 million years, are generally observed in the northeast and southwest of the district.

Map 16: Great Soil Groups Map of Hekimhan District.

When the soil groups in and around Hekimhan are examined, brown forest soil is the most widely distributed soil group, covering approximately 700 square kilometers. Colluvial soil is intensely observed in the south of Hekimhan, covering 450 square kilometers. Reddish-brownish soils cover an area of approximately 180 square kilometers in the east of Hekimhan. In addition to these, small amounts of alluvial, non-calcareous brown, brown, and organic soils are seen in the region.

Map 17: Topographic Position Index (TPI) Map of Hekimhan and its Surroundings.

The Topographic Position Index (TPI) is a tool utilized in various ways within the fields of geography and environmental sciences. By comparing the elevation of a specific location with the average elevation of its surrounding area, TPI determines whether that point topographically represents a valley, a plain, or a ridge. This feature is employed in domains such as land classification and ecosystem analysis. In ecological studies, TPI serves as a critical data source for understanding the distribution of vegetation and habitats. Furthermore, it is used in agriculture and forest management to analyze terrain structures that influence water flow and soil moisture. TPI is also leveraged in urban and regional planning, particularly for identifying flood-prone areas, as well as in hydrological studies for defining riverbeds and wetlands. In the fields of geology and mining, TPI becomes a useful tool for evaluating terrain structure and erosion risk, as well as for natural disaster risk assessments. In summary, TPI is utilized by professionals across various disciplines for different purposes, enabling a better understanding of terrain structure and environmental characteristics.

Map 18: Topographic Ruggedness Index (TRI) Map of Hekimhan and its Surroundings.

The Topographic Ruggedness Index (TRI) plays a significant role in understanding the physical structure of terrain and its environmental impacts across various disciplines. This index ranges between 0 and 1, where values approaching 1 indicate maximum surface roughness. In geological research, this index is primarily utilized to comprehend the geological formation and tectonic activity of a landscape. Furthermore, it is essential in ecology and biodiversity studies for evaluating different habitat types and the overall health of ecosystems. Within the fields of agriculture and forest management, topographic ruggedness—which influences factors such as water runoff and soil erosion—provides critical data for the planning and management of agricultural lands and forests. Urban planning and infrastructure projects also benefit from this index by considering the topographic structure of the land during the construction of roads and buildings. Moreover, the Topographic Ruggedness Index is of vital importance in natural disaster risk assessments for identifying hazards in rugged and uneven terrains. In hydrology and water resource management, the index is employed to understand water flow paths and drainage patterns within rivers and watersheds. Consequently, the Topographic Ruggedness Index contributes to a better understanding of the terrain and the environment through its application in geographic and environmental analyses.

Map 19: Fault Map of Hekimhan District and its Surroundings.

Tensions and compressions resulting from the movements of the plates that form the Earth’s crust accumulate energy in certain parts of the crust for centuries. This energy is released from time to time. These active sections in the Earth’s crust are called faults.

Due to geological conditions, many large and small normal, reverse, and strike-slip faults are observed in and around Hekimhan. The Malatya-Ovacık fault, which passes through Yazıhan (bordering the southwest of Hekimhan) is the largest and most influential fault in the region.

Map 20: Earthquake Distribution Map of Hekimhan District and its Surroundings (USGS).

According to earthquake data obtained from the United States Geological Survey (USGS), earthquakes in and around Hekimhan are concentrated in areas close to the Malatya-Ovacık fault. When looking at the magnitudes of the earthquakes, one earthquake with a magnitude of 5 or above is observed to the northwest of Haydaroğlu. Other earthquakes range between magnitudes 3 and 5, and they are generally concentrated in the southeastern part of the Kuru Çay basin.

Map 21: Earthquake Distribution Map of Hekimhan District and its Surroundings (AFAD).

According to data from the Disaster and Emergency Management Presidency (AFAD), earthquakes in and around Hekimhan are concentrated in areas close to the Malatya-Ovacık fault line. Regarding the magnitudes of the earthquakes, one earthquake of magnitude 5 or above occurred in Yayladamı. Earthquakes between 4.0 and 4.9 are predominantly located in areas near the Malatya-Ovacık fault line. Additionally, earthquakes with a magnitude over 4 have been recorded in the Ballıkaya and Sarıkız locations.

Map 22: Landslide Map of Hekimhan District and its Surroundings.

A landslide is the downward and outward movement of a slope composed of rock or artificial fill material under the influence of gravity, slope, water, and other similar forces. The displacement of masses consisting of rocks, debris, or soil by breaking away from their original locations under the influence of gravity is called a landslide. While some landslides occur at great speed, others happen more slowly. Due to the high slope in and around Hekimhan, there are landslide areas that have occurred in different places and at different periods. On the map, the areas shown in yellow represent old landslides, while the areas represented in red show current landslide zones.

Map 23: Erosion Map of Hekimhan District.

Erosion refers to the wearing away and transportation of a certain amount of soil by external factors or precipitation. Irregular rainfall, scattered settlement patterns, or plowing soil parallel to the slope cause erosion. Hekimhan and its surroundings have been examined across four different levels of erosion. The fourth level appears as the most severe erosion stage. Very severe erosion is observed in an area of approximately 280 km^2. Third-level severe soil erosion is seen in an area of 720 km^2. The second level, representing moderate erosion, was found to cover approximately 480 km^2. The amount of area with a mild level of erosion is represented as the first level and was found to be approximately 30 km^2. It is understood from the map that Hekimhan and its surroundings are facing intense erosion.

Map 24: Mineral Distribution Map of Hekimhan District.

When the mineral deposits in Hekimhan and its surroundings are examined (according to MTA reports), dense iron deposits are prominent to the west of Hasançelebi. Additionally, iron deposits are seen in Bahçedamı, to the west and east of Boğazgören, and to the west of Karaköçek. Although asbestos deposits have been identified to the south of Çanakpınar, no mining operations have been opened there. In addition to iron and asbestos, gypsum deposits are also found in the region. There are gypsum processing facilities in Salıcık center and to the west of Yeşilpınar. Chromium deposits and operations in the region are only found 8 km south of Yeşilpınar.

Map 25: Mean Temperature Map of Hekimhan District and its Surroundings.

When the average temperature distribution map of Hekimhan and its surroundings is examined, it is observed that temperatures generally increase in relation to altitude. Aspect and slope constitute other topographic conditions. While average temperatures exceed 13°C in the lower reaches of the Kuru Çay, which traverses the district in a northwest-southeast direction, they reach 12.7°C in the center of Hekimhan and drop to below 10°C in the settlements of Dereyurt and Taşoluk located in the upper reaches of the valley.

In the settlements of Kocaözü and Yayladamı, located in the plateau area to the southwest of the valley, temperatures hover around 10-11°C, and around 9-10°C in Kurşunlu and Yukarı Selimli. The lowest averages are reached in the plateaus and mountains to the northeast; in the settlement areas of Dikili and Karslılar, temperatures are between 6-7°C.

Map 26: Maximum Mean Temperature Map of Hekimhan District and its Surroundings.

When the maximum average temperature distribution map of Hekimhan and its surroundings is examined, it is observed that the temperature averages, starting at 16 °C in the south of the Kuruçay valley, gradually decrease along the two slopes of the valley and the catchment basins to the north, dropping to levels of 9.1 °C in high mountains and plateaus. The distribution of averages is as follows: 15 °C in Aksütlü and Yeşilpınar; 14 °C in Hekimhan, Yağca, and Dumlu; 13 °C in İpekyolu, Güzelyurt, Beykent, Davulgu, Deveci, and Haydaroğlu; 12 °C in Kurşunlu, Bahçedamı, Başkınık, and Ballıkaya; 11 °C in Dereyurt, Taşoluk, and Saraylı; and around 10 °C in Karslılar and Dikili. Geographical factors, primarily landforms, followed by continentality and latitude, play a role in this extent of change in temperature averages.

Map 27: Mean Minimum Temperature Map of Hekimhan District and its Surroundings.

An analysis of the average minimum temperature distribution map for Hekimhan and its surroundings reveals that temperature values fluctuate between 5.2 °C and 12 °C. Temperatures generally exhibit an increasing trend from the northeast toward the southwest. While temperature values range between 11–12 °C in Aksütlü and Yeşilpınar, they are recorded as 10–11 °C in Hekimhan, Haydaroğlu, and Dumlu; 9–10 °C in Cecimli, Kurşunlu, Kocaözü, Yayladamı, Dereköy, Deveci, and Başkavak; 8–9 °C in Kozdere, Taşoluk, and Dereyurt; and 7–8 °C in Saraylı, Dikili, and Karslılar. Furthermore, temperatures drop below 6 °C at the peaks of Yama Mountain. Topographic features constitute the most significant factor influencing this spatial variation in temperature.

Map 28: Maximum Temperature Values Map of Hekimhan District and its Surroundings.

When the distribution map of the highest temperatures (absolute maximum) in Hekimhan and its surroundings is examined, the temperature value, which reaches

42 °C in the Hekimhan district center, drops below 32 °C on high mountains and plateaus, while it rises above 42 °C in low valley floors. The highest temperatures are; 42 °C in Hekimhan, Dumlu, Yağca, and Mollaibrahim; 41 °C in İpekyolu, Güzelpınar, Beykent, Boğazgören, Salıcak, and Kavacık; 40 °C in Kocaözü, Dursunlu, Hacılar, Hasançelebi, Güvenç, and Ballıkaya; 39 °C in Kozdere, Basak, Karapınar, Çelikli, Güzelyayla, and Söğüt; 38 °C in Karapınar and Taşoluk; 37 °C in Çimenlik and Saraylı; 36 °C in Karslılar and Sazlıca; 34 °C in Dikili; and falls below 32 °C at the peaks of Yama Mountain. At the Hekimhan meteorology station, the highest temperature was recorded as 42 °C on July 27, 2001.

Map 29: Minimum Temperature Values Map of Hekimhan District and its Surroundings.

When the distribution map of the lowest temperatures (absolute minimum) in and around Hekimhan is examined; temperatures gradually decrease along the two slopes of the Kuruçay valley, rising masses, and from south to north.

The lowest temperature values are reached in Yama Mountain and its surrounding plateau area (-25 °C). In the vicinity of the Aksütlü and Yeşilpınar settlements located within the district borders to the southeast, temperatures hover around -19 °C. At the Hekimhan meteorology station, the lowest temperature was recorded as -21 °C on December 27, 2002. In general, the lowest temperature values are observed in the northeast of the district due to altitude and latitude.

Map 30: Spring Season Mean Temperature Map of Hekimhan District and its Surroundings.

When the spring season average temperature map of Hekimhan and its surroundings is examined, it is observed that temperature values range between 6.7 °C and 13.1 °C. It is noted that temperatures do not rise sufficiently due to it being a transition season following winter. Temperatures are between 11-13 °C around Aksütlü, Yeşilpınar, and Yağca; 10-11 °C around İpekyolu, Güzelyurt, Beykent, Hasançelebi, Işıklı, and Haydaroğlu; 9-10 °C around Kurşunlu, Yayladam, Akmağara, Karaköçek, and Ballıkaya; and drop to the 7-9 °C range around Saraylı, Karslılar, and Dikili. In this varied temperature distribution, topographic factors such as altitude, aspect, and slope play a role, in addition to continentality.

Map 31: Summer Season Mean Temperature Map of Hekimhan District and its Surroundings.

When the summer season average temperature map of Hekimhan and its surroundings is examined, it is observed that temperature values range between 16.8 °C and 26.2 °C. Temperatures exceed 25 °C in the southeastern course of the Kuru Çay valley, while they drop below 17 °C at the peaks of Yama Mountain. Temperature values are 24-26 °C around Hekimhan, Mollaibrahim, and Yeşilpınar; 22-24 °C around Dursunlu, Kocaözü, Sarıkız, Dereköy, Çanakpınar, and Basak; 20-22 °C around Deli Hasanyurdu, Söğüt, Taşoluk, Çimenlik, and Saraylı; and descend to 18-20 °C and below in Karslılar, Dikili, and higher elevations. Although summer is the period when the highest temperature values are seen, it also stands out as a period when drought is effective due to low precipitation.

Map 32: Autumn Season Mean Temperature Map of Hekimhan District and its Surroundings.

When the autumn season average temperature map of Hekimhan and its surroundings is examined, it is observed that temperature values range between 8.5 °C and 15.2 °C. Temperatures decrease in parallel with altitude levels. Since it is the period following the summer season, the averages are higher than in the spring season. Temperatures are 13-15 °C in Hekimhan, Dumlu, and Aksütlü; 12-13 °C around Davulgu, Çulhalı, Salıcık, and Kavacık; 11-12 °C in Yeşilköy, Kocaözü, Bahçedamı, Köylüköyü, and İğdir; 10-11 °C around Çelikli, Çimenlik, and Saraylı; and drop to 9-10 °C and below around Dikili and Karslılar. Drought continues in this period, during which precipitation values are also low.

Map 33: Winter Season Mean Temperature Map of Hekimhan District and its Surroundings.

When the map of the distribution of winter season temperature averages in and around Hekimhan is examined, temperatures observed at around 1 0C in the center of Hekimhan range at levels of (-2.5 0C) - (-3 0C) in mountainous areas depending on elevation, while exceeding 2 0C in lower parts.

Winter temperature averages, which are 2 0C in Aksütlü, Yeşilpınar, Mollaibrahim, and Yağca; remain above 1 0C in İpekyolu, Hekimhan, and Kavacık. Along with the increase in altitude, these temperatures are: between 0-1 0C in Kocaözü, Sarıkız, Kurşunlu, Yayladam, Hasançelebi, Karaköçek, and Ballıkaya; between (-20C)-(-10C) in Karslılar, Dikili, and Sazlıca; and observed below -2 0C at the summits of Yama Mountain. In continental climate regions with this and similar locations, the months of December, January, and February represent the winter season.

Map 34: Mean Temperature Map of the Vegetation Period in Hekimhan District and its Surroundings.

An analysis of the distribution map of average temperatures during the vegetation period in and around Hekimhan reveals that average temperatures throughout the growing season remain high at 16 °C in the southern part of the Kuru Çay basin within the district boundaries of Hekimhan, whereas they remain low at 9.1 °C in the mountainous areas of the northern and western sections. Considering that the temperatures initiating and concluding the vegetation period are defined as 10 °C and above for forest trees, it is observed that most areas in and around Hekimhan possess suitable conditions for the development of forest communities.

During this period, temperatures range between 17-18 °C around Hekimhan; 16-17 °C in Dikenli, Dursunlu, Bahçedamı, Hasançelebi, Çanakpınar, and Ballıkaya; 15-16 °C in Kozdere, Çimenlik, Karapınar, and Güzelyayla; and 14-15 °C in Dikili and Karslılar.

Map 35: Maximum Mean Temperature Map of the Vegetation Period in Hekimhan District and its Surroundings.

An analysis of the distribution map of the highest average temperatures during the vegetation period in and around Hekimhan reveals that temperatures range between 15-20 °C across a significant portion of the area during the April-November period. The average temperatures, which maintain high values along the Kuru Çay valley, relatively decrease in the mountain and plateau regions where altitude increases. Starting from the south, temperatures exceed 21 °C around Aksütlü and Yeşilpınar; they are recorded as 20 °C in Hekimhan, Yağca, Mollaibrahim, and Dumlu; 19 °C in İpekyolu, Güzelyurt, Beykent, Çulhalı, Haydaroğlu, and Kavacık; 18 °C in Yeşilköy, Kurşunlu, Kocaözü, Dereköy, Başkınık, Uğurlu, and İğdir; 17 °C in Deli Hasanyurdu, Söğüt, Taşoluk, and Sazlıca; and 16 °C in Karslılar and Dikili. In the summits of Yama Mountain, where settlements end, temperatures drop below 14 °C.

Map 36: Number of Frosty Days Map of Hekimhan District and its Surroundings.

Upon examination of the map illustrating the distribution of frosty days in and around Hekimhan, it is observed that more than 74% of the annual number of frosty days in the center occurs during the winter period. As is well known, temperatures below 0 °C occurring within the growing season pose a threat to plants and can cause permanent damage. In this regard, spring and autumn frosts are of greater significance; the frost rate can reach 3.4% in spring and up to 22.2% in autumn. The frequency of frosty days, which exhibits these rates in the center, increases in mountainous and plateau areas.

Map 37: Mean Precipitation Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of average precipitation in and around Hekimhan reveals that precipitation levels increase toward the catchment basins of Kuru Çay, reaching over 700 mm in the summit regions of Yama Mountain. The sudden increase in altitude and changes in aspect conditions play a significant role in the emergence of this precipitation amount. The average total precipitation, which ranges between 350-400 mm around Hekimhan, Güzelyurt, and Kocaözü, is recorded between 600-650 mm in the vicinity of Kurşunlu, Yukarı Selimli, Başkınık, and Uğurlu, and fluctuates around 700-750 mm at the summits of Yama Mountain. Conversely, valley floors stand out as areas receiving approximately 300 mm of precipitation due to descending air movements and their location in the rain shadow of the mountains.

Map 38: Maximum Precipitation Amount Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of maximum precipitation in and around Hekimhan reveals that precipitation values range between 40 mm and 80 mm. The fact that the highest amount of precipitation occurs during this period (April) is a consequence of the continental climate. Precipitation levels increase in the surrounding mountainous massifs depending on altitude. On Yama Mountain and its surrounding plateaus, the maximum precipitation value exceeds 80 mm. The maximum precipitation value, which is approximately 60 mm in Hekimhan, rises to 70 mm around Basak, Başkınık, and Taşoluk, and reaches 80 mm in the vicinity of Saraylı, Çimenlik, and Karslılar. Conversely, the Kuru Çay valley floor in the south is identified as an area where precipitation drops to approximately 40 mm. These values are primarily observed around the settlements of Aksütlü and Yeşilpınar.

Map 39: Spring Season Mean Precipitation Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of average precipitation during the spring season in and around Hekimhan reveals that precipitation values, which drop to approximately 100 mm in the southern sections, increase rapidly in mountainous areas and high plateaus, exceeding 250 mm. A high proportion of the annual precipitation, approximately 40.2%, falls during this season. This situation is a typical indicator of the continental climate prevailing in the region. Average precipitation levels are recorded as 100 mm in Yeşilpınar, Aksütlü, and Mollaibrahim; 150 mm in Dumlu, Hekimhan, Haydaroğlu, and Yağca; 170 mm in Beykent, Hacılar, Çulhalı, Karaköçek, Güvenç, and Dursunlu; 200 mm in Karapınar, Kozdere, Uğurlu, Güzelyayla, and Güçlü; 220 mm in Taşoluk, Dereyurt, and Çimenlik; 240 mm in Dikili and Sazlıca; and fluctuate around 250 mm at higher elevations.

Map 40: Summer Season Mean Precipitation Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of average precipitation during the summer season in and around Hekimhan reveals that the lowest amount of precipitation, with a rate of 7.6%, occurs during this season. This situation, which is one of the fundamental indicators of a continental climate, brings about a dry summer season. Average precipitation, which drops to approximately 20 mm in lower elevations, increases up to 80 mm in high mountainous areas, leading to a mitigation of aridity. Average precipitation levels are recorded as 25 mm in Hekimhan, Mollaibrahim, and Dumlu; 30 mm in İpekyolu, Beykent, and Salıcak; 40 mm in Kocaözü, Yayladamı, Hasançelebi, and Ballıkaya; 50 mm in Akmağara, Basak, and Kurşunlu; 60 mm in Karapınar, Aşağı Sazlıca, and Kozdere; 70 mm in Çimenlik and Saraylı; and reach approximately 80 mm at higher elevations.

Map 41: Autumn Season Mean Precipitation Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of average precipitation during the autumn season in and around Hekimhan reveals that approximately 19.9% of the annual precipitation falls during this season. Precipitation values, which are around 50 mm in the southern sections near the Hekimhan boundaries of the Kuru Çay basin, increase gradually toward the north, reaching up to 180 mm. Average precipitation is recorded as approximately 50 mm in Aksütlü and Yeşilpınar; 70 mm in Hekimhan, Dumlu, and Kavacık; 100 mm in Bahçedamı, Güvenç, Işıklı, İğdir, Başkavak, Güzelyurt, and Sarıkız; 120 mm in Başkınık, Uğurlu, Ballıkaya, and Kurşunlu; 140 mm in Kozdere, Taşoluk, and Karapınar; 160 mm in Çimenlik, Dereyurt, and Saraylı; and reaches 170 mm in Dikili and Karslılar. Since this period follows the summer season, during which sufficient water accumulation in the soil does not occur, aridity continues during the initial months of the season.

Map 42: Winter Season Mean Precipitation Map of Hekimhan District and its Surroundings

An analysis of the distribution map of average precipitation during the winter season in and around Hekimhan reveals that approximately 32.3% of the annual precipitation falls during this period. During this season, where precipitation is primarily driven by frontal systems affecting the region, the lowest amount of precipitation is received in valley floors, while levels exceed 220 mm in surrounding areas where altitude increases. Average precipitation, which fluctuates around 100 mm in Hekimhan, Mollaibrahim, Yağca, and Dumlu, is recorded as 130 mm in Kocaözü, Beykent, Hasançelebi, and Başkavak; 160 mm in Köylüköyü, Akmağara, Ballıkaya, and Dikenli; 180 mm in Kurşunlu, Kozdere, and Taşoluk; and 200 mm in Dereyurt, Çimenlik, and Sazlıca. In Dikili and Karslılar, precipitation levels rise up to 220 mm.

Map 43: Forest Stand Map of Hekimhan District.

An analysis of the forest cover (mescere) map of Hekimhan and its surroundings reveals that forest areas occupy limited space, except for high and rugged terrains. The forest cover has disappeared in many places due to factors such as severe winters, limited agricultural land, and erosion. The most common species in these areas consist of oak, cedar, juniper, Anatolian black pine, Scots pine, and Turkish red pine. Oak communities are found between Kavacık-Ballıkaya, İpekyolu-Yeşilpınar, Deveci-Karaköçek, and Dereköy-Bahçedamı. Cedar communities are distributed north of the Dumlu settlement, while Anatolian black pine is spread between Kocaözü, Güzelyurt, and Dumlu. Scots pine occurs between Boğazören and Deveci, juniper near Kocaözü, and Turkish red pine communities cover local areas in Aksütlü. The presence of tree species suitable for a continental climate, favorable precipitation conditions resulting from altitude, and weak human impact positively influence the distribution of forest formations in these areas.

Map 44: Forest Map of Hekimhan District.

An analysis of the forest distribution map of Hekimhan and its surroundings reveals that extensive afforestation activities have been conducted in forest areas previously degraded due to various reasons. Forest areas constituting natural plant communities are surrounded by these afforestation sites and are situated at higher elevations. Forest areas are predominantly distributed between the northeast of Kocaözü and Bahçedamı-Davulgu-Dereköy, as well as between Deveci-Karaköçek-Çanakpınar, Ballıkaya-Başkavak-Kavacık, and İpekyolu-Yeşilpınar. Beyond these locations, vast areas are covered with a more fragmented and scattered forest cover.

Map 45: Sentinel-2 Satellite Imagery of Hekimhan District.

Sentinel-2 satellites are a constellation of satellites used for Earth surface observation as part of the Copernicus program conducted by the European Space Agency (ESA). These satellites provide optical imagery with a spatial resolution ranging from 10m to 60m. Designed to monitor changes on the land surface, Sentinel-2 possesses a wide swath width (290 km) and a high revisit frequency. It has the capability to revisit locations every 10 days with a single satellite at the equator, every 5 days with two satellites under cloud-free conditions, and within 2-3 days in mid-latitudes. The imagery provided by these satellites includes RGB and infrared data, finding a wide range of applications in various fields such as environmental protection, sustainable development, emergency response, and scientific research.

Map 46: Sentinel-2 Satellite Imagery (False Color) of Hekimhan District.

In Sentinel-2 satellite imagery, ‘False Color’ is utilized to observe vegetation, water resources, and land changes more prominently. By employing various wavelengths within the visible and infrared spectrums, this technique reveals details that are typically indiscernible to the human eye. False color applications are widely used in fields such as plant health and agriculture, forest management and ecology, water resources, urban areas and land use, environmental monitoring, and natural disaster management.

Map 47: NDVI Map of Hekimhan District.

The Normalized Difference Vegetation Index (NDVI) is a method employed to determine vegetation density. An NDVI value approaching -1 indicates a decrease in vegetation, while a value approaching 1 signifies an increase in vegetation cover. Upon examination of the NDVI index in and around Hekimhan, values are

observed to range between zero and one. Güzelyurt, Yayladamı, Beykent, Dereköy, Karaköçek, Deveci, Başkavak, Kocaözü, and İpekyolu yield high NDVI values. Conversely, Aksütlü, Dumlu, Söğüt, Güzelyayla, Yağca, and Haydaroğlu are locations where low NDVI values are recorded.

Map 48: NDMI Map of Hekimhan District.

The Normalized Difference Moisture Index (NDMI) enables the identification of green spaces or agricultural lands experiencing water stress issues. NDMI values range from -1 to 1; a value approaching 1 indicates adequate water availability and an absence of water stress. While NDMI values are observed to be quite high in the valley floors of the region, low NDMI values are recorded in Dereyurt, Karapınar, the north-northwest of Kocaözü, the west of Deli Hasanyurdu, the south of Dumlu, the west of Haydaroğlu, the south of Deveci, the southwest of Saray, and the south of Çimen District. Conversely, locations such as Kozdere, Karaköçek, the south of Güzelyurt, Sarıkız, İpekyolu, and the south of Bahçedamı exhibit high NDMI values.

Map 49: NDSI Map of Hekimhan District.

The Normalized Difference Snow Index (NDSI) indicates the probability of snow presence. NDSI values range from -1 to 1; as the value approaches 1, the probability of snow cover increases. Locations such as Dereyurt, Karapınar, Taşoluk, Karslılar, Dikili, Çimenlik, Başkınık, Basak, Dereköy, Davulgu, Bahçedamı, Karaköçek, and Kozdere yield higher NDSI values compared to other regions. Conversely, Dumlu, Dikenli, Çelikli, Güçlü, Kurşunlu, Yeşilköy, Deli Hasanyurdu, Yukarı Selimli, Deveci, Haydaroğlu, Yağca, Aksütlü, and Yeşilpınar are areas where lower NDSI values are recorded.

Map 50: NDWI Map of Hekimhan District.

The Normalized Difference Water Index (NDWI) analysis is employed to delineate water boundaries. An NDWI value approaching -1 indicates a decrease in water difference, while a value approaching 1 signifies an increase. Upon examination of the NDWI index in and around Hekimhan, it is observed that water content is particularly high in the Kuruçay valley floors. Conversely, low water difference values are recorded in and around Hekimhan, which exhibits high plateau characteristics. Furthermore, the water scarcity issues experienced in many settlements are clearly identified through this NDWI analysis.

Map 51: SWIR Map of Hekimhan District.

SWIR, or Short-Wave Infrared, is utilized in numerous diverse fields. It is primarily employed in land and vegetation analysis to evaluate plant health and water stress. This is particularly significant for drought monitoring and agricultural applications. Furthermore, SWIR is used in geological and mining research to detect the unique spectral signatures of different minerals and rocks. Effective also in fire monitoring and management, SWIR can identify thermal hotspots and burned areas. It is additionally used for observing water bodies; by increasing the contrast between water and other surfaces, it enables clearer imaging of water structures. SWIR is also utilized to differentiate atmospheric conditions, specifically clouds, fog, and water vapor. This feature is vital for military and security applications, especially in situations requiring imaging under low-light conditions or in foggy and cloudy weather. Thanks to these attributes, this technology is widely integrated into satellite and airborne observation platforms, particularly Earth observation satellites.

Map 52: Road Network Map of Hekimhan District and its Surroundings.

Hekimhan has historically been situated within a transportation network. The district is established on the D 850 highway, which provides the East-West and East-North connections for the Malatya-Sivas route. In recent years, this highway connection has been enhanced with the construction of tunnels and bridges, leading to a significant development in Hekimhan’s road transport. The 44-84 Kuluncak-Darende-Elbistan connection serves as an important auxiliary transport network for the district. Access to the district’s rural settlements is provided via cold-mix asphalt roads. However, transportation to Yama Mountain in the north and its surrounding neighborhoods becomes difficult during the winter months due to heavy snowfall. In terms of both road and rail transport, Hekimhan...

Map 53: Main Road Network Map of Hekimhan District and its Surroundings.

An analysis of the distribution map of average temperatures during the vegetation period in and around Hekimhan reveals that average temperatures remain high at 16 °C in the southern part of the Kuru Çay basin within the Hekimhan district boundaries, while they follow a lower course at 9.1 °C in the mountainous areas to the north and west. Considering that the temperatures initiating and terminating the vegetation period are determined by values of 10 °C and above for forest trees, it is observed that most areas in and around Hekimhan contain suitable conditions for the growth of forest communities. During this period, the temperature, which ranges between 17-18 °C around Hekimhan, follows a course of 16-17 °C in Dikenli, Dursunlu, Bahçedamı, Hasançelebi, Çanakpınar, and Ballıkaya; 15-16 °C in Kozdere, Çimenlik, Karapınar, and Güzelyayla; and between 14-15 °C in Dikili and Karslılar.

Map 54: Railway Map of Hekimhan District and its Surroundings.

The Malatya-Hekimhan railway has been recognized as a significant line for Hekimhan and the mining industry for 84 years. Ores produced from the mineral deposits around Hekimhan-Deveci and Hasançelebi are dispatched from the Hekimhan and Hasançelebi stations to the Iron and Steel plants in Ereğli, Karabük,

and İskenderun. During periods when road and air transport were not as active as they are today, the railway served as a vital transportation hub for Hekimhan-Kuluncak and rural areas. Furthermore, by influencing the district's development axis, it facilitated southward growth and led to the formation of the station neighborhood (İstasyon Mahallesi). The Sivas-Malatya railway network diversified Hekimhan's transport functions and was, for a period, highly significant for passenger transportation. Today, it still ranks first in freight transportation...

Map 55: The Land Capability Classification Map for Hekimhan District

"When the district of Hekimhan is evaluated according to land capability classes, it is observed that the largest portion consists of Class VII lands. These Class VII lands, covering an area of approximately 800 km², are distributed throughout the district; however, they are particularly concentrated in the northern, eastern, and central regions where elevation and slope are high. Class IV and VI lands, each covering approximately 250 km², are distributed across the central and southwestern parts of the district. Lands suitable for agriculture (Classes I, II, and III) exceed 200 km² in total and are concentrated in the southeastern section of the district, specifically where the Kuru Çay stream exits the district boundaries. Furthermore, the presence of these fertile lands is also evident within the river valleys and their associated tributaries located throughout the district."

Map 56: Land Use Map of Hekimhan District (CORINE-1990)

"In 1990, the Hekimhan district comprised three main land cover classes: 'Artificial Surfaces', 'Agricultural Areas', and 'Scrub and/or Herbaceous Vegetation Associations'. Approximately two-thirds ($2/3$) of the district consisted of 'Scrub and/or Herbaceous Vegetation Associations'. This unit, covering an area of approximately 920 km², is concentrated in the northern part of the district and on the southern slopes of Yama Mountain. Furthermore, these areas are distributed throughout the eastern parts and high-altitude regions across the district.

The majority of the remaining portion of Hekimhan, approximately one-third ($1/3$), was composed of 'Agricultural Areas'. It is observed that agricultural areas are concentrated in the southwest and are present in regions characterized by relatively low altitude and gentle slopes. The third land use class is 'Artificial Surfaces'. These areas, covering approximately 1 km², consist of settlement sites. While the Hekimhan district center constitutes the primary part of this class, neighborhood centers located throughout the district also form other artificial surface areas."

Map 57: Land Use Map of Hekimhan District (CORINE-2000)

Significant changes were observed in the land use of Hekimhan district in 2006 compared to the years 1990 and 2000. The area of "Scrub and/or Herbaceous Vegetation Associations," which was slightly over 900 km², increased to exceed 1000 km². In contrast, "Agricultural Areas," previously covering an area of 500 km², decreased to the 400 km² level. This decline is a result of agricultural lands being abandoned and left uncultivated during this period.

No major changes were observed in "Artificial Surfaces," which increased from 2.5 km² to 2.6 km²; this slight growth can be attributed to the expansion of settlement areas. The spatial distribution of land use classes remained parallel to the patterns seen in 1990 and 2000. "Scrub and/or Herbaceous Vegetation Associations" are concentrated in the northern and eastern parts of the district, while "Agricultural Areas" are predominantly found in the southwest. "Artificial Surfaces" consist of the district center and neighborhood centers.

Map 58: Land Use Map of Hekimhan District

In 2006, land use in the Hekimhan district exhibited significant changes compared to the 1990 and 2000 periods. The class of "Scrub and/or Herbaceous Vegetation Associations," which previously covered slightly over 900 km², increased to exceed 1000 km². In contrast, "Agricultural Areas," which formerly occupied an area of 500 km², decreased to the 400 km² level. This decline is identified as a consequence of agricultural lands being abandoned and remaining uncultivated during this period.

Regarding "Artificial Surfaces," no major changes were observed, with the area increasing slightly from 2.5 km² to 2.6 km². This minor growth can be attributed to the expansion of settlement areas. The distribution of land use classes remained parallel to the trends observed in 1990 and 2000. "Scrub and/or Herbaceous Vegetation Associations" continue to be concentrated in the northern and eastern parts of the district. "Agricultural Areas" remain predominantly located in the southwest, while "Artificial Surfaces" are composed of the district center and various neighborhood centers.

Map 59: Land Use Map of Hekimhan District

The land use patterns in 2012 exhibited significant similarities to those observed in 2006. The "Scrub and/or Herbaceous Vegetation Associations" class, which covers an area slightly exceeding 1,000 km², remains concentrated in the northern and eastern parts of the Hekimhan district. "Agricultural Areas" continue to be prevalent in the southwest and across the regions where the river and its tributaries are distributed.

It is estimated that "Agricultural Areas" have undergone no significant changes since 2006, maintaining a total area of approximately 400 km². In contrast,

“Artificial Surfaces” showed an increase of 0.4 km² compared to the 2006 data. This growth is attributed to the expansion of residential settlement areas within the district.

Map 60: Land Use Map of Hekimhan District

The land use patterns in 2012 exhibited a high degree of continuity with the trends established in 2006. The “Scrub and/or Herbaceous Vegetation Associations” class, covering an area slightly exceeding 1,000 km², remained concentrated in the northern and eastern regions of the Hekimhan district. “Agricultural Areas” maintained their spatial distribution in the southwest and along the primary river valleys and their tributaries.

Statistically, “Agricultural Areas” showed no substantial change relative to 2006, sustaining a total calculated area of approximately 400 km². In contrast, “Artificial Surfaces” experienced a growth of 0.4 km² compared to 2006 data. This expansion is directly attributed to the spatial growth of residential settlement areas within the district.

Map 61: Land Use Map of Hekimhan District

Map 62: Population Map of Hekimhan District for the Year 1965

According to the results of the 1965 General Population Census, the district of Hekimhan comprised 69 settlements with a total population of 44,548, among which the District Center emerged as the most populous settlement. The district center, with a population of 4,288, was followed by the sub-district (bucak) of Güzelyurt, which had a population of 3,721 during this period. Similarly, the Kocaözü sub-district, located in the southern part of the study area, ranked among the most populated settlements in 1965 with a population of 2,142.

Regarding the settlements with the lowest populations in 1965, it is observed that these consisted of rural village settlements such as Dereyurt (142), Kavacık (144), Dikili (151), Uzunhasan (164), and Deveci (172). Furthermore, these low-population localities are identified as settlements situated at a significant distance from the district center.

Map 63: Population Map of Hekimhan District for the Year 1970

According to the results of the 1965 General Population Census, Hekimhan district comprised 69 settlements with a total population of 44,548. During this period, the District Center emerged as the most populous settlement with 4,288 inhabitants. It was followed by the sub-district (bucak) of Güzelyurt with a population of 3,721, and Kocaözü, located in the southern part of the study area, which was also among the most populated localities with 2,142 residents. Conversely, the least populated settlements were identified as rural villages situated at a significant distance from the district center, including Dereyurt (142), Kavacık (144), Dikili (151), Uzunhasan (164), and Deveci (172).

By the 1970 General Population Census, the total population of Hekimhan district reached 49,604. The population of the district center increased by 3,561 compared to the previous census period, rising to 7,849. The center was followed by Güzelyurt (4,711) to the southwest and Hasançelebi (2,164) to the north. In 1970, Dikili village, located in the northeastern part of the study area, was the only settlement with a population below 100, recorded at 64. Overall, rural village settlements continued to maintain lower population levels compared to other settlement types during this period.

Map 64: Population Map of Hekimhan District for the Year 1975

In 1975, despite a decrease in the number of settlements to 67, the total population of the district rose to 51,330. This upward trend was also reflected in the district center, where the population reached 11,818. Other prominent settlements during this year included the sub-districts of Güzelyurt (4,276) and Hasançelebi (2,474). Notably, 1975 marked a period of population decline specifically for village settlements. Settlements such as Yağca (87) and Dereköy (95) saw their populations fall below 100, while Kavacık (112), Dikili (113), Koşar (134), Beykent (149), and Dereyurt (173) were recorded among the localities with fewer than 200 inhabitants.

Map 65: Population Map of Hekimhan District for the Year 1980

According to the results of the 1980 General Population Census, the district center is the most crowded settlement in the Hekimhan district, which had a population of 48,824. The district center, with a total population of 11,355, was followed by the Güzelyurt settlement, which was a sub-district (bucak) during this period (3,195). Similarly, the Hasançelebi sub-district (2,712) located in the north of the study area and the Kocaözü sub-district (1,942) located in the south were among the other most populous settlements of 1980.

When examining the settlements with the lowest population in the district in 1980, it is understood that these were village settlements such as Uğurlu and Işıklı, located in the east of the study area. Similarly, Güzelyayla village, located in the southwest of the study area, was another one of the lowest-populated settlements of this period.

Map 66: Population Map of Hekimhan District for the Year 1985

According to the results of the 1985 General Population Census, 22,686 men and 21,420 women live in the Hekimhan district, which has a total population of 44,106. During this period, the central district once again became the most crowded settlement in the district. The district center, with a total population of 11,579, was followed by the settlements of Güzelyurt (4,870), Hasançelebi (2,868), and Kocaözü (2,443), which were sub-districts (bucak).

When examining the settlements with the lowest population in the Hekimhan district for the year 1985, it is understood that these consist of village settlements such as Dikili (42), Dereköy (78), Koşar (109), Deveci (118), Dereyurt (121), and Bahçedamı (134).

Map 67: Population Map of Hekimhan District for the Year 1990

According to the results of the 1990 General Population Census, there were decreases in the population of the Hekimhan district—which consists of 61 settlements—particularly in village settlements far from the district center, partly due to the effects of internal migration. Among these, the settlements located in the north were Dikili (34), Dereyurt (92), Karapınar (96), and Dereköy (63); while those in the east were Kavacık (98) and Başkavak (175).

The Hekimhan district center reached its highest population during this period, rising to a total of 13,612. Again, the sub-districts (bucak) of Güzelyurt (4,500), Kocaözü (1,773), and Hasançelebi (1,534) were the other most crowded settlements of the Hekimhan district in this period.

Map 68: Population Map of Hekimhan District for the Year 2000

In the year 2000, the last of the general population censuses, the total population of the Hekimhan district was 42,515. While the most crowded population of the district was seen in the Hekimhan central settlement with 13,206, it was followed by the sub-districts (bucak) of Güzelyurt (5,810), Kurşunlu (4,101), Hasançelebi (3,092), Kocaözü (2,854), and İpekyolu (2,774).

When looking at the low-populated settlements, it is observed that the number of settlements with a population under 100 increased during this period. Among these low-populated settlements are village settlements such as Bahçedamı (23), Karslılar (35), Kavacık (47), Karapınar (64), Koşar (76), Davulgu (78), and Işıklı (78), and these villages are mostly located in the north of the study area.

Map 69: Population Map of Hekimhan District for the Year 2007

Looking at the year 2007, the first census period conducted according to the Address-Based Population Registration System, it is seen that Hekimhan district center and its immediate surroundings are the most densely populated areas. These settlements are Güzelyurt, Kocaözü, Kurşunlu, and İpekyolu.

When examining the low-populated settlements of 2007, it is observed that they are concentrated especially in the north of the study area and are generally settlements far from the Hekimhan district center. Notably, the number of settlements with a population under 100 reached its highest level in this period. In fact, in this period, a total of 23 settlements have a population under 100, and all of them consist of village settlements.

Map 70: Population Map of Hekimhan District for the Year 2015

In Malatya, which became a metropolitan municipality in 2012, villages were transformed into neighborhood (mahalle) settlements as of 2013. This change was reflected in the settlements belonging to the Hekimhan district; according to the 2015 Address-Based Population Registration System results, the total number of settlements became 64.

The distribution of the population in the district has not changed much as in previous periods, and the population has concentrated in the Hekimhan center. Generally, this population, concentrating in the northern and central parts of the study area, is gathered in neighborhoods that were formerly sub-districts (bucak) such as Kurşunlu, İpekyolu, Güzelyurt, etc. When examining the low-populated settlements of 2015, it is seen that they generally consist of former village settlements, and the total population of some has fallen below 20.

Map 71: Population Map of Hekimhan District for the Year 2020

In 2020, when the total population of the Hekimhan district was 16,965, the number of neighborhoods in the district became 65. In this period, the population concentrated especially in the neighborhoods within the Hekimhan center is over 10,000. Looking at the distribution of this population by neighborhood, Güzelyurt (1,396), Kurşunlu (1,012), Bahçelievler (881), and Turgut Özal (806) became the most populous neighborhoods.

When looking at the low-populated settlements in the district, it is seen that they are spread throughout the study area, especially concentrated in the north, east, and southwest. Former village settlements such as Uğurlu (39), Deveci (46), Bahçedamı (47), and Dereköy (48) can be given as examples of these settlements.

Map 72: Population Map of Hekimhan District for the Year 2022

“In 2022, while the number of neighborhoods in the district remained unchanged, it is observed that the population was generally concentrated in the neighborhoods of the Hekimhan center. These include neighborhoods that were formerly sub-district settlements, such as Güzelyurt (1,273), Kurşunlu (918), Kocaözü (736), and

Hasançelebi (539).

Regarding low-population settlements in 2022, it is understood that they are spread across almost the entire study area, and the number of neighborhoods with a population falling below 100 has increased compared to previous periods. Among the neighborhoods with a population under 100 are former village settlements such as Dikili, Karapınar, Dereköy, Başkavak, Aksütlü, Yeşilköy, and Delihasanyurdu."

Map 72: Arithmetic Population Density Map of Hekimhan District for the Year 1965.

According to the 1965 census, the total population of the Hekimhan district was 44,548. During this period, the male population was 22,390, while the female population was 22,158.

The settlements with the highest arithmetic population density during this period were the Hekimhan district center (82) and Köylüköyü (79.8). The settlement with the lowest population density in 1965 was Dikili (1.9), which was a village settlement with a recorded population of 151.

Map 73: Arithmetic Population Density Map of Hekimhan District for the Year 1970

According to the results of the 1970 General Census, the total population of the Hekimhan district was 49,604. During this period, the male population was 25,046, and the total female population in the district was 24,558.

The settlements with the highest arithmetic population density as of 1970 remained unchanged: the Hekimhan district center and Köylüköyü.

While the population of the Hekimhan district center rose to 7,849 during this period, its arithmetic population density was analyzed as 151. When looking at the settlement with the lowest population density, it is understood to be Dikili village (0.82), which also had the lowest population (64 people).

Map 74: Arithmetic Population Density Map of Hekimhan District for the Year 1970

According to the results of the 1970 General Population Census, the total population of the Hekimhan district was 49,604. During this period, the male population was 25,046, while the total female population in the district was recorded as 24,558.

The settlements with the highest arithmetic population density in 1970 remained unchanged, being the Hekimhan district center and Köylüköyü. While the population of the Hekimhan district center rose to 7,849 during this period, its arithmetic population density was analyzed as 151. Conversely, when looking at the settlement with the lowest population density, it is understood to be the village of Dikili (0.82), which also had the lowest population (64 people).

Map 75: Arithmetic Population Density Map of Hekimhan District for the Year 1975

In the Hekimhan district, where the total population rose to 51,330 in 1975, the male population was recorded as 26,102 and the female population as 25,228. Generally, the population—concentrated in the district center, its immediate surroundings, and the north of the district—decreases moving towards rural areas.

Indeed, during this period, the settlements with the highest arithmetic population density were the Hekimhan district center (227) and Köylüköyü (77), followed by sub-district settlements such as Güzelyurt (50) and Hasançelebi (49.6). Conversely, looking at the settlements with the lowest population density during the same period, it is understood that these were the villages of Dikili (1.4), located in the northeast of the study area, and Yağca (2.1), located in the east.

Map 76: Arithmetic Population Density Map of Hekimhan District for the Year 1980

The population mobility in 1980, when internal migration in Turkey began to intensify, was reflected in the total population of the Hekimhan district; the total population decreased by 2,506 people compared to the previous census period, falling to 48,824. Again in this period, the male population was recorded as 24,960 and the female population as 23,864.

This decrease in population also affected the arithmetic population density, and the population density of the Hekimhan district center fell to 212 during this period. Although there was a decline in total population figures across settlements, the locations with the highest population density remained the same; Köylüköyü (69), Hasançelebi (54), and Basak (49) were the other settlements where population density was highest.

Map 77: Arithmetic Population Density Map of Hekimhan District for the Year 1985

According to the results of the 1985 General Population Census, the total population of the Hekimhan district was 44,106. During this period, the male population was recorded as 22,686, while the total female population was officially registered as 21,420.

Regarding the arithmetic population density of the Hekimhan district for the year 1985, the settlement with the highest density was the Hekimhan district center (215). This was followed by the Köylüköyü (67.8) settlement, located in the northern part of the study area.

When examining the settlements with the lowest population density, it is observed that these consist of village settlements such as Dikili village (0.54)—which had a total population of 42—as well as Karapınar (5), Dereköy (5.6), Yağca (6.7), and Kurşunlu (6.8).

Map 78: Arithmetic Population Density Map of Hekimhan District for the Year 1990

In 1990, the population of the Hekimhan district experienced a decline, receding to a total of 42,467. This decrease was reflected in both the female and male populations of the district, with the male population falling to 21,659 and the female population to 20,808. Internal migration played a significantly influential role in this downward trend.

Internal migration also created areas of attraction in terms of district centers. Consequently, this situation was reflected in the population of the Hekimhan district center, which increased by 2,033 individuals during this period, reaching 13,612. This demographic mobility was also mirrored in the arithmetic population density; the Hekimhan district center became the sole settlement with a density greater than 60 (261).

During this period, the number of settlements with a population density between 1 and 10 increased. Rural settlements such as Dikili (0.5), Karapınar (5), Dereköy (5.6), and Kurşunlu (6.8) remained the locations with the lowest arithmetic population densities.

Map 79: Arithmetic Population Density Map of Hekimhan District for the Year 2000

According to the results of the 2000 General Population Census, the total population of the Hekimhan district was 42,515. Within this period, the male population was recorded as 21,942, while the total female population was officially registered as 20,573.

Regarding the arithmetic population density for the year 2000, the settlements with the highest density were identified as the sub-district (bucak) centers, led by the Hekimhan district center (253), followed by Güzelyurt (68) and Hasançelebi (61.9). Conversely, an analysis of settlements with the lowest population density reveals that these primarily consist of village settlements such as Karslılar (1.1) in the north, Bahçedamı (1.3) in the northwest, and Karapınar (1.7).

Map 80: Arithmetic Population Density Map of Hekimhan District for the Year 2015

Malatya, whose total population exceeded 750,000 as of 2011, became a metropolitan municipality with Law No. 6360 accepted in 2012. This change was also reflected in the village and city populations of the province; as of 2013, villages in Malatya were transformed into neighborhood settlements. Undoubtedly, this change also affected the Hekimhan district, where villages lost their legal entities and became neighborhoods.

In the Hekimhan district, which consisted of a total of 64 neighborhood settlements as of 2015, the arithmetic population density is concentrated in the neighborhood settlements considered the center of Hekimhan. When examining the settlements with the lowest arithmetic population density, it is understood that these generally align with the former village settlements in the study area, consisting of neighborhoods such as Dikili (0.52) and Yağca (0.76).”

Map 81: Arithmetic Population Density Map of Hekimhan District for the Year 2020

As of 2020, the total population of Hekimhan district, which contains 65 neighborhood settlements, was 16,965. During this period, the male population was recorded as 8,608, and the female population was 8,357.

When examining the arithmetic population density of Hekimhan district for the year 2020, it is understood that the settlements with the highest population density consist of neighborhoods located in the Hekimhan district center, such as Şehit Mehmet Fethi Akyüz (6.577), Yeni (4.416), and Turgut Özal (2.682).

Conversely, when looking at the settlements with the lowest arithmetic population density, it is observed that these consist of former village settlements located in the north of the study area, such as Dikili (0.67) and Karslılar (1.74).”

Map 82: Arithmetic Population Density of Hekimhan District, 2022.

As of 2022, the total population of Hekimhan district was 15,706, consisting of 8,006 males and 7,700 females. During this period, the settlements with the highest arithmetic population density remained unchanged compared to 2020, with concentrations primarily located in the neighborhoods within the district center. Among these neighborhoods, Şehit Mehmet Fethi Akyüz (4,394), Yeni (3,744), and Turgut Özal (2,360) rank the highest.

Regarding the settlements with the lowest arithmetic population density in Hekimhan district for the year 2022, it is observed that these consist of former rural settlements such as Dikili (0.58), İğdir (1.14), and Karapınar (1.63), which are situated far from the district center.

Map 83: In-Migration Map of Hekimhan District by Years.

In 2015, the district of Hekimhan received a total of 1,252 immigrants from other provinces in Turkey. This figure was recorded as 1,122 in 2017 and 1,052 in 2019. While Hekimhan generally received over 1,000 immigrants annually until 2020, the district saw an inward migration of 695 people in 2020, 934 in 2021, and 967 in 2022.

A significant portion of these migratory flows consisted of individuals who had previously moved to the central district of Malatya, while Istanbul ranked second as a source of migration. Specifically, in 2020, 120 out of the 695 individuals who migrated to Hekimhan arrived from Istanbul.

Map 84: Out-Migration Map of Hekimhan District by Years.

Hekimhan is a district characterized by both receiving and sending migration to other provinces and regions. In 2015, the number of individuals emigrating from Hekimhan reached 2,482. Of this total, 694 individuals moved to the central districts of Malatya, while 94 migrated to Istanbul within the Marmara Region. These were followed by Adıyaman, a neighbor of Malatya, with 36 individuals, and the capital, Ankara, with 35 individuals.

The total number of emigrants from Hekimhan was 1,847 in 2017, reaching a peak of 5,521 in 2019. In the subsequent years, emigration figures were recorded as 1,944 in 2020, 1,395 in 2021, and 1,505 in 2022. Excluding the central districts of Malatya, the primary destinations for those emigrating from the district were identified as major metropolitan areas such as Istanbul, Adana, Ankara, and Izmir.

Map 85: Net Migration Rate Map of Hekimhan District by Years.

An analysis of Hekimhan district's net migration rate reveals a generally negative (-) trend. The net migration rate, which was -63.96‰ in 2015, was recorded as -42.4‰ in 2017.

Within the analyzed periods, the highest net migration rate in the district occurred in 2019. While the net migration rate was -217.16‰ in 2019, it receded to -71.01‰ in 2020. Among the studied periods, the lowest net migration rate was observed in 2021 at -27.75‰, while the rate slightly increased to -33.68‰ in 2022.

Map 86: Number of Apricot Trees in Hekimhan District by Years.

Apricot production, which holds a significant place for Malatya, is also reflected in the district of Hekimhan, where apricot trees constitute the most prevalent fruit tree species.

The number of trees has demonstrated an upward trend over the years; in 2000, there were 740,000 apricot trees in the district. This figure rose by 16,000 to reach 756,000 by 2005. In general, the quantity of apricot trees in the district has maintained an increasing trajectory, reaching 758,500 by 2010.

As of 2015, the number of apricot trees across the district remained consistently above 800,000, ultimately reaching its peak in 2022 with a recorded total of 811,380 trees.

Map 87: Apricot Production in Hekimhan District by Years.

An analysis of the apricot production volume in Hekimhan district reveals significant fluctuations across the examined periods. In 2000, 26,728 tons of apricots were harvested from 740,000 trees, while in 2005, production reached 45,858 tons from 756,000 trees. Throughout all analyzed periods, the peak production occurred in 2010, with a yield of 45,994 tons from 758,500 apricot trees.

As a fruit highly sensitive to and affected by climatic events, apricot production in the district has experienced declines in recent years. While the total apricot production across the district was 29,900 tons in 2015, the lowest production level was recorded in 2020. In 2020, only 12,816 tons of apricots were produced throughout the district. Although this figure increased to 30,737 tons in 2022, it remained low compared to the production levels observed between 2005 and 2010.

Map 88: Number of Walnut Trees in Hekimhan District by Years.

Hekimhan is a prominent district in walnut production, and the number of walnut trees has increased over the years. In the year 2000, there were 44,500 walnut trees across the district, a figure that rose to 72,280 by 2022.

The period with the lowest number of walnut trees was 2005, during which the total count was recorded as 41,500. In the subsequent years, the number of walnut trees in the district increased, reaching 51,000 by 2010.

Within the analyzed periods, the highest number of walnut trees was achieved in 2020, with the count rising to 72,210.

Map 89: Walnut Production in Hekimhan District by Years.

Regarding the walnut production volume in Hekimhan district, the lowest production level was recorded in 2000 with 700 tons. While walnut production exceeded 900 tons in 2005 and 2010, the output nearly doubled by 2015, reaching its peak at 1,607 tons.

Despite the increase in the number of walnut trees in Hekimhan district over the years, walnut production has not demonstrated the same growth and has instead declined. Specifically, following the 1,607 tons produced in 2015, walnut production in the district receded to 1,516 tons in 2020 and further decreased to 1,308 tons in 2022

Map 90: Number of Apple Trees in Hekimhan District by Years.

Another fruit tree species found in the district of Hekimhan is the apple tree. The number of apple trees, which stood at 21,400 in 2000, decreased to 20,000 by 2005. In 2010, no significant changes occurred in the number of apple trees compared to the previous period, with a total of 20,090 trees recorded across the district. A similar situation was observed in 2015, during which the total number of apple trees in the district was 20,900.

In general, while the number of apple trees hovered around 20,000 until 2015, it rose to 23,053 in 2020, reaching the highest level of the analyzed period. By 2022, the total number of apple trees in the district was recorded as 22,034.

Map 91: Apple Production in Hekimhan District by Years.

An analysis of the apple production volume in Hekimhan district reveals fluctuations over the years. In 2000, apple production was recorded at 873 tons, whereas in 2005, it decreased to 670 tons. By 2010, production in the district, which possessed 20,090 trees, saw a slight increase to reach 779 tons.

As of 2015, apple production in the district increased, reaching its peak across all analyzed periods with a total of 936 tons. In 2020, 916 tons of apples were produced, while by 2022, a yield of 839 tons was obtained from 22,034 apple trees throughout the district.

Map 92: Wheat Cultivation Areas in Hekimhan District by Years.

Wheat is another cereal product cultivated in the Hekimhan district, and it is grown over much more extensive areas compared to barley. An analysis of wheat production indicates that it was cultivated on an area of 90,145 decares in 2000. The maximum extent of wheat cultivation in the district was reached in 2005, covering 134,500 decares. By 2010, wheat cultivation areas in the district had decreased relative to 2005, with production occurring on 91,468 decares.

Between 2015 and 2022, wheat production was generally maintained on a surface area exceeding 80,000 decares, with efforts made to slightly increase the cultivation area in recent years. Consequently, while wheat was produced on 86,041 decares throughout the district in 2020, this figure rose to 87,735 decares by 2022.

Map 93: Wheat Production Volumes of Hekimhan District by Years.

An examination of the wheat production volumes in the district between 2000 and 2022 reveals that 11,838 tons of wheat were produced across the district in the year 2000. The period with the highest wheat production coincides with 2005, which also saw the largest cultivation area. Indeed, during this period, wheat production in the district exceeded 20,000 tons for the first time, reaching 22,264 tons. In the following years, production was recorded as 13,759 tons in 2010, 16,735 tons in 2015, and 12,798 tons in 2020.

In general, wheat production in the district has declined after 2015, with the lowest production level occurring in 2022 at 10,395 tons.

Map 94: Barley Cultivation Areas in Hekimhan District by Years.

An examination of the changes in barley cultivation areas in Hekimhan district between 2000 and 2022 reveals that the highest rates were generally observed in the early 2000s, covering an area nearly double that of 2022. Specifically, barley was cultivated on 14,957 decares in 2000, while the cultivation area was recorded as 13,810 decares in 2005.

In general, while the district maintained barley cultivation areas exceeding 10,000 decares until 2010, this figure receded to 5,800 decares by 2015. Despite efforts to increase the barley production area in recent years, barley was cultivated on a total of 8,100 decares across Hekimhan district as of 2022.

Map 95: Barley Production Volumes of Hekimhan District by Years.

An examination of the barley production volume derived from cultivated areas in Hekimhan district reveals that production stood at 2,683 tons in 2000. Generally, while barley production in the district remained above 2,000 tons until 2005, it was recorded at 1,138 tons by 2010.

Despite a reduction in barley cultivation areas within the district in recent years, the yield per unit area has increased over time, with production reaching 1,282 tons in 2015. Concurrently with the recent expansion of barley cultivation areas in the district, production volumes have also begun to rise. In 2020, 1,282 tons of barley were produced, and by 2022, the total barley production in Hekimhan district was recorded as 1,683 tons.

Map 96: Lentil Cultivation Areas in Hekimhan District by Years.

As of the year 2000, lentil production was carried out on an area of 350 decares in Hekimhan district. This figure rose to 800 decares in 2005, while in 2010, production was realized on a 729-decare area.

In general, the period between 2005 and 2010 represents the highest levels of lentil cultivation areas throughout the district; however, cultivation areas have continuously declined in the subsequent years. Specifically, lentils were planted on 800 decares in 2005 and 729 decares in 2010. This cultivation area receded to 205 decares in 2015 and was recorded as 197 decares in 2020. By 2022, the lentil production area fell to its lowest level among the analyzed periods, decreasing to 130 decares.

Map 97: Lentil Production Volumes of Hekimhan District by Years.

An examination of the lentil production volume in the district indicates that fluctuations in cultivation areas and production levels exhibit a parallel trend. In the year 2000, 20 tons of lentils were produced in Hekimhan district, while the highest production levels were achieved between 2005 and 2010. Specifically, a total of 80 tons of lentils were produced across the district in 2005, and in 2010, a yield of 88 tons was obtained from a cultivation area of 729 decares.

As of 2015, lentil production throughout the district has continuously declined. While 22 tons of lentils were harvested from a 205-decare area in 2015, this figure receded to 19 tons by 2020. By 2022, the production further decreased, with only 10 tons of lentils obtained from a cultivation area of 130 decares across the district.

Map 98: Chickpea Cultivation Areas in Hekimhan District by Years.

Chickpea is another legume species cultivated in the Hekimhan district. An analysis of the cultivation areas indicates that the production area was 4,350 decares in 2000. By 2005, a slight decrease was observed compared to the previous period, with the cultivation area receding to 3,300 decares. The peak period for chickpea cultivation in the district occurred in 2010, during which production was carried out on an area of 12,400 decares.

As of 2015, chickpea cultivation areas in the district have consistently remained above 10,000 decares. In this context, an examination of the cultivation areas over the last seven years reveals a high degree of stability; the production area was recorded as 10,400 decares in 2015, 10,224 decares in 2020, and 10,020 decares in 2022.

Map 99: Chickpea Production Volumes of Hekimhan District by Years

A correlation is observed between the chickpea cultivation areas and the resulting production volumes in Hekimhan district across the analyzed periods. In the year 2000, 413 tons of chickpeas were produced in the district, whereas the lowest production level occurred in 2005 with a yield of 330 tons. Corresponding to the expansion of cultivation areas, the production volume increased significantly by 2010, marking it as the peak year with a total output of 1,265 tons.

Although the chickpea cultivation areas remained relatively stable between 2015 and 2022, fluctuations in production volumes were nonetheless observed. Specifically, 1,115 tons of chickpeas were produced in the district in 2015. This figure receded to 1,094 tons from a cultivation area of 10,224 decares in 2020, and further decreased to 948 tons from an area of 10,020 decares by 2022.

Map 100: Bean Cultivation Areas in Hekimhan District by Years.

An analysis of the bean cultivation areas in Hekimhan district reveals an upward trend between 2000 and 2010, followed by a declining trajectory from 2015 to 2022. In the year 2000, bean production was conducted on an area of 80 decares throughout the district. Although the cultivation area receded to 60 decares in 2005, it reached its peak in 2010. During this period, beans were produced on a total of 104 decares, marking the highest level among the analyzed periods.

In general, bean cultivation areas in the district have continuously decreased between 2015 and 2022. As of 2015, beans were planted on 62 decares across the district. This area further contracted to 44 decares in 2020 and decreased to 30 decares by 2022, suggesting a likely continued decline in the following years.

Map 101: Bean Production Volumes of Hekimhan District by Years.

An examination of the bean production volumes in Hekimhan district reveals a correlation between cultivation areas and production levels. In the year 2000, 8 tons of beans were obtained from an area of 80 decares, while this figure rose to 9 tons in 2005. Corresponding to the peak in cultivation areas, the highest production level was achieved in 2010, with a total yield of 19 tons across the district.

Due to the contraction of cultivation areas between 2015 and 2022, bean production volumes in the district also decreased. Specifically, 8 tons of beans were harvested from a 44-decare area in 2020. Nevertheless, when compared to the figures from 2000, these results indicate an increase in yield per unit area over the years. By 2022, a total of 5 tons of beans were produced across the district from a 30-decare cultivation area.

Map 102: Number of Cattle in Hekimhan District by Years.

Between 1991 and 2016, the 25-year period of bovine livestock numbers in the Hekimhan district is represented through various charts and maps. The peak period for the bovine population was 1991, with approximately 10,000 heads recorded. Data indicates a general downward trend over the elapsed time; by 1995, the number of cattle had decreased to 9,500, and by 2000, it had fallen below 9,000.

The most dramatic decline occurred between 2000 and 2005, with the bovine population plummeting to approximately 1,200 heads by 2005. This downward trajectory continued into 2010, when the count reached its lowest level at around 1,000 heads. However, a recovery phase followed this period, with the population rising again and exceeding 5,000 heads by 2016.

Map 103: Number of Small Ruminants in Hekimhan District by Years.

An analysis of ovine livestock numbers in the Hekimhan district from 1991 to 2016 reveals an overall downward trend, although partial increases were observed in certain periods. In 1991, the number of ovine animals was approximately 20,000, which subsequently fell below 17,500 by 1995. However, the population saw a temporary recovery by 2000, reaching approximately 19,000 heads.

Following the year 2000, the ovine population entered a renewed period of decline, receding to approximately 15,000 in 2005 and further dropping to around 12,500 by 2010. Between 2010 and 2016, a growth phase was once again recorded, with the total count rising above 15,000 heads.

Map 104: Number of Poultry in Hekimhan District by Years.

Poultry farming represents another significant livestock activity in the Hekimhan district, with changes observed between 1991 and 2016 illustrated through various maps and charts. While the number of poultry exhibited a general downward trend between 1991 and 2010, a rapid increase has been observed following 2010. In 1991, the poultry population was approximately 14,000, which receded to around 12,000 by 1995 and subsequently rose back to approximately 13,000 in 2000.

The period between 2000 and 2010 was characterized by a renewed decline in poultry numbers, with the population falling to 6,000 in 2005 and reaching its lowest level of 2,000 in 2010. However, between 2010 and 2016, poultry farming underwent a substantial expansion, reaching its peak with a total of 26,000 birds.

Map 105: Number of Beehives in Hekimhan District by Years.

The changes in beekeeping activities in Hekimhan district from 1991 to 2016 are illustrated through maps and charts at approximately five-year intervals. While beekeeping showed a continuous increase in the district until 2005, it is observed that the number of hives decreased by approximately threefold in 2010. Specifically, while there were around 6,000 hives in 1991, this number rose above 7,000 in 1995, exceeded 10,000 in 2000, and approached 12,000 by 2005.

In 2010, the number of beehives decreased threefold, falling below 4,000 units, and it is observed that this figure remained below 4,000 in 2016. In conclusion, throughout the 25-year period, beekeeping activities, which showed an increase between 1991 and 2005, declined rapidly after 2005.

Map 106: Number of Equines in Hekimhan District by Years.

An analysis of the number of odd-toed ungulates (solipeds) in Hekimhan district over a 25-year period (1991–2016) indicates a general downward trend. In 1991, the number of odd-toed ungulates was approximately 1,800. By 1995, this figure fell below 1,500, with the most significant decline occurring thereafter. Indeed, by the year 2000, the count had plummeted to below 200.

Although the number of odd-toed ungulates saw a temporary recovery, rising to nearly 550 by 2005 and remaining around that level in 2010, another decline followed. By 2016, the population reached its lowest value of the 25-year period, once again falling below the 200 mark.

Map 107: Earthquake Density Map of Hekimhan and Its Environs.

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Map 108: Vintage Design Map of Hekimhan District.

KAYNAKÇA

U.S. Geological Survey. (2023). Earthquake Catalog. Erişim Linki: https://earthquake.usgs.gov/earthquakes/search/

T.C. İçişleri Bakanlığı Afet ve Acil Durum Yönetimi Başkanlığı (AFAD). (2023). Deprem Katoloğu. Erişim Linki: https://deprem.afad.gov.tr/event-catalog

Türkiye İstatistik Kurumu (TÜİK). (2023). Nüfus ve Demografi Veri Portalı. Erişim Linki: https://data.tuik.gov.tr/Kategori/GetKategori?p=nufus-ve-demografi-109&dil=1

Türkiye İstatistik Kurumu (TÜİK). (2023). Tarım Veri Portalı. Erişim Linki: https://data.tuik.gov.tr/Kategori/GetKategori?p=tarim-111&dil=1

T.C. Milli Savunma Bakanlığı Harita Genel Müdürlüğü (HGM). (2023). İndirilebilir Ürünler. Erişim Linki: https://www.harita.gov.tr/urunler/indirilebilir-urunler/14

Emre Ö, Duman TY, Özalp S, Elmacı H, Olgun Ş, ve Şaroğlu F (2013) Açıklamalı Türkiye Diri Fay Haritası. Ölçek 1:1.250.000, Maden Tetkik ve Arama Genel Müdürlüğü, Özel Yayın Serisi-30, Ankara-Türkiye. ISBN: 978-605-5310-56-1

Maden Tetkik ve Arama (MTA). (2023). İl Maden Haritaları. Erişim Linki: https://www.mta.gov.tr/v3.0/hizmetler/il-maden-haritalari

Maden Tetkik ve Arama (MTA). (2023). Yerbilimleri Harita Görüntüleyici. Erişim Linki: http://yerbilimleri.mta.gov.tr/anasayfa.aspx

Copernicus Sentinel Datas (2023) processed by Sentinel Hub. Erişim Linki: https://dataspace.copernicus.eu/browser/

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JAXA/METI ALOS PALSAR L1.0 2007. (ASF DAAC 17 September 2023).

NaturalEarthData. (2023). Erişim Linki: https://www.naturalearthdata.com/

OpenStreetMap Copyright and Licence OSM (2023). Erişim Linki: https://www.openstreetmap.org/copyright/en

Meteoroloji Genel Müdürlüğü (MGM). (2023). Erişim Linki: https://www.mgm.gov.tr/

Orman Genel Müdürlüğü (OGM). (2023). Meşcere Haritaları. Erişim Linki: https://cbs.ogm.gov.tr/vatandas/

TEŞEKKÜR

*Hekimhan Coğrafya Atlası'nın hazırlanma sürecinde sağladıkları katkı, destek ve iş birliği dolayısıyla **Hekimhan Belediyesi**'ne, **Hekimhan Kaymakamlığı**'na ve **Hekimhan Madencilik İthalat, İhracat, Ticaret ve Sanayi A.Ş.**'ye teşekkür ederiz. Ayrıca bu çalışma, İnönü Üniversitesi Bilimsel Araştırma Projeleri Koordinasyon Birimi tarafından desteklenen **2332 ID numaralı, SBA-2021-2332** kodlu "**Hekimhan İlçesi Coğrafya Atlası Hazırlama Projesi**" kapsamında gerçekleştirilmiştir.*

Malatya ilinin Hekimhan ilçesi için hazırlanan coğrafi atlas, ilçenin hem fiziki hem de beşeri özelliklerini kapsamlı bir şekilde ele alarak yaklaşık 112 harita içermektedir. Bu atlasın oluşturulmasında, detaylı arazi çalışmaları, resmi kurumlardan elde edilen veriler ve literatür taraması gibi çeşitli yöntemlerden faydalanılmıştır, bu sayede ilçenin coğrafi yapısına dair zengin ve güncel bilgiler sunulmuştur. Atlasın hazırlanmasında kritik bir rol oynayan haritalar, coğrafi bilgi sistemlerinde uzman bir akademisyen tarafından ArcGIS Pro yazılımı kullanılarak çizilmiştir. Bu yaklaşım, atlasın teknik doğruluğunu ve analitik derinliğini artırmış, ilçenin coğrafi ve sosyal yapısını anlamada önemli bir kaynak haline getirmiştir. Haritaların çiziminde kullanılan ArcGIS Pro yazılımı, atlasın görsel kalitesini ve analitik detaylarını ön plana çıkararak, kullanıcıların Hekimhan ilçesinin coğrafyasını daha iyi anlamalarını sağlamıştır. Ayrıca Atlasta yer alan haritalar alanında uzman akademisyenler tarafından kontrol edilerek açıklamalar ve incelemelerle zenginleştirilmiştir. Fiziki haritalar, ilçenin arazi yapısını, iklim özelliklerini, bitki örtüsünü ve su kaynaklarını detaylandırırken, beşeri haritalar nüfus dağılımı, ekonomik faaliyetler ve yerleşim düzeni gibi sosyo-ekonomik özellikleri ortaya koymaktadır. Bu atlas, sadece eğitimciler, araştırmacılar ve Hekimhan ilçesine ilgi duyanlar için değil karar vericiler, ilçe ve mahalle yöneticileri için de değerli bir kaynak oluşturarak, ilçenin coğrafi karakterini ve sosyal yapısını derinlemesine anlamaya olanak tanır.

The geographical atlas prepared for the Hekimhan district of Malatya province comprehensively addresses both the physical and human features of the district, containing approximately 112 maps. The creation of this atlas utilized various methods, including detailed field studies, data obtained from official institutions, and literature reviews, thereby presenting rich and current information on the district's geographical structure. The maps, playing a critical role in the atlas's development, were drawn using ArcGIS Pro software by an academician specialized in geographic information systems. This approach has enhanced the technical accuracy and analytical depth of the atlas, making it a significant resource for understanding the geographical and social structure of the district. The use of ArcGIS Pro software in drawing the maps has brought to the forefront the atlas's visual quality and analytical details, facilitating a better comprehension of Hekimhan district's geography among users. Additionally, the maps in the atlas have been reviewed by academicians specialized in the field, enriched with explanations and analyses. While physical maps detail the district's terrain structure, climate characteristics, vegetation cover, and water resources, human maps reveal socio-economic features such as population distribution, economic activities, and settlement patterns. This atlas, thus, serves as a valuable resource not only for educators, researchers, and those interested in Hekimhan district but also for decision-makers and district and neighborhood administrators, enabling a deep understanding of the district's geographical character and social structure.

İNÖNÜ ÜNİVERSİTESİ YAYINEVİ